A NEURAL NETWORK BASED VECTOR CONTROL SCHEME FOR REGENERATIVE CONVERTERS TO USE IN ELEVATOR SYSTEMS

Wewalage Suren Senadheera

(178667D)

Degree of Master of Science

Department of Electrical Engineering

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December 2019

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Thesis/Dissertation submitted in partial fulfilment of the requirements for the degree Master of Science in Industrial Automation

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DECLARATION

I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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(Prof. K. T. M. U. Hemapala)

Abstract – Current days, large scale buildings are the major energy consumers in the world. In most of the cases, energy is wasted than using effectively in buildings. Clients always request optimum energy consumption levels when the new buildings are designed. In a conventional elevator system, energy is dissipated as heat in a set of resistors when braking occurs. Using this dissipating power for another useful activity as regenerative power will make the energy usage of a building more efficient.

The main modification to be done for the motor drive to collect this regenerative power is to replace the passive rectifier in the drive input side with an active AC/DC converter. Traditionally, these converters are controlled with PI controllers. Though, modern experiments reveal that arrangements of these kinds demonstrate restrictions with their suitability in practical applications.

This research explores on mitigating similar limitations by applying a neural network in regulating active front end converters in such systems. Further, it proposes a neural network related switching regulation scheme for bi-directional AC/DC converters to improve the efficiency of extracting regenerative energy in elevator systems. By using this kind of NN controller setup, bi-directional AC/DC converters can achieve the advantages such as quick switching response, simpler structure and better output waveform.

Neural network controller's performance was analysed together with normal vector control stipulations and compared versus traditional vector control arrangements. This establishes that the neural network vector control scheme introduced in this research is more efficient and useful. Even with rapidly changing and power switching converter control arrangements, the NN based vector control mechanism exhibits good performance levels. Following input reference signals which are fluctuating frequently, fulfilling the basic regulating requirements for faulty power utilities and enduring of unstable situations in power regeneration system.

Keywords – Elevator Regenerative Power, Active Front End Converters, Neural Network Control Systems.

ACKNOWLEDGEMENT

It is with great pleasure that I acknowledge the assistance and contribution of all the people who helped me to successfully finish my master's thesis.

First, I extend my sincere gratitude to my research supervisor Prof. K. T. M. U. Hemapala who provided me with his continuous support and assistance throughout the course of this thesis. Without his advices and encouragement, this thesis would never have been accomplished. I also would like to thank my progress review committee members, Dr. Chandima Pathirana and Dr. Buddhika Jayasekara for delivering their guidance and valuable comments for successfully continuing my thesis work throughout the past year.

Also, my appreciation goes to the staff and all my friends in 2017 MSc. (Industrial Automation) batch for their invaluable support.

Finally, I would like to extend my deepest gratitude to my family. Their blessings undoubtedly helped me in making this endeavour a success.

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LIST OF ABBREVIATIONS

NN	Neural Network
IGBT	Insulated Gate Bipolar Transistor
VOC	Voltage Oriented Control
FOC	Field Oriented Control
PID	Proportional, Integral, Derivative
PI	Proportional, Integral
AC	Alternating Current
DC	Direct Current
EERU	Elevator Energy Regenerative Unit
VFD	Variable Frequency Drive
AFE	Active Front End
SV	Space Vector
PWM	Pulse Width Modulation
ZOH	Zero Order Hold
FLC	Fuzzy Logic Controller
MPC	Model Predictive Control
DSP	Digital Signal Processing
THD	Total Harmonic Distortion

LIST OF APPENDICES

1. INTRODUCTION

Elevator units installed in multi storey buildings provide the services for transporting people among the different floors. Due to the space limitations in many cities and other areas, many of the existing and future buildings in the world are getting taller. Therefore, the elevator systems installed in these buildings are getting faster in their day to day operations. These elevator systems have become an important part of the installation in high rise buildings for vertical transportation.

Consumption of energy in these elevator systems have become common as of lighting system installations in the buildings. However, when it compares with lighting systems energy consumption of elevator systems are much higher than that. The main reasons for this observation are the huge electrical traction machines and heavy loads incorporated in these elevator systems combined with continuous operation around the clock. On behalf of addressing the green building concepts with these kinds of systems in todays' world, extraction of regenerative energy from these systems in a more efficient and useful manner has become a more important consideration.

The common method of construction in regenerative drive systems is to replace the passive diode rectifier at the input side of motor drive with a two-way active converter which can act as a rectifier in the normal input mode and an inverter in the regeneration mode. The main switching element in active front end converters currently in use is the Insulated Gate Bipolar Transistor (IGBT). Generally, these types of IGBT switches are regulated with standard techniques in vector control methodology via PID controller-based techniques.

Nevertheless its positive outcomes, current analyses describe about the limitations which this type of controller techniques are facing frequently [1].

1.1. Problem Statement

When it comes to the extraction process of elevator regenerative energy, the main modification to be done for the traditional elevator drive system is to replace the passive rectifier set at input side of the motor drive with an AC/DC bidirectional active converter. The efficiency of extracting regenerative energy via this bidirectional

converter depends on the switching control scheme applied on main switching devices in the converter unit. Therefore, by improving the efficiency in switching control process of these switching devices can improve the efficiency of extracting regenerative energy from the elevator system.

The travelling time, travelling load, travelling distance etc… in an elevator system are always changing with the time. Hence the regenerative power coming out from these elevator systems are frequently changing with the time. Applying conventional switching mechanisms which are used in constant power applications will not help to extract this kind of uncertain regenerative power effectively. Therefore, the requirement of a novel method matching with these kinds of dynamic output situations is being evolved rapidly.

1.2. Thesis Overview

The overview of this thesis can be summarized as follows:

Chapter 2 – Literature Review.

Chapter 3 – Presents four elevator system studies that has been performed in order to analyse the behaviour of power regeneration throughout the cycle of elevator system operation. Furthermore, these studies help to understand the factors that might influence the behaviour of elevator system. Each study is presented in four subsections: elevator load, elevator travelling speed, elevator travelling distance, elevator travelling direction, etc…

Chapter 4 – Presents the system design.

Chapter 5 – Presents the experiments that has been carried out in order to test the performance of system and the obtained results are discussed.

Chapter 6 – Concludes the thesis.

2. LITERATURE REVIEW

In current days, large scale buildings are major energy consumers in the world. Most of the cases, energy is wasted than using effectively in buildings. Clients always request optimum energy consumptions when new buildings are designed. In a conventional elevator system, energy is dissipated as heat in a set of resistors when braking occurs. Using this dissipating power for another useful activity will make the energy usage of the building more efficient.

2.1. Energy Regenerative Methods

According to the previous studies carried out by the researchers, the energy regenerative methods can be classified mainly into several categories. One is to control the motor braking process with a critical method. This is considerably a different practise to diminish the regenerated energy inside the windings of motor. This technique is implemented by adjusting the slip of induction motor at a certain penetrating level where the regenerated and absorbed power in motor windings are almost balanced with each other. This regulation technique might allow to exclude those equipment needed to process the regenerating energy in traditional methods by removing braking resisters and regenerative converters from the controller [2]. However, it is difficult to use regenerative power efficiently with this system. The following Figure 2.1 shows a block diagram of the proposed system.

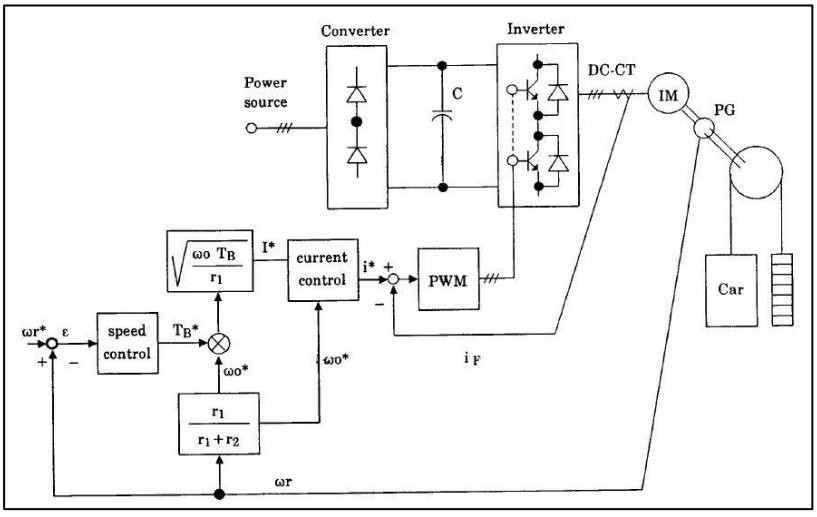


Figure 2.1: Block Diagram of Critical Braking Method (source: [2])

Another method is to store this regenerative power in a backup storage system. And, this method can be considered as an emergency elevator system arrangement. Here it is proposed to use the elevator to vacate people in case of power outage situation in the building. Further it enables the emergency admittance of external salvage personnel into the building and users to exit from the building in a critical situation. In order to carry out this kind of operation it uses only the weight of passengers in the elevator system, no electricity. The proposed method may help people to exit the building in a danger during the salvage team is conveyed to affected areas of the building in a well-organized way [3]. However, there is no any method to use the excess regenerated power in this kind of system. The following Figure 2.2 shows the backup energy system.

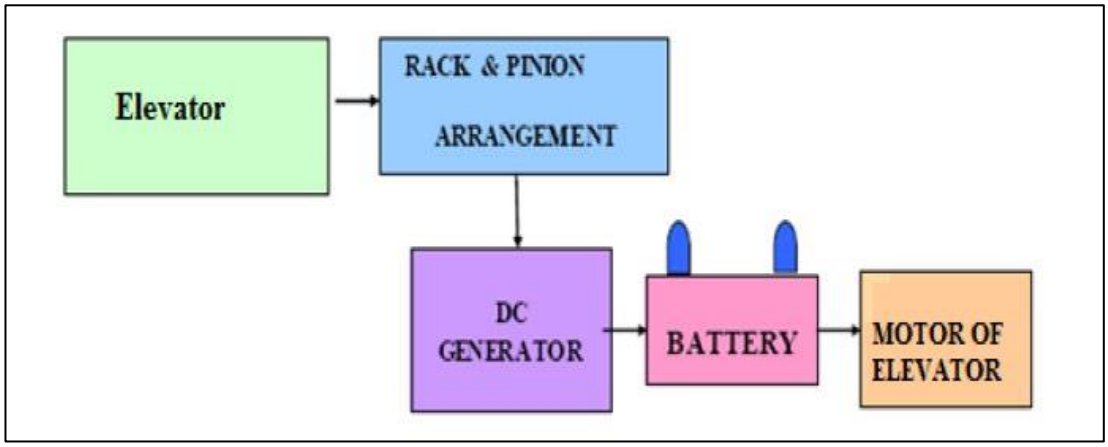


Figure 2.2: Block Diagram of Backup Energy System (source: [3])

Storing regenerated energy in a capacitor built in to the elevator drive also have been considered in previous researches as a new option to reuse elevator regenerative power in the system [4]. However complex resources and fast dynamic operational system requirements have made this method somewhat inefficient to use in practical scenarios.

Adding an energy regenerative unit into the elevator drive also another option in connecting elevator regenerative power to the main electrical system. Since the operation of an elevator system is mainly categorised in to two stages as motoring and generating modes, this system proposes to collect energy from the elevator unit from its generating mode. It explains about a method of extracting regenerative power from the elevator system and connecting it into the grid of utility power supply. Although the simulation process was implemented in a lab, a more detailed assessment about

regenerating power has been carried out in the MATLAB environment [5]. In this study, the regenerative load variation pattern of the elevator has not been taken into consideration. Figure 2.3 shows a block diagram of this system.

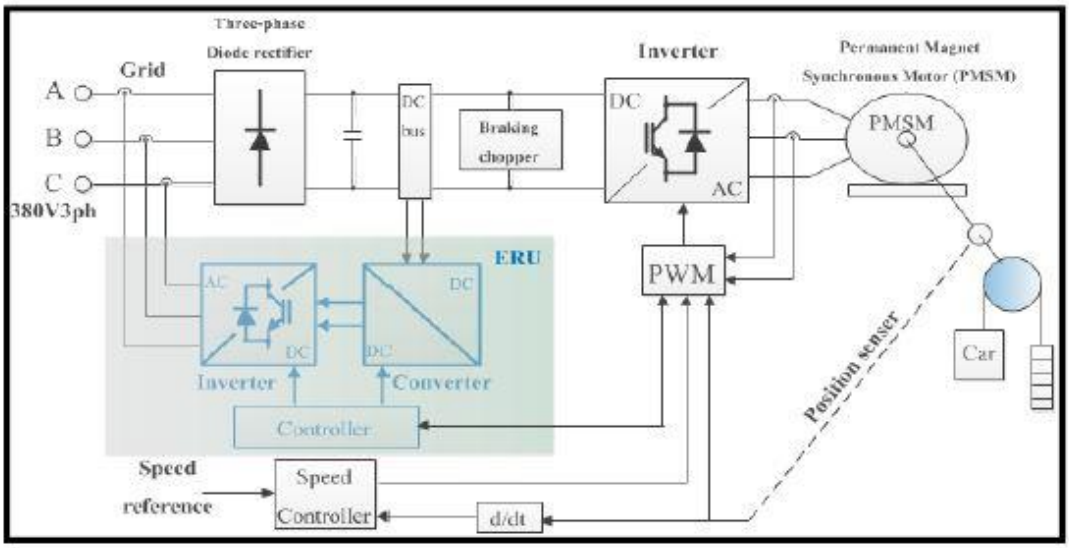


Figure 2.3: Block Diagram of Elevator Energy Regenerative Unit (source: [5])

2.2. Different Strategies in Converter Controllers

When we consider about convertor control methods, there are several ways. IGBT based AFE converters are among the most famous in the industry. The reasons for this popularity are lower distortion in harmonic levels, bidirectional energy flow, smaller sized equipment and power factor is much closer to unity. For the analysis, control of AFE converter based on Variable Frequency Drives for induction machines and the simulation of relevant MATLAB prototypes will be discussed. Substituting an IGBT bridge for the diode bridge allows to address regenerative operation, controlling the reactive power and decrease in harmonic currents in the system. For such a converter, the power can flow in both directions [6]. This method is mainly based on voltage-oriented control of IGBT converter. Here the converter performance is considerably affected by the load disturbances.

Another method based on AFE Converters is sensor less control. Here it proposes to develop a method which was established on VOC. This sensor less regulator mode promises balanced and sinusoidal network current levels even throughout robust voltage fluctuations. In order to refrain from unnecessary current overruns, a novel

collective start up technique was developed here. Function of the method is based on measuring the current increase in a small-time interval for which the zero vector is kept on. It allows the system for soft starts and synchronize with or without connecting the load at any state in the network voltage. Laboratory test results and MATLAB Simulink models explain the operation of this proposed method [7]. However, the performance of these kinds of systems are getting limited with fast changing loads in dynamic systems.

2.3. Artificial Intelligence (AI) Based Converter Controllers

Due to the limitations in PID controlled IGBT converters, some of the researches have been carried out to employ Artificial Neural Networks (ANNs) for improved efficiency levels. One of such researches offers some enhancements in their regulator process based on its total active prototype. This was much easier in function at its static reference frame and it doesn't contain much current sensors to measure its currents on the AC network. However, the basic operational technique is much vulnerable to the changes in network inductances, which cause many complications in industrial environments. Suggested alterations of this method cope with this drawback with the help of FLC used to adjust constraints and act robustly with the basic regulation related to the variations in parameters of network inductance. However, the proposed technique requires input parameters regarding the reactive network current. System accuracy has been proved by experimental and simulation outputs with an extensive variation of network inductance values [8]. Here the new Fuzzy Logic Control (FLC) tuning approach presents an improved behaviour in common situations. However, the load variation pattern in elevator systems has not been considered here. Figure 2.4 shows a block diagram of this system.

Another method based on ANNs is the MPC. Proposed technique studies an enhanced AFE converter bridge based on Model Predictive Control. This method employs the discrete behaviour in AFE Converter Bridge to obtain its suitable switching positions through describing the cost function. Accuracy of this Active Front End Converter has been tested with a trial setup. It has indicated that the system efficiency has been in a good level. In order to ensure the effectiveness of this proposed MPC regulator, a

comparative productivity assessment also has been carried out between the MPC and VOC referred PWM regulators for the AFE Converter Bridge. In order to analyse the steadiness of proposed MPC controller, several other Digital Signal Processing (DSP) techniques also have been used. Results of these experiments have proved that the proposed MPC controller is having a good stability [9]. However, the regenerative energy output variation pattern of elevators has not been considered.

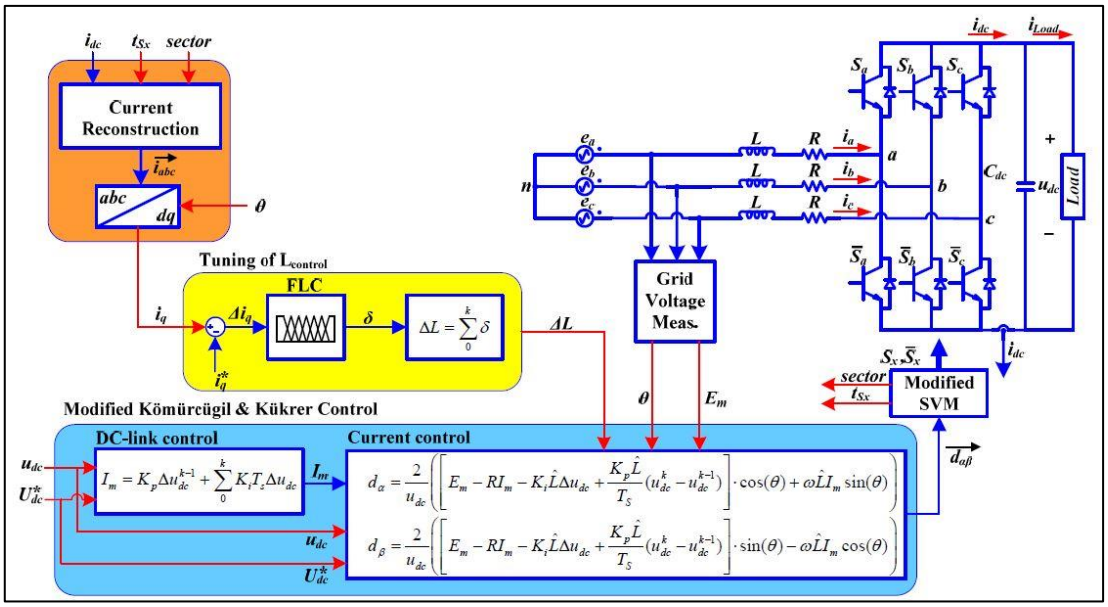


Figure 2.4: FLC Based Voltage Control (source: [9])

Another research refers to a regulation strategy of a Pulse Width Modulation rectifier. The proposed algorithm is mainly based on VOC technique. This is originating from the FOC for induction motor. Since a current controlled loop has been used in this technique, it delivers a quick strong reaction. The proposed technique has been used to minimize the THD of the line current by removing harmonic current signals and to increase the power factor during the DC-voltage is being maintained at preferred values. Here the standard Proportional-Integral (PI) regulator and a FLC have been applied to control the DC link voltage levels. Illustrated results of these analysed data have been presented in latter parts of the paper for the ease of comparison with operational and efficiency level criteria of the proposed methodology [10]. However, this paper has considered only the operation of 3 phase rectifier systems. Operation of 3 phase converter systems in a dynamic regenerating environment has not been considered here.

3. STUDIES ON EXISTING ELEVATOR SYSTEMS

During the operation of elevator systems, the main traction motor of that elevator acts both in the motor mode and generator mode. When the elevator is going up with a heavy load or coming down with a light load in its cabin, the main traction motor operates in the motoring mode and absorb power from the utility supply into the motor drive. When it is going up with a light load or coming down with a heavy load in its cabin, the main traction motor operates in the generating mode and release power from motor drive to the utility supply. This process is based on the four-quadrant operation of motor drives used in the motor. Following Figure 3.1 shows the more details of a four-quadrant operation of a motor drive.

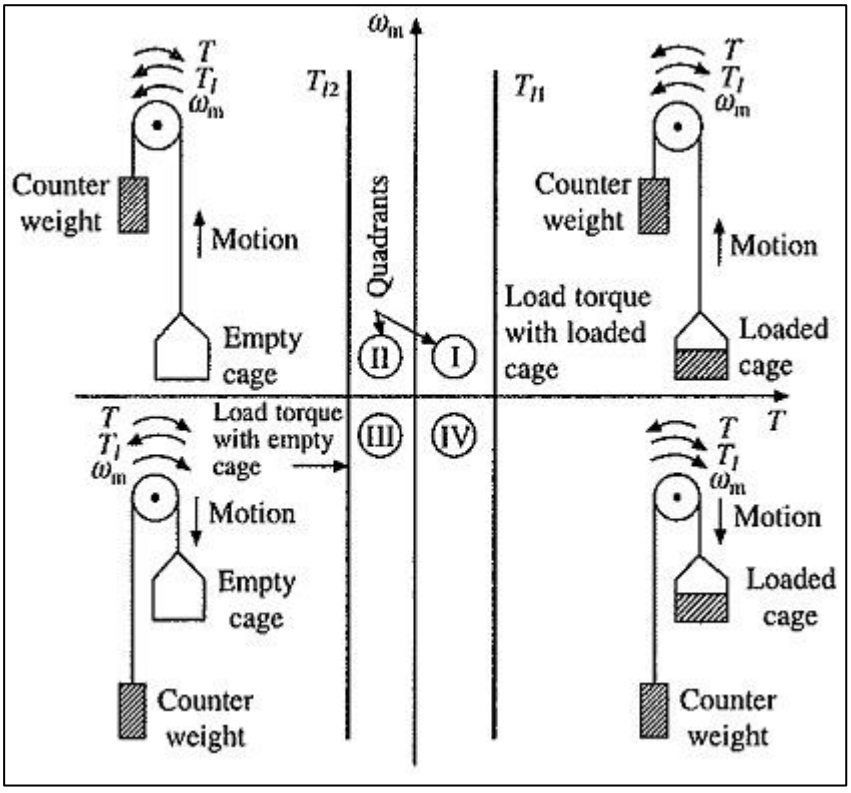


Figure 3.1: Four Quadrant Operation of a Motor Driving a Hoist Load (source: *https://www.eeeguide.com/four-quadrant-operation-of-motor-drive/*)

As shown in the above figure, when the torque applied by the motor is similar to its rotational direction (1st and 3rd Quadrant Operation), it operates in the motoring mode and absorbs power from the utility supply. When the torque applied by the motor is opposite to its rotational direction (2nd and 4th Quadrant Operation), it operates in the generating mode.

3.1. Conventional Braking Resistors

Before the extraction of elevator regenerative power comes into picture, braking resistors were used in elevator systems to dissipate the energy generated in the braking/regeneration process of elevator motors. Following Figure 3.2 shows the arrangement of braking resistors in a traditional elevator drive system.

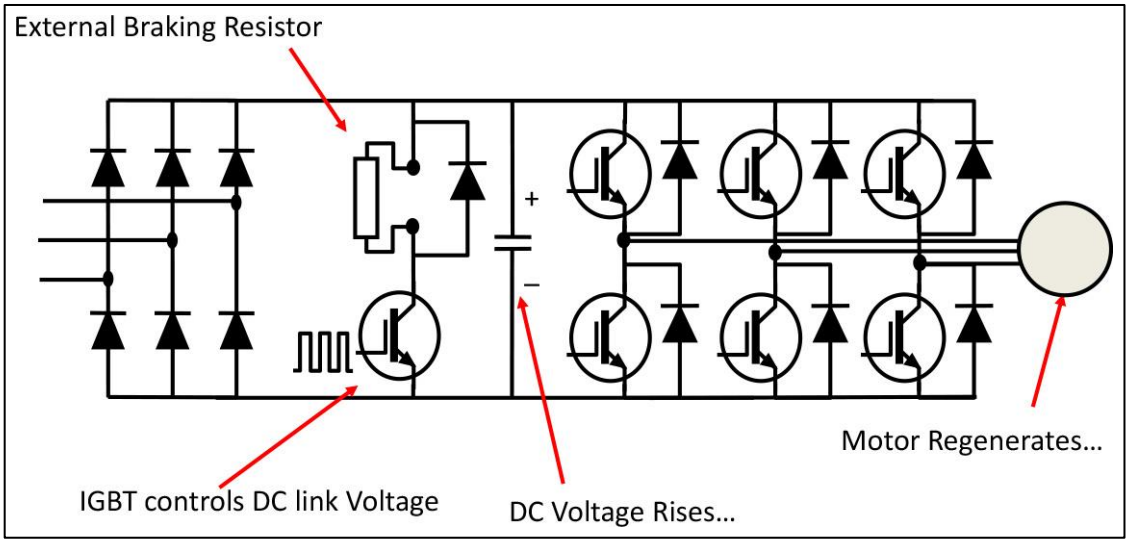
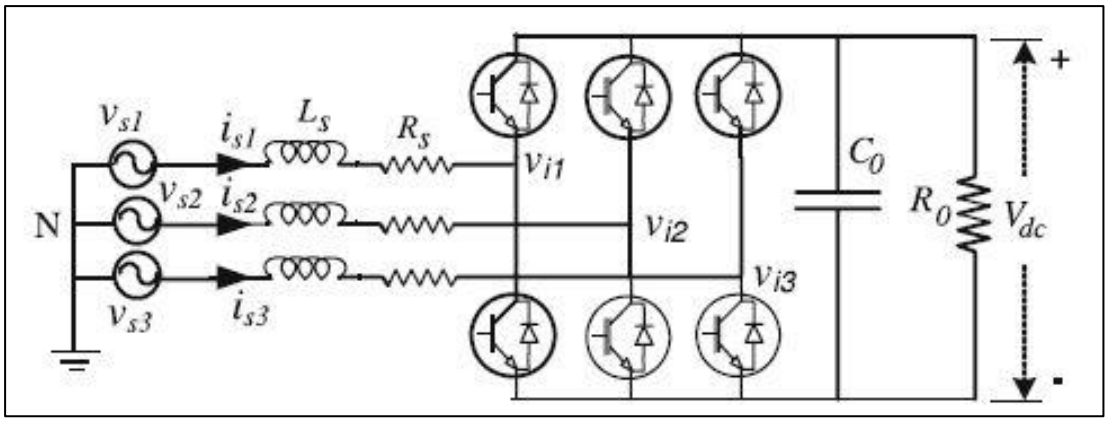


Figure 3.2: Application of Breaking Resistor in Elevator Drives (source: *https://www.invertekdrives.com/variable-frequency-drives/iknow/braking-and-regeneration-14*)

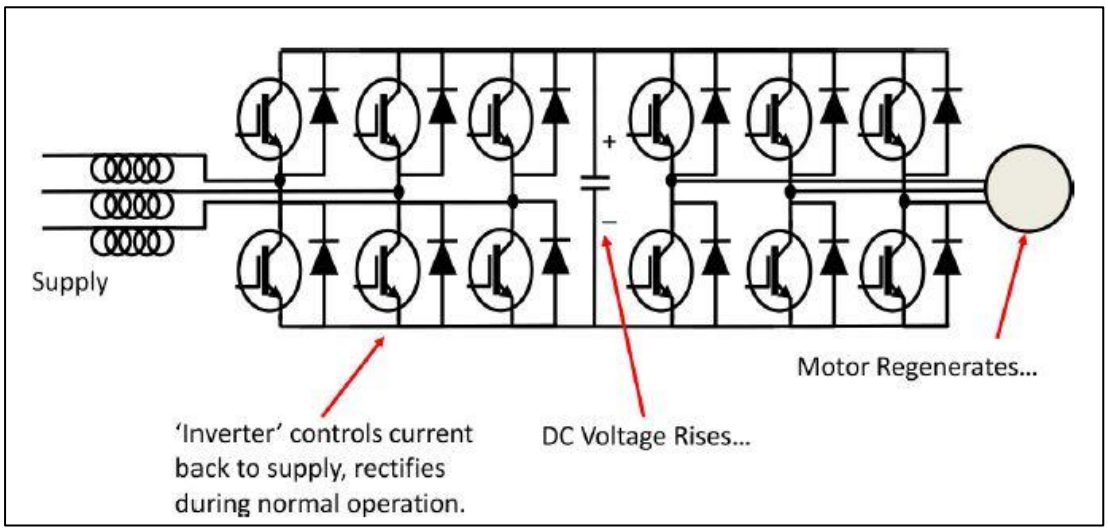
As shown in the above figure, when the motor operates in generating mode, the inverter drive connected to the motor is giving power back to the DC link capacitor and the DC voltage rises. When the DC voltage rise comes to a specific maximum safety voltage level, the IGBT unit connected parallel to the DC link operates the braking resistor and dissipate this extra energy as heat and controls the DC link voltage within the safe limits.

3.2. New AC/DC Bi-directional Converter

When we replace this braking resistor with a regenerative converter, this dissipated heat energy can be harvested in a useful. The following Fig. 3.3 shows the application of regenerative converter into the motor drive system by replacing the braking resistor.



(a)



(b)

Figure 3.3: (a) shows the detailed view of regenerative converter to be added to the motor drive. (b) shows the total diagram of motor drive after adding regenerative converter to the motor drive (source: *https://www.invertekdrives.com/variable-frequency-drives/iknow/braking-and-regeneration-14*).

When designing a switching control system that has some improved behavioural aspects when compared to the existing switching control systems, it is important to analyse the behaviour of real-world elevator systems. This research contains the studies of several office and apartment building complexes that help in understanding different key factors that might be important to be incorporated into the system in obtaining a much more realistic elevator behavioural quality.

The flow of this process can be explained as follows: Initially the site data is collected. These data will be converted into data types which can be processed with MATLAB simulation models. Here mainly the elevator load data will be converted into motor torque values. After that these data will be simulated in standard PI model and proposed NN model separately. Then the output data will be recorded separately for comparison purposes. Finally, these results will be compared with each other and the relevant performance will be reflected as the final assessment. A block diagram of the complete process is shown in the Figure 3.4 for more clarity.

3.3. Measurement of input parameters in the system

During the measurement of real-world elevator data, several parameters were measured as follows:

1. Utility Side AC Voltage (V)
2. Utility Side AC Current (A)
3. Utility Side AC Frequency (Hz)
4. Utility Side Energy (kWh)
5. Motor Rotational Speed (rpm)
6. Elevator Load (kg)
7. Travelling Direction (Up/Down)

a. Utility Side AC Voltage (V), Utility Side AC Current (A), Utility Side AC Frequency (Hz), Utility Side Energy (kWh)

A 3-Phase energy analyser was used for the recording of above parameters from the elevator system. Sampling time of the Energy Logger was set to one second. Following Figure 3.5 shows an image of the Energy Logger.

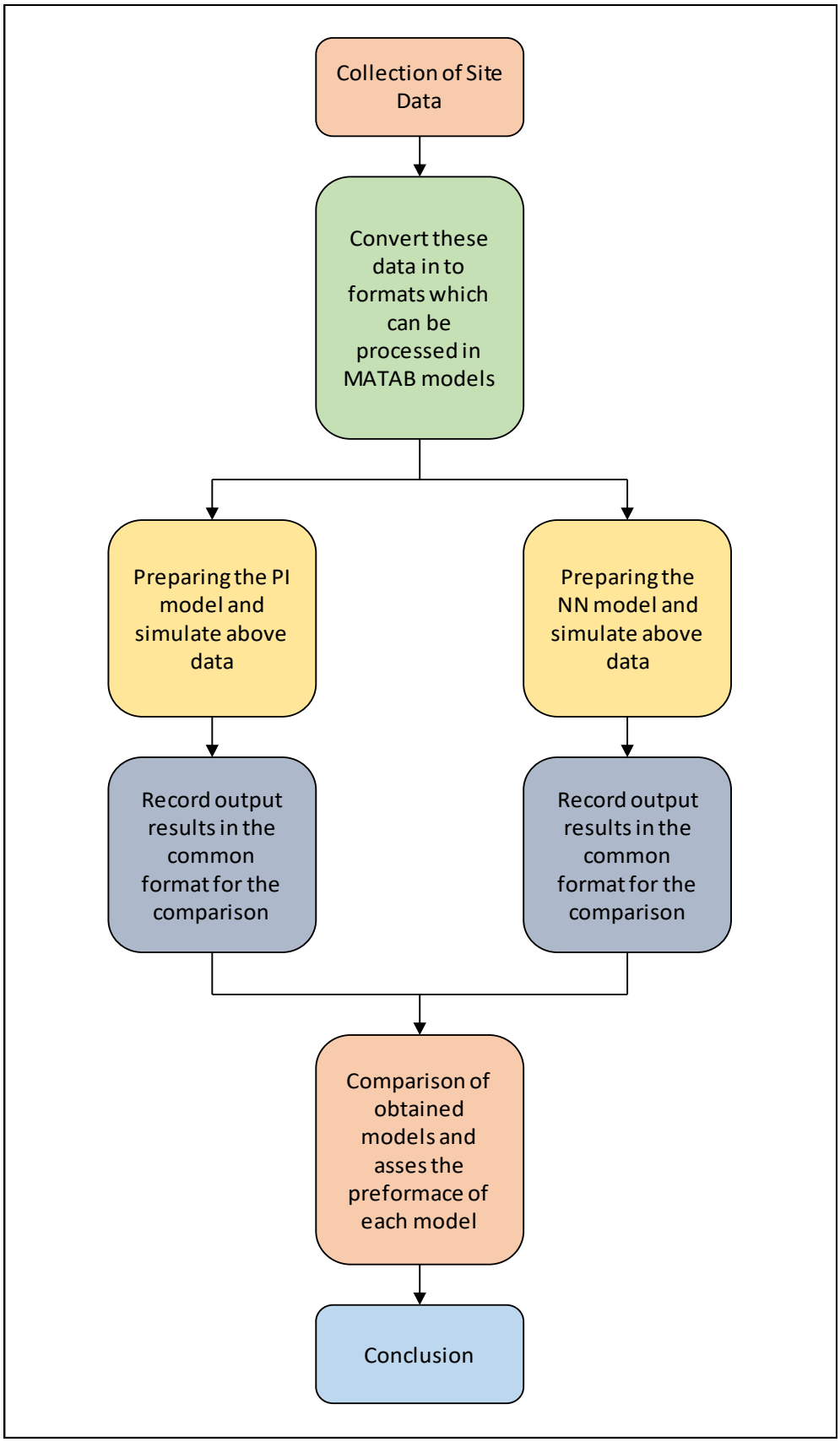


Figure 3.4: Simplified block diagram for the research

Figure 3.5: Energy analyser used for the application

b. Traction Motor Speed (rpm)

This was done by using a speed sensor module. A magnetic pointer was attached to main traction wheel and the speed sensor was aligned to that point to get the rotational speed [11]. An image of the speed sensor module is shown in following Figure 3.6 for the reference. The output of this sensor is forwarded to record in the data logger shown in Figure 3.11.

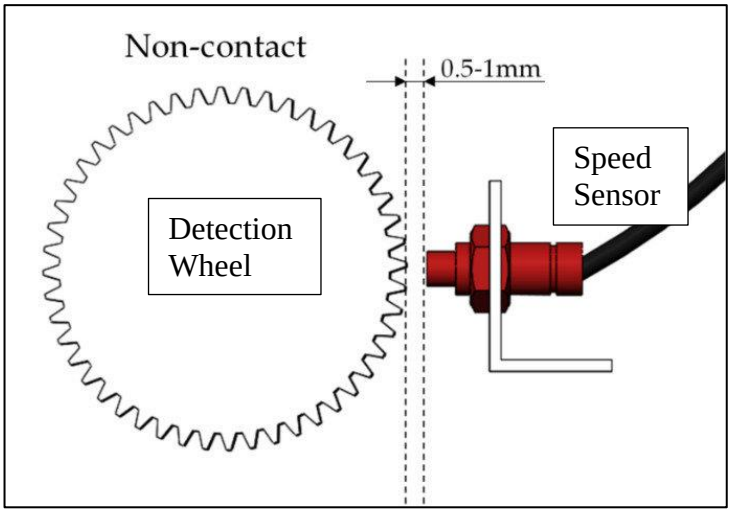


Figure 3.6: Separately installed speed sensor

In addition to this, a noncontact RPM meter also was used to measure the rotational speed. The main purpose of using an RPM meter is to verify the accuracy of data recorded via the speed sensor/data logger. An image of the RPM meter is shown in Figure 3.7 for more details. During this comparison, it was noticed that both the readings were matching with each other.

Figure 3.7: Non-contact RPM meter

c. Elevator load (kg)

Elevator load measurement was done by using an elevator load sensor installed on elevator ropes fixed to the elevator frame. Figure 3.8 shows an image of the location where the load sensor was installed. Figure 3.9 shows the sensor location in 2:1 rope ratio diagram. Figure 3.10 shows a clearer image of the load sensor installed on elevator ropes.

Figure 3.8: Mounting location of elevator load sensor

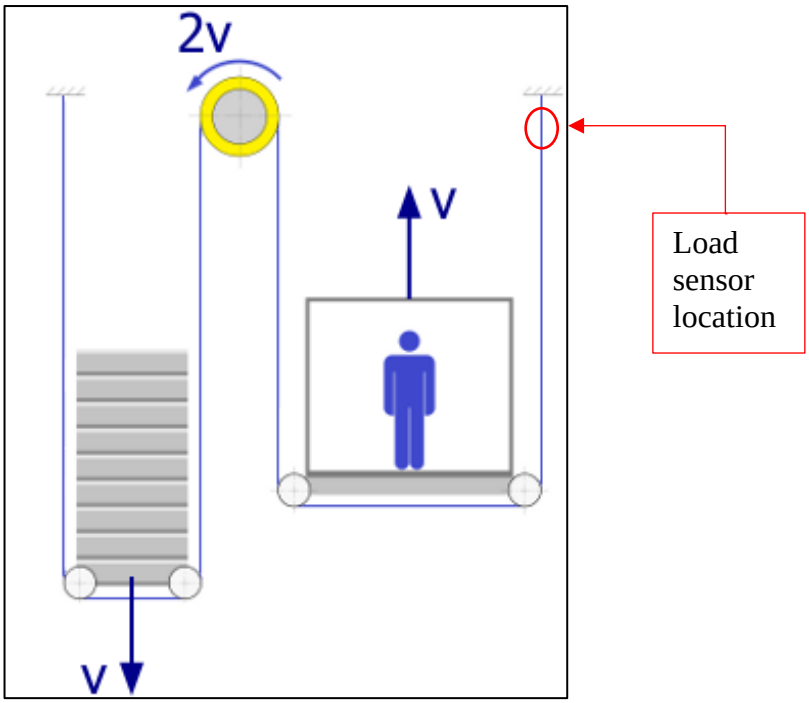


Figure 3.9: Load sensor location in 2:1 rope ratio diagram

During the time of data recording, there was an unstable situation in the load sensor reading. This was mainly due to the dynamic behaviour of passengers and the elevator system. Hence, the load sensor reading at the time of triggering the door closing motor which is mounted on the elevator cabin was recorded as the input load for the elevator system until the next stop.

Figure 3.10: Elevator load sensor mounted on the ropes

For more clarity, assume that the elevator is starting the n^{th} term of its journey by closing the doors mounted on elevator cabin for the n^{th} term. Then the load sensor reading at that time is recorded as the input load of elevator for the n^{th} term of its journey. Once the elevator was stopped at a certain destination floor by completing the n^{th} term of its journey, it will open the doors to start the $(n+1)^{th}$ term. At the time of door closure to start the $(n+1)^{th}$ term of elevator's journey, available reading of the load sensor is recorded as the input load of elevator system for the $(n+1)^{th}$ term of its journey. In this way the issue of getting unstable readings from the load sensor could be avoided up to a satisfactory level. The output of these sensors was recorded in the data logger shown in Figure 3.11.

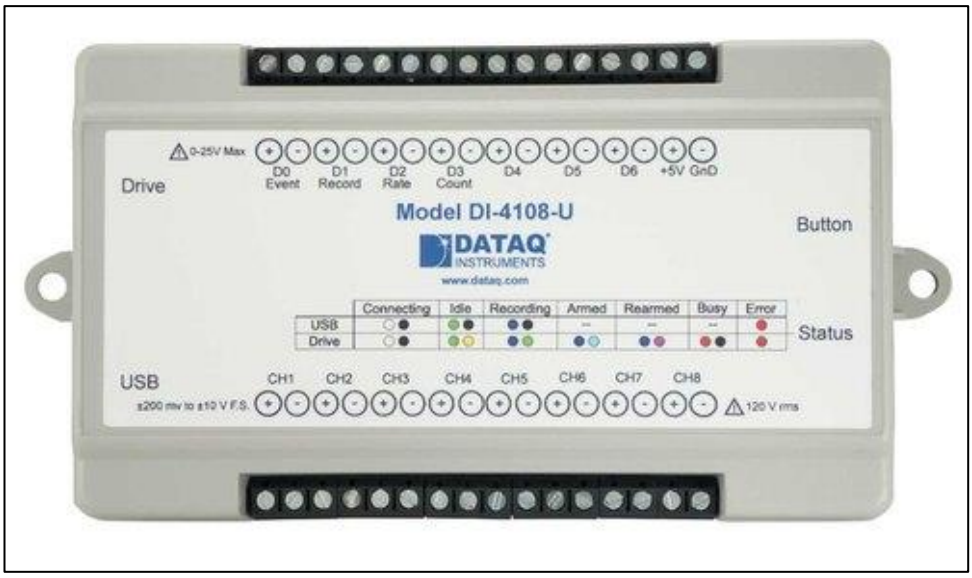


Figure 3.11: Data recording logger

d. Elevator Travelling Direction (Up/Down)

This input was recorded by referring the travel direction signal output from the elevator controller. The input data from this unit were recorded in the data logger.

In this process, four numbers of multi-storey buildings were randomly selected for the data collection which are shown in Table 3.1, Table 3.2, Table 3.3 and Table 3.4 respectively.

1. 20 storeys office building complex at Narahenpita:

Table 3.1: Elevator System Specifications at Narahenpita

No.	Description	Details
1	No. of Elevators in the Building	5 nos
2	Load Capacity of Each Elevator	1050 kg
3	Vertical Speed of Elevator	2.0 m/s
4	Type of the Traction Motor	PM/ Gearless
5	Maximum Torque of Traction Motor	670 Nm
6	Rated Speed of Traction Motor	190 rpm
7	Traction Sheave Diameter	400 mm
8	Counterweight	1650 kg
9	Empty Car Weight	1200 kg
10	Rope Ratio	2:1

2. 15 storeys apartment building complex at Boswell place, Colombo – 06:

Table 3.2: Elevator System Specifications at Boswell Place

No.	Description	Details
1	No. of Elevators in the Building	1 no
2	Load Capacity of Each Elevator	630 kg
3	Vertical Speed of Elevator	1.0 m/s
4	Type of the Traction Motor	PM/ Gearless
5	Maximum Torque of Traction Motor	110 Nm
6	Rated Speed of Traction Motor	382 rpm
7	Traction Sheave Diameter	100 mm
8	Counterweight	1050 kg
9	Empty Car Weight	800 kg
10	Rope Ratio	2:1

3. 12 storeys apartment building complex at Moore's Road, Colombo – 06:

Table 3.3: Elevator System Specifications at Moore's Road

No.	Description	Details
1	No. of Elevators in the Building	1 no
2	Load Capacity of Each Elevator	630 kg
3	Vertical Speed of Elevator	1.0 m/s
4	Type of the Traction Motor	PM/ Gearless
5	Maximum Torque of Traction Motor	450 Nm
6	Rated Speed of Traction Motor	95 rpm
7	Traction Sheave Diameter	400 mm
8	Counterweight	1050 kg
9	Empty Car Weight	800 kg
10	Rope Ratio	2:1

4. 8 storeys apartment building complex at Frankfort Place, Colombo – 04:

Table 3.4: Elevator System Specifications at Frankfort Place

No.	Description	Details
1	No. of Elevators in the Building	1 no
2	Load Capacity of Each Elevator	800 kg
3	Vertical Speed of Elevator	1.0 m/s
4	Type of the Traction Motor	PM/ Gearless
5	Maximum Torque of Traction Motor	570 Nm
6	Rated Speed of Traction Motor	95 rpm
7	Traction Sheave Diameter	400 mm
8	Counterweight	1320 kg
9	Empty Car Weight	1000 kg
10	Rope Ratio	2:1

Results of the site collected data were arranged in tables accordingly. Table 3.5 shows a sample of site collected data for Office Building Complex at Narahenpita. Table 3.6 shows a sample of relevant site data for Apartment Building Complex at Boswell Place, Colombo 06. Table 3.7 shows a sample set of collected data from the Apartment Building Complex at Moore's Road, Colombo 06 and Table 3.8 shows a sample of site collected data for the Apartment Building Complex at Frankfort Place, Colombo 04. Total set of these data is attached in Annexure-1 at the end.

Then these data were analysed on the MATLAB Simulink platform and resulting data were tabulated. Following Figure 3.12 shows the MATLAB Simulink model used to simulate these data. Modelling of this figure was mainly based on the details indicated in the diagram of Figure 3.3 (b).

Table 3.5: Site Data for Office Building Complex at Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	401.8	567	-22.0	49	780	0	-42.6
2	400.4	677	15.5	50	160	1	10.1
3	398.5	671	11.0	49	240	1	7.1
4	397.9	675	15.8	49	160	1	20.3
5	402.3	680	6.2	50	320	1	3.9
6	400.9	677	11.3	50	240	1	14.1
7	398.8	560	-20.0	51	90	0	-60.8
8	402.3	680	1.3	49	400	1	2.3
9	399.5	676	17.0	49	160	1	29.1
10	397.8	673	6.1	51	320	1	3.9
11	400.0	561	-25.7	51	810	0	-14.3
12	400.3	561	-28.7	51	860	0	-33.3
13	398.4	564	-20.2	49	750	0	-51.2
14	399.4	678	22.2	49	80	1	12.6
15	398.6	670	3.2	49	470	1	10.5
16	402.1	564	-24.4	49	40	0	-41.6
17	398.5	567	-18.4	49	140	0	-21.8
18	402.3	562	-22.4	49	70	0	-26.5
19	397.6	563	-15.5	50	180	0	-18.7
20	400.0	672	16.3	50	160	1	9.5
21	399.2	567	-34.5	50	980	0	-63.7
22	399.3	564	-24.7	51	830	0	-30.2
23	399.5	569	-23.2	50	790	0	-14.5
24	399.1	561	-21.0	50	760	0	-25.7
25	401.9	568	-20.4	49	760	0	-64.1
26	399.2	671	4.5	50	350	1	10.5
27	400.0	670	10.3	51	250	1	6.5
28	401.9	675	14.3	50	640	1	40.1
29	400.1	676	8.5	51	560	1	15.5
30	400.2	672	16.7	50	680	1	20.3
31	401.6	562	-21.0	50	80	0	-26.7
32	400.8	678	20.3	50	730	1	12.2
33	399.3	562	-35.5	50	990	0	-63.8
34	397.9	679	4.8	49	340	1	6.1
35	398.6	678	26.8	49	0	1	31.2
36	402.4	670	15.8	49	170	1	9.5
37	400.3	565	-28.4	50	890	0	-34.2
38	399.6	674	19.6	51	110	1	35.3
39	397.6	673	10.2	51	260	1	24.4
40	397.7	563	-21.7	51	80	0	-37.8
41	400.6	674	25.2	49	840	1	68.9
42	398.6	677	13.7	50	650	1	17.6
43	400.7	673	5.9	50	510	1	6.6
44	401.2	567	-21.1	51	80	0	-24.8
45	400.6	680	19.6	51	110	1	11.8
46	402.3	560	-35.1	49	1000	0	-64.9
47	398.9	570	-29.5	50	880	0	-18.0
48	402.4	564	-24.1	51	790	0	-42.3
49	400.6	671	19.3	51	120	1	32.7
50	400.1	673	18.1	50	720	1	53.5
51	400.2	569	-21.5	50	70	0	-13.4
52	397.6	678	13.6	50	210	1	53.1
53	397.9	671	25.8	49	0	1	63.9
54	402.4	566	-24.6	50	30	0	-56.6
55	402.5	570	-21.4	51	90	0	-37.3
56	401.6	679	10.4	50	590	1	12.3
57	399.3	565	-24.6	50	40	0	-14.6
58	397.5	678	13.2	49	630	1	15.7
59	399.8	565	-19.1	51	130	0	-10.6
60	397.8	675	18.6	49	710	1	42.8

Table 3.6: Site Data for Apartment Building Complex at Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	401.5	677	11.8	50	490	0	45.6
2	398.7	679	14.5	51	530	0	35.3
3	400.2	672	0.5	51	260	0	0.3
4	404.2	679	4.3	50	340	0	3.0
5	402.7	563	-13.7	50	530	1	-60.1
6	395.1	678	1.0	49	230	1	1.3
7	398.1	679	7.7	51	90	1	23.2
8	399.5	679	1.0	50	270	0	1.2
9	403.2	680	7.7	49	410	0	33.5
10	395.0	678	3.5	49	320	0	4.0
11	403.4	677	14.8	50	550	0	18.4
12	400.2	676	6.2	49	380	0	4.1
13	396.2	679	1.5	51	220	1	4.7
14	402.6	565	-8.9	50	420	1	-5.5
15	400.9	569	-9.3	51	440	1	-18.0
16	402.3	671	1.0	51	230	1	1.2
17	398.3	566	-9.1	50	430	1	-11.3
18	395.6	677	5.2	51	350	0	8.8
19	404.3	560	-8.1	49	90	0	-5.5
20	403.3	670	11.0	51	470	0	47.7
21	399.0	679	2.0	51	210	1	3.8
22	400.4	673	14.6	49	540	0	17.0
23	399.1	675	11.4	50	490	0	14.6
24	400.8	671	6.8	49	390	0	4.7
25	403.1	680	6.8	50	110	1	48.1
26	395.2	679	13.9	50	520	0	41.3
27	395.3	674	11.5	50	470	0	27.5
28	398.3	677	2.0	49	290	0	1.4
29	399.5	679	2.0	49	210	1	2.3
30	402.6	565	-12.4	49	490	1	-36.7
31	399.2	565	-15.4	50	570	1	-27.6
32	402.4	678	5.7	49	130	1	11.0
33	401.4	675	10.8	50	460	0	12.1
34	400.7	676	10.5	49	470	0	13.1
35	397.3	561	-9.3	49	70	0	-6.1
36	398.3	560	-7.2	50	110	0	-12.8
37	395.2	674	4.6	50	340	0	5.7
38	402.5	677	10.6	49	460	0	12.4
39	404.8	673	1.5	51	280	0	1.0
40	397.0	671	5.8	50	360	0	3.6
41	400.0	678	1.5	51	220	1	5.2
42	404.4	564	-10.8	50	470	1	-33.3
43	403.3	562	-13.9	50	520	1	-9.3
44	397.3	678	1.5	50	220	1	1.8
45	403.1	560	-7.6	49	100	0	-18.9
46	396.8	563	-9.5	49	50	0	-11.8
47	400.3	677	5.3	50	360	0	6.8
48	395.2	675	4.4	50	340	0	2.9
49	395.2	563	-8.7	50	80	0	-24.7
50	402.3	568	-11.4	49	470	1	-20.5
51	401.1	561	-18.6	51	610	1	-64.9
52	404.9	674	1.0	50	230	1	1.2
53	401.9	562	-15.1	50	560	1	-17.6
54	399.3	560	-14.5	50	550	1	-10.0
55	398.1	679	3.1	50	310	0	7.5
56	401.1	567	-9.8	50	50	0	-43.2
57	399.4	564	-15.0	50	560	1	-36.3
58	399.9	568	-13.8	51	520	1	-24.0
59	396.7	567	-15.5	49	570	1	-28.1
60	396.3	671	7.4	50	400	0	50.8

Table 3.7: Site Data for Apartment Building Complex at Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	401.6	569	-11.1	51	460	1	-65.2
2	402.5	567	-7.0	50	110	0	-30.0
3	397.7	671	15.1	50	560	0	18.7
4	406.0	670	9.0	49	70	1	21.2
5	404.4	679	1.5	51	220	1	2.9
6	402.4	679	6.8	50	390	0	20.5
7	404.7	570	-13.0	50	520	1	-47.9
8	403.2	678	14.6	49	550	0	36.3
9	405.8	568	-15.4	49	550	1	-27.0
10	404.5	673	12.9	51	510	0	15.5
11	402.0	567	-11.4	49	480	1	-20.6
12	397.7	679	4.2	49	330	0	12.2
13	400.3	568	-10.7	49	470	1	-20.1
14	400.7	565	-13.4	51	510	1	-24.2
15	399.3	670	8.9	50	420	0	9.9
16	399.7	676	5.6	50	360	0	13.5
17	401.1	670	1.0	51	270	0	2.5
18	404.3	672	6.7	50	110	1	21.4
19	402.2	674	17.3	50	580	0	52.2
20	400.8	679	12.7	50	0	1	84.1
21	398.4	671	1.4	51	280	0	4.4
22	404.2	675	0.5	50	260	0	1.5
23	403.9	570	-11.4	50	480	1	-27.5
24	400.0	671	3.7	50	180	1	8.8
25	402.5	676	15.5	50	560	0	54.1
26	398.8	677	11.2	50	480	0	21.1
27	399.2	676	2.0	50	210	1	1.3
28	404.0	565	-13.4	50	510	1	-40.0
29	401.2	672	4.2	50	170	1	4.9
30	398.3	677	3.5	50	180	1	6.5
31	396.2	676	3.4	50	320	0	4.0
32	396.5	568	-9.8	50	60	0	-41.3
33	402.7	565	-15.7	50	570	1	-30.0
34	403.4	678	5.3	49	150	1	6.2
35	400.0	673	6.4	50	380	0	19.2
36	405.7	567	-9.1	50	430	1	-48.7
37	403.1	567	-8.8	49	80	0	-15.6
38	400.9	672	14.9	51	540	0	17.3
39	401.3	672	7.7	51	400	0	18.7
40	396.5	678	8.8	51	420	0	9.8
41	403.6	674	2.1	50	210	1	6.1
42	399.5	561	-14.2	49	540	1	-18.1
43	399.9	674	5.6	49	140	1	10.5
44	404.0	680	12.0	51	480	0	35.5
45	401.9	674	18.8	49	610	0	21.4
46	399.8	677	7.8	50	400	0	5.2
47	400.8	565	-11.4	51	470	1	-47.4
48	404.8	566	-9.1	50	70	0	-45.0
49	402.7	673	6.2	49	130	1	18.1
50	405.8	674	0.5	50	240	1	1.6
51	400.2	678	12.2	51	490	0	43.7
52	398.5	672	0.5	50	240	1	1.3
53	399.6	562	-6.0	51	130	0	-6.9
54	405.2	672	7.8	50	410	0	24.8
55	396.3	565	-15.0	50	560	1	-75.3
56	401.5	565	-7.0	49	110	0	-13.1
57	402.9	672	3.1	50	310	0	11.5
58	396.6	563	-15.9	51	560	1	-28.4
59	405.8	679	6.2	51	120	1	16.1
60	403.7	566	-15.0	50	560	1	-19.8

Table 3.8: Site Data for Apartment Building Complex at Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	406.9	680	12.5	50	620	0	15.1
2	399.9	566	-12.6	49	610	1	-21.6
3	399.7	677	13.4	49	0	1	25.3
4	404.8	673	10.9	51	560	0	12.7
5	403.5	678	4.6	51	210	1	8.8
6	402.5	678	19.1	50	780	0	88.2
7	399.0	679	9.7	49	90	1	23.7
8	399.4	672	1.7	49	360	0	2.2
9	404.3	561	-15.8	49	700	1	-10.6
10	403.8	570	-10.9	49	60	0	-13.6
11	406.7	565	-10.0	51	550	1	-18.1
12	399.0	671	5.9	50	180	1	3.9
13	403.8	673	4.0	49	410	0	6.8
14	401.9	680	1.7	51	280	1	5.2
15	399.8	672	6.6	50	470	0	15.0
16	401.2	677	6.6	51	470	0	4.3
17	401.4	567	-4.9	49	200	0	-3.4
18	406.3	676	10.4	49	80	1	19.2
19	403.0	679	14.6	51	650	0	34.5
20	401.1	673	13.7	49	0	1	50.3
21	406.5	672	11.0	50	570	0	7.5
22	402.6	566	-6.6	50	160	0	-4.6
23	401.8	564	-15.4	49	670	1	-26.6
24	406.2	674	1.3	50	350	0	1.5
25	401.8	566	-7.2	50	160	0	-8.2
26	402.0	562	-10.5	49	80	0	-6.8
27	401.4	676	3.6	50	400	0	4.1
28	399.5	564	-18.2	49	740	1	-21.4
29	403.7	564	-13.5	50	650	1	-9.2
30	406.7	677	13.9	49	0	1	24.4
31	400.2	671	0.8	50	340	0	0.6
32	406.4	674	15.4	50	680	0	38.1
33	404.7	678	1.7	49	360	0	1.2
34	400.0	563	-9.4	51	530	1	-16.4
35	405.6	568	-10.1	49	80	0	-12.1
36	403.8	671	5.0	50	210	1	11.1
37	398.6	670	14.8	50	670	0	18.8
38	404.4	677	4.2	49	420	0	5.5
39	398.1	672	13.6	50	0	1	42.7
40	405.2	675	2.9	50	250	1	2.1
41	405.2	672	8.0	51	510	0	9.6
42	402.6	671	3.7	51	410	0	4.6
43	399.6	673	6.3	49	470	0	11.2
44	405.7	569	-11.7	51	600	1	-8.5
45	397.1	680	3.9	49	230	1	6.9
46	406.6	671	17.4	49	720	0	11.6
47	404.4	569	-13.2	50	630	1	-34.0
48	399.6	671	0.8	50	340	0	3.0
49	406.2	676	7.2	50	150	1	5.2
50	406.4	671	14.2	51	660	0	18.1
51	397.3	680	13.9	51	0	1	42.4
52	405.3	677	9.0	50	520	0	10.5
53	399.2	561	-13.2	49	630	1	-33.8
54	400.6	566	-8.9	49	110	0	-16.6
55	397.5	564	-16.6	49	690	1	-19.1
56	402.4	679	14.4	49	650	0	25.2
57	405.0	677	3.8	51	410	0	2.6
58	403.1	563	-10.9	49	580	1	-21.4
59	400.1	567	-10.9	49	70	0	-7.0
60	399.0	676	5.7	50	190	1	6.5

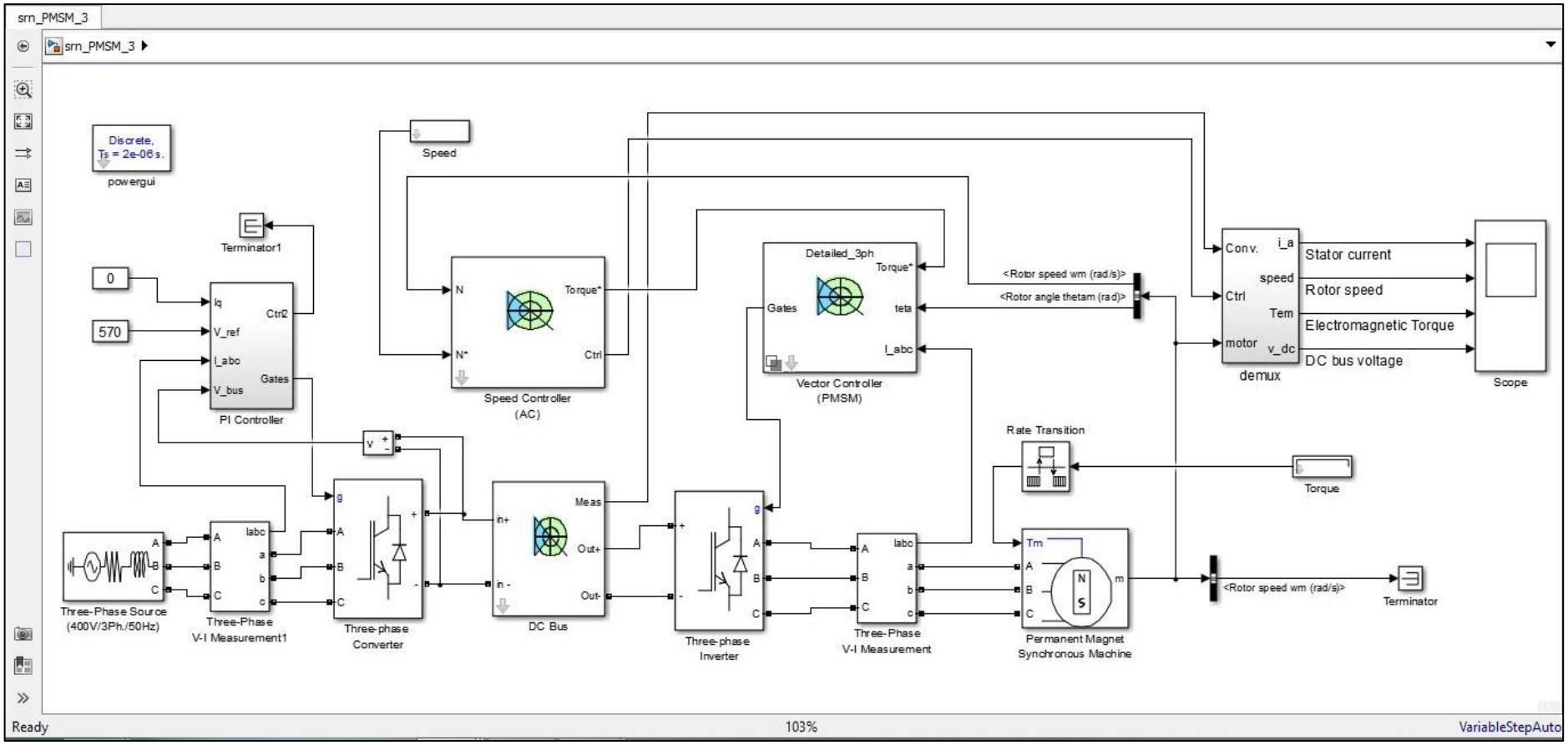


Figure 3.12: MATLAB Simulink Model of the Standard PI Regulator Based Switching Controller of AC/DC Bidirectional Converter

3.4. System Data Inputs

Based on these collected data for each building, the torque and speed reference data were calculated for all the four buildings (Office Building Complex at Narahenpita, Apartment Building Complexes at Boswell Place, Moore's Road and Frankfort Place). Then these inputs were used in PI based and NN based MATLAB simulation models to compare the performance of each model with respect each building.

By considering the office building complex at Narahenpita, a sample of calculation data for torque and speed can be detailed as follows:

Calculation for torque data;

Reference passenger load = 640 kg (28^{th} entry of Table 3.5)
Empty car weight = 1200 kg
Counterweight = 1620 kg

Load applied on the motor = Passenger load + Empty car weight – Counterweight
= 640 + 1200 – 1650 kg
= 190 kg

Traction sheave diameter = 400 mm
Elevator rope ratio = 2:1 (then the torque will become a half)

Hence the generated torque in motor = 190 x 9.8 x (200/1000) x 0.5 Nm
= 186.2 Nm

Calculation of speed data;

Vertical elevator speed = 2.0 m/s
Traction sheave diameter = 400 mm
Elevator rope ratio = 2:1 (then the speed will become double)

Hence the motor speed = (2.0 m/s) x 2 / [(400 mm) x π / 1000] rev./s
= 3.18 rev./s x 60 s/min.
= 190 rpm

Sample calculated values of torque and speed data for Office Building Complex at Narahenpita are shown in the Table 3.9 and Table 3.10 respectively. Sample calculated values for torque and speed data of Apartment Building Complex at Boswell Place are shown in Table 3.11 and Table 3.12 respectively. Sample of calculation data for torque

and speed data of Apartment Building Complex at Moore's Road are shown in Table 3.13 and 3.14 respectively. Sample calculation data of torque and speed for the Apartment Building Complex at Frankfort Place are shown in Table 3.15 and 3.16 respectively. The complete set of these data is attached in Annexure-2 at the end.

Table 3.9: Torque Data for Office Building Complex at Narahenpita

No.	Time (s)	Reference Torque (Nm)
1	0	-323
2	29	-284
3	42	-206
4	64	-284
5	90	-127
6	112	-206
7	128	353
8	155	-49
9	184	-284
10	203	-127
11	225	-353
12	238	-402
13	254	-294
14	286	-363
15	327	20
16	355	402
17	374	304
18	391	372
19	407	265
20	433	-284

Table 3.10: Speed Data for Office Building Complex at Narahenpita

No.	Time (s)	Simulation Speed (rpm)
1	0	0
2	19	-190
3	28	0
4	39	190
5	41	0
6	61	190
7	63	0
8	83	190
9	89	0
10	109	190
11	111	0
12	121	190
13	127	0
14	138	-190
15	154	0

Table 3.11: Torque Data for Apartment Building Complex at Boswell Place

No.	Time (s)	Reference Torque (Nm)
1	0	-59
2	39	-69
3	71	-2
4	84	-22
5	97	69
6	139	-5
7	165	-39
8	201	-5
9	226	-39
10	259	-17
11	275	-74
12	300	-32
13	314	-7
14	340	42
15	372	47
16	401	-5
17	426	44
18	452	-25
19	471	39
20	484	-54

Table 3.12: Speed Data for Apartment Building Complex at Boswell Place

No.	Time (s)	Simulation Speed (rpm)
1	0	0
2	19	-382
3	38	0
4	58	-382
5	70	0
6	81	-382
7	83	0
8	94	-382
9	96	0
10	116	382
11	138	0
12	158	382
13	164	0
14	184	382
15	200	0

Table 3.13: Torque Data for Apartment Building Complex at Moore's Road

No.	Time (s)	Reference Torque (Nm)
1	0	206
2	52	137
3	94	-304
4	110	-176
5	142	-29
6	171	-137
7	197	265
8	227	-294
9	249	294
10	278	-255
11	304	225
12	342	-78
13	368	216
14	388	255
15	407	-167
16	423	-108
17	455	-20
18	478	-137
19	504	-323
20	530	-245

Table 3.14: Speed Data for Apartment Building Complex at Moore's Road

No.	Time (s)	Simulation Speed (rpm)
1	0	0
2	19	95
3	51	0
4	71	-95
5	93	0
6	104	-95
7	109	0
8	129	95
9	141	0
10	161	95
11	170	0
12	181	-95
13	196	0
14	207	95
15	226	0

Table 3.15: Torque Data for Apartment Building Complex at Frankfort Place

No.	Time (s)	Reference Torque (Nm)
1	0	-294
2	26	284
3	55	-314
4	83	-235
5	100	-108
6	119	-451
7	161	-225
8	193	-39
9	209	372
10	222	255
11	248	225
12	277	-137
13	290	-88
14	319	-39
15	355	-147
16	377	-147
17	400	118
18	413	-235
19	442	-323
20	465	-314

Table 3.16: Speed Data for Apartment Building Complex at Frankfort Place

No.	Time (s)	Simulation Speed (rpm)
1	0	0
2	19	-95
3	25	0
4	45	95
5	54	0
6	74	95
7	82	0
8	93	-95
9	99	0
10	109	95
11	118	0
12	138	-95
13	160	0
14	180	95
15	192	0

Then the site collected data were simulated with above PI regulator model to convert them into the common platform to compare with newly proposed Neural Network model. These resulting data were tabulated based on each building. Sample of relevant PI model data for Office Building Complex at Narahenpita is shown in Table 3.17. Sample PI simulation data of the Apartment Building Complex at Boswell Place is shown in Table 3.18. Sample simulation data for Apartment Building Complex at Moore's Road has tabulated in Table 3.19. Sample of PI regulator data for Apartment Building Complex at Frankfort Place is shown in Table 3.20. The total set of these data are attached in Annexure-3 at the end.

When we compare these PI model simulated output data with site collected data, it shows a slight improvement in the PI model simulated data. This is because of the losses and measurement errors of site collected data.

When these data were analysed, it seems that the nature of power regeneration pattern from these elevator systems are mainly depends on four parameters. Those are Elevator Load, Elevator Speed, Elevator Travelling Direction and Elevator Travelling Distance.

Table 3.17: PI Model Data for Office Building Complex at Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	404.1	567	-23.4	50	780	0	-43.1
2	398.2	674	17.0	51	160	1	9.9
3	398.8	676	11.3	49	240	1	6.3
4	402.1	671	16.9	50	160	1	21.0
5	404.6	676	6.6	50	320	1	2.9
6	395.2	680	12.3	49	240	1	14.3
7	396.4	568	-22.5	51	90	0	-68.5
8	398.2	678	1.1	51	400	1	1.1
9	402.3	678	17.6	50	160	1	30.9
10	404.7	679	6.6	51	320	1	3.6
11	398.1	563	-26.1	50	810	0	-15.4
12	402.4	562	-28.4	50	860	0	-36.2
13	401.4	567	-21.4	51	750	0	-50.0
14	396.8	675	21.7	49	80	1	13.6
15	403.2	673	3.2	51	470	1	10.4
16	402.5	563	-23.8	50	40	0	-43.9
17	396.8	564	-18.6	49	140	0	-24.2
18	402.3	565	-22.5	51	70	0	-29.3
19	396.6	567	-16.2	51	180	0	-19.1
20	401.7	672	17.9	51	160	1	11.4
21	398.0	562	-35.3	50	980	0	-67.0
22	402.5	568	-26.8	49	830	0	-31.2
23	398.6	562	-23.5	50	790	0	-15.7
24	399.9	561	-22.4	50	760	0	-28.8
25	397.1	563	-23.2	49	760	0	-65.7
26	399.5	670	4.5	50	350	1	11.9
27	404.6	677	10.2	50	250	1	6.6
28	398.8	677	13.6	50	640	1	43.2
29	404.7	671	9.1	51	560	1	16.0
30	404.3	677	17.9	50	680	1	21.8
31	403.7	563	-22.4	50	80	0	-25.6
32	396.7	678	21.3	51	730	1	11.4
33	405.0	568	-38.7	49	990	0	-65.5
34	396.9	674	5.4	50	340	1	5.9
35	397.1	677	28.5	51	0	1	32.5
36	404.3	679	16.4	50	170	1	8.4
37	396.9	565	-31.2	50	890	0	-37.2
38	400.4	677	20.0	51	110	1	36.5
39	400.4	678	10.6	51	260	1	25.3
40	402.8	570	-22.7	49	80	0	-40.9
41	404.5	673	27.1	51	840	1	72.3
42	400.1	675	15.5	51	650	1	18.1
43	404.2	676	6.5	50	510	1	6.6
44	399.6	560	-23.6	49	80	0	-28.1
45	403.0	675	19.7	49	110	1	12.2
46	404.1	567	-37.7	51	1000	0	-70.1
47	403.6	569	-30.1	49	880	0	-18.5
48	404.3	564	-24.8	50	790	0	-46.6
49	398.0	674	18.7	49	120	1	33.9
50	401.1	677	19.7	51	720	1	56.4
51	396.7	561	-23.0	49	70	0	-13.4
52	396.7	677	14.2	51	210	1	55.2
53	396.7	674	27.1	50	0	1	65.1
54	398.9	567	-26.6	50	30	0	-63.7
55	402.1	569	-20.5	49	90	0	-38.2
56	400.8	676	11.2	49	590	1	13.2
57	395.4	563	-25.9	51	40	0	-15.3
58	399.0	672	13.4	49	630	1	16.1
59	398.7	568	-17.7	50	130	0	-12.9
60	395.1	680	17.8	49	710	1	46.8

Table 3.18: PI Model Data for Apartment Building Complex at Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	395.2	670	12.8	50	490	0	46.5
2	399.4	678	14.2	50	530	0	37.4
3	400.6	677	0.5	51	260	0	0.4
4	403.8	679	4.9	49	340	0	3.2
5	402.4	562	-15.3	50	530	1	-62.9
6	395.2	671	1.0	50	230	1	1.3
7	401.8	678	8.7	50	90	1	26.0
8	398.2	674	1.1	50	270	0	1.3
9	402.2	675	8.8	50	410	0	36.2
10	404.0	677	3.8	49	320	0	4.5
11	402.1	680	15.5	50	550	0	19.5
12	399.0	674	7.2	50	380	0	4.6
13	399.5	678	1.6	50	220	1	4.6
14	402.5	566	-8.7	51	420	1	-5.9
15	404.7	562	-10.2	50	440	1	-18.4
16	395.8	672	1.0	51	230	1	1.3
17	396.3	565	-9.2	49	430	1	-11.6
18	403.8	671	5.5	50	350	0	10.1
19	396.0	566	-8.4	50	90	0	-6.0
20	402.6	672	11.3	50	470	0	51.9
21	398.0	677	2.0	50	210	1	3.9
22	395.1	671	14.7	51	540	0	17.6
23	404.1	675	13.2	49	490	0	15.4
24	398.3	674	7.3	51	390	0	4.8
25	400.9	676	7.4	49	110	1	51.7
26	403.0	673	14.0	50	520	0	41.8
27	403.4	672	11.5	49	470	0	29.5
28	399.5	677	2.0	50	290	0	1.4
29	396.3	678	2.0	49	210	1	2.6
30	399.7	567	-12.2	50	490	1	-37.4
31	401.5	567	-16.2	50	570	1	-32.3
32	398.7	676	6.3	50	130	1	11.5
33	404.4	672	10.6	49	460	0	13.6
34	399.9	675	11.6	50	470	0	14.4
35	403.0	566	-9.9	49	70	0	-6.2
36	396.3	563	-7.2	51	110	0	-13.1
37	398.1	674	4.8	49	340	0	5.4
38	400.8	677	10.8	50	460	0	12.9
39	404.0	675	1.6	51	280	0	1.1
40	403.7	673	5.6	51	360	0	4.0
41	395.3	674	1.6	50	220	1	5.8
42	399.5	560	-11.7	49	470	1	-34.8
43	397.2	568	-14.3	50	520	1	-10.1
44	400.1	674	1.6	50	220	1	2.0
45	399.3	564	-7.9	50	100	0	-20.0
46	396.5	565	-10.5	50	50	0	-13.1
47	404.8	676	5.9	51	360	0	6.8
48	395.7	676	4.6	50	340	0	3.1
49	402.7	561	-8.9	49	80	0	-28.1
50	404.3	569	-11.2	50	470	1	-21.4
51	402.8	567	-18.1	50	610	1	-68.2
52	396.0	676	1.0	50	230	1	1.3
53	399.1	561	-17.1	49	560	1	-20.5
54	395.6	570	-16.2	49	550	1	-10.7
55	399.9	670	3.0	50	310	0	7.5
56	395.7	561	-11.1	51	50	0	-43.4
57	400.2	566	-16.5	50	560	1	-38.8
58	400.6	562	-13.9	50	520	1	-26.7
59	399.3	561	-17.5	51	570	1	-30.3
60	404.6	678	8.1	51	400	0	52.3

Table 3.19: PI Model Data for Apartment Building Complex at Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	402.9	567	-11.6	50	460	1	-69.9
2	402.7	566	-7.5	50	110	0	-30.5
3	402.5	674	16.2	50	560	0	20.3
4	404.4	677	9.7	49	70	1	24.2
5	400.5	679	1.5	51	220	1	3.0
6	400.3	679	7.6	51	390	0	23.0
7	402.9	570	-14.2	50	520	1	-51.6
8	404.5	679	15.9	49	550	0	39.3
9	404.6	568	-15.3	49	550	1	-29.3
10	397.6	670	13.1	49	510	0	16.9
11	396.3	564	-11.6	51	480	1	-21.4
12	405.2	675	4.1	49	330	0	12.9
13	398.7	563	-11.5	49	470	1	-21.4
14	398.1	560	-13.8	51	510	1	-25.5
15	403.4	670	8.9	50	420	0	11.2
16	397.8	671	5.7	50	360	0	14.6
17	405.1	679	1.0	50	270	0	2.7
18	400.2	679	7.3	51	110	1	22.1
19	404.6	671	17.9	49	580	0	53.3
20	404.4	677	12.9	50	0	1	84.9
21	403.6	672	1.6	50	280	0	4.7
22	402.0	672	0.5	49	260	0	1.6
23	403.6	561	-12.6	50	480	1	-29.9
24	404.0	671	3.8	51	180	1	8.7
25	405.5	671	16.8	50	560	0	58.5
26	402.6	672	12.3	50	480	0	22.6
27	403.3	670	2.2	49	210	1	1.5
28	402.9	570	-13.8	50	510	1	-44.0
29	396.1	671	4.1	51	170	1	4.9
30	402.0	675	3.8	51	180	1	6.9
31	399.3	671	3.7	50	320	0	4.4
32	403.6	562	-9.7	50	60	0	-41.1
33	398.6	570	-17.3	51	570	1	-30.8
34	402.1	672	5.3	49	150	1	6.1
35	396.7	673	7.1	49	380	0	20.2
36	399.4	567	-9.7	51	430	1	-53.1
37	403.8	560	-8.8	50	80	0	-16.7
38	396.3	676	15.5	50	540	0	18.1
39	400.2	670	8.0	49	400	0	19.6
40	404.7	680	9.1	51	420	0	11.0
41	400.1	675	2.2	50	210	1	6.5
42	400.6	562	-15.4	50	540	1	-19.1
43	399.3	674	5.7	50	140	1	10.7
44	396.4	677	12.6	50	480	0	37.4
45	396.8	678	19.8	50	610	0	23.1
46	401.2	674	7.7	49	400	0	5.2
47	403.8	569	-11.8	51	470	1	-48.6
48	402.1	560	-9.2	49	70	0	-44.6
49	403.2	673	6.1	50	130	1	19.5
50	400.0	676	0.5	49	240	1	1.6
51	399.2	679	12.7	51	490	0	47.5
52	400.4	676	0.5	51	240	1	1.3
53	405.0	567	-6.6	50	130	0	-7.5
54	400.9	671	8.8	50	410	0	24.7
55	396.3	565	-16.3	51	560	1	-78.2
56	403.5	563	-7.2	51	110	0	-13.7
57	404.8	670	3.2	49	310	0	11.4
58	398.7	562	-16.1	50	560	1	-30.6
59	404.1	672	6.7	51	120	1	17.4
60	401.7	562	-17.0	50	560	1	-20.8

Table 3.20: PI Model Data for Apartment Building Complex at Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	406.4	678	14.0	51	620	0	17.6
2	406.7	560	-13.1	49	610	1	-24.1
3	402.8	673	15.1	50	0	1	26.7
4	403.8	674	10.7	51	560	0	13.2
5	400.7	670	4.9	49	210	1	9.4
6	402.8	673	22.0	49	780	0	94.5
7	407.5	674	10.7	49	90	1	25.3
8	398.0	674	1.9	50	360	0	2.3
9	403.6	564	-18.3	49	700	1	-12.3
10	406.9	563	-12.5	50	60	0	-15.0
11	398.8	563	-10.2	49	550	1	-20.0
12	404.0	676	6.5	50	180	1	4.5
13	405.5	675	4.0	51	410	0	7.8
14	401.1	678	1.8	50	280	1	5.6
15	405.2	671	7.1	51	470	0	17.3
16	406.6	674	6.8	49	470	0	4.9
17	405.9	567	-5.5	49	200	0	-3.6
18	404.3	677	11.2	51	80	1	21.0
19	401.0	675	15.3	51	650	0	37.5
20	406.3	678	14.6	51	0	1	52.6
21	404.0	674	11.5	51	570	0	8.2
22	399.4	567	-7.2	51	160	0	-4.9
23	405.7	564	-16.6	49	670	1	-29.3
24	403.0	673	1.4	50	350	0	1.6
25	406.3	564	-7.3	49	160	0	-8.9
26	400.0	564	-11.1	50	80	0	-7.4
27	400.8	677	3.8	49	400	0	4.6
28	403.7	567	-19.9	51	740	1	-22.2
29	403.2	563	-14.9	50	650	1	-10.5
30	401.0	677	15.0	49	0	1	26.3
31	403.5	677	0.9	49	340	0	0.6
32	407.0	675	15.8	49	680	0	39.9
33	398.2	672	1.9	51	360	0	1.2
34	407.8	565	-9.9	50	530	1	-17.8
35	406.1	565	-11.2	50	80	0	-13.3
36	401.8	676	5.0	49	210	1	12.5
37	403.0	672	15.6	51	670	0	19.2
38	398.5	676	4.8	49	420	0	5.6
39	405.3	671	14.9	50	0	1	43.5
40	401.7	675	3.4	51	250	1	2.2
41	407.0	677	8.7	51	510	0	11.2
42	400.0	676	4.2	50	410	0	4.9
43	407.5	675	7.0	49	470	0	12.9
44	406.9	561	-12.7	51	600	1	-8.7
45	398.6	679	4.2	49	230	1	7.8
46	405.4	679	18.9	50	720	0	12.1
47	400.7	563	-13.8	49	630	1	-34.0
48	402.9	677	0.9	51	340	0	3.5
49	405.1	678	7.5	50	150	1	5.5
50	404.9	680	16.1	51	660	0	19.4
51	405.9	677	14.2	50	0	1	43.4
52	407.2	672	9.5	49	520	0	11.4
53	400.7	569	-14.2	51	630	1	-34.6
54	399.7	565	-9.3	50	110	0	-17.5
55	401.9	564	-16.3	51	690	1	-21.2
56	407.3	671	15.6	49	650	0	27.4
57	404.9	675	4.3	49	410	0	2.8
58	404.3	569	-11.6	50	580	1	-22.7
59	405.1	563	-11.0	50	70	0	-7.7
60	399.9	672	5.9	49	190	1	7.1

3.5. Summary of PI Regulator Model Simulated Data

This chapter provided four elevator system related data collected from randomly selected multi-storey buildings in Colombo area. The results of these studies are used in designing a system that has the capability to function with more improvements compared to the PI regulator-based model. By improving a new system based on these types of practical performance levels, makes it easier to achieve higher accuracy levels than the existing basic systems.

During this study, it could be noticed that what are the main system parameters effecting the efficiency of power regeneration process in elevator systems. After that it was further studied on how to improve the efficiency of the process by improving the efficiency of each parameter with different aspects. The effects that exert upon power regeneration according to the elevator load and elevator travelling distance were extensively studied which will help to determine the controlled inputs of the proposed system.

4. SYSTEM DESIGN

4.1. System Overview

The system contains four major modules. They are utility supply side voltage sensor, utility supply side frequency meter, motor drive side voltage sensor and the main neural network controller. The input from utility supply side voltage sensor is considered to smooth the voltage waveform of the regenerated signal from the system. Frequency meter input is considered in maintaining system output frequency within the allowable limits of utility system supply. The motor drive side voltage sensor input is considered to smoothly maintain the DC link voltage levels within the allowable limits of the system. The neural network controller takes all these inputs and modify the control signal sending to the Space Vector – Pulse Width Modulation (SV-PWM) generator to control the on-off operation/frequency IGBT switches in the converter.

4.2. System Block Diagram

Block diagram of the proposed system is shown in following Figure 4.1 for clear details.

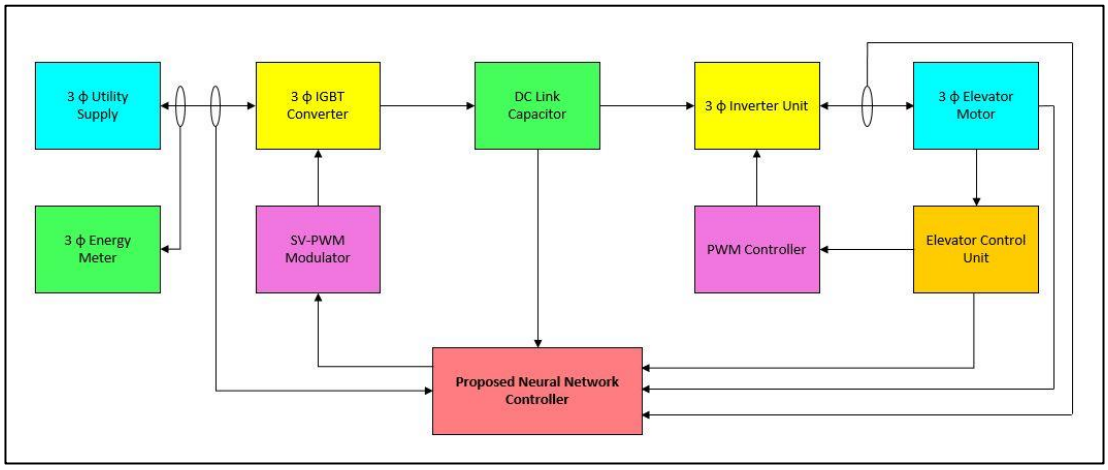


Figure 4.1: System Block Diagram of the Proposed Model

Initially the three phase reference signals are converted in to two phase stationery reference frame signals by the Clarke transform. Then these signals are converted in to two phase signals in the rotating reference frame by the Park Transformation. After that these signals are input to the Neural Network based controller. Here the Neural Network controller compare these signals with the reference input signals and the

rotating reference frame signals are forwarded as outputs of the system. These signal outputs are then inverse transformed by the Park transformation in the rotating reference frame. Then these rotating reference fame signals are again converted into stationary reference frame signals through the Clarke transformation. Then these signals are forwarded to the SV-PWM generator to generate control signals of IGBT switching devices in the converter.

4.3. System Calculation Process

Calculation block diagram of the system is shown in following Figure 4.2.

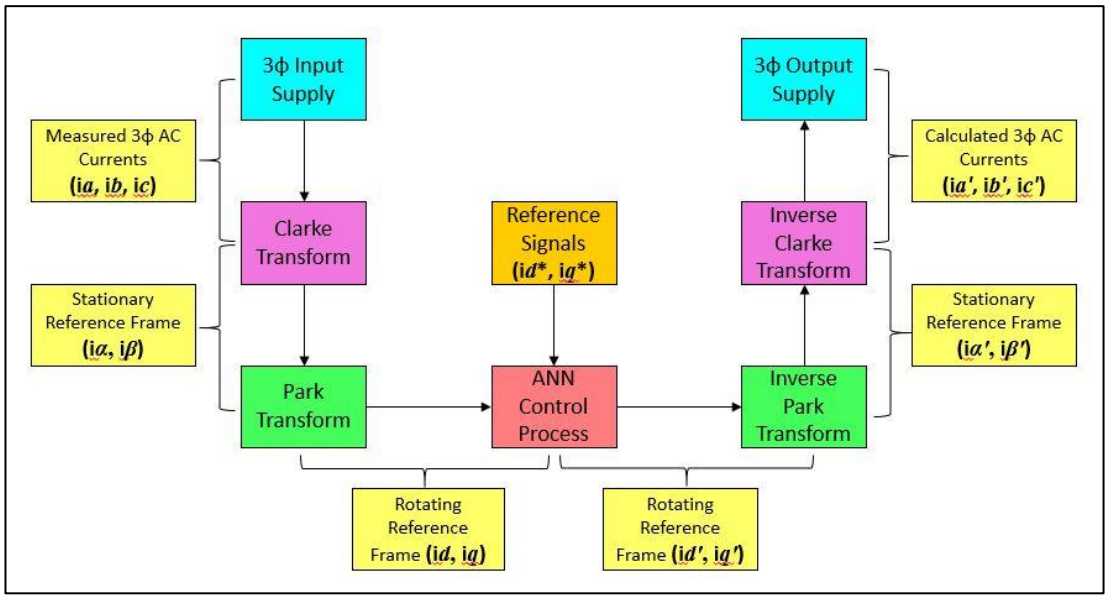


Figure 4.2: Calculation Block Diagram of the Proposed Model (source: *https://www.switchcraft.org/learning/2016/12/16*)

4.4. Simulink Model of NN Based Control System

Main part of this model is the neural network-based model reference controller. As indicated in the above explanations, this system takes the inputs from utility power supply and motor stator. Based on this information, the controller gives the output signal to the three-phase inverter [12], [13], [14].

Simulink model of the NN based control system is shown in Figure 4.3. The detailed internal view of the controller model is shown in Figure 4.4 with internal NN components.

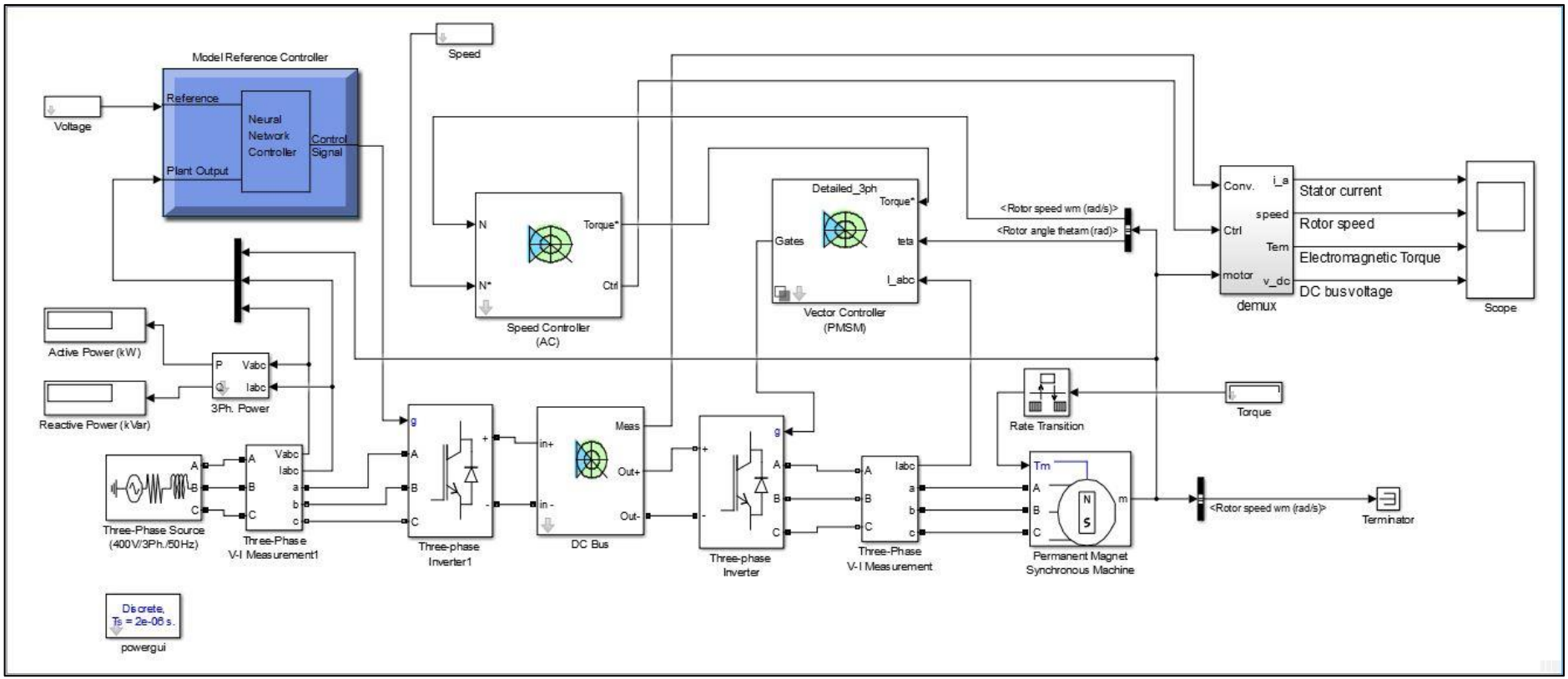


Figure 4.3: Simulink Model of NN Based Controller

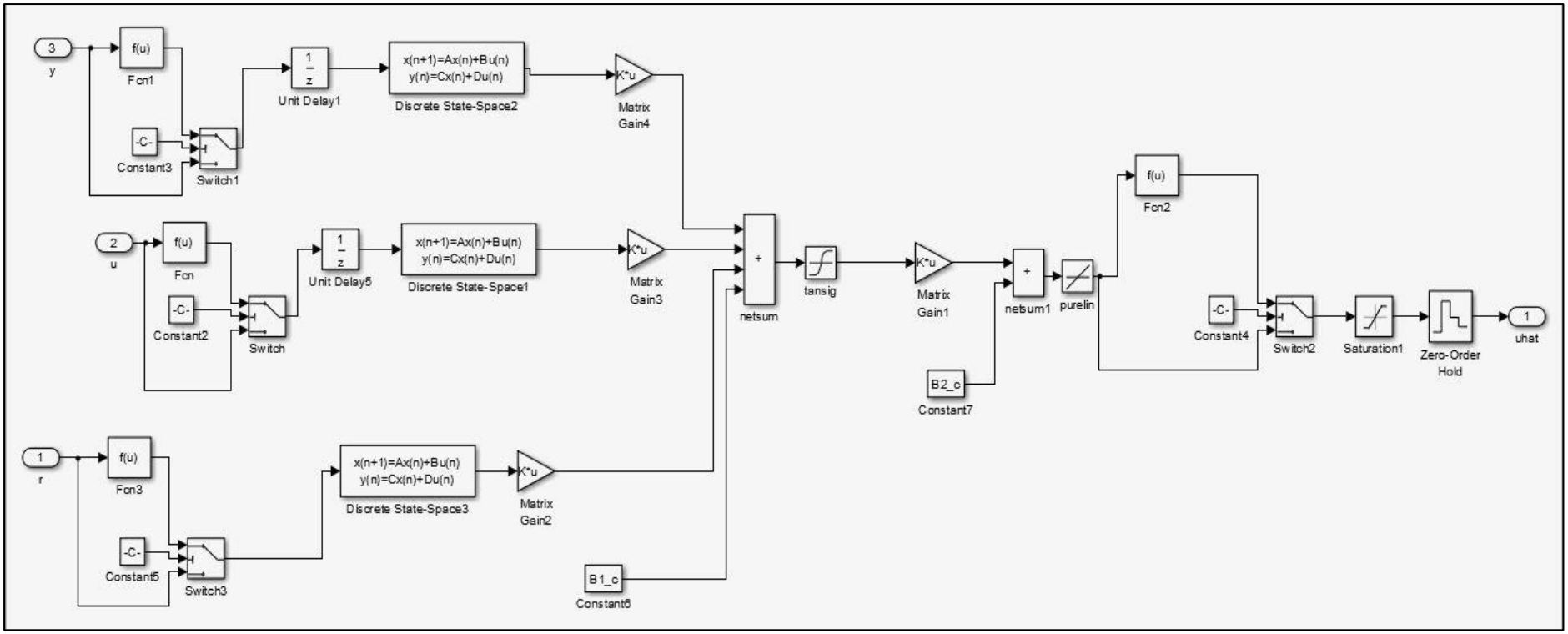


Figure 4.4: Internal NN Components of NN Based Controller

Initially the NN model was trained using generated data sets based on randomly selected data from the original records from four buildings. Following Figure 4.5 shows the training process NN model reference controller.

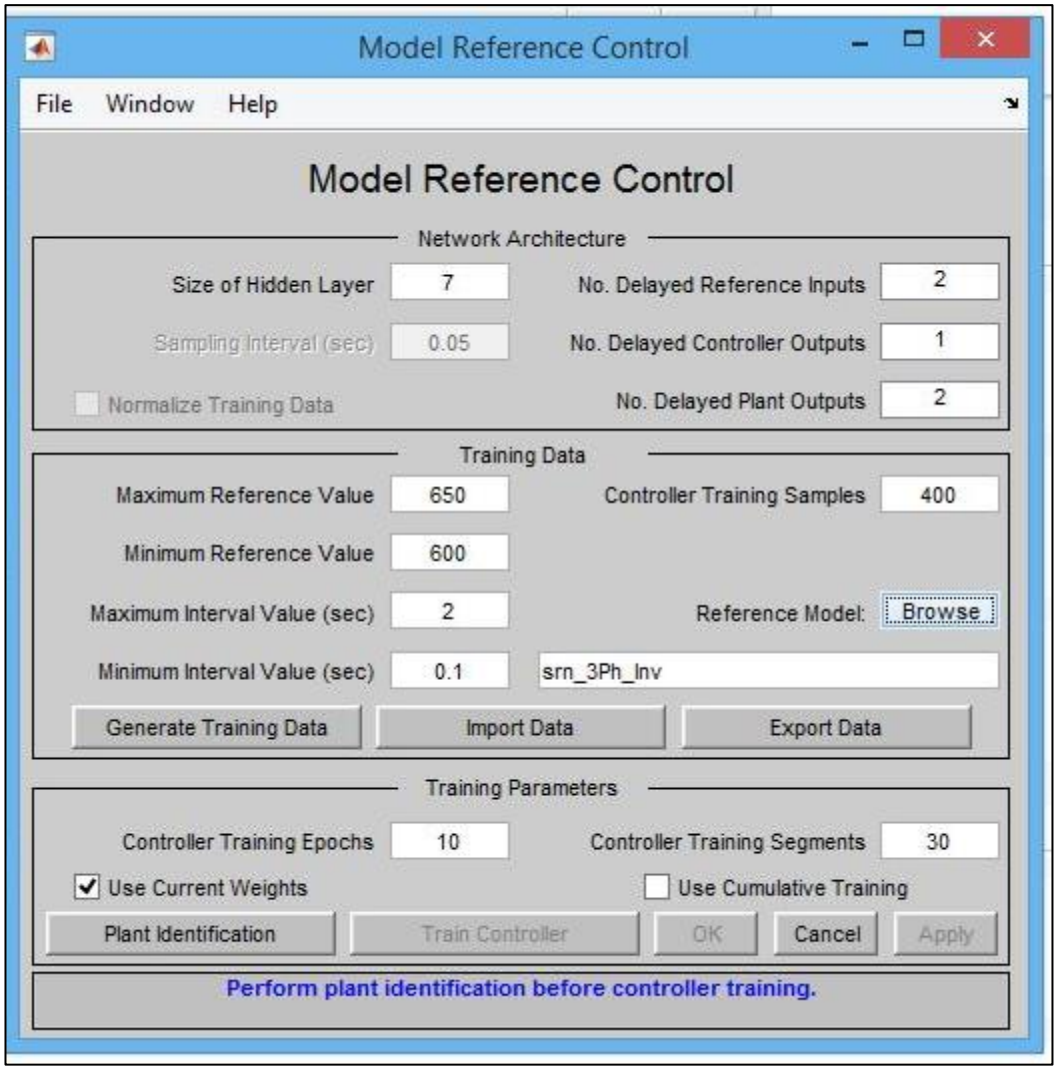


Figure 4.5: Plant model identification details

There are six numbers of parameters which were applied to the NN based model during its simulation.

1. Utility supply 3 phase voltage
2. Utility supply 3 phase currents
3. Utility side 3 phase power frequency
4. Rotational speed of the main Traction Motor

5. Elevator load
6. Elevator travelling direction

Following Figure 4.6 shows the plant identification process as a part of training the NN model reference.

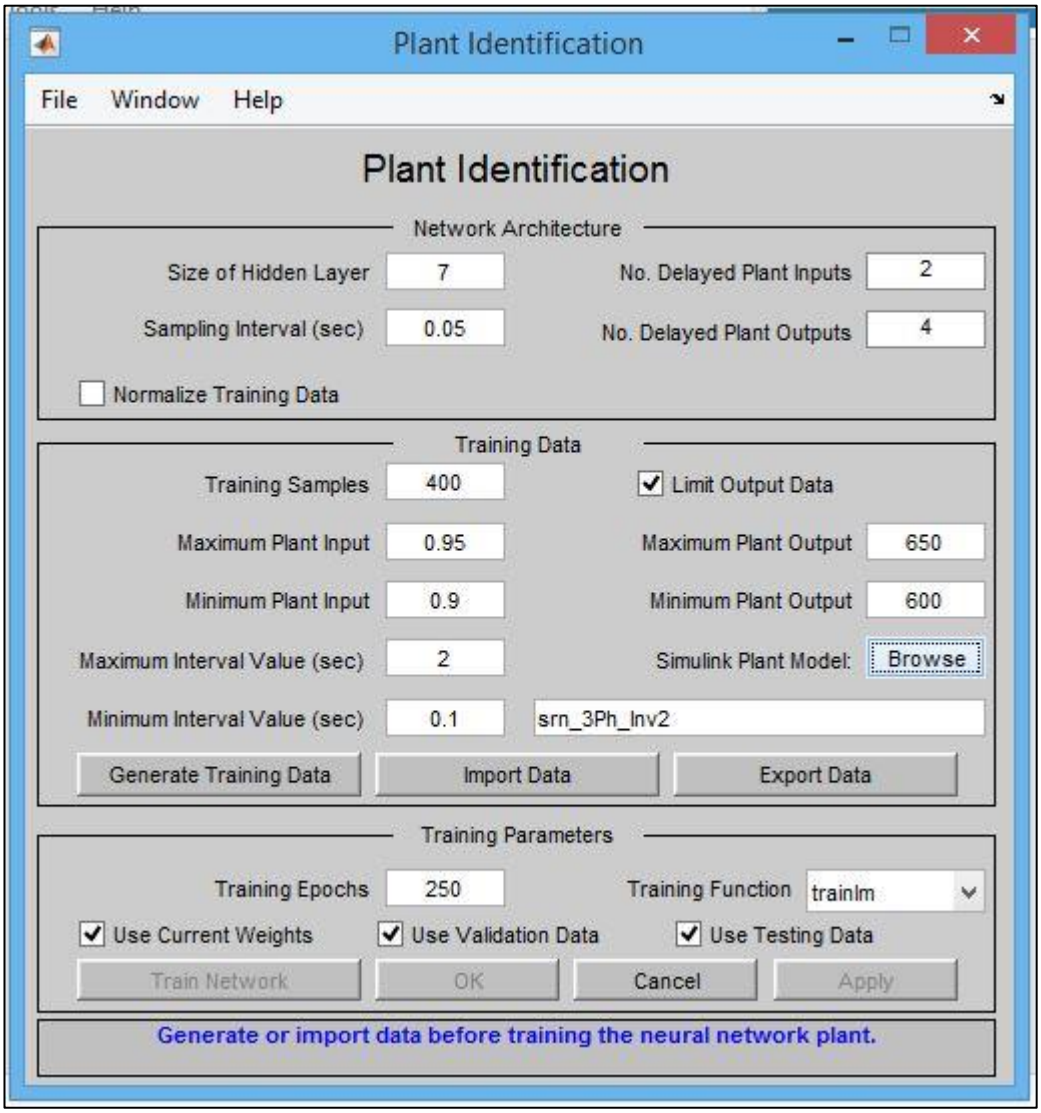


Figure 4.6: Plant model identification details

Following Figure 4.7 shows some generated results during the training process of NN model reference controller.

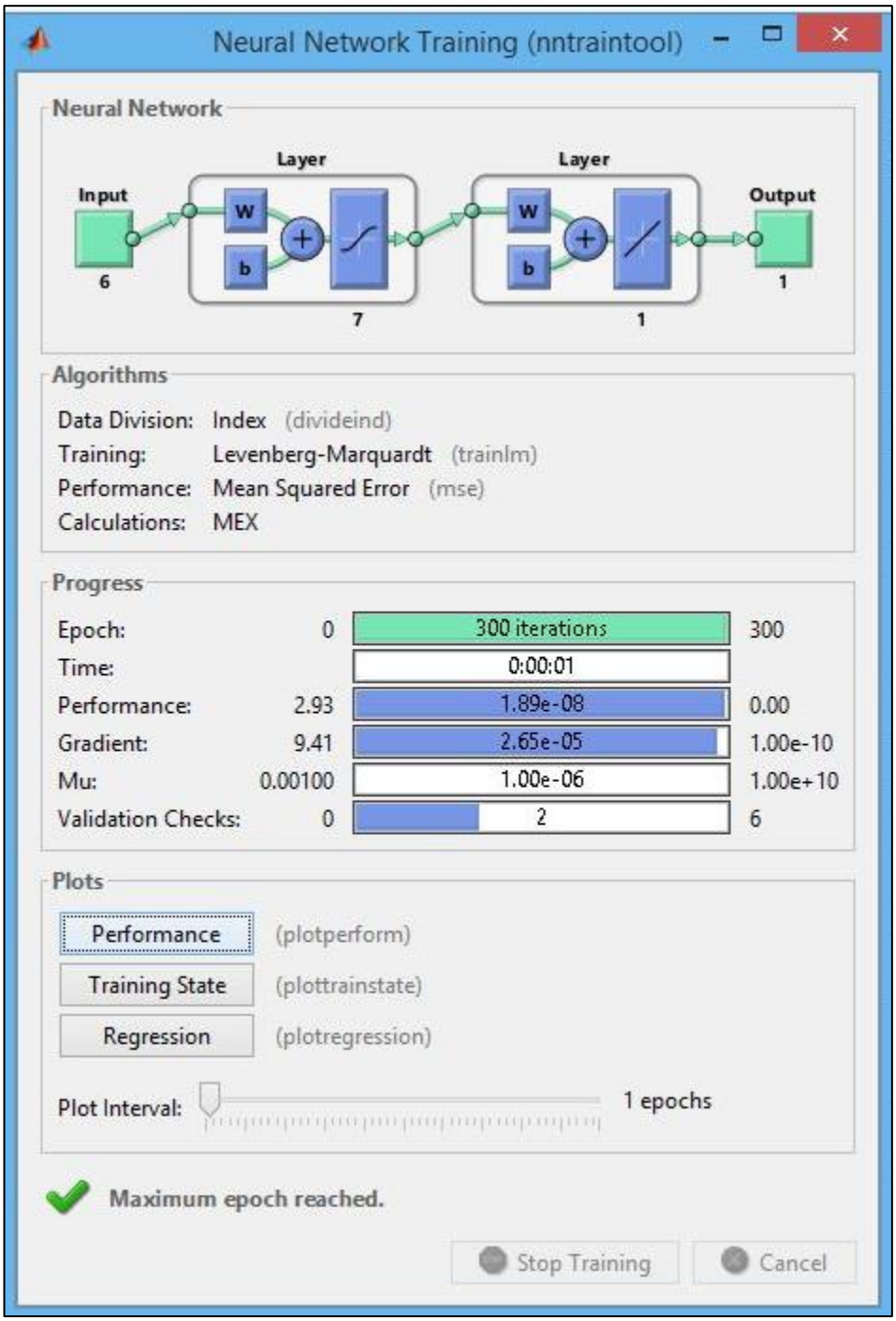


Figure 4.7: Neural network training data

Some of the training, validation, testing and performance data results randomly obtained during the training process of neural network are shown in Figure 4.8, Figure 4.9, Figure 4.10 and Figure 4.11 respectively.

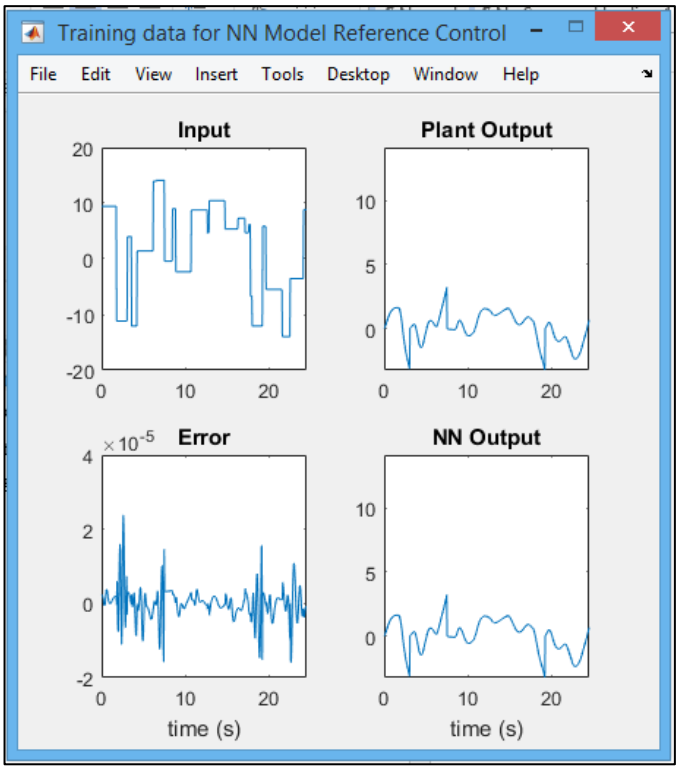


Figure 4.8: Random training results obtained during the training of NN model

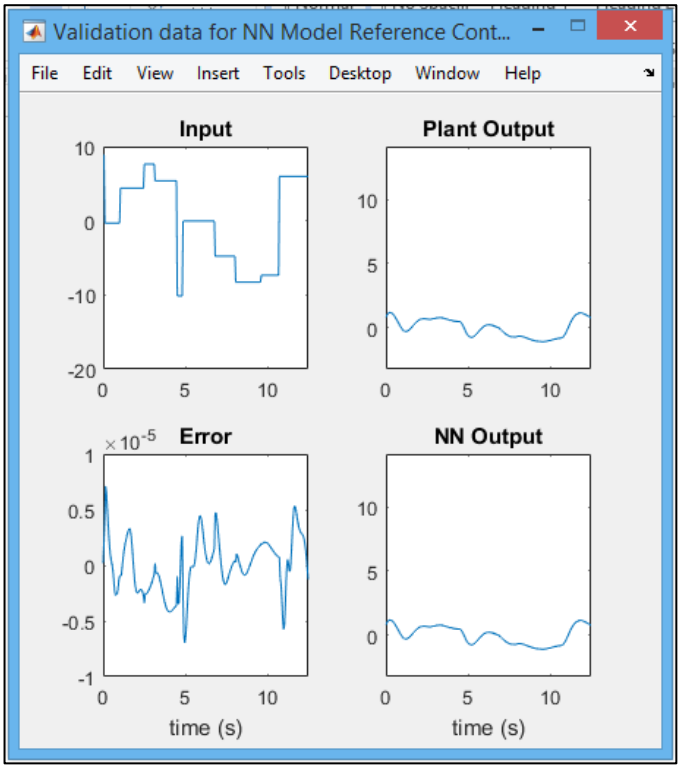


Figure 4.9: Random validation results obtained during the training of NN model

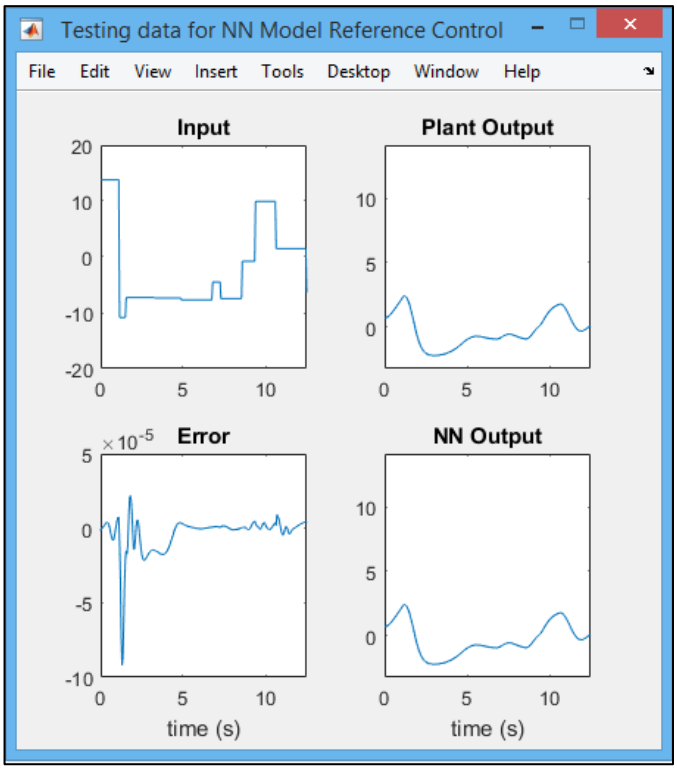


Figure 4.10: Random testing results obtained during the training of NN model

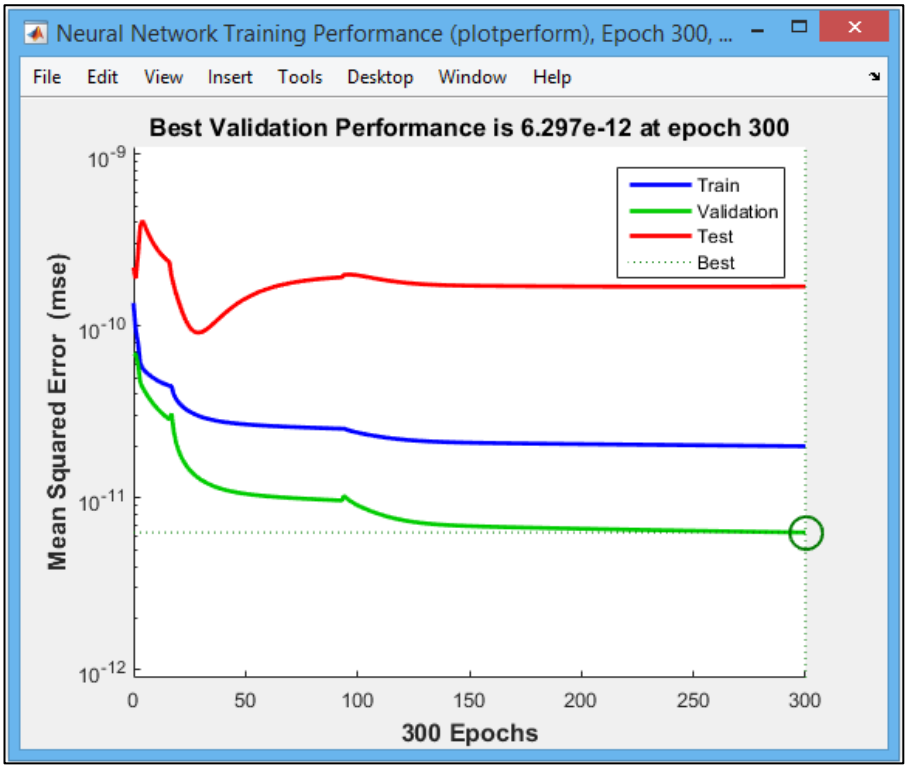


Figure 4.11: Random performance results obtained during the training of NN model

5. RESULTS AND DISCUSSION

5.1. System Outputs

In order to implement a system analysis with NN based Vector Control technique and to carry out a comparison study between NN based control method with traditional Vector Control method, a combined Simulink Model of an AFE converter was established with power electronic modelling tools available in MATLAB Simulink library (Figure 3.4). An AC/DC Pulse Width Modulation converter was used as the front end converter. A DC Bus block was used as the DC Link capacitor in the simulation model. Inside the process of Converter simulation arrangement, system evaluation procedure can be implemented much closer with actual elevator operational situations. This includes the collecting parameter values of direct and quadrature axis values, generating the direct and quadrature axis voltage control signals and position of Voltage Space Vector from the real time calculation.

With the Digital Signal Processing (DSP) execution of this NN based regulator, the collected momentary values of system current and voltage are sending across a Zero Order Hold (ZOH) block. This zeroth order hold applies to the regulator output also before it is attached to pulse width modulation generating component in the converter module.

The arbitrarily created current reference signal will be inside the adequate current limits for tracing confirmation of the neural network regulator. Here the initial states can be generated randomly. Rated current and pulse width modulator saturation limits of AFE module will not be used for the training purposes of the NN controller.

After starting of the system, this neural network (NN) regulator rapidly adjusts the existing current levels of direct and quadrature (dq) axes into their new values. When these dq currents change to new values, the neural network regulator reinstates direct and quadrature axes current values to their new reference input current levels instantly. In this way the neural network regulator is rapidly tuned to new reference current values whenever an adjustment is occurred in the reference values within rated current levels of AFE switching module and pulse width modulator saturation limits. This

demonstrates the robust and optimum regulating competency of proposed neural network regulator.

Sample NN simulation data for the Office Building Complex at Narahenpita is tabulated in Table 5.1. Sample simulation data for Apartment Building Complex at Boswell Place is shown in Table 5.2. Sample NN model data for the Apartment Building Complex at Moore's Road is shown in Table 5.3. Sample of NN model simulation data for the Apartment Building Complex at Frankfort Place is shown in Table 5.4. The total set of these data is attached in Annexure-4 at the end.

Table 5.1: NN Model Data for Office Building Complex at Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	401.8	562	-28.9	50	780	0	-47.8
2	400.4	673	19.7	51	160	1	6.1
3	398.5	673	13.7	50	240	1	8.5
4	397.9	676	19.6	50	160	1	21.0
5	402.3	679	7.0	50	320	1	-1.4
6	400.9	676	13.8	49	240	1	15.0
7	398.8	569	-23.9	49	90	0	-63.1
8	402.3	674	1.5	51	400	1	1.4
9	399.5	673	20.2	49	160	1	37.3
10	397.8	674	7.2	50	320	1	-1.5
11	400.0	567	-28.8	50	810	0	-19.9
12	400.3	561	-34.5	49	860	0	-37.8
13	398.4	568	-26.0	50	750	0	-59.7
14	399.4	676	25.9	49	80	1	13.9
15	398.6	673	4.2	51	470	1	11.4
16	402.1	563	-28.4	50	40	0	-45.2
17	398.5	569	-22.1	49	140	0	-26.6
18	402.3	565	-27.2	51	70	0	-29.0
19	397.6	569	-17.9	50	180	0	-20.3
20	400.0	680	19.8	49	160	1	7.5
21	399.2	561	-43.7	49	980	0	-68.7
22	399.3	569	-31.6	50	830	0	-34.7
23	399.5	567	-28.6	50	790	0	-20.7
24	399.1	567	-26.6	50	760	0	-28.3
25	401.9	565	-26.3	51	760	0	-65.9
26	399.2	676	5.6	49	350	1	7.4
27	400.0	674	13.4	50	250	1	3.8
28	401.9	678	16.8	50	640	1	46.6
29	400.1	673	10.5	51	560	1	17.6
30	400.2	675	18.3	49	680	1	15.6
31	401.6	561	-25.4	50	80	0	-32.5
32	400.8	679	23.3	49	730	1	11.7
33	399.3	564	-44.8	50	990	0	-67.5
34	397.9	671	6.4	49	340	1	1.3
35	398.6	677	30.6	50	0	1	34.1
36	402.4	672	19.9	51	170	1	11.3
37	400.3	563	-35.5	50	890	0	-38.1
38	399.6	675	24.2	50	110	1	40.2
39	397.6	672	12.1	50	260	1	28.4
40	397.7	564	-25.3	49	80	0	-41.7
41	400.6	675	32.5	50	840	1	89.3
42	398.6	673	16.9	50	650	1	14.3
43	400.7	671	6.9	50	510	1	10.7
44	401.2	568	-25.3	49	80	0	-28.0
45	400.6	671	24.9	51	110	1	16.1
46	402.3	564	-44.6	50	1000	0	-76.0
47	398.9	568	-36.5	51	880	0	-23.6
48	402.4	562	-27.5	50	790	0	-47.7
49	400.6	672	22.2	50	120	1	40.6
50	400.1	674	21.8	49	720	1	53.3
51	400.2	562	-25.7	49	70	0	-14.6
52	397.6	674	15.3	50	210	1	64.7
53	397.9	671	31.3	49	0	1	75.0
54	402.4	567	-28.0	49	30	0	-64.6
55	402.5	561	-26.6	51	90	0	-43.8
56	401.6	676	12.5	50	590	1	8.9
57	399.3	560	-30.1	50	40	0	-19.2
58	397.5	677	16.5	50	630	1	17.7
59	399.8	560	-23.2	50	130	0	-17.4
60	397.8	672	22.6	49	710	1	52.8

Table 5.2: NN Model Data for Apartment Building Complex at Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	403.6	673	15.1	50	490	0	51.8
2	397.1	671	16.9	51	530	0	37.8
3	403.6	676	0.8	50	260	0	0.9
4	397.9	678	6.1	51	340	0	3.2
5	397.1	562	-16.5	50	530	1	-63.6
6	400.0	677	1.1	51	230	1	0.6
7	395.1	670	9.8	50	90	1	29.3
8	397.4	673	1.5	49	270	0	0.8
9	402.6	672	9.4	50	410	0	38.8
10	404.1	676	4.0	50	320	0	3.1
11	400.6	674	18.0	50	550	0	19.2
12	398.2	670	8.4	50	380	0	5.7
13	402.8	674	1.8	50	220	1	4.3
14	400.5	565	-10.1	50	420	1	-8.2
15	397.2	568	-11.5	49	440	1	-18.5
16	402.3	673	1.7	50	230	1	1.4
17	404.3	567	-11.0	50	430	1	-11.3
18	399.6	676	6.2	51	350	0	8.6
19	395.3	568	-9.8	49	90	0	-5.7
20	404.6	671	13.6	50	470	0	57.1
21	404.5	677	2.8	49	210	1	3.2
22	401.0	672	18.3	50	540	0	20.0
23	401.6	672	15.4	49	490	0	17.9
24	395.0	672	8.3	49	390	0	3.8
25	395.8	673	8.3	49	110	1	57.2
26	403.5	676	15.8	49	520	0	49.0
27	395.7	678	13.2	51	470	0	28.9
28	397.7	675	2.3	49	290	0	0.9
29	404.1	675	2.3	49	210	1	0.9
30	402.7	568	-14.5	49	490	1	-36.0
31	404.7	568	-19.1	50	570	1	-33.7
32	396.6	674	7.6	51	130	1	12.4
33	396.4	675	12.2	49	460	0	14.8
34	398.4	680	12.6	50	470	0	14.2
35	404.3	563	-10.9	50	70	0	-5.7
36	397.4	564	-8.1	49	110	0	-13.1
37	403.5	672	5.5	50	340	0	6.3
38	397.9	676	13.1	50	460	0	17.1
39	398.1	680	1.5	50	280	0	2.2
40	395.5	672	6.5	50	360	0	2.7
41	397.8	678	2.0	50	220	1	5.9
42	404.3	569	-14.2	51	470	1	-34.8
43	401.5	561	-16.8	51	520	1	-9.8
44	398.5	671	1.7	51	220	1	2.8
45	403.3	566	-8.8	50	100	0	-21.1
46	403.1	560	-12.6	49	50	0	-12.5
47	403.6	672	7.3	50	360	0	7.8
48	404.9	678	5.3	49	340	0	2.6
49	396.6	563	-11.2	51	80	0	-28.7
50	395.0	569	-13.1	50	470	1	-22.7
51	396.8	564	-23.2	50	610	1	-67.7
52	399.9	680	1.3	50	230	1	0.5
53	400.5	565	-19.6	49	560	1	-21.1
54	395.6	568	-18.3	50	550	1	-13.0
55	402.3	679	3.7	49	310	0	9.6
56	398.9	562	-12.9	50	50	0	-43.0
57	404.3	568	-18.8	51	560	1	-43.5
58	398.4	562	-16.3	50	520	1	-26.2
59	401.2	570	-19.6	51	570	1	-33.4
60	397.8	675	9.6	50	400	0	57.5

Table 5.3: NN Model Data for Apartment Building Complex at Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	404.3	566	-13.0	50	460	1	-67.3
2	406.0	568	-8.9	49	110	0	-31.3
3	405.9	678	19.7	49	560	0	22.4
4	399.4	670	11.3	51	70	1	25.9
5	396.4	680	2.0	49	220	1	1.6
6	405.5	679	8.2	50	390	0	27.0
7	402.6	563	-17.2	49	520	1	-55.5
8	396.9	674	18.9	49	550	0	44.8
9	404.0	569	-18.2	50	550	1	-30.7
10	400.3	673	15.7	50	510	0	16.7
11	402.7	563	-13.3	51	480	1	-22.4
12	404.9	670	5.2	51	330	0	14.1
13	401.6	565	-13.1	50	470	1	-21.4
14	399.2	567	-15.0	49	510	1	-25.5
15	398.2	675	10.5	51	420	0	13.7
16	404.7	677	7.0	50	360	0	13.7
17	399.8	678	0.8	51	270	0	2.4
18	400.4	674	9.4	50	110	1	27.7
19	405.0	674	19.2	51	580	0	63.3
20	397.8	677	15.4	50	0	1	100.6
21	403.5	671	1.9	50	280	0	3.7
22	397.4	677	0.6	50	260	0	0.7
23	404.2	568	-14.7	50	480	1	-28.7
24	396.6	674	4.1	49	180	1	9.6
25	400.8	677	18.4	51	560	0	69.6
26	396.5	675	13.3	50	480	0	22.8
27	397.4	677	2.5	50	210	1	2.3
28	396.5	569	-15.2	49	510	1	-43.9
29	398.2	680	4.2	49	170	1	5.6
30	402.1	679	4.1	50	180	1	8.5
31	398.5	678	3.9	51	320	0	3.5
32	404.8	569	-11.3	49	60	0	-42.1
33	400.0	567	-20.2	50	570	1	-32.8
34	402.7	673	6.5	50	150	1	6.5
35	403.0	676	8.3	51	380	0	25.0
36	402.3	563	-11.7	50	430	1	-55.5
37	400.4	567	-10.6	49	80	0	-16.2
38	398.1	673	17.8	51	540	0	22.6
39	401.2	675	9.3	49	400	0	24.1
40	402.1	675	10.7	51	420	0	13.9
41	403.4	672	2.5	49	210	1	6.4
42	403.4	569	-18.0	50	540	1	-19.4
43	401.2	676	6.9	50	140	1	11.7
44	399.6	673	13.7	51	480	0	38.9
45	401.8	671	21.7	51	610	0	26.0
46	400.1	679	9.3	50	400	0	7.0
47	398.4	569	-13.9	49	470	1	-51.2
48	403.9	564	-11.2	50	70	0	-47.3
49	402.9	677	7.0	49	130	1	21.7
50	400.2	675	0.5	50	240	1	0.3
51	401.6	678	14.1	50	490	0	54.3
52	401.8	677	0.6	50	240	1	0.8
53	401.8	563	-6.7	51	130	0	-8.1
54	400.3	676	9.6	50	410	0	28.6
55	396.7	565	-18.7	51	560	1	-76.0
56	405.2	564	-8.3	51	110	0	-14.1
57	404.2	679	3.7	49	310	0	11.2
58	398.0	569	-18.9	50	560	1	-29.6
59	403.7	673	7.6	50	120	1	20.5
60	400.2	565	-20.0	50	560	1	-21.7

Table 5.4: NN Model Data for Apartment Building Complex at Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	401.9	680	16.3	49	620	0	20.3
2	404.3	567	-15.3	50	610	1	-24.7
3	406.9	673	17.4	51	0	1	30.3
4	400.2	680	12.7	49	560	0	15.1
5	404.5	670	6.1	50	210	1	10.6
6	402.9	674	24.6	50	780	0	108.0
7	402.5	672	12.0	49	90	1	29.7
8	400.9	679	2.1	49	360	0	2.6
9	404.5	560	-19.6	49	700	1	-11.7
10	400.0	567	-14.0	49	60	0	-15.1
11	405.8	567	-11.9	51	550	1	-18.7
12	401.5	673	7.5	50	180	1	5.0
13	403.6	676	4.7	50	410	0	9.2
14	404.0	674	2.1	49	280	1	6.2
15	399.8	674	8.1	49	470	0	19.4
16	401.3	680	7.7	51	470	0	5.1
17	405.5	569	-6.2	50	200	0	-3.5
18	406.5	671	12.5	51	80	1	22.5
19	403.6	677	17.7	50	650	0	43.5
20	397.1	678	17.2	50	0	1	58.9
21	404.2	674	13.6	49	570	0	8.9
22	405.6	567	-8.3	49	160	0	-5.1
23	401.4	565	-18.5	50	670	1	-30.7
24	405.5	676	1.6	50	350	0	1.9
25	400.3	562	-8.3	49	160	0	-9.1
26	404.7	566	-12.2	50	80	0	-7.6
27	404.7	676	4.5	51	400	0	5.3
28	406.6	561	-22.4	49	740	1	-23.8
29	401.3	561	-18.2	50	650	1	-9.9
30	399.9	672	17.0	51	0	1	30.3
31	400.0	672	1.0	51	340	0	0.7
32	401.9	671	18.8	49	680	0	45.7
33	403.8	677	2.1	49	360	0	1.5
34	406.0	561	-11.7	50	530	1	-17.5
35	401.5	566	-13.0	51	80	0	-13.1
36	405.5	674	5.8	49	210	1	14.6
37	405.4	674	19.6	49	670	0	22.1
38	406.8	678	5.6	49	420	0	6.3
39	402.5	679	16.4	50	0	1	51.3
40	398.9	670	3.7	51	250	1	2.6
41	405.8	675	10.4	50	510	0	12.7
42	402.7	679	4.7	49	410	0	5.9
43	406.0	674	7.7	49	470	0	14.8
44	397.5	560	-14.9	49	600	1	-9.0
45	398.4	678	4.7	50	230	1	8.3
46	404.9	679	21.7	51	720	0	14.1
47	406.2	569	-17.3	49	630	1	-33.4
48	398.8	677	1.1	50	340	0	3.8
49	400.2	672	9.5	51	150	1	5.8
50	397.5	675	18.3	51	660	0	20.7
51	403.6	679	17.3	49	0	1	53.3
52	403.1	680	10.8	51	520	0	13.3
53	399.6	563	-16.2	50	630	1	-34.9
54	402.6	570	-10.8	49	110	0	-16.9
55	404.2	561	-19.9	49	690	1	-20.4
56	403.3	673	17.6	51	650	0	33.7
57	402.0	672	4.8	50	410	0	3.3
58	398.2	568	-14.2	51	580	1	-21.8
59	404.8	567	-13.1	51	70	0	-7.5
60	406.0	678	7.1	51	190	1	8.8

5.2. Comparison of Output Data

For the comparison activities, the current loop PI controller is designed by using the conventional standard method as shown in Figure 3.4. The improvements of discrete Proportional-Integral (PI) regulator were considered referring to the equivalent discrete system of the transfer function. With a sample time of $T_s = 1$ ms, there was no any stable PI gains could be obtained for the conventional vector control method. However, the neural network controller gives a higher stability level at this stage. When we consider a smaller sampling time such as $T_s = 0.1$ ms, the existent dq currents of the standard vector controller are oscillating at higher unacceptable levels when compared to the NN regulator and hence there are many distortions and unbalances in the three-phase utility system also [15].

Several more comparisons have been carried out with different dq reference input current levels. All those experiments indicate that this NN regulator's performance is better than the PI regulator based standard vector controller mechanism. Generally, the NN based regulator is able to reach a reference value more rapidly and become stable nearby these reference values using considerably small oscillations. Since these outputs regenerative power from elevator systems are always having frequent fluctuations along with the system operation, the quick recovery behaviours in the neural network based controller systems can improve the system efficiency up to a satisfactory level.

Comparison of PI model output data and NN model output data were put on graphs separately based on each building. Sample of comparative graph for PI and NN energy regeneration of the Office Building Complex at Narahenpita has shown in Figure 5.1. Sample of regenerative energy comparison for the Apartment Building Complex at Boswell Place has shown in Figure 5.2. Sample PI and NN model energy regenerating comparison is shown in Figure 5.3. Sample energy regeneration comparison of PI and NN model for the Apartment Building Complex at Frankfort Place is shown in Figure 5.4. The complete set of above comparison data is attached in Annexure-5 at the end.

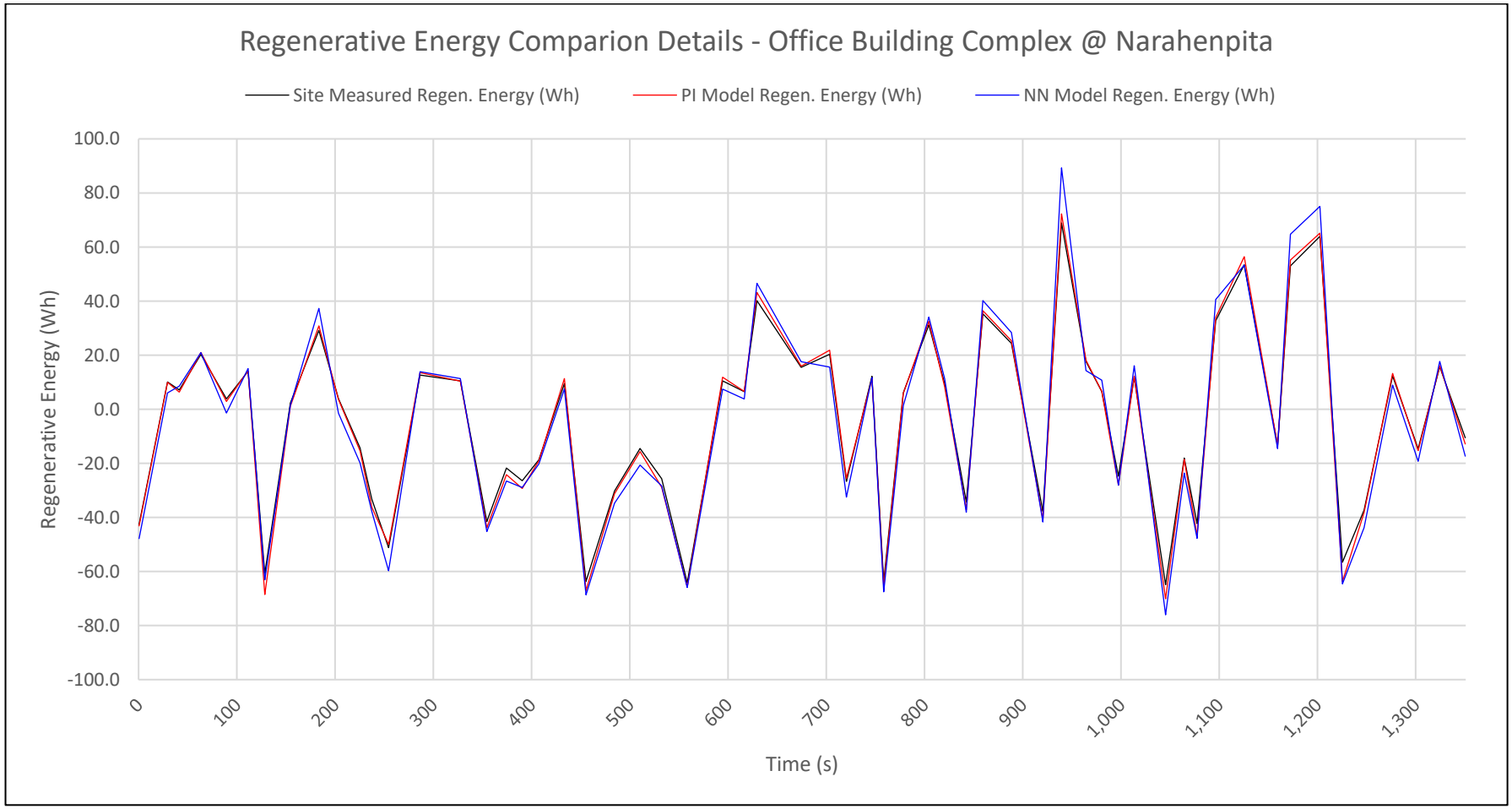


Figure 5.1: Regen. Energy Comparison for the Office Complex at Narahenpita

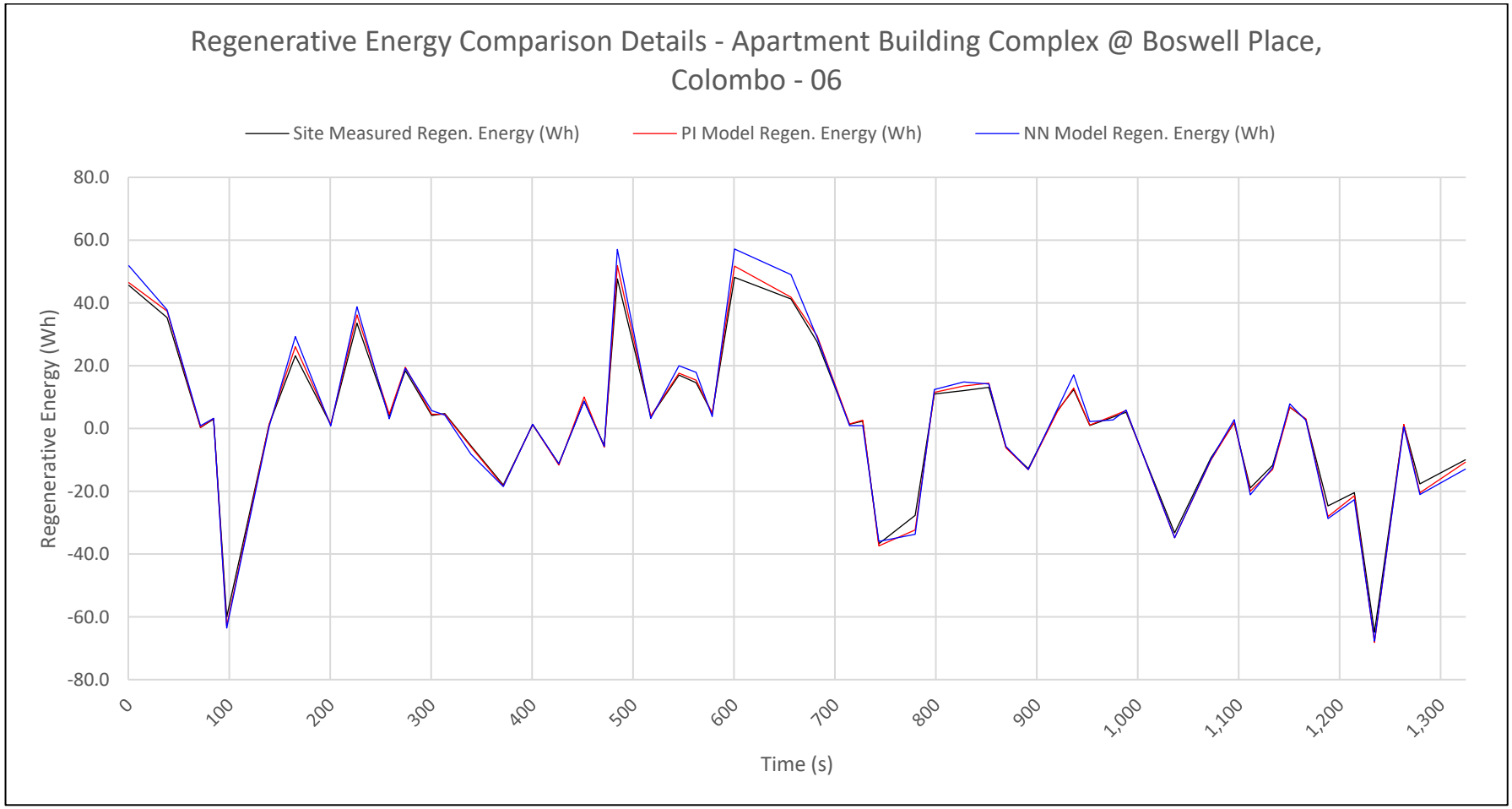


Figure 5.2: Regen. Energy Comparison for Apartment Complex at Boswell Place

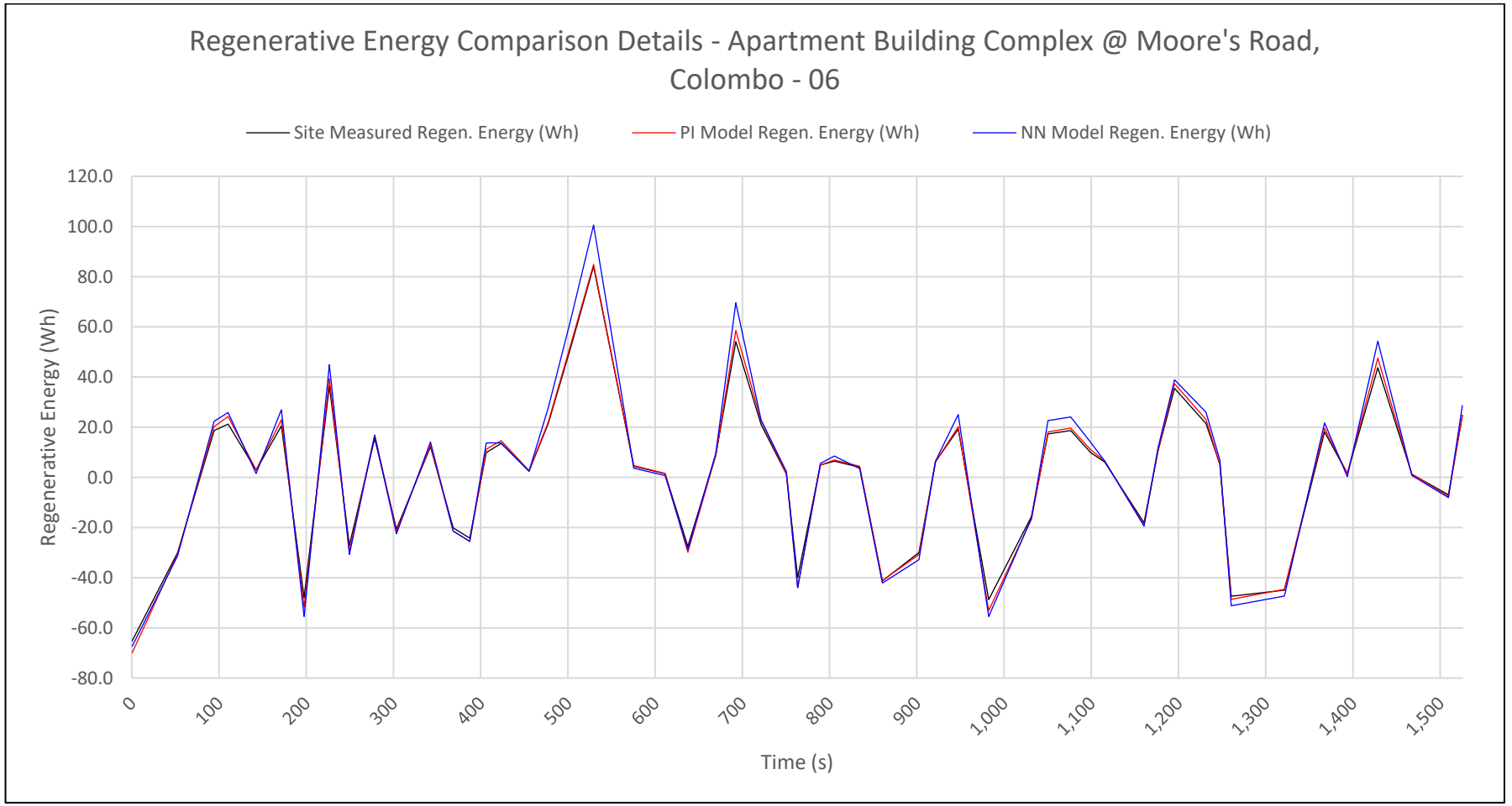


Figure 5.3: Regen. Energy Comparison for Apartment Complex at Moore's Road

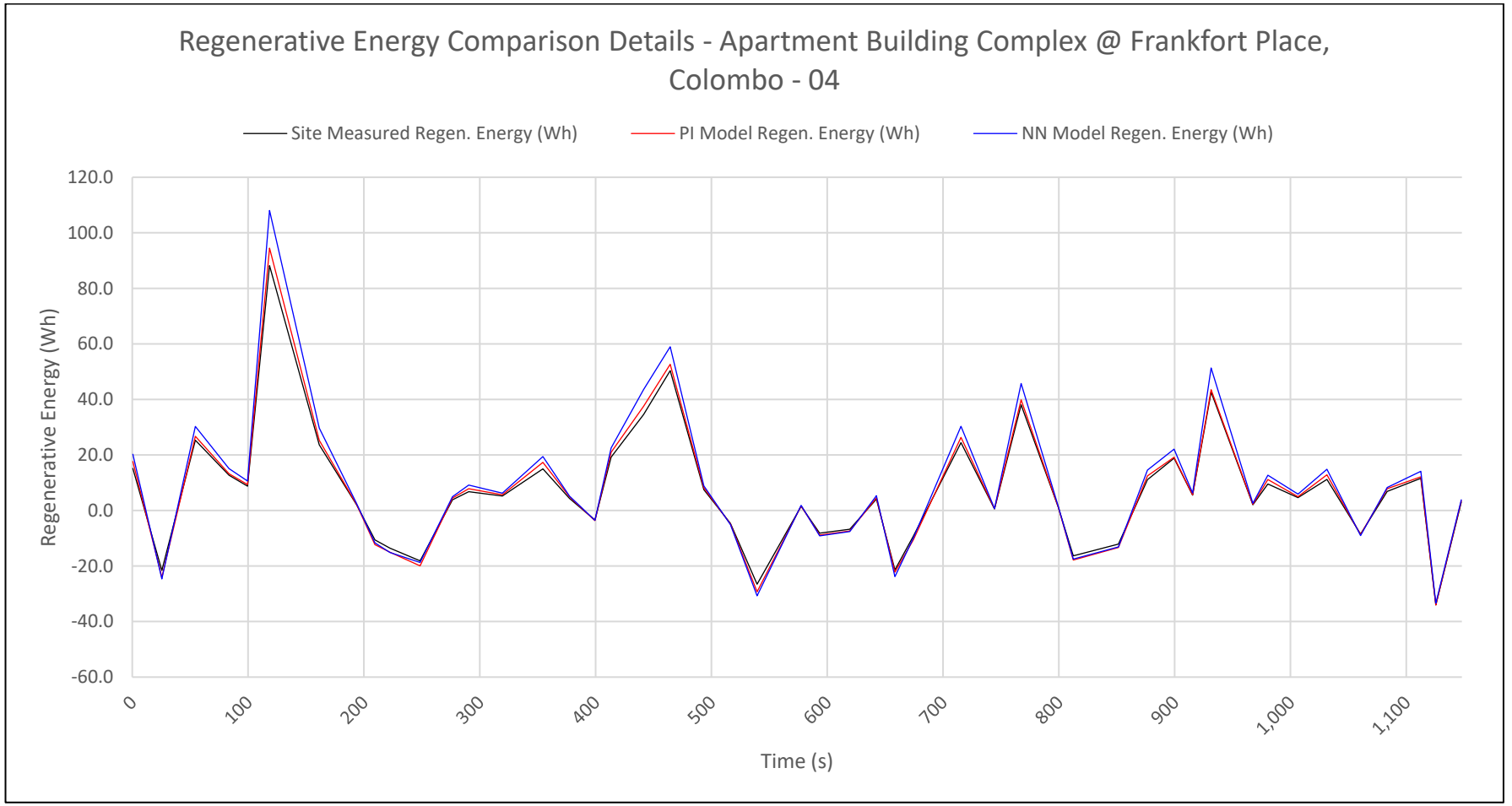


Figure 5.4: Regen. Energy Comparison for Apartment Complex at Frankfort Place

6. CONCLUSION

6.1. Energy Calculation Details

1. Energy regeneration details of 20 storey office building complex at Narahenpita. In this building, there were 5 nos. of elevators to serve the passenger demand of the building. All the five elevators seem to be matching with each other in operation and passenger traffic so that effects on site collected data will be negligible. Therefore, only one elevator reading could be considered and multiply it by five for further comparisons. However, at the end of total calculation process, a tolerance will be added to compensate these kinds of site errors.

   By considering total regenerative output energy from PI model data in Annexure-3:

   - Total monthly energy regeneration of the existing elevator system:

   $$1.18\frac{kWh}{day} \times 25\frac{day}{month} = 29.5\frac{kWh}{month}$$

   By considering total regenerative output energy from NN model data in Annexure-4:

   - Total monthly energy regeneration of the proposed NN based system:

   $$1.74\frac{kWh}{day} \times 25\frac{day}{month} = 43.5\frac{kWh}{month}$$

   Accordingly, the improvement in energy regeneration from the proposed NN based system:

   $$\frac{43.5 - 29.5}{29.5} \times 100\% = \mathbf{47.46}\%$$

2. Energy regeneration details of 15 storey apartment building complex at Boswell Place, Colombo-06.

   By considering total regenerative output energy from PI model data in Annexure-3:

- Total monthly energy regeneration of the existing elevator system:

$$1.83\frac{kWh}{day} \times 30\frac{day}{month} = 54.9\frac{kWh}{month}$$

By considering total regenerative output energy from NN model data in Annexure-4:

- Total monthly energy regeneration of the proposed NN based system:

$$2.72\frac{kWh}{day} \times 30\frac{day}{month} = 81.6\frac{kWh}{month}$$

Accordingly, the improvement in energy regeneration from the proposed NN based system:

$$\frac{81.6 - 54.9}{54.9} \times 100\% = \mathbf{48.63}\%$$

3. Energy regeneration details of 12 storey apartment building complex at Moore's Road, Colombo-06.

   By considering total regenerative output energy from PI model data in Annexure-3:

   - Total monthly energy regeneration of the existing elevator system:

$$1.97\frac{kWh}{day} \times 30\frac{day}{month} = 59.1\frac{kWh}{month}$$

   By considering total regenerative output energy from NN model data in Annexure-4:

   - Total monthly energy regeneration of the proposed NN based system:

$$2.76\frac{kWh}{day} \times 30\frac{day}{month} = 82.8\frac{kWh}{month}$$

   Hence, the improvement in energy regeneration from the proposed NN based system:

$$\frac{82.8 - 59.1}{59.1} \times 100\% = \mathbf{40.10}\%$$

4. Energy regeneration details of 8 storey apartment building complex at Frankfort Place, Colombo-04.

By considering total regenerative output energy from PI model data in Annexure-3:

- Total monthly energy regeneration of the existing elevator system:

$$2.91\frac{kWh}{day} \times 30\frac{day}{month} = 87.3\frac{kWh}{month}$$

By considering total regenerative output energy from NN model data in Annexure-4:

- Total monthly energy regeneration of the proposed NN based system:

$$3.77\frac{kWh}{day} \times 30\frac{day}{month} = 113.1\frac{kWh}{month}$$

Therefore, the improvement in energy regeneration from the proposed NN based system:

$$\frac{113.1 - 87.3}{87.3} \times 100\% = \mathbf{29.55}\%$$

6.2. Average Energy Improvement

Accordingly, the average improvement of the proposed system:

- Therefore the average improvement in proposed NN based system compared to the existing systems:

$$\frac{47.46 + 48.63 + 40.10 + 29.55}{4} = \mathbf{41.44}\%$$

If we allocate around 10% tolerance for possible calculation errors and other measurement errors in the site,

$$41.44\% \times 0.9 = \mathbf{37.30}\%$$

Hence, with the application of this method, it is possible to obtain a **37%** of growth in energy regeneration process according to the above calculations.

6.3. Improvements in input signal quality

During the performance comparison between PI regulator-based converter and NN controller-based converter, another important point could be found. It was noticed that there is a considerable reduction in current waveform distortion in proposed NN controller-based converter when compared to the PI regulator-based converter operation.

Please refer to the following figures for more details. Figure 6.1 shows the input current waveform for PI regulator-based converter for a specific motor operation period. Figure 6.2 shows the input current waveform for NN based converter under same motor operation conditions as above for the comparison.

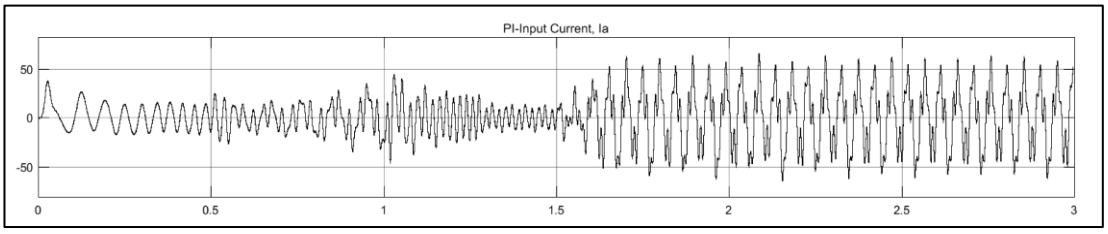


Figure 6.1: Phase-A current waveform of PI regulator-based Converter

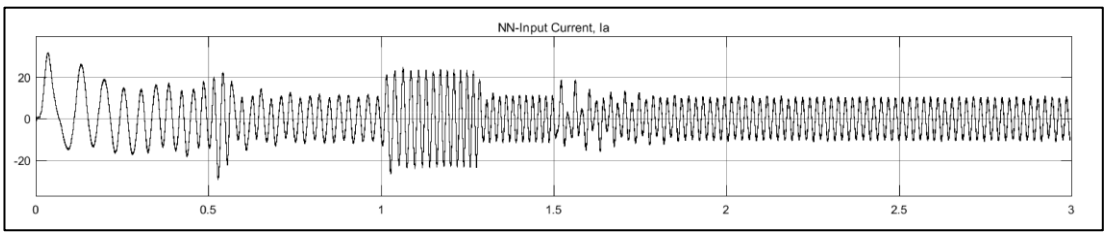


Figure 6.2: Phase-A current waveform of NN controller-based converter

Accordingly, the reduction of waveform distortion in NN based converter can be clearly noticed here.

6.4. Overall System Improvements

Therefore, the improvements obtained with the proposed NN controller can be summarized as:

1. Minimized current distortions and 3-phase unbalances in utility power system due to low output oscillations.
2. More reduced sampling and computing power requirement [12].
3. Quick responses in dynamic system behaviours [13].
4. Forecasting of energy regeneration behaviour with real time system dynamics.
5. With these improvements, around **37%** of energy saving can be expected compared to existing regenerative converters.

6.5. System Limitations

Here, the data processing and all the system performance comparison activities have been carried out using software simulation models and concepts. Nevertheless, the system modelling has been done so that it is satisfactorily matching with real world practical situations. With the help of site collected data through multiple repetitive and testing processes, it was possible to align these simulation model outputs with more practical scenarios in a reasonable way.

However, the optimization of implementing proposed Neural Network system in industrial environments haven't perfectly covered under this document. For the future work, it is planned to continue the study of further developing this proposed Neural Network system to match with harder industrial situations [12], [13], [14].

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ANNEXURE – 01

Site Measured Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	401.8	567	-22.0	49	780	0	-42.6
2	400.4	677	15.5	50	160	1	10.1
3	398.5	671	11.0	49	240	1	7.1
4	397.9	675	15.8	49	160	1	20.3
5	402.3	680	6.2	50	320	1	3.9
6	400.9	677	11.3	50	240	1	14.1
7	398.8	560	-20.0	51	90	0	-60.8
8	402.3	680	1.3	49	400	1	2.3
9	399.5	676	17.0	49	160	1	29.1
10	397.8	673	6.1	51	320	1	3.9
11	400.0	561	-25.7	51	810	0	-14.3
12	400.3	561	-28.7	51	860	0	-33.3
13	398.4	564	-20.2	49	750	0	-51.2
14	399.4	678	22.2	49	80	1	12.6
15	398.6	670	3.2	49	470	1	10.5
16	402.1	564	-24.4	49	40	0	-41.6
17	398.5	567	-18.4	49	140	0	-21.8
18	402.3	562	-22.4	49	70	0	-26.5
19	397.6	563	-15.5	50	180	0	-18.7
20	400.0	672	16.3	50	160	1	9.5
21	399.2	567	-34.5	50	980	0	-63.7
22	399.3	564	-24.7	51	830	0	-30.2
23	399.5	569	-23.2	50	790	0	-14.5
24	399.1	561	-21.0	50	760	0	-25.7
25	401.9	568	-20.4	49	760	0	-64.1
26	399.2	671	4.5	50	350	1	10.5
27	400.0	670	10.3	51	250	1	6.5
28	401.9	675	14.3	50	640	1	40.1
29	400.1	676	8.5	51	560	1	15.5
30	400.2	672	16.7	50	680	1	20.3
31	401.6	562	-21.0	50	80	0	-26.7
32	400.8	678	20.3	50	730	1	12.2
33	399.3	562	-35.5	50	990	0	-63.8
34	397.9	679	4.8	49	340	1	6.1
35	398.6	678	26.8	49	0	1	31.2
36	402.4	670	15.8	49	170	1	9.5
37	400.3	565	-28.4	50	890	0	-34.2
38	399.6	674	19.6	51	110	1	35.3
39	397.6	673	10.2	51	260	1	24.4
40	397.7	563	-21.7	51	80	0	-37.8
41	400.6	674	25.2	49	840	1	68.9
42	398.6	677	13.7	50	650	1	17.6
43	400.7	673	5.9	50	510	1	6.6
44	401.2	567	-21.1	51	80	0	-24.8
45	400.6	680	19.6	51	110	1	11.8
46	402.3	560	-35.1	49	1000	0	-64.9
47	398.9	570	-29.5	50	880	0	-18.0
48	402.4	564	-24.1	51	790	0	-42.3
49	400.6	671	19.3	51	120	1	32.7
50	400.1	673	18.1	50	720	1	53.5
51	400.2	569	-21.5	50	70	0	-13.4
52	397.6	678	13.6	50	210	1	53.1
53	397.9	671	25.8	49	0	1	63.9
54	402.4	566	-24.6	50	30	0	-56.6
55	402.5	570	-21.4	51	90	0	-37.3
56	401.6	679	10.4	50	590	1	12.3
57	399.3	565	-24.6	50	40	0	-14.6
58	397.5	678	13.2	49	630	1	15.7
59	399.8	565	-19.1	51	130	0	-10.6
60	397.8	675	18.6	49	710	1	42.8
61	397.7	563	-37.1	49	1020	0	-71.1
62	397.6	567	-29.9	51	910	0	-38.6
63	400.7	675	26.0	50	0	1	78.4
64	398.4	671	6.6	50	310	1	20.8
65	402.4	680	20.3	51	110	1	11.2
66	399.6	565	-20.9	51	90	0	-38.1
67	400.0	676	29.5	51	870	1	80.2
68	398.6	676	18.5	51	730	1	33.6
69	400.0	563	-21.8	50	90	0	-12.7
70	401.4	564	-23.7	50	40	0	-41.1
71	400.7	672	12.3	51	610	1	6.9
72	402.2	679	26.9	50	0	1	48.9

Site Measured Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
73	399.3	568	-26.9	51	840	0	-15.3
74	400.8	561	-18.5	49	710	0	-43.8
75	399.6	677	3.2	49	370	1	7.6
76	401.3	672	12.8	51	630	1	32.6
77	397.8	560	-24.8	51	40	0	-29.0
78	401.3	673	23.6	51	790	1	54.4
79	402.2	678	12.5	49	620	1	23.6
80	398.6	561	-13.3	49	200	0	-8.4
81	399.1	561	-23.8	51	800	0	-58.6
82	400.8	670	27.2	51	0	1	48.8
83	399.7	565	-21.7	49	760	0	-26.1
84	398.9	672	11.0	51	250	1	6.1
85	397.8	677	11.9	50	230	1	22.0
86	402.0	560	-24.6	50	40	0	-67.0
87	397.5	561	-21.2	50	70	0	-13.1
88	398.3	566	-20.3	50	110	0	-36.5
89	398.8	674	26.4	50	820	1	45.4
90	400.7	672	33.5	50	930	1	19.8
91	398.4	560	-22.1	51	50	0	-14.4
92	401.8	675	14.7	50	190	1	8.7
93	400.9	569	-26.1	49	830	0	-44.9
94	397.6	676	27.4	50	0	1	32.9
95	401.0	568	-19.4	49	730	0	-11.9
96	401.8	670	8.5	49	290	1	10.1
97	397.5	567	-19.1	50	720	0	-11.8
98	399.4	678	5.2	50	340	1	12.5
99	401.9	674	6.5	50	320	1	19.3
100	398.9	677	14.7	51	180	1	9.4
101	397.8	568	-22.7	50	40	0	-27.4
102	398.1	563	-18.4	49	140	0	-42.8
103	398.5	672	0.0	50	420	1	0.0
104	398.1	670	21.7	51	760	1	73.9
105	401.2	565	-17.1	51	150	0	-20.1
106	400.1	565	-19.8	49	90	0	-12.5
107	402.0	675	16.1	50	670	1	28.0
108	401.0	562	-21.1	50	80	0	-13.3
109	399.4	679	8.7	51	280	1	10.3
110	398.8	677	20.6	50	90	1	25.7
111	397.9	565	-18.1	50	710	0	-21.4
112	399.0	674	0.6	50	410	1	0.4
113	399.2	672	4.4	50	350	1	7.8
114	400.3	673	2.4	50	380	1	6.2
115	402.3	564	-15.6	50	180	0	-27.1
116	401.6	565	-11.5	49	230	0	-28.8
117	397.9	675	4.5	50	490	1	5.4
118	398.7	676	7.6	50	540	1	9.0
119	400.5	672	13.2	50	620	1	7.5
120	400.4	672	25.9	50	850	1	15.7
121	401.7	677	24.0	49	790	1	40.5
122	399.4	678	33.7	51	940	1	20.4
123	399.9	566	-24.4	51	40	0	-14.1
124	398.7	675	15.5	50	170	1	9.5
125	401.3	565	-31.3	49	910	0	-18.6
126	400.7	677	0.7	51	430	1	1.3
127	398.2	561	-24.0	49	800	0	-29.0
128	398.4	561	-22.9	49	800	0	-75.0
129	398.6	672	21.6	50	750	1	41.9
130	398.5	570	-20.3	50	750	0	-38.8
131	401.5	679	25.2	49	0	1	49.3
132	400.9	672	12.5	50	620	1	28.7
133	402.3	679	6.9	49	310	1	8.3
134	399.2	674	16.4	51	170	1	18.8
135	399.8	674	16.1	50	150	1	30.5
136	399.4	567	-14.3	50	200	0	-49.3
137	399.8	680	12.5	50	620	1	7.6
138	398.3	673	4.4	51	490	1	10.3
139	398.4	670	1.3	50	400	1	5.9
140	399.3	678	12.7	49	210	1	23.2
141	402.3	680	2.0	50	390	1	2.2
142	399.4	677	20.2	49	730	1	36.8
143	401.0	562	-14.4	49	200	0	-17.3
144	399.7	679	6.5	49	520	1	11.0

Site Measured Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
145	401.9	567	-14.8	49	180	0	-37.2
146	400.1	560	-25.4	51	840	0	-16.6
147	400.7	674	12.9	49	630	1	15.2
148	398.5	674	3.7	49	360	1	6.8
149	401.7	677	27.2	50	0	1	69.8
150	399.7	677	28.4	49	890	1	92.7
151	399.0	566	-28.3	50	870	0	-33.6
152	399.8	672	5.9	51	330	1	6.7
153	398.4	671	12.9	50	210	1	23.3
154	399.4	678	21.5	50	750	1	51.2
155	402.3	673	3.1	50	370	1	3.7
156	401.4	568	-16.9	50	140	0	-22.1
157	399.2	671	7.4	49	540	1	8.8
158	398.6	675	1.8	49	390	1	3.5
159	400.1	680	18.5	50	120	1	21.7
160	398.4	565	-23.6	49	800	0	-82.6
161	399.1	678	19.0	49	730	1	110.3
162	402.4	675	27.0	49	0	1	99.5
163	399.5	677	14.0	50	650	1	43.9
164	399.0	566	-24.9	51	820	0	-109.5
165	402.0	561	-19.1	50	120	0	-61.2
166	401.5	563	-11.4	50	240	0	-20.4
167	399.5	677	1.2	51	400	1	3.4
168	397.7	672	7.8	50	300	1	14.3
169	400.4	679	18.6	51	720	1	78.3
170	397.9	561	-23.3	49	780	0	-83.3
171	401.3	670	10.9	50	590	1	31.9
172	401.9	570	-16.5	50	160	0	-35.3
173	399.4	677	8.1	51	290	1	19.2
174	400.5	675	16.3	50	150	1	30.5
175	399.0	569	-23.2	50	800	0	-41.2
176	398.7	678	27.2	50	0	1	61.8
177	402.2	674	22.6	51	770	1	47.1
178	397.6	562	-17.6	49	150	0	-21.6
179	398.6	562	-23.5	51	800	0	-42.7
180	400.6	671	17.9	50	700	1	67.4
181	398.5	563	-13.2	51	210	0	-24.4
182	398.3	677	27.4	51	0	1	79.4
183	401.0	677	10.9	51	240	1	32.8
184	400.1	675	19.8	50	90	1	26.1
185	400.8	679	25.5	51	830	1	95.0
186	400.0	677	16.8	49	140	1	65.4
187	397.8	677	10.4	50	580	1	12.0
188	398.1	674	21.0	49	740	1	46.5
189	400.0	676	1.9	49	390	1	4.5
190	397.8	678	4.9	50	500	1	6.2
191	398.2	676	29.4	51	870	1	67.7
192	398.1	673	15.0	49	660	1	45.7
193	399.8	673	9.6	49	580	1	6.0
194	399.9	565	-26.5	50	850	0	-110.3
195	400.4	675	0.6	50	430	1	1.1
196	401.7	562	-24.0	50	40	0	-108.4
197	400.8	678	27.4	49	0	1	107.5
198	400.5	562	-10.3	51	260	0	-32.5
199	401.7	678	27.2	50	0	1	79.6
200	398.6	569	-13.9	51	190	0	-25.9
201	398.5	671	20.9	50	740	1	37.2
202	402.1	677	12.9	49	210	1	38.8
203	398.5	563	-27.1	51	870	0	-91.7
204	400.7	567	-16.3	49	150	0	-41.3
205	398.2	563	-24.4	51	790	0	-44.1
206	399.1	679	1.2	50	440	1	2.3
207	402.1	566	-14.7	51	190	0	-25.8
208	399.6	679	7.2	50	530	1	24.4
209	399.6	672	0.0	50	420	1	0.0
210	398.3	675	5.2	50	340	1	9.5
211	397.9	675	2.4	50	380	1	4.5
212	401.3	560	-26.1	49	20	0	-72.7
213	400.2	563	-25.2	50	820	0	-53.9
214	399.0	565	-17.7	50	150	0	-32.1
215	401.5	675	7.1	50	530	1	15.1
216	400.6	566	-21.2	49	770	0	-63.9

Site Measured Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
217	398.3	678	8.1	51	290	1	23.4
218	397.8	671	22.4	50	770	1	46.3
219	401.5	677	9.2	50	560	1	20.6
220	398.4	568	-22.3	50	770	0	-46.0
221	400.1	565	-25.0	49	830	0	-60.8
222	397.9	678	1.3	49	400	1	3.0
223	399.3	671	14.6	51	660	1	52.6
224	398.7	678	3.6	50	360	1	9.1
225	398.1	563	-26.0	50	850	0	-68.1
226	398.7	567	-15.9	50	170	0	-73.8
227	402.4	674	8.5	50	280	1	24.8
228	400.7	677	10.8	49	590	1	19.7
229	398.5	679	6.8	50	310	1	13.0
230	397.8	565	-27.4	51	840	0	-46.5
231	402.4	674	38.4	50	1030	1	140.3
232	398.0	562	-26.0	51	850	0	-16.6
233	400.1	679	1.2	50	440	1	3.4
234	400.8	673	2.5	50	380	1	2.9
235	400.8	680	9.0	50	280	1	5.1
236	400.4	567	-12.9	50	220	0	-71.4
237	401.7	674	0.6	51	430	1	2.3
238	401.5	567	-13.8	50	190	0	-30.4
239	400.1	671	2.5	49	460	1	5.3
240	401.8	569	-26.9	50	840	0	-75.8
241	400.1	671	8.4	51	280	1	20.5
242	398.7	560	-23.6	49	790	0	-68.8
243	400.1	675	4.3	49	490	1	23.3
244	399.3	564	-23.6	50	800	0	-28.5
245	400.3	561	-20.5	51	730	0	-41.3
246	402.0	679	30.1	50	890	1	102.7
247	399.1	676	16.2	51	170	1	89.0
248	402.3	678	6.8	50	530	1	19.8
249	397.7	675	9.2	51	570	1	10.9
250	399.2	679	10.9	50	250	1	20.0
251	402.2	674	4.4	50	490	1	13.8
252	401.7	568	-12.5	50	220	0	-31.6
253	400.3	569	-17.8	50	710	0	-78.9
254	400.6	678	10.7	50	590	1	40.3
255	401.8	680	10.6	50	260	1	34.1
256	397.7	562	-26.1	49	830	0	-62.1
257	401.6	567	-17.6	51	150	0	-72.9
258	401.8	561	-25.4	51	820	0	-118.4
259	399.6	673	6.0	50	520	1	35.2
260	401.2	680	1.9	50	390	1	6.3
261	398.4	671	7.3	50	540	1	9.5
262	399.0	674	2.5	50	380	1	6.9
263	402.0	567	-10.4	50	250	0	-27.0
264	397.7	672	11.8	50	610	1	34.8
265	398.0	679	10.1	51	260	1	29.0
266	399.9	568	-15.6	51	180	0	-8.8
267	400.9	569	-14.8	49	190	0	-35.7
268	399.0	569	-25.7	51	850	0	-63.7
269	397.9	675	0.0	51	420	1	0.0
270	399.8	673	7.1	50	530	1	12.2
271	398.2	565	-11.7	50	230	0	-34.4
272	400.3	670	9.6	49	260	1	39.4
273	397.8	565	-13.9	50	190	0	-8.6
274	399.0	564	-11.3	50	240	0	-21.4
275	398.2	674	4.9	49	340	1	14.6
276	402.2	676	8.4	50	560	1	19.0
277	402.4	672	0.0	50	420	1	0.0
278	402.1	567	-18.5	49	720	0	-35.1
279	401.6	567	-16.2	49	160	0	-40.2
280	398.6	568	-18.3	50	720	0	-43.8
281	400.5	678	27.9	49	860	1	56.5
282	401.6	672	21.9	51	80	1	79.0
283	399.3	564	-15.7	51	160	0	-39.8
284	397.5	566	-15.7	50	180	0	-26.7
285	402.1	567	-20.6	50	750	0	-65.7
286	400.1	672	3.2	50	470	1	3.9
287	398.4	563	-27.1	50	870	0	-80.6
288	398.5	560	-14.4	50	200	0	-43.6

Site Measured Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
289	401.1	675	15.4	50	660	1	27.1
290	397.7	567	-23.5	51	780	0	-41.8
291	400.5	561	-19.4	51	740	0	-42.8
292	399.9	679	6.4	51	520	1	15.5
293	400.4	678	6.1	49	520	1	22.8
294	397.9	562	-24.9	51	830	0	-81.9
295	397.8	569	-13.7	49	210	0	-7.8
296	398.9	564	-26.5	50	850	0	-79.7
297	400.3	673	1.2	51	400	1	2.3
298	399.2	673	18.4	50	700	1	54.8
299	402.0	567	-12.0	50	230	0	-21.2
300	398.1	678	18.9	50	730	1	60.7
301	400.4	677	17.3	50	140	1	105.1
302	401.2	567	-18.5	50	130	0	-54.7
303	398.0	567	-25.3	51	810	0	-65.3
304	401.5	560	-16.7	50	160	0	-53.4
305	397.6	674	7.4	51	300	1	30.8
306	402.5	675	12.1	49	610	1	33.4
307	400.9	671	3.9	50	360	1	10.8
308	397.9	672	8.4	50	550	1	36.9
309	399.4	678	18.8	49	110	1	87.9
310	398.2	674	5.4	50	510	1	18.9
311	397.9	675	5.8	49	330	1	12.5
312	402.1	567	-28.4	50	860	0	-67.8
313	402.0	673	25.1	50	820	1	95.2
314	401.8	569	-18.1	49	700	0	-69.5
315	402.3	675	5.0	51	500	1	6.0
316	399.9	561	-11.6	50	230	0	-46.6
317	402.1	676	1.3	50	400	1	4.6
318	400.1	566	-13.9	51	200	0	-61.0
319	401.4	561	-26.0	51	820	0	-74.0
320	401.3	679	0.6	49	410	1	1.3
321	399.7	566	-17.3	50	150	0	-73.3
322	401.2	672	1.3	50	400	1	2.4
323	402.1	677	7.4	50	540	1	8.8
324	399.1	561	-27.0	50	860	0	-51.5
325	400.0	672	7.2	49	540	1	13.2
326	400.6	675	8.0	51	290	1	9.6
327	399.3	673	13.1	50	220	1	42.2
328	400.5	560	-16.0	49	170	0	-38.3
329	400.8	562	-16.1	50	170	0	-32.9
330	401.2	561	-21.1	50	750	0	-50.2
331	400.9	680	15.7	50	670	1	63.7
332	399.5	562	-20.2	50	740	0	-76.4
333	400.1	565	-13.8	49	190	0	-26.7
334	399.8	679	6.5	50	320	1	13.6
335	401.5	671	6.4	49	320	1	7.5
336	400.9	567	-27.2	50	860	0	-33.8
337	401.9	679	18.7	49	730	1	89.0
338	400.1	676	10.5	50	590	1	12.6
339	400.4	570	-17.4	50	710	0	-53.6
340	399.7	566	-17.5	51	700	0	-32.6
341	400.2	678	20.8	50	750	1	60.4
342	400.6	569	-25.5	49	810	0	-116.3
343	402.2	565	-15.0	50	170	0	-72.4
344	399.1	679	27.8	51	880	1	17.6
345	400.3	564	-21.2	49	760	0	-39.3
346	398.9	675	21.7	50	770	1	45.5
347	399.3	676	8.4	50	290	1	15.3
348	398.2	673	17.1	51	680	1	9.4
349	398.3	564	-23.4	51	780	0	-95.5
350	398.0	678	7.9	50	550	1	14.3
351	401.4	672	13.0	50	630	1	70.7
352	398.5	680	3.2	50	370	1	13.4
353	400.4	570	-15.5	50	170	0	-38.4
354	402.0	562	-22.9	51	790	0	-41.0
355	398.6	566	-12.8	50	210	0	-15.6
356	400.4	670	9.7	51	270	1	11.7
357	401.3	673	14.6	50	190	1	26.7
358	400.7	674	18.5	49	140	1	54.0
359	399.4	678	22.0	49	60	1	42.3
360	400.6	567	-18.3	51	130	0	-67.8

Site Measured Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
361	398.5	561	-11.5	49	230	0	-7.2
362	401.8	680	12.8	51	210	1	33.0
363	400.6	672	0.6	50	430	1	1.1
364	401.2	563	-27.3	49	840	0	-16.4
365	400.3	568	-12.7	50	220	0	-54.4
366	401.3	676	14.8	50	190	1	54.5
367	400.9	565	-18.9	50	710	0	-22.1
368	399.5	677	7.2	49	540	1	18.8
369	402.1	570	-13.4	50	200	0	-29.7
370	401.8	569	-30.2	51	910	0	-97.1
371	402.5	566	-25.2	49	840	0	-77.7
372	398.4	673	12.8	51	210	1	23.2
373	401.8	678	17.1	50	690	1	83.4
374	400.8	563	-19.9	51	730	0	-94.7
375	398.5	569	-13.5	51	210	0	-39.2
376	399.1	675	3.1	50	370	1	6.9
377	398.3	567	-10.8	50	240	0	-42.8
378	400.1	678	15.1	50	660	1	9.3
379	400.3	679	20.0	49	90	1	101.8
380	399.4	569	-13.8	50	210	0	-8.2
381	398.0	674	13.5	50	630	1	28.7
382	401.2	676	10.4	49	590	1	12.6
383	401.4	563	-15.9	49	160	0	-41.0
384	398.2	566	-22.9	50	800	0	-49.1
385	399.8	672	25.6	50	810	1	56.7
386	399.9	567	-21.7	49	760	0	-26.4
387	402.2	676	2.6	49	460	1	4.4
388	402.4	570	-24.7	51	800	0	-136.6
389	399.4	672	32.4	50	960	1	205.6
390	399.9	677	3.1	51	370	1	3.9
391	400.5	567	-21.7	51	760	0	-85.3
392	401.0	567	-16.6	50	150	0	-29.4
393	398.3	567	-24.0	50	810	0	-61.1
394	399.2	677	6.2	51	520	1	14.5
395	400.7	561	-15.0	50	170	0	-9.4
396	398.1	565	-23.4	51	780	0	-49.4
397	397.8	671	9.1	50	560	1	22.8
398	402.3	677	22.6	50	60	1	67.8
399	402.2	678	28.0	49	850	1	93.0
400	399.5	672	18.7	51	120	1	56.9
401	398.0	672	7.5	50	540	1	13.5
402	398.7	568	-17.5	50	150	0	-61.3
403	399.0	567	-20.2	50	740	0	-49.5
404	401.2	568	-22.3	51	780	0	-54.9
405	397.6	676	4.9	50	340	1	2.9
406	399.7	569	-24.2	50	810	0	-29.8
407	401.7	671	4.4	50	490	1	7.7
408	399.3	565	-19.9	51	740	0	-50.2
409	400.7	677	13.9	51	650	1	25.6
410	397.6	673	23.7	51	810	1	60.8
411	401.4	568	-17.1	49	160	0	-43.2
412	401.4	567	-23.1	49	790	0	-29.1
413	399.9	673	0.7	50	410	1	0.4
414	397.7	673	12.9	51	630	1	16.5
415	397.9	565	-32.4	49	930	0	-77.4
416	397.7	679	19.3	49	720	1	23.3
417	399.3	563	-23.3	50	790	0	-13.6
418	402.3	678	6.4	51	320	1	7.8
419	397.8	568	-20.0	50	740	0	-12.1
420	399.9	676	1.3	49	400	1	2.3
421	399.7	678	11.2	51	240	1	7.2
422	399.7	680	17.7	50	150	1	20.1
423	399.0	676	19.9	50	90	1	37.7
424	398.4	567	-22.9	51	50	0	-28.5
425	399.8	674	12.7	49	630	1	32.6
426	400.6	672	27.9	50	870	1	83.1
427	398.7	567	-16.5	50	160	0	-9.5
428	398.7	566	-21.5	50	80	0	-27.0
429	400.3	563	-27.7	50	0	0	-16.4
430	397.7	679	8.4	51	560	1	20.3
431	401.0	562	-34.6	51	980	0	-21.8
432	399.0	564	-25.6	50	820	0	-63.1

Site Measured Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
433	398.3	569	-32.5	49	930	0	-19.3
434	401.6	680	6.2	49	320	1	7.6
435	401.4	670	11.8	49	240	1	14.0
436	399.8	677	16.8	51	160	1	10.0
437	398.7	671	21.3	50	80	1	36.9
438	399.4	673	15.8	50	160	1	38.5
439	399.9	675	5.5	50	330	1	3.3
440	400.7	563	-22.1	50	60	0	-26.0
441	401.8	569	-10.8	50	240	0	-26.8
442	401.1	678	9.0	51	560	1	16.1
443	401.7	563	-14.9	50	190	0	-25.7
444	401.3	568	-15.8	50	180	0	-17.7
445	400.8	570	-12.0	51	230	0	-14.6
446	402.0	680	25.9	51	0	1	49.3
447	399.7	676	5.6	49	510	1	15.0
448	398.1	562	-21.3	49	80	0	-13.3
449	397.6	671	18.9	50	110	1	11.5
450	402.0	676	0.6	50	410	1	0.7
451	397.9	679	6.3	51	320	1	3.7
452	399.9	570	-25.0	51	810	0	-31.0
453	401.7	670	6.4	49	320	1	11.6
454	398.8	678	11.4	51	240	1	21.3
455	402.3	679	26.0	50	830	1	60.8
456	401.4	564	-12.2	51	230	0	-14.1
457	401.9	671	26.8	51	0	1	61.2
458	400.3	678	13.2	50	640	1	32.0
459	401.0	570	-20.0	50	90	0	-12.0
460	397.8	675	10.4	49	260	1	19.0
461	398.0	563	-22.6	51	780	0	-14.2
462	400.6	568	-17.8	51	690	0	-41.8
463	399.0	671	4.3	51	350	1	5.2
464	397.7	671	2.4	50	380	1	6.3
465	400.9	671	6.8	51	310	1	12.8
466	399.8	677	25.7	49	0	1	32.1
467	400.2	567	-16.1	51	170	0	-19.1
468	399.6	675	2.6	49	460	1	5.8
469	400.7	565	-20.3	50	110	0	-35.9
470	398.2	679	10.2	51	580	1	18.5
471	400.6	675	13.8	50	650	1	16.8
472	397.8	567	-13.2	49	210	0	-16.5
473	400.0	563	-15.9	50	170	0	-9.6
474	400.3	563	-13.1	51	210	0	-16.3
475	399.5	564	-25.4	49	810	0	-14.7
476	398.5	680	3.6	49	360	1	6.5
477	399.9	677	1.9	50	390	1	2.2
478	400.5	680	6.0	50	320	1	3.7
479	398.1	677	7.9	51	290	1	15.4
480	398.1	674	26.0	49	0	1	63.6
481	401.2	678	13.8	49	640	1	33.0
482	398.1	677	19.8	50	730	1	45.9
483	397.7	678	23.9	50	810	1	30.5
484	400.6	678	36.6	50	990	1	42.3
485	399.2	677	20.7	50	740	1	24.9
486	400.4	678	16.2	50	680	1	10.3
487	399.1	671	25.6	51	820	1	46.0
488	399.8	566	-23.9	50	40	0	-14.7
489	399.6	678	14.4	50	190	1	8.6
490	401.6	675	6.7	49	310	1	4.1
491	400.1	670	0.6	50	430	1	0.7
492	398.3	562	-19.7	51	740	0	-12.4
493	398.8	677	4.3	51	350	1	8.1
494	398.3	675	0.0	51	420	1	0.0
495	402.4	680	15.8	50	170	1	38.4
496	399.7	677	26.4	51	0	1	77.4
497	400.7	680	10.0	51	580	1	26.6
498	397.8	565	-12.2	51	230	0	-20.9
499	400.8	676	4.2	50	490	1	2.7
500	402.4	673	13.1	49	640	1	16.1
501	400.3	678	21.3	51	760	1	12.3
502	400.3	677	36.5	50	1000	1	65.2
503	400.9	678	6.0	50	320	1	3.9
504	400.0	670	3.1	50	370	1	3.9

Site Measured Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
505	399.2	672	11.0	50	240	1	13.9
506	399.0	673	12.6	50	210	1	16.0
507	398.2	674	4.4	50	350	1	7.6
508	399.4	676	18.4	49	130	1	38.9
509	400.6	677	12.6	49	210	1	15.5
510	402.2	568	-19.8	49	110	0	-11.6
511	399.5	676	33.4	50	970	1	86.6
512	399.5	678	14.2	50	640	1	25.2
513	402.3	677	18.6	50	720	1	47.4
514	398.4	671	28.4	50	880	1	49.8
515	401.8	679	11.8	50	240	1	6.5
516	400.8	678	16.7	49	160	1	29.3
517	398.0	673	11.6	50	240	1	21.3
518	399.6	673	26.3	51	0	1	45.6
519	400.5	673	5.8	50	330	1	14.0
520	401.8	672	16.8	51	150	1	10.6
521	401.3	565	-15.2	50	170	0	-36.6
522	402.4	563	-16.2	51	150	0	-48.0
523	398.8	567	-12.6	50	210	0	-7.6
524	401.8	673	16.7	49	690	1	30.1
525	399.2	679	4.3	50	490	1	2.8
526	398.0	563	-23.6	49	40	0	-14.4
527	399.7	677	22.2	50	80	1	12.8
528	402.2	671	10.7	50	250	1	19.9
529	402.1	676	15.2	51	170	1	38.3
530	398.2	678	18.6	50	110	1	11.3
531	399.9	675	25.2	50	0	1	80.7
532	398.6	566	-18.7	51	120	0	-34.6
533	402.2	564	-15.9	49	160	0	-28.8
534	398.5	676	23.0	50	780	1	56.7
535	401.9	563	-14.5	50	200	0	-26.2
536	398.2	674	7.0	50	310	1	16.8
537	398.2	676	10.8	50	240	1	13.4
538	400.9	676	14.7	50	180	1	18.1
539	397.5	671	11.6	50	230	1	7.2
540	400.0	567	-21.5	50	90	0	-50.6
Total Regenerated Energy per Day by 1 Elevator (Wh)							**227.1**
Total Regenerated Energy per Day by all the 5 Elevators (kWh)							**1.1**

Site Measured Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	401.5	677	11.8	50	490	0	45.6
2	398.7	679	14.5	51	530	0	35.3
3	400.2	672	0.5	51	260	0	0.3
4	404.2	679	4.3	50	340	0	3.0
5	402.7	563	-13.7	50	530	1	-60.1
6	395.1	678	1.0	49	230	1	1.3
7	398.1	679	7.7	51	90	1	23.2
8	399.5	679	1.0	50	270	0	1.2
9	403.2	680	7.7	49	410	0	33.5
10	395.0	678	3.5	49	320	0	4.0
11	403.4	677	14.8	50	550	0	18.4
12	400.2	676	6.2	49	380	0	4.1
13	396.2	679	1.5	51	220	1	4.7
14	402.6	565	-8.9	50	420	1	-5.5
15	400.9	569	-9.3	51	440	1	-18.0
16	402.3	671	1.0	51	230	1	1.2
17	398.3	566	-9.1	50	430	1	-11.3
18	395.6	677	5.2	51	350	0	8.8
19	404.3	560	-8.1	49	90	0	-5.5
20	403.3	670	11.0	51	470	0	47.7
21	399.0	679	2.0	51	210	1	3.8
22	400.4	673	14.6	49	540	0	17.0
23	399.1	675	11.4	50	490	0	14.6
24	400.8	671	6.8	49	390	0	4.7
25	403.1	680	6.8	50	110	1	48.1
26	395.2	679	13.9	50	520	0	41.3
27	395.3	674	11.5	50	470	0	27.5
28	398.3	677	2.0	49	290	0	1.4
29	399.5	679	2.0	49	210	1	2.3
30	402.6	565	-12.4	49	490	1	-36.7
31	399.2	565	-15.4	50	570	1	-27.6
32	402.4	678	5.7	49	130	1	11.0
33	401.4	675	10.8	50	460	0	12.1
34	400.7	676	10.5	49	470	0	13.1
35	397.3	561	-9.3	49	70	0	-6.1
36	398.3	560	-7.2	50	110	0	-12.8
37	395.2	674	4.6	50	340	0	5.7
38	402.5	677	10.6	49	460	0	12.4
39	404.8	673	1.5	51	280	0	1.0
40	397.0	671	5.8	50	360	0	3.6
41	400.0	678	1.5	51	220	1	5.2
42	404.4	564	-10.8	50	470	1	-33.3
43	403.3	562	-13.9	50	520	1	-9.3
44	397.3	678	1.5	50	220	1	1.8
45	403.1	560	-7.6	49	100	0	-18.9
46	396.8	563	-9.5	49	50	0	-11.8
47	400.3	677	5.3	50	360	0	6.8
48	395.2	675	4.4	50	340	0	2.9
49	395.2	563	-8.7	50	80	0	-24.7
50	402.3	568	-11.4	49	470	1	-20.5
51	401.1	561	-18.6	51	610	1	-64.9
52	404.9	674	1.0	50	230	1	1.2
53	401.9	562	-15.1	50	560	1	-17.6
54	399.3	560	-14.5	50	550	1	-10.0
55	398.1	679	3.1	50	310	0	7.5
56	401.1	567	-9.8	50	50	0	-43.2
57	399.4	564	-15.0	50	560	1	-36.3
58	399.9	568	-13.8	51	520	1	-24.0
59	396.7	567	-15.5	49	570	1	-28.1
60	396.3	671	7.4	50	400	0	50.8
61	396.9	673	7.7	50	410	0	5.4
62	400.3	561	-4.8	51	150	0	-3.5
63	398.8	565	-8.9	49	420	1	-14.7
64	396.6	569	-13.1	50	520	1	-16.0
65	403.5	676	2.0	51	210	1	1.4
66	404.0	567	-11.4	50	480	1	-20.4
67	396.1	676	5.9	50	130	1	4.0
68	398.3	680	1.0	51	230	1	1.2
69	398.5	560	-10.6	49	470	1	-13.5
70	398.7	679	0.5	50	260	0	0.6
71	403.4	677	1.0	51	270	0	1.8
72	401.9	674	3.0	50	310	0	9.6
73	398.0	679	3.3	51	320	0	6.7
74	404.0	674	0.5	50	260	0	0.3
75	403.3	569	-11.9	49	480	1	-39.2
76	403.9	673	2.0	50	210	1	3.7
77	395.4	672	8.0	49	90	1	5.6
78	402.9	675	11.9	51	0	1	15.3

Site Measured Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
79	400.7	561	-13.8	50	520	1	-16.1
80	396.0	674	13.6	50	510	0	86.2
81	398.7	677	4.5	51	340	0	5.6
82	398.8	674	1.0	49	270	0	0.6
83	398.8	563	-10.3	50	450	1	-41.6
84	404.1	672	2.4	50	200	1	4.6
85	404.8	562	-11.8	51	490	1	-8.0
86	404.8	565	-15.7	49	550	1	-17.4
87	401.7	679	5.8	49	370	0	10.4
88	398.3	565	-8.3	50	80	0	-43.8
89	404.0	563	-18.0	50	600	1	-82.0
90	395.7	567	-12.1	50	490	1	-21.2
91	402.2	568	-9.4	50	70	0	-26.3
92	400.6	570	-6.2	50	130	0	-17.8
93	398.0	677	13.1	51	0	1	71.0
94	396.9	675	10.0	51	460	0	70.4
95	404.6	675	6.7	50	110	1	8.6
96	396.0	673	11.9	50	0	1	53.4
97	400.0	570	-12.9	49	500	1	-8.6
98	398.7	561	-13.2	51	520	1	-24.2
99	396.8	671	4.9	50	350	0	3.3
100	401.3	569	-7.7	50	100	0	-13.5
101	404.2	566	-12.1	51	500	1	-28.5
102	395.6	680	18.7	51	610	0	104.8
103	398.9	670	4.4	50	340	0	3.2
104	397.8	674	2.0	50	290	0	1.4
105	402.8	674	12.1	51	0	1	90.8
106	403.1	674	18.3	50	600	0	21.0
107	404.7	675	6.1	49	370	0	14.8
108	401.6	678	9.4	50	440	0	35.0
109	400.5	567	-12.3	49	500	1	-99.0
110	401.5	567	-7.8	49	100	0	-18.0
111	402.1	679	11.3	49	480	0	51.1
112	398.5	672	0.5	49	240	1	0.9
113	395.1	678	6.5	50	380	0	15.0
114	396.0	567	-9.0	51	430	1	-47.3
115	396.6	678	7.0	50	110	1	4.8
116	403.1	677	5.0	50	150	1	6.2
117	400.7	680	11.3	51	470	0	71.6
118	396.9	676	12.1	50	0	1	31.2
119	402.9	674	2.9	50	190	1	7.2
120	395.3	564	-9.8	51	50	0	-17.5
121	402.1	566	-6.4	50	120	0	-11.6
122	400.7	567	-8.2	49	80	0	-5.9
123	400.4	676	5.8	50	130	1	36.2
124	403.2	670	11.7	51	490	0	29.8
125	402.7	675	13.2	50	510	0	54.1
126	395.8	676	3.4	50	320	0	4.3
127	400.6	674	12.3	50	0	1	88.2
128	398.0	676	11.8	51	480	0	56.7
129	400.4	566	-18.0	51	600	1	-20.8
130	397.1	672	12.1	51	490	0	8.0
131	397.9	565	-9.4	51	440	1	-11.8
132	400.2	670	5.2	49	140	1	20.7
133	398.8	673	4.9	50	350	0	11.7
134	399.2	676	10.8	51	460	0	43.3
135	400.4	672	9.0	50	430	0	5.7
136	397.3	566	-11.0	49	480	1	-8.1
137	404.2	672	12.1	49	0	1	72.3
138	398.9	676	13.1	49	520	0	16.7
139	401.5	673	10.0	51	450	0	35.5
140	402.7	567	-13.8	50	540	1	-9.8
141	402.1	567	-14.8	50	560	1	-19.1
142	399.6	679	2.6	50	200	1	4.6
143	400.4	569	-4.5	51	160	0	-13.8
144	397.5	674	1.0	51	230	1	1.8
145	396.6	569	-16.0	51	580	1	-29.3
146	399.7	679	7.3	50	390	0	32.3
147	395.2	565	-15.7	49	560	1	-47.9
148	397.5	671	6.8	50	110	1	12.7
149	401.4	567	-11.5	50	490	1	-14.8
150	398.6	670	16.2	50	590	0	137.3
151	397.0	566	-9.1	50	430	1	-10.5
152	402.7	673	12.9	50	0	1	76.4
153	402.3	674	9.6	49	450	0	59.3
154	396.8	674	7.2	50	100	1	51.5
155	398.4	679	9.9	50	450	0	6.7
156	396.9	678	11.6	50	490	0	78.1

Site Measured Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
157	400.2	568	-6.8	51	110	0	-8.6
158	397.8	679	3.3	50	180	1	21.2
159	395.8	560	-14.8	50	540	1	-16.9
160	398.3	673	9.7	51	450	0	6.5
161	396.9	565	-9.1	50	70	0	-21.7
162	396.1	673	1.5	50	220	1	2.8
163	403.1	564	-8.1	50	420	1	-15.0
164	398.1	678	14.7	51	540	0	108.3
165	403.1	670	12.3	49	0	1	78.6
166	402.2	676	2.9	49	190	1	3.8
167	398.2	673	2.5	49	300	0	7.9
168	398.4	678	10.9	50	460	0	31.1
169	404.9	567	-9.8	50	450	1	-18.1
170	403.3	674	1.0	49	230	1	0.7
171	399.0	673	0.5	50	240	1	0.6
172	401.8	562	-8.1	49	420	1	-16.2
173	395.3	679	2.1	50	210	1	2.4
174	397.6	672	18.1	49	610	0	112.0
175	399.1	671	12.9	49	0	1	63.0
176	395.0	674	11.9	50	490	0	51.3
177	399.3	564	-15.7	51	570	1	-10.9
178	395.6	674	6.7	50	110	1	28.6
179	402.9	676	17.6	50	590	0	86.0
180	402.9	675	2.1	50	290	0	3.7
181	400.8	671	2.4	50	200	1	1.7
182	401.0	678	9.4	50	430	0	10.6
183	403.9	562	-11.0	50	470	1	-41.6
184	396.2	677	2.0	49	290	0	2.4
185	400.2	566	-15.1	49	540	1	-63.4
186	403.3	673	15.7	49	560	0	82.7
187	399.5	678	1.0	50	230	1	1.1
188	400.4	676	2.9	49	190	1	7.3
189	401.9	565	-12.7	50	500	1	-8.1
190	396.5	680	12.5	51	490	0	65.4
191	401.7	678	12.5	49	0	1	82.2
192	396.8	672	1.9	50	290	0	8.3
193	403.4	568	-13.1	51	510	1	-30.2
194	400.6	569	-12.0	49	500	1	-22.4
195	404.3	677	1.0	51	270	0	0.7
196	401.9	676	12.7	51	510	0	86.5
197	400.6	677	5.0	50	150	1	28.0
198	396.3	677	12.4	51	500	0	22.3
199	404.4	672	8.3	50	410	0	14.0
200	404.4	570	-18.1	50	620	1	-92.5
201	399.0	679	9.9	49	440	0	6.4
202	397.2	673	11.8	49	490	0	59.9
203	404.6	561	-8.6	50	420	1	-20.8
204	403.0	679	4.9	50	350	0	8.7
205	399.9	563	-12.8	50	510	1	-8.8
206	402.7	570	-15.0	51	560	1	-49.0
207	399.5	676	5.7	49	370	0	3.9
208	401.9	565	-8.3	50	90	0	-25.2
209	402.8	673	1.0	49	270	0	1.2
210	401.4	564	-18.2	50	600	1	-86.2
211	402.4	673	13.9	50	530	0	35.2
212	402.0	566	-5.4	51	140	0	-10.1
213	397.8	672	11.9	50	0	1	64.7
214	395.4	561	-7.6	50	100	0	-26.5
215	401.1	675	6.4	49	120	1	23.0
216	402.7	674	3.1	49	190	1	3.7
217	396.0	679	5.5	49	360	0	33.6
218	403.4	674	0.5	50	240	1	2.7
219	397.5	679	10.5	50	470	0	76.4
220	404.1	563	-11.6	51	490	1	-62.3
221	402.5	672	0.5	49	240	1	0.4
222	403.2	672	17.2	51	610	0	42.5
223	395.5	566	-15.3	50	570	1	-10.7
224	395.9	675	10.2	51	50	1	41.4
225	397.0	564	-7.2	49	100	0	-14.0
226	398.6	673	14.1	50	520	0	72.0
227	403.0	566	-12.8	50	510	1	-79.8
228	399.2	567	-9.6	50	60	0	-11.6
229	395.5	672	2.9	50	310	0	7.4
230	397.8	677	4.6	50	340	0	5.7
231	395.5	564	-6.8	50	120	0	-12.2
232	404.0	678	12.1	50	0	1	31.2
233	399.2	567	-11.2	51	470	1	-19.8
234	395.5	567	-12.4	50	510	1	-15.2

Site Measured Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
235	398.5	565	-10.4	50	450	1	-24.1
236	397.0	672	2.0	49	290	0	7.5
237	397.6	565	-9.9	50	450	1	-18.1
238	398.5	568	-6.7	49	120	0	-7.5
239	403.3	676	11.2	50	470	0	33.2
240	397.2	671	3.0	50	310	0	3.7
241	402.6	679	0.5	51	260	0	0.3
242	400.1	568	-15.6	50	560	1	-108.2
243	395.3	674	3.4	49	320	0	12.2
244	396.9	676	11.4	50	480	0	42.7
245	400.4	566	-9.3	49	70	0	-6.3
246	401.2	564	-14.0	50	540	1	-9.2
247	403.7	570	-9.8	50	440	1	-40.1
248	396.5	677	4.8	51	350	0	3.3
249	395.1	564	-6.5	50	120	0	-4.2
250	400.3	675	9.2	49	430	0	31.3
251	398.6	569	-8.3	49	420	1	-36.6
252	400.2	566	-9.1	49	430	1	-22.6
253	401.0	562	-11.9	49	500	1	-23.2
254	403.0	680	7.7	51	400	0	21.4
255	395.6	566	-6.5	50	120	0	-23.1
256	395.0	566	-10.7	50	460	1	-20.1
257	396.9	569	-11.0	49	470	1	-12.9
258	398.6	673	1.9	49	210	1	3.8
259	397.7	563	-15.2	49	560	1	-28.4
260	398.0	678	10.1	49	450	0	34.5
261	397.4	569	-9.6	49	440	1	-22.0
262	399.4	676	4.5	50	340	0	25.2
263	399.1	565	-9.9	49	60	0	-12.0
264	404.9	672	12.7	50	0	1	63.0
265	403.7	565	-14.6	50	540	1	-10.1
266	395.7	566	-16.7	50	580	1	-20.1
267	396.3	674	8.4	51	420	0	30.1
268	398.6	564	-15.3	50	570	1	-30.3
269	399.9	674	8.0	49	410	0	38.7
270	404.9	567	-14.2	51	530	1	-9.7
271	403.8	569	-13.4	49	520	1	-9.4
272	402.1	561	-15.0	51	550	1	-44.8
273	402.4	678	4.8	49	150	1	17.8
274	396.8	567	-6.3	50	130	0	-38.7
275	403.2	676	4.1	51	170	1	16.9
276	403.3	673	9.7	50	440	0	16.4
277	399.0	563	-11.4	49	480	1	-14.3
278	398.5	670	8.2	49	410	0	5.6
279	396.2	567	-7.2	50	100	0	-26.4
280	401.3	570	-16.8	50	570	1	-28.8
281	395.8	680	8.4	51	420	0	19.8
282	398.2	567	-10.3	50	460	1	-58.4
283	402.2	676	6.9	50	390	0	25.5
284	399.8	678	7.8	49	100	1	13.1
285	404.9	678	17.0	50	600	0	53.3
286	403.7	670	6.2	51	130	1	18.3
287	399.0	674	2.5	51	300	0	3.1
288	397.1	670	2.0	50	290	0	2.5
289	402.7	679	4.0	50	170	1	19.8
290	400.7	570	-15.7	51	560	1	-28.8
291	396.1	679	9.0	50	440	0	55.0
292	399.9	674	12.9	51	500	0	14.8
293	402.6	570	-7.6	50	100	0	-8.6
294	397.5	677	11.9	50	0	1	72.5
295	402.5	673	6.7	49	390	0	28.3
296	403.0	565	-11.8	51	490	1	-30.2
297	398.7	679	15.0	49	560	0	48.5
298	398.2	677	15.4	50	570	0	10.7
299	395.2	674	7.9	51	90	1	33.4
300	404.3	562	-11.5	50	480	1	-21.6
301	401.7	674	6.8	50	390	0	33.1
302	400.4	677	8.7	49	80	1	44.7
303	404.1	673	5.4	50	360	0	29.7
304	397.6	678	2.4	50	200	1	12.1
305	401.5	673	15.8	49	580	0	108.6
306	402.7	673	4.5	50	160	1	11.2
307	402.9	673	6.3	50	380	0	4.3
308	397.0	566	-12.3	49	500	1	-37.5
309	403.3	679	0.5	51	260	0	2.4
310	399.5	568	-10.4	51	450	1	-55.7
311	401.6	678	1.5	49	220	1	3.8
312	398.2	679	17.7	51	600	0	32.6

Site Measured Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
313	398.1	565	-8.3	51	80	0	-34.6
314	403.4	570	-7.7	50	100	0	-9.3
315	400.2	561	-11.5	50	490	1	-35.4
316	395.3	569	-8.6	51	430	1	-33.7
317	399.0	570	-9.6	49	440	1	-12.1
318	395.5	677	16.1	49	580	0	109.7
319	398.7	680	12.0	50	0	1	52.3
320	395.5	673	1.0	50	230	1	1.2
321	398.9	567	-7.7	51	90	0	-47.7
322	396.2	563	-15.4	50	550	1	-43.7
323	395.3	673	2.4	50	200	1	10.4
324	404.3	562	-7.1	51	100	0	-55.1
325	395.0	560	-7.0	50	390	1	-13.1
326	396.9	567	-14.6	50	530	1	-17.1
327	400.1	570	-16.6	50	590	1	-70.7
328	396.8	672	14.0	50	530	0	118.9
329	404.1	562	-12.7	51	510	1	-91.2
330	403.8	560	-13.1	50	510	1	-16.2
331	397.9	568	-5.3	50	140	0	-46.2
332	396.8	568	-13.6	50	530	1	-91.2
333	399.3	674	4.7	50	340	0	2.9
334	403.2	567	-6.9	51	110	0	-33.8
335	401.1	679	3.9	50	170	1	5.0
336	400.2	564	-12.4	51	490	1	-14.6
337	397.0	675	0.5	50	240	1	0.9
338	395.6	564	-5.1	49	150	0	-18.7
339	403.1	673	12.5	50	0	1	73.8
340	404.1	679	17.1	50	580	0	136.2
341	397.0	675	2.9	51	190	1	18.6
342	399.3	565	-9.6	51	60	0	-11.9
343	396.4	678	5.2	50	350	0	3.3
344	397.3	568	-14.0	50	520	1	-54.2
345	397.7	671	7.9	51	410	0	23.7
346	398.5	565	-9.0	50	430	1	-22.3
347	403.1	675	12.6	50	500	0	15.3
348	399.0	561	-10.1	50	50	0	-12.0
349	400.2	562	-8.4	51	90	0	-29.8
350	403.2	560	-8.3	50	410	1	-19.5
351	397.4	561	-13.9	49	530	1	-25.8
352	398.7	678	11.6	49	480	0	13.6
353	399.1	562	-7.0	51	110	0	-20.3
354	402.7	671	15.1	51	550	0	27.9
355	404.2	565	-11.5	49	490	1	-82.8
356	398.2	679	4.1	50	330	0	9.9
357	404.3	677	8.3	50	410	0	19.2
358	398.5	564	-12.4	50	510	1	-56.7
359	396.8	679	2.9	50	190	1	5.6
360	396.6	679	6.8	49	380	0	39.6
361	395.3	566	-7.2	50	100	0	-17.9
362	403.9	567	-14.4	50	530	1	-75.0
363	395.5	675	1.9	50	290	0	1.3
364	399.9	568	-7.3	51	100	0	-4.9
365	395.4	678	4.4	51	160	1	8.3
366	403.5	570	-11.6	50	480	1	-26.2
367	404.8	568	-8.3	50	90	0	-10.0
368	396.9	676	13.3	49	510	0	91.2
369	403.1	676	12.8	49	0	1	74.3
370	397.3	679	0.5	49	260	0	1.3
371	403.7	679	5.1	50	350	0	3.5
372	404.6	672	5.2	51	350	0	3.4
373	401.4	679	8.5	50	80	1	35.2
374	404.4	674	11.8	50	480	0	75.2
375	399.0	568	-18.0	50	600	1	-11.1
376	401.7	678	2.4	49	200	1	14.5
377	398.8	680	4.2	50	330	0	23.4
378	398.7	566	-8.6	50	430	1	-37.2
379	400.4	561	-9.0	49	430	1	-10.5
380	403.0	679	12.4	51	510	0	32.5
381	402.6	675	1.0	49	270	0	1.9
382	401.5	565	-10.7	50	470	1	-41.2
383	398.3	678	4.8	50	150	1	9.1
384	400.6	678	5.7	50	360	0	31.8
385	398.2	679	12.8	51	0	1	57.6
386	404.7	570	-16.1	50	560	1	-9.9
387	399.0	673	8.5	49	420	0	15.0
388	401.2	568	-9.5	49	60	0	-16.4
389	395.3	678	9.5	50	440	0	17.5
390	398.3	565	-13.5	50	530	1	-92.4

Site Measured Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
391	405.0	563	-6.8	51	110	0	-60.2
392	402.1	672	1.9	49	210	1	8.5
393	398.2	673	0.5	50	240	1	0.3
394	397.5	562	-13.1	49	520	1	-24.4
395	398.5	672	5.5	50	360	0	28.9
396	400.6	566	-6.7	50	110	0	-4.7
397	396.9	678	2.0	50	210	1	8.8
398	398.9	562	-11.7	50	480	1	-7.6
399	397.7	560	-10.5	50	450	1	-12.3
400	403.9	562	-11.1	50	470	1	-7.1
401	396.6	674	9.4	51	430	0	26.0
402	400.7	671	5.0	51	350	0	6.1
403	403.9	566	-9.1	49	70	0	-5.9
404	395.1	568	-6.9	50	110	0	-4.8
405	401.1	674	8.5	50	420	0	10.2
406	398.9	561	-8.7	50	70	0	-5.8
407	400.5	678	9.1	50	70	1	41.9
408	399.1	566	-10.4	51	460	1	-19.2
409	399.9	564	-9.9	51	450	1	-18.7
410	400.1	563	-8.3	50	90	0	-14.5
411	401.7	678	3.1	50	310	0	2.0
412	398.2	676	9.9	50	450	0	24.3
413	395.7	673	13.1	50	500	0	14.2
414	397.0	560	-5.6	50	140	0	-9.6
415	396.8	560	-7.2	49	100	0	-5.2
416	403.0	680	1.0	50	230	1	1.9
417	397.5	564	-9.6	49	450	1	-23.4
418	404.1	673	2.0	51	210	1	3.5
419	395.6	674	5.2	51	150	1	9.0
420	399.2	568	-9.7	50	60	0	-23.5
421	404.5	679	5.5	49	360	0	3.8
422	396.3	671	5.5	51	360	0	6.4
423	398.5	564	-6.2	51	120	0	-8.0
424	395.7	675	11.1	50	470	0	7.2
425	401.2	679	13.4	50	510	0	23.6
426	401.0	562	-10.1	50	450	1	-24.6
427	403.8	561	-9.2	51	430	1	-11.3
428	398.5	677	0.5	49	240	1	1.8
429	404.8	678	11.9	50	500	0	14.7
430	404.6	567	-6.1	49	130	0	-11.2
431	400.5	672	13.5	50	510	0	8.5
432	400.9	673	11.7	50	490	0	29.5
433	397.7	679	1.4	49	280	0	1.8
434	396.4	679	1.0	51	230	1	3.1
435	401.3	677	0.5	50	240	1	0.3
436	399.7	565	-11.6	51	480	1	-14.2
437	395.4	675	12.5	51	0	1	21.7
438	397.8	568	-15.0	50	540	1	-18.2
439	400.6	676	13.2	51	510	0	16.1
440	397.6	674	9.0	50	440	0	10.9
441	404.6	676	1.4	50	280	0	1.1
442	396.4	678	8.0	50	410	0	15.2
443	398.4	676	11.3	49	480	0	21.6
444	395.3	672	5.0	51	350	0	3.4
445	404.7	562	-7.7	50	90	0	-5.4
446	404.1	568	-12.4	49	490	1	-22.0
447	398.6	564	-11.6	50	480	1	-34.3
448	403.9	677	2.0	51	210	1	2.4
449	398.6	568	-10.2	50	460	1	-18.9
450	402.2	568	-13.1	49	500	1	-8.3
451	398.0	676	9.3	50	440	0	33.7
452	399.3	678	9.4	51	440	0	23.4
453	402.9	566	-6.7	51	120	0	-7.5
454	400.8	568	-7.3	50	110	0	-8.7
455	400.6	566	-9.2	49	430	1	-16.0
456	397.6	671	12.8	49	0	1	51.7
457	399.6	672	2.5	51	200	1	4.5
458	398.2	673	8.9	49	430	0	10.4
459	402.4	673	6.8	49	390	0	8.4
460	405.0	671	6.5	50	380	0	4.3
461	397.5	676	12.0	51	490	0	14.2
462	397.9	561	-6.5	49	120	0	-11.9
463	401.6	677	5.5	49	360	0	6.6
464	403.2	671	3.1	49	310	0	1.9
465	404.3	563	-17.2	50	600	1	-62.7
466	404.1	565	-15.6	51	570	1	-10.8
467	399.1	676	1.0	50	230	1	1.7
468	404.2	570	-13.2	50	520	1	-9.3

Site Measured Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
469	400.9	678	0.5	50	240	1	0.6
470	399.0	565	-8.3	50	90	0	-9.7
471	397.5	674	9.2	51	440	0	16.5
472	400.5	569	-6.8	51	120	0	-11.7
473	404.9	676	5.0	50	350	0	6.0
474	401.4	673	6.3	51	380	0	4.2
475	402.1	565	-7.3	51	110	0	-8.7
476	396.9	567	-16.3	51	580	1	-19.6
477	399.3	675	4.8	50	350	0	6.2
478	403.3	673	12.9	51	0	1	46.2
479	395.9	561	-15.2	50	540	1	-17.6
480	399.0	570	-12.7	49	500	1	-14.6
481	396.0	671	12.1	49	490	0	74.6
482	404.2	673	6.8	49	110	1	20.8
483	395.4	679	6.2	51	130	1	20.7
484	396.5	562	-10.3	50	40	0	-12.3
485	396.8	671	4.1	50	330	0	7.1
486	401.6	671	12.3	51	490	0	8.0
487	402.2	675	3.5	51	320	0	6.3
488	404.4	673	16.9	49	590	0	20.6
489	397.7	563	-13.0	51	500	1	-38.3
490	399.8	568	-11.2	50	480	1	-34.4
Total Regenerated Energy per Day (Wh)							**1,747.0**

Site Measured Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	401.6	569	-11.1	51	460	1	-65.2
2	402.5	567	-7.0	50	110	0	-30.0
3	397.7	671	15.1	50	560	0	18.7
4	406.0	670	9.0	49	70	1	21.2
5	404.4	679	1.5	51	220	1	2.9
6	402.4	679	6.8	50	390	0	20.5
7	404.7	570	-13.0	50	520	1	-47.9
8	403.2	678	14.6	49	550	0	36.3
9	405.8	568	-15.4	49	550	1	-27.0
10	404.5	673	12.9	51	510	0	15.5
11	402.0	567	-11.4	49	480	1	-20.6
12	397.7	679	4.2	49	330	0	12.2
13	400.3	568	-10.7	49	470	1	-20.1
14	400.7	565	-13.4	51	510	1	-24.2
15	399.3	670	8.9	50	420	0	9.9
16	399.7	676	5.6	50	360	0	13.5
17	401.1	670	1.0	51	270	0	2.5
18	404.3	672	6.7	50	110	1	21.4
19	402.2	674	17.3	50	580	0	52.2
20	400.8	679	12.7	50	0	1	84.1
21	398.4	671	1.4	51	280	0	4.4
22	404.2	675	0.5	50	260	0	1.5
23	403.9	570	-11.4	50	480	1	-27.5
24	400.0	671	3.7	50	180	1	8.8
25	402.5	676	15.5	50	560	0	54.1
26	398.8	677	11.2	50	480	0	21.1
27	399.2	676	2.0	50	210	1	1.3
28	404.0	565	-13.4	50	510	1	-40.0
29	401.2	672	4.2	50	170	1	4.9
30	398.3	677	3.5	50	180	1	6.5
31	396.2	676	3.4	50	320	0	4.0
32	396.5	568	-9.8	50	60	0	-41.3
33	402.7	565	-15.7	50	570	1	-30.0
34	403.4	678	5.3	49	150	1	6.2
35	400.0	673	6.4	50	380	0	19.2
36	405.7	567	-9.1	50	430	1	-48.7
37	403.1	567	-8.8	49	80	0	-15.6
38	400.9	672	14.9	51	540	0	17.3
39	401.3	672	7.7	51	400	0	18.7
40	396.5	678	8.8	51	420	0	9.8
41	403.6	674	2.1	50	210	1	6.1
42	399.5	561	-14.2	49	540	1	-18.1
43	399.9	674	5.6	49	140	1	10.5
44	404.0	680	12.0	51	480	0	35.5
45	401.9	674	18.8	49	610	0	21.4
46	399.8	677	7.8	50	400	0	5.2
47	400.8	565	-11.4	51	470	1	-47.4
48	404.8	566	-9.1	50	70	0	-45.0
49	402.7	673	6.2	49	130	1	18.1
50	405.8	674	0.5	50	240	1	1.6
51	400.2	678	12.2	51	490	0	43.7
52	398.5	672	0.5	50	240	1	1.3
53	399.6	562	-6.0	51	130	0	-6.9
54	405.2	672	7.8	50	410	0	24.8
55	396.3	565	-15.0	50	560	1	-75.3
56	401.5	565	-7.0	49	110	0	-13.1
57	402.9	672	3.1	50	310	0	11.5
58	396.6	563	-15.9	51	560	1	-28.4
59	405.8	679	6.2	51	120	1	16.1
60	403.7	566	-15.0	50	560	1	-19.8
61	401.2	563	-6.4	49	120	0	-4.6
62	405.6	680	10.7	51	460	0	51.4
63	398.7	564	-14.4	50	530	1	-76.3
64	401.2	678	8.8	51	430	0	51.1
65	401.2	567	-11.5	50	480	1	-56.1
66	404.4	567	-14.0	49	520	1	-16.7
67	398.0	670	9.1	50	440	0	64.4
68	396.3	674	1.5	49	220	1	2.7
69	404.9	564	-12.7	50	510	1	-32.2
70	403.3	675	2.0	49	290	0	1.3
71	401.4	565	-5.0	50	150	0	-9.0
72	404.8	561	-15.8	50	560	1	-18.5
73	397.6	569	-13.2	50	510	1	-46.9
74	400.8	670	1.5	50	280	0	6.6
75	399.7	561	-11.8	49	490	1	-28.6
76	399.6	567	-6.5	50	120	0	-24.6
77	402.7	674	0.5	50	260	0	0.3
78	403.7	561	-11.3	49	470	1	-14.1

Site Measured Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
79	398.9	565	-14.1	50	530	1	-40.7
80	403.0	679	2.0	51	290	0	5.1
81	404.0	569	-8.9	51	420	1	-10.1
82	404.1	672	5.4	49	360	0	10.5
83	405.4	673	4.0	49	330	0	2.7
84	400.3	565	-11.2	49	470	1	-45.3
85	401.6	560	-9.0	50	430	1	-11.3
86	405.9	676	15.5	49	550	0	104.9
87	405.7	566	-14.4	50	530	1	-43.2
88	399.0	676	1.4	51	220	1	4.6
89	397.8	676	10.7	50	470	0	52.0
90	404.1	567	-11.1	50	470	1	-39.6
91	398.6	675	12.6	50	490	0	21.2
92	400.4	674	9.6	49	60	1	11.5
93	400.4	671	16.2	50	560	0	48.1
94	400.5	676	2.5	49	200	1	1.7
95	405.2	568	-9.4	49	440	1	-36.4
96	403.4	674	6.9	50	390	0	38.5
97	399.5	564	-13.0	51	500	1	-31.0
98	397.3	563	-14.8	51	550	1	-18.6
99	396.8	675	3.0	49	310	0	2.0
100	404.7	565	-16.3	50	560	1	-28.9
101	399.2	671	9.3	49	430	0	42.0
102	400.6	678	4.4	50	160	1	30.6
103	400.9	671	2.5	51	300	0	5.9
104	399.9	673	13.8	49	520	0	58.9
105	400.0	567	-13.1	50	500	1	-15.8
106	399.1	671	2.5	50	300	0	1.6
107	396.7	568	-14.4	49	530	1	-41.9
108	403.6	673	8.9	51	420	0	21.8
109	405.1	563	-12.1	49	490	1	-22.5
110	400.0	674	4.0	50	330	0	2.6
111	397.0	563	-13.1	49	510	1	-29.9
112	396.2	678	7.1	50	390	0	34.5
113	403.9	568	-6.7	51	390	1	-12.8
114	405.3	568	-9.9	49	450	1	-24.6
115	397.8	674	12.0	51	490	0	14.3
116	400.3	565	-9.6	50	440	1	-6.3
117	403.9	671	5.5	50	140	1	6.5
118	401.9	568	-15.5	49	570	1	-20.4
119	396.3	671	15.7	51	550	0	89.5
120	402.5	562	-16.6	49	580	1	-30.7
121	401.7	563	-15.2	50	540	1	-25.3
122	400.7	564	-14.9	49	540	1	-17.5
123	399.6	568	-7.1	50	110	0	-4.8
124	398.9	677	8.9	49	420	0	25.5
125	405.1	565	-7.7	49	90	0	-5.6
126	400.9	569	-12.0	51	480	1	-34.0
127	397.8	678	13.7	49	510	0	37.9
128	397.5	560	-8.3	51	420	1	-31.0
129	396.9	675	5.8	49	370	0	26.6
130	400.1	562	-11.4	50	480	1	-27.8
131	397.0	670	5.7	50	140	1	13.6
132	398.3	564	-7.7	49	100	0	-28.5
133	404.8	679	5.9	49	370	0	7.3
134	401.6	671	1.5	49	220	1	5.6
135	396.8	563	-9.8	50	60	0	-11.6
136	404.8	675	4.4	50	160	1	16.2
137	396.5	676	3.9	51	330	0	4.8
138	397.4	672	1.5	50	280	0	5.2
139	404.7	561	-7.6	50	100	0	-5.2
140	396.4	562	-15.2	49	550	1	-10.3
141	399.1	563	-11.5	51	480	1	-21.6
142	402.1	673	2.5	50	300	0	5.8
143	401.0	675	6.1	50	130	1	18.4
144	402.4	672	6.3	51	130	1	7.4
145	396.0	566	-8.1	50	90	0	-14.9
146	398.6	680	10.5	50	460	0	18.8
147	400.8	678	2.4	51	200	1	7.6
148	401.7	567	-9.8	51	450	1	-12.1
149	403.9	679	4.4	50	340	0	10.8
150	396.2	561	-15.3	51	560	1	-44.4
151	402.9	677	2.0	49	290	0	5.1
152	396.2	568	-9.4	50	430	1	-28.1
153	405.8	567	-6.6	51	120	0	-15.3
154	396.8	678	1.0	50	230	1	0.6
155	400.8	673	11.5	50	480	0	20.3
156	404.0	671	13.7	50	510	0	15.8

Site Measured Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
157	396.7	678	1.0	50	270	0	1.8
158	398.1	560	-11.6	50	490	1	-42.3
159	399.3	561	-15.6	50	550	1	-47.1
160	399.4	673	9.2	50	430	0	11.4
161	404.3	567	-16.7	50	570	1	-11.2
162	397.8	675	13.8	51	530	0	58.0
163	403.2	566	-11.9	50	480	1	-27.8
164	399.0	679	6.1	50	370	0	22.0
165	397.9	560	-14.2	50	520	1	-32.8
166	402.9	564	-8.1	50	90	0	-20.1
167	396.2	670	13.2	50	0	1	51.7
168	400.5	673	16.4	49	570	0	51.1
169	400.0	675	3.2	50	190	1	5.6
170	401.7	563	-9.8	50	440	1	-6.5
171	396.0	563	-8.7	51	430	1	-10.6
172	397.2	565	-16.6	49	590	1	-20.4
173	405.2	677	13.9	50	540	0	51.4
174	405.4	675	9.8	50	450	0	18.7
175	396.0	671	4.4	50	160	1	5.5
176	398.8	678	7.8	51	90	1	23.4
177	405.0	671	7.3	49	400	0	14.0
178	405.7	678	4.5	50	340	0	3.1
179	398.7	673	2.5	50	200	1	4.7
180	405.6	676	9.1	50	440	0	30.0
181	402.2	672	4.1	50	170	1	15.4
182	402.0	679	5.4	51	360	0	6.9
183	399.4	673	8.3	51	410	0	29.6
184	402.1	676	12.3	50	0	1	78.0
185	403.9	677	4.1	49	330	0	7.7
186	399.0	673	1.1	49	270	0	4.3
187	397.8	567	-14.2	50	540	1	-9.6
188	405.8	677	0.5	51	240	1	1.6
189	400.3	680	2.5	50	300	0	3.2
190	404.0	561	-11.0	50	470	1	-42.2
191	396.3	675	17.3	50	590	0	88.7
192	398.8	671	5.8	50	130	1	19.0
193	398.7	674	5.3	49	360	0	13.5
194	405.7	678	11.6	49	490	0	8.4
195	399.7	677	9.6	50	440	0	11.8
196	399.9	670	9.0	51	70	1	37.0
197	401.6	677	1.1	50	270	0	1.2
198	400.5	678	3.6	50	320	0	2.4
199	403.0	569	-12.8	50	500	1	-40.1
200	404.2	678	1.5	51	220	1	1.0
201	401.4	679	9.3	49	440	0	23.2
202	397.7	679	7.4	51	390	0	4.7
203	398.7	674	6.6	51	120	1	11.6
204	397.9	566	-13.0	51	510	1	-16.1
205	402.4	563	-8.3	51	90	0	-15.3
206	397.5	676	11.4	50	470	0	48.4
207	404.3	677	7.3	51	100	1	32.4
208	403.0	671	1.0	50	270	0	2.4
209	398.6	566	-11.6	50	480	1	-20.8
210	404.9	679	13.6	51	530	0	17.6
211	400.5	566	-11.6	50	490	1	-22.4
212	405.1	677	8.8	49	430	0	6.2
213	401.7	570	-9.0	50	70	0	-21.3
214	404.3	671	12.2	51	0	1	55.5
215	405.7	565	-7.9	49	100	0	-17.9
216	404.5	673	0.5	50	240	1	0.6
217	399.2	678	15.5	50	560	0	66.8
218	396.5	679	4.1	49	170	1	12.2
219	402.9	675	1.0	50	230	1	1.9
220	404.8	674	5.8	49	130	1	7.1
221	404.9	564	-10.7	49	40	0	-19.6
222	401.4	673	9.9	51	450	0	37.5
223	398.9	672	13.0	50	0	1	63.3
224	405.8	675	3.1	50	310	0	2.0
225	398.8	565	-11.5	49	480	1	-21.0
226	401.5	679	14.1	49	530	0	52.7
227	398.2	675	1.5	49	280	0	1.0
228	399.5	676	8.8	50	80	1	35.7
229	399.7	673	6.3	50	380	0	20.1
230	398.6	570	-12.3	50	490	1	-22.1
231	403.7	564	-10.1	49	50	0	-23.7
232	396.4	563	-11.9	51	490	1	-45.1
233	398.5	673	14.9	50	550	0	87.1
234	396.7	679	2.5	50	200	1	1.7

Site Measured Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
235	402.4	562	-6.6	50	380	1	-8.2
236	400.7	562	-9.2	50	430	1	-16.2
237	399.7	671	10.1	50	450	0	6.8
238	402.1	564	-10.4	51	450	1	-18.6
239	397.1	671	5.3	51	360	0	6.3
240	404.2	564	-13.0	51	510	1	-8.9
241	405.0	676	11.8	50	490	0	49.3
242	405.9	674	12.6	50	0	1	74.1
243	396.0	672	13.0	49	500	0	64.7
244	397.4	566	-7.2	51	390	1	-13.3
245	398.4	568	-13.7	50	520	1	-33.7
246	397.9	680	16.2	49	570	0	80.5
247	400.4	676	5.5	50	140	1	23.4
248	401.1	670	4.1	49	330	0	14.0
249	401.8	565	-14.4	50	530	1	-9.8
250	398.4	673	1.0	49	230	1	4.9
251	398.2	678	5.4	49	360	0	19.6
252	405.0	676	10.9	49	470	0	7.3
253	398.1	677	1.0	50	230	1	2.4
254	396.6	680	14.1	49	520	0	25.0
255	398.3	675	6.3	50	130	1	22.0
256	397.8	676	17.0	49	580	0	41.0
257	404.3	569	-10.6	51	460	1	-13.5
258	401.2	676	4.7	50	340	0	8.2
259	404.0	677	12.6	50	490	0	35.9
260	399.3	675	4.5	50	160	1	14.3
261	397.4	564	-6.2	50	120	0	-15.2
262	400.5	671	8.9	50	420	0	5.5
263	397.8	672	8.9	50	70	1	20.9
264	403.8	678	1.5	50	280	0	1.8
265	402.2	674	5.1	51	150	1	17.9
266	401.3	674	1.0	51	230	1	0.7
267	405.9	680	15.5	49	560	0	38.0
268	398.7	678	7.9	51	410	0	19.0
269	401.3	678	9.0	50	430	0	10.7
270	402.4	680	4.5	51	160	1	24.2
271	396.9	672	15.8	50	570	0	50.3
272	402.6	674	5.4	49	140	1	6.7
273	396.5	569	-10.4	50	450	1	-23.3
274	397.8	676	15.1	50	540	0	59.2
275	399.0	562	-10.2	50	450	1	-19.1
276	402.7	677	0.5	50	240	1	0.9
277	400.6	677	2.6	50	300	0	6.4
278	403.7	568	-8.8	51	420	1	-15.8
279	405.5	561	-15.3	50	550	1	-27.0
280	400.3	675	6.7	51	380	0	7.6
281	401.5	678	18.0	49	590	0	92.5
282	402.0	679	3.4	50	180	1	15.2
283	402.8	680	10.4	51	450	0	35.4
284	396.8	674	1.5	49	220	1	3.6
285	402.7	568	-7.3	51	110	0	-8.8
286	396.8	568	-9.8	50	440	1	-16.3
287	404.6	561	-12.4	49	500	1	-15.8
288	404.7	671	16.8	51	570	0	76.1
289	397.7	675	0.5	51	240	1	0.9
290	397.9	672	8.8	50	80	1	10.6
291	396.4	677	10.8	50	470	0	7.4
292	398.5	566	-7.7	49	410	1	-5.2
293	399.0	563	-16.1	49	560	1	-10.8
294	401.8	569	-10.5	51	450	1	-30.1
295	400.3	670	16.5	49	570	0	94.4
296	400.6	674	2.1	49	210	1	8.6
297	399.0	678	12.3	50	490	0	21.8
298	403.8	568	-10.5	49	450	1	-6.9
299	401.5	560	-13.2	51	520	1	-16.1
300	399.0	677	7.8	50	100	1	13.4
301	399.7	670	14.5	51	540	0	93.2
302	398.9	566	-9.2	50	430	1	-16.9
303	398.4	671	2.1	50	210	1	7.5
304	401.3	676	13.6	49	530	0	49.1
305	403.4	674	3.7	50	320	0	2.4
306	404.6	674	12.7	49	0	1	68.6
307	397.0	676	12.2	50	490	0	79.2
308	397.6	671	4.5	50	160	1	22.7
309	404.7	671	2.9	50	310	0	7.6
310	396.0	566	-12.0	50	480	1	-13.5
311	405.9	679	8.2	50	410	0	20.4
312	405.1	568	-12.7	51	490	1	-37.1

Site Measured Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
313	399.3	672	6.9	50	380	0	11.8
314	397.3	563	-7.0	50	110	0	-12.7
315	401.2	563	-10.3	49	460	1	-38.1
316	400.8	564	-9.2	49	430	1	-17.0
317	397.8	561	-7.6	49	100	0	-13.9
318	398.5	679	13.5	51	510	0	46.4
319	398.4	566	-14.2	51	530	1	-51.6
320	399.4	674	1.0	49	230	1	2.5
321	403.9	674	10.7	51	460	0	12.9
322	398.0	563	-9.8	50	60	0	-11.2
323	397.5	672	3.1	51	310	0	3.7
324	396.7	678	4.6	49	340	0	8.2
325	399.2	566	-13.0	49	510	1	-16.3
326	399.8	566	-13.5	49	520	1	-31.9
327	405.5	562	-12.5	50	490	1	-22.9
328	398.7	679	6.0	49	370	0	32.3
329	401.6	569	-10.1	50	460	1	-50.5
330	398.1	676	2.4	49	300	0	8.7
331	397.7	672	7.5	50	400	0	9.1
332	404.5	565	-12.1	50	500	1	-38.0
333	400.5	672	10.9	50	460	0	32.1
334	396.9	564	-15.4	50	570	1	-20.0
335	397.4	568	-12.6	50	510	1	-56.2
336	402.3	678	16.7	51	590	0	116.6
337	401.8	562	-14.4	50	550	1	-27.6
338	401.8	563	-12.0	51	490	1	-7.8
339	399.2	670	4.6	49	340	0	5.4
340	402.3	565	-13.0	50	500	1	-29.5
341	402.7	565	-9.9	51	440	1	-16.9
342	398.9	676	6.6	51	380	0	35.2
343	396.4	568	-10.2	51	460	1	-32.8
344	397.8	677	7.9	49	90	1	24.4
345	399.6	676	5.2	50	150	1	3.4
346	404.0	673	5.8	51	360	0	20.5
347	404.6	670	2.0	49	290	0	4.8
348	406.0	674	12.1	50	0	1	54.3
349	403.3	568	-14.7	51	530	1	-17.1
350	396.4	561	-9.5	50	70	0	-21.1
351	397.6	679	4.9	49	150	1	8.9
352	399.9	670	9.9	50	450	0	53.3
353	404.0	562	-14.0	50	520	1	-17.3
354	400.8	679	11.0	50	470	0	13.1
355	400.7	677	2.1	50	210	1	8.4
356	398.9	679	6.2	50	130	1	11.2
357	396.4	673	4.1	50	330	0	12.3
358	404.8	569	-12.8	49	500	1	-22.5
359	397.7	564	-14.8	49	540	1	-26.0
360	405.6	678	3.0	49	310	0	12.4
361	396.4	568	-13.4	49	510	1	-23.4
362	403.3	561	-11.5	51	480	1	-14.4
363	405.4	564	-13.7	49	520	1	-8.9
364	396.6	671	2.5	50	300	0	7.3
365	397.8	565	-11.2	50	470	1	-19.9
366	400.7	677	0.5	51	260	0	0.9
367	404.8	675	5.4	50	140	1	13.7
368	397.4	677	4.5	50	340	0	11.1
369	397.6	568	-12.1	51	480	1	-34.8
370	398.7	677	1.5	51	280	0	1.8
371	405.8	567	-7.6	51	100	0	-18.3
372	398.4	569	-7.6	50	400	1	-22.4
373	403.6	567	-4.9	50	150	0	-26.6
374	401.6	562	-7.7	49	410	1	-23.9
375	404.5	676	8.4	49	410	0	18.8
376	401.2	676	1.4	51	220	1	4.8
377	403.5	673	8.0	49	90	1	9.6
378	399.0	671	4.9	51	150	1	6.0
379	396.4	670	13.7	49	520	0	24.9
380	398.9	563	-10.0	50	450	1	-23.5
381	399.8	676	5.3	49	360	0	34.3
382	396.8	567	-10.0	49	450	1	-35.1
383	397.0	677	18.7	50	610	0	11.5
384	404.0	680	1.0	50	230	1	1.9
385	403.7	675	9.7	51	440	0	23.7
386	401.4	564	-16.7	50	580	1	-19.1
387	397.1	567	-9.6	49	440	1	-18.0
388	400.1	560	-6.4	49	120	0	-19.8
389	405.2	677	2.6	51	300	0	3.2
390	397.0	678	7.7	50	410	0	5.4

Site Measured Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
391	404.6	561	-9.5	50	440	1	-33.7
392	400.6	671	11.7	50	490	0	60.3
393	398.9	680	9.5	49	70	1	56.3
394	398.9	680	1.6	51	280	0	7.4
395	403.5	562	-8.5	50	420	1	-31.3
396	399.9	678	2.1	51	290	0	3.5
397	402.8	678	2.5	49	300	0	7.9
398	398.7	567	-15.8	50	550	1	-17.6
399	400.6	561	-14.6	50	530	1	-41.3
400	401.9	672	3.5	50	320	0	4.4
401	397.5	671	9.7	50	440	0	6.1
402	398.0	567	-12.5	51	510	1	-39.3
403	401.2	566	-9.2	51	60	0	-17.8
404	405.8	561	-14.0	50	540	1	-34.1
405	404.7	676	6.3	49	380	0	25.0
406	406.0	673	0.5	49	260	0	0.9
407	400.6	566	-8.2	49	410	1	-14.2
408	404.2	569	-15.6	51	550	1	-27.1
409	404.0	673	8.2	50	420	0	25.6
410	401.0	565	-14.4	49	540	1	-25.3
411	404.5	678	1.6	50	220	1	1.0
412	397.0	565	-10.3	50	460	1	-18.7
413	402.5	671	10.5	50	470	0	33.2
414	397.9	677	13.0	50	520	0	8.8
415	405.6	562	-10.5	49	470	1	-13.4
416	401.4	565	-14.5	50	540	1	-9.8
417	400.9	562	-13.9	50	530	1	-16.8
418	401.2	567	-9.8	51	450	1	-11.8
419	397.1	679	7.5	51	400	0	14.0
420	402.4	676	5.4	49	360	0	16.2
421	404.8	567	-13.5	51	510	1	-9.2
422	405.4	672	2.0	50	290	0	3.5
423	405.3	677	6.7	50	110	1	34.0
424	397.0	675	4.5	50	160	1	5.7
425	403.4	679	15.3	50	540	0	81.6
426	401.8	680	12.0	50	0	1	76.1
427	397.6	671	12.3	50	490	0	44.2
428	399.7	564	-12.1	50	480	1	-13.9
429	399.9	674	2.0	49	210	1	2.3
430	405.3	565	-8.9	50	70	0	-16.5
431	396.1	672	16.1	50	560	0	48.7
432	403.0	678	9.0	50	70	1	36.7
433	400.9	670	6.1	50	370	0	17.9
434	399.0	671	12.4	50	490	0	14.9
435	399.9	677	10.2	50	450	0	7.0
436	399.0	566	-15.2	50	550	1	-36.5
437	405.7	568	-14.0	49	530	1	-16.9
438	399.3	674	7.1	50	390	0	17.1
439	405.6	673	4.6	51	160	1	14.0
440	396.4	565	-13.8	51	530	1	-9.3
441	400.2	678	0.5	50	260	0	1.9
442	397.9	678	3.4	49	180	1	18.6
443	403.1	679	2.0	50	290	0	2.4
444	403.8	678	6.0	50	370	0	25.0
445	402.1	673	4.5	50	160	1	14.4
446	403.7	569	-18.1	50	600	1	-20.6
447	404.8	675	8.2	50	410	0	29.0
448	402.7	563	-10.0	50	440	1	-27.9
449	398.8	563	-6.5	50	120	0	-7.7
450	400.9	567	-13.7	51	530	1	-26.3
451	402.7	675	11.7	49	490	0	28.6
452	404.8	675	8.8	50	430	0	11.1
453	397.2	570	-6.5	49	120	0	-7.8
454	398.7	561	-15.6	49	550	1	-75.9
455	396.4	564	-6.9	50	120	0	-7.6
456	402.7	673	0.5	51	240	1	0.9
457	402.3	680	12.1	51	490	0	53.2
458	398.4	679	6.5	50	120	1	31.7
459	400.1	565	-6.7	50	120	0	-19.3
460	399.7	674	1.0	50	230	1	1.8
461	401.0	670	8.8	51	430	0	10.8
462	396.1	672	9.3	51	70	1	20.9
463	403.7	562	-5.8	49	130	0	-25.0
464	396.4	564	-12.7	50	490	1	-21.3
465	403.8	565	-8.7	49	430	1	-6.2
466	400.4	671	5.8	49	370	0	22.8
467	400.9	567	-10.5	49	460	1	-44.0
468	397.4	673	3.6	50	320	0	14.9

Site Measured Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
469	405.2	565	-12.8	50	500	1	-22.8
470	404.3	677	9.4	50	440	0	30.3
471	396.4	672	3.4	50	180	1	12.4
472	398.8	569	-14.6	50	540	1	-25.5
473	399.3	671	5.5	50	360	0	20.7
474	396.0	674	2.0	51	290	0	3.8
475	399.8	678	12.3	51	0	1	80.5
476	398.6	678	11.4	49	470	0	38.9
477	401.4	561	-16.8	50	580	1	-38.4
478	405.6	565	-9.8	49	440	1	-11.2
479	401.1	677	16.6	51	570	0	109.7
480	401.7	674	0.5	49	240	1	1.0
481	397.3	564	-8.4	50	90	0	-9.4
482	403.8	564	-8.9	50	430	1	-48.9
483	401.3	676	11.1	51	460	0	45.3
484	398.8	565	-18.5	51	600	1	-31.9
485	404.8	564	-10.1	50	450	1	-18.6
486	396.5	562	-9.3	50	440	1	-11.4
487	402.3	677	8.2	50	420	0	10.6
488	402.2	670	9.1	50	430	0	6.2
489	396.4	678	16.6	49	570	0	38.3
490	396.2	564	-9.2	49	430	1	-16.2
Total Regenerated Energy per Day (Wh)							**1,882.0**

Site Measured Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	406.9	680	12.5	50	620	0	15.1
2	399.9	566	-12.6	49	610	1	-21.6
3	399.7	677	13.4	49	0	1	25.3
4	404.8	673	10.9	51	560	0	12.7
5	403.5	678	4.6	51	210	1	8.8
6	402.5	678	19.1	50	780	0	88.2
7	399.0	679	9.7	49	90	1	23.7
8	399.4	672	1.7	49	360	0	2.2
9	404.3	561	-15.8	49	700	1	-10.6
10	403.8	570	-10.9	49	60	0	-13.6
11	406.7	565	-10.0	51	550	1	-18.1
12	399.0	671	5.9	50	180	1	3.9
13	403.8	673	4.0	49	410	0	6.8
14	401.9	680	1.7	51	280	1	5.2
15	399.8	672	6.6	50	470	0	15.0
16	401.2	677	6.6	51	470	0	4.3
17	401.4	567	-4.9	49	200	0	-3.4
18	406.3	676	10.4	49	80	1	19.2
19	403.0	679	14.6	51	650	0	34.5
20	401.1	673	13.7	49	0	1	50.3
21	406.5	672	11.0	50	570	0	7.5
22	402.6	566	-6.6	50	160	0	-4.6
23	401.8	564	-15.4	49	670	1	-26.6
24	406.2	674	1.3	50	350	0	1.5
25	401.8	566	-7.2	50	160	0	-8.2
26	402.0	562	-10.5	49	80	0	-6.8
27	401.4	676	3.6	50	400	0	4.1
28	399.5	564	-18.2	49	740	1	-21.4
29	403.7	564	-13.5	50	650	1	-9.2
30	406.7	677	13.9	49	0	1	24.4
31	400.2	671	0.8	50	340	0	0.6
32	406.4	674	15.4	50	680	0	38.1
33	404.7	678	1.7	49	360	0	1.2
34	400.0	563	-9.4	51	530	1	-16.4
35	405.6	568	-10.1	49	80	0	-12.1
36	403.8	671	5.0	50	210	1	11.1
37	398.6	670	14.8	50	670	0	18.8
38	404.4	677	4.2	49	420	0	5.5
39	398.1	672	13.6	50	0	1	42.7
40	405.2	675	2.9	50	250	1	2.1
41	405.2	672	8.0	51	510	0	9.6
42	402.6	671	3.7	51	410	0	4.6
43	399.6	673	6.3	49	470	0	11.2
44	405.7	569	-11.7	51	600	1	-8.5
45	397.1	680	3.9	49	230	1	6.9
46	406.6	671	17.4	49	720	0	11.6
47	404.4	569	-13.2	50	630	1	-34.0
48	399.6	671	0.8	50	340	0	3.0
49	406.2	676	7.2	50	150	1	5.2
50	406.4	671	14.2	51	660	0	18.1
51	397.3	680	13.9	51	0	1	42.4
52	405.3	677	9.0	50	520	0	10.5
53	399.2	561	-13.2	49	630	1	-33.8
54	400.6	566	-8.9	49	110	0	-16.6
55	397.5	564	-16.6	49	690	1	-19.1
56	402.4	679	14.4	49	650	0	25.2
57	405.0	677	3.8	51	410	0	2.6
58	403.1	563	-10.9	49	580	1	-21.4
59	400.1	567	-10.9	49	70	0	-7.0
60	399.0	676	5.7	50	190	1	6.5
61	406.4	670	10.4	49	550	0	17.7
62	401.0	565	-8.9	49	120	0	-10.0
63	402.1	672	2.2	50	270	1	3.8
64	398.9	568	-12.5	50	40	0	-28.1
65	405.2	566	-19.8	51	760	1	-33.5
66	401.0	672	6.2	49	180	1	14.7
67	401.3	561	-6.4	50	170	0	-7.6
68	399.6	563	-9.7	51	90	0	-18.7
69	406.6	676	11.8	50	600	0	15.5
70	401.6	568	-13.6	49	640	1	-31.9
71	401.7	568	-15.2	50	660	1	-25.4
72	403.2	672	7.7	49	500	0	9.5
73	404.6	563	-10.3	49	70	0	-19.5
74	397.0	674	4.5	51	220	1	2.8
75	405.2	679	9.9	50	540	0	17.9
76	404.6	568	-15.9	50	690	1	-18.8
77	402.9	678	6.0	51	180	1	7.1
78	397.4	671	1.3	51	290	1	0.9

Site Measured Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
79	399.9	671	3.1	50	390	0	3.8
80	400.5	565	-6.5	51	170	0	-12.1
81	404.3	565	-13.8	49	630	1	-31.8
82	398.8	673	14.8	50	680	0	27.2
83	397.8	565	-11.4	50	590	1	-13.7
84	399.2	677	12.0	51	590	0	21.6
85	402.1	674	14.2	50	0	1	59.2
86	406.4	675	12.1	51	600	0	8.4
87	397.7	568	-9.2	50	110	0	-25.8
88	398.7	568	-10.0	49	560	1	-30.7
89	402.6	678	3.4	50	400	0	4.2
90	405.4	679	2.2	51	370	0	1.4
91	406.6	672	1.2	50	290	1	1.7
92	398.6	568	-11.9	51	590	1	-14.3
93	400.4	561	-5.6	50	190	0	-16.7
94	397.1	566	-12.7	51	630	1	-33.0
95	402.3	671	7.5	49	500	0	9.0
96	401.0	562	-9.6	49	100	0	-11.5
97	399.8	674	2.7	49	380	0	3.2
98	397.9	671	8.7	50	110	1	36.2
99	398.7	672	19.5	51	760	0	69.2
100	406.4	674	4.0	49	230	1	9.6
101	399.0	679	1.7	50	360	0	5.2
102	397.6	679	11.8	51	60	1	7.8
103	397.7	560	-13.8	50	650	1	-9.6
104	402.4	672	10.8	50	70	1	19.6
105	404.3	672	3.1	51	390	0	9.6
106	404.4	672	10.0	51	80	1	12.8
107	402.6	567	-14.4	50	640	1	-17.2
108	401.9	677	3.5	51	400	0	2.4
109	404.9	671	0.4	49	310	1	0.5
110	404.4	563	-16.9	51	700	1	-10.7
111	404.0	569	-6.1	50	180	0	-7.2
112	403.8	562	-7.3	50	150	0	-17.3
113	401.4	680	13.6	49	0	1	49.1
114	403.5	564	-6.2	49	180	0	-4.3
115	399.4	678	5.9	51	460	0	14.3
116	406.6	567	-10.9	50	570	1	-19.2
117	406.7	565	-7.5	50	150	0	-9.4
118	402.4	674	12.4	49	600	0	8.5
119	400.8	672	7.5	51	150	1	26.5
120	400.3	675	3.9	51	410	0	11.8
121	405.7	670	7.5	50	490	0	5.2
122	398.0	677	3.5	51	240	1	8.2
123	401.3	675	9.2	50	110	1	10.9
124	406.3	566	-7.2	51	150	0	-12.8
125	406.7	677	14.4	49	650	0	36.5
126	401.8	565	-12.2	51	590	1	-20.7
127	397.9	678	11.2	49	580	0	13.6
128	398.2	562	-12.9	49	630	1	-23.3
129	398.1	674	14.0	49	630	0	32.4
130	401.6	566	-13.2	49	620	1	-16.3
131	401.5	570	-12.1	51	610	1	-22.2
132	404.8	566	-11.1	49	570	1	-13.5
133	401.4	678	11.6	50	600	0	51.0
134	401.0	676	7.6	51	150	1	4.9
135	399.9	569	-13.2	49	620	1	-15.2
136	404.5	674	3.9	50	230	1	2.7
137	397.6	676	5.6	50	190	1	6.4
138	401.1	673	10.2	50	560	0	24.3
139	402.1	674	14.3	51	0	1	42.9
140	399.4	680	6.6	51	470	0	20.4
141	398.9	563	-12.8	49	620	1	-23.9
142	402.4	673	17.7	51	720	0	51.7
143	397.5	674	1.8	51	280	1	2.0
144	400.6	679	4.0	49	230	1	9.6
145	403.5	679	3.9	51	410	0	4.8
146	398.8	676	9.0	50	120	1	15.8
147	397.2	678	2.5	49	380	0	6.0
148	398.0	562	-8.9	50	120	0	-5.9
149	404.4	675	9.4	51	530	0	11.3
150	402.4	567	-7.8	50	500	1	-5.2
151	406.3	676	5.8	51	190	1	14.3
152	404.0	563	-13.7	51	640	1	-9.0
153	407.0	560	-11.7	50	50	0	-21.2
154	405.7	678	0.8	49	340	0	1.6
155	402.8	568	-15.4	49	680	1	-19.2
156	398.7	672	5.9	51	180	1	17.3

Site Measured Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
157	406.4	673	10.1	50	560	0	13.3
158	397.4	560	-15.1	50	680	1	-10.5
159	398.5	561	-8.2	50	130	0	-19.2
160	401.5	672	6.3	51	180	1	7.7
161	401.9	672	9.0	50	520	0	10.7
162	403.1	563	-8.5	49	520	1	-21.9
163	399.4	673	2.2	51	270	1	1.4
164	403.7	675	15.1	50	680	0	54.6
165	401.6	678	3.7	51	230	1	7.1
166	404.2	679	10.1	50	560	0	6.9
167	397.0	677	7.3	50	150	1	13.6
168	397.2	676	0.4	50	330	0	1.0
169	397.4	564	-12.6	49	610	1	-30.2
170	402.7	674	7.8	50	500	0	23.7
171	403.0	680	13.6	50	0	1	50.7
172	406.7	678	3.1	49	390	0	13.5
173	400.2	677	8.5	50	130	1	20.2
174	402.9	563	-17.2	49	710	1	-11.8
175	405.8	563	-8.4	51	120	0	-25.8
176	397.1	673	7.1	50	160	1	16.7
177	399.4	680	2.7	49	380	0	6.0
178	406.0	568	-13.2	50	620	1	-15.2
179	399.0	563	-15.6	49	690	1	-10.3
180	402.4	672	14.4	51	660	0	27.2
181	403.6	676	4.5	49	220	1	5.4
182	402.9	676	3.7	50	230	1	4.6
183	404.7	569	-8.1	51	130	0	-19.4
184	404.1	677	11.1	49	60	1	26.8
185	398.6	672	5.8	50	450	0	9.9
186	403.5	671	5.4	51	190	1	17.1
187	406.1	676	12.3	49	610	0	22.8
188	400.7	562	-12.1	51	610	1	-8.1
189	399.4	678	10.6	51	570	0	7.0
190	397.9	675	7.8	50	500	0	14.0
191	403.4	673	13.9	51	0	1	51.0
192	402.7	675	8.6	50	510	0	10.1
193	404.8	673	15.5	49	690	0	38.6
194	403.0	675	9.7	50	90	1	31.1
195	399.1	674	4.7	49	210	1	5.9
196	404.2	674	3.4	51	400	0	6.3
197	405.1	680	4.1	51	420	0	10.2
198	406.3	675	7.8	49	140	1	24.2
199	397.6	676	16.7	50	720	0	41.1
200	402.1	673	4.6	49	210	1	5.6
201	398.1	569	-10.8	50	580	1	-7.7
202	406.9	676	7.1	49	160	1	8.7
203	397.4	675	17.4	51	710	0	62.0
204	404.3	673	14.1	50	0	1	42.8
205	398.3	678	7.9	49	500	0	17.8
206	405.3	566	-10.0	51	550	1	-12.7
207	406.0	671	0.4	50	310	1	1.0
208	401.1	676	5.7	51	450	0	10.1
209	406.7	679	2.6	51	380	0	3.0
210	401.2	570	-11.8	49	600	1	-22.9
211	401.3	676	0.4	51	330	0	0.8
212	404.6	673	8.2	49	130	1	20.5
213	399.5	674	6.0	49	460	0	7.1
214	398.4	674	10.4	49	80	1	6.7
215	400.6	674	13.8	50	630	0	15.5
216	399.9	568	-11.7	49	590	1	-7.5
217	400.5	674	10.2	50	560	0	12.6
218	403.9	674	14.1	50	640	0	17.1
219	405.3	670	14.1	50	0	1	53.0
220	401.0	674	4.9	51	440	0	6.3
221	403.1	679	17.7	51	720	0	30.9
222	404.7	561	-10.2	50	550	1	-11.7
223	401.6	563	-9.5	50	550	1	-11.9
224	401.7	676	20.7	50	780	0	59.3
225	398.3	564	-9.8	49	550	1	-11.9
226	406.4	671	3.6	49	400	0	4.1
227	400.8	672	8.7	51	120	1	16.4
228	405.8	561	-10.6	50	570	1	-20.4
229	401.1	672	13.0	50	620	0	40.0
230	404.8	680	2.1	51	270	1	4.0
231	400.0	673	0.8	49	300	1	1.6
232	404.1	679	8.5	49	520	0	5.8
233	404.7	674	5.3	49	440	0	6.6
234	398.4	671	8.6	49	520	0	10.9

Site Measured Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
235	400.2	561	-10.4	49	570	1	-19.1
236	405.9	680	19.9	49	760	0	47.1
237	401.9	565	-14.3	50	650	1	-16.6
238	401.5	560	-11.2	51	590	1	-21.4
239	402.6	565	-11.0	50	580	1	-7.9
240	397.2	670	7.4	51	500	0	18.2
241	402.5	676	0.4	49	330	0	0.7
242	399.0	560	-14.0	51	650	1	-9.9
243	404.3	675	14.2	51	0	1	48.7
244	405.9	671	9.5	50	530	0	11.5
245	402.1	676	3.8	50	410	0	4.8
246	398.5	674	18.1	50	720	0	29.8
247	398.3	670	5.6	51	190	1	13.7
248	401.2	679	1.7	51	360	0	3.1
249	399.2	676	4.7	50	210	1	11.3
250	398.8	673	9.4	50	110	1	10.8
251	398.5	677	16.7	50	690	0	66.5
252	400.1	672	3.1	50	250	1	2.0
253	397.8	673	7.3	49	150	1	17.7
254	402.3	671	13.6	51	640	0	32.1
255	402.0	561	-12.7	50	630	1	-16.6
256	405.5	561	-9.1	50	530	1	-22.2
257	399.5	672	7.5	49	490	0	8.7
258	398.1	674	4.9	49	210	1	5.6
259	400.9	679	4.4	51	420	0	7.7
260	404.5	670	13.8	50	630	0	16.2
261	397.0	560	-8.3	50	130	0	-9.8
262	400.8	675	8.1	49	140	1	13.9
263	404.7	670	1.3	50	290	1	0.9
264	398.0	566	-11.6	49	590	1	-7.6
265	403.8	675	15.3	50	670	0	18.5
266	399.2	680	2.7	51	380	0	3.2
267	401.8	568	-11.9	50	590	1	-21.8
268	406.9	676	3.7	51	410	0	4.6
269	402.9	672	3.3	49	240	1	6.4
270	398.9	563	-16.4	49	700	1	-11.0
271	405.2	676	11.3	51	580	0	42.9
272	406.7	671	3.0	50	250	1	2.2
273	403.4	676	7.5	49	140	1	27.2
274	401.2	677	13.9	49	630	0	49.2
275	402.1	569	-10.2	49	560	1	-7.1
276	400.8	679	13.6	50	0	1	16.8
277	401.1	678	11.1	50	590	0	21.9
278	406.3	564	-12.3	49	610	1	-14.8
279	397.7	675	10.2	51	550	0	17.4
280	404.6	672	0.4	50	310	1	0.3
281	404.0	564	-16.1	50	680	1	-18.5
282	398.0	560	-16.9	50	700	1	-19.4
283	398.3	671	10.5	50	570	0	19.0
284	402.9	568	-9.8	50	550	1	-12.4
285	400.4	673	8.0	50	140	1	14.6
286	401.6	677	8.4	50	520	0	37.6
287	401.4	677	4.4	51	220	1	10.0
288	400.0	561	-11.2	49	590	1	-13.8
289	404.9	568	-5.2	49	200	0	-6.1
290	406.1	679	9.0	49	530	0	17.1
291	401.3	679	12.7	49	610	0	8.7
292	402.6	671	14.3	50	0	1	51.3
293	405.8	670	9.7	50	550	0	23.3
294	399.7	569	-11.2	51	580	1	-34.3
295	401.2	676	0.8	49	340	0	1.6
296	405.1	679	8.4	50	520	0	15.6
297	400.6	676	5.4	49	190	1	10.1
298	404.3	674	3.3	51	400	0	2.3
299	397.5	563	-11.7	51	600	1	-22.5
300	401.3	674	8.6	49	520	0	20.0
301	399.3	670	3.9	49	230	1	7.0
302	406.3	560	-8.2	49	120	0	-26.9
303	403.4	673	10.1	50	80	1	37.0
304	402.8	564	-8.6	51	130	0	-10.2
305	401.1	672	3.8	49	410	0	9.6
306	403.0	565	-14.0	50	630	1	-16.2
307	400.9	678	8.8	51	110	1	22.8
308	402.9	673	1.3	51	350	0	2.3
309	404.2	567	-11.7	51	600	1	-15.3
310	404.4	673	17.2	49	720	0	50.4
311	405.0	673	13.9	50	0	1	33.1
312	403.8	562	-9.9	49	540	1	-17.9

Site Measured Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
313	397.5	676	8.5	49	520	0	5.7
314	405.9	670	5.8	51	450	0	10.5
315	402.2	565	-10.9	50	570	1	-12.6
316	401.4	680	12.0	50	610	0	8.1
317	400.5	563	-9.2	51	530	1	-11.4
318	397.4	568	-9.4	49	100	0	-11.5
319	400.5	677	13.0	50	610	0	29.8
320	397.8	567	-12.8	49	620	1	-8.3
321	403.0	674	10.6	50	70	1	38.2
322	404.4	676	8.9	49	530	0	21.2
323	402.5	677	10.2	51	560	0	13.1
324	406.7	671	8.2	49	120	1	25.8
325	402.9	673	5.2	49	440	0	6.0
326	403.7	674	11.6	50	580	0	27.2
327	405.1	567	-10.3	51	560	1	-6.7
328	402.2	678	4.7	51	210	1	3.2
329	397.9	676	7.0	51	160	1	16.5
330	405.4	566	-15.3	51	660	1	-10.2
331	398.0	679	8.6	51	520	0	27.0
332	405.1	676	2.1	50	370	0	2.8
333	398.8	565	-14.8	49	680	1	-10.3
334	398.3	562	-12.7	49	610	1	-14.9
335	401.2	567	-12.9	49	610	1	-14.6
336	406.7	672	0.9	50	340	0	2.6
337	406.0	671	14.2	49	0	1	48.6
338	404.7	677	7.8	51	500	0	14.3
339	399.6	675	2.5	49	260	1	3.1
340	403.1	562	-14.8	51	660	1	-18.1
341	404.9	567	-11.3	51	70	0	-34.1
342	399.0	673	10.3	50	550	0	11.9
343	400.9	673	10.3	50	90	1	35.1
344	406.0	675	3.5	51	400	0	2.2
345	398.3	564	-7.1	51	160	0	-16.6
346	400.9	677	2.2	50	270	1	3.8
347	403.9	680	8.0	50	510	0	10.4
348	400.2	566	-11.6	49	590	1	-8.2
349	405.6	672	3.3	50	240	1	4.1
350	400.5	679	17.8	49	720	0	53.8
351	401.9	678	4.5	51	220	1	13.5
352	405.4	676	6.4	49	170	1	4.4
353	405.1	676	15.5	50	690	0	51.2
354	402.3	563	-15.7	50	690	1	-28.7
355	399.1	566	-12.5	49	600	1	-8.5
356	402.3	676	12.6	49	600	0	35.9
357	399.7	568	-18.9	50	750	1	-34.8
358	401.3	673	1.2	51	290	1	1.5
359	397.4	675	2.9	51	250	1	3.7
360	398.2	670	3.6	50	400	0	8.2
361	402.6	567	-9.4	50	110	0	-5.8
362	401.2	677	7.6	50	150	1	18.6
363	403.4	674	5.9	50	450	0	16.8
364	398.6	675	2.2	49	270	1	2.6
365	397.6	675	8.4	49	510	0	14.1
366	401.0	673	10.5	50	80	1	31.0
367	406.1	671	2.2	50	370	0	3.9
368	401.2	565	-17.5	49	740	1	-33.4
369	397.7	672	0.4	49	330	0	0.5
370	398.5	564	-14.7	49	660	1	-26.2
371	401.5	670	5.2	50	440	0	19.2
372	402.4	674	13.3	50	0	1	48.7
373	401.0	674	0.9	50	340	0	1.5
374	397.8	677	0.8	51	300	1	1.1
375	406.6	671	5.2	50	440	0	9.8
376	399.9	676	3.1	50	390	0	2.1
377	405.1	679	4.7	51	210	1	15.0
378	399.6	675	11.0	50	580	0	39.1
379	398.2	560	-9.8	49	550	1	-40.6
380	402.0	676	6.3	51	470	0	11.4
381	404.2	672	14.9	50	680	0	27.4
382	399.0	568	-12.5	49	620	1	-14.8
383	397.9	680	7.1	50	160	1	8.4
384	403.1	568	-9.8	51	540	1	-6.2
385	397.1	678	18.8	50	740	0	65.3
386	398.2	561	-15.2	49	690	1	-30.2
387	400.1	677	8.9	51	110	1	22.5
388	400.6	677	13.1	50	630	0	31.1
389	405.2	671	2.9	50	250	1	5.3
390	399.6	679	1.3	51	290	1	0.9

Site Measured Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
391	402.7	670	7.9	51	510	0	25.8
392	402.3	674	10.8	51	80	1	12.8
393	406.7	673	7.9	51	140	1	9.2
394	402.2	675	10.0	50	560	0	36.7
395	399.0	563	-12.9	50	620	1	-15.0
396	403.5	672	5.2	49	440	0	3.6
397	397.5	677	0.5	49	310	1	0.5
398	400.1	564	-13.9	51	650	1	-9.5
399	400.3	680	7.2	51	490	0	8.6
400	398.6	568	-10.3	51	560	1	-30.8
401	401.1	675	9.3	51	530	0	32.3
402	405.1	671	2.6	50	260	1	7.5
403	404.4	674	8.0	50	510	0	23.9
404	403.8	673	3.5	49	240	1	4.3
405	404.7	570	-11.3	50	590	1	-22.1
406	402.7	674	10.7	49	560	0	25.6
407	398.2	564	-15.2	50	680	1	-28.0
408	401.2	671	6.0	50	460	0	17.7
409	402.4	679	5.6	49	190	1	10.7
410	402.0	563	-11.7	49	600	1	-30.7
411	403.5	679	17.9	51	730	0	76.3
412	406.3	677	9.5	51	110	1	31.9
413	399.3	673	6.6	49	470	0	15.3
414	398.7	567	-10.7	50	70	0	-12.4
415	398.0	569	-13.5	51	630	1	-15.6
416	400.1	675	10.4	50	550	0	6.8
417	404.4	561	-13.1	50	610	1	-30.7
418	398.1	676	19.2	51	770	0	60.2
419	398.8	671	9.4	50	90	1	35.4
420	403.0	672	7.1	49	480	0	17.0
421	404.6	568	-14.1	51	660	1	-34.8
422	399.7	565	-15.4	51	680	1	-10.4
423	404.0	677	16.2	51	690	0	39.7
424	403.1	679	3.8	50	410	0	4.9
425	400.5	561	-12.4	49	620	1	-23.3
426	397.4	568	-9.5	50	550	1	-18.2
427	406.5	676	13.1	49	620	0	31.2
428	404.7	671	18.1	51	740	0	32.7
429	401.9	565	-12.1	50	610	1	-15.6
430	402.8	562	-10.5	49	570	1	-7.1
Total Regenerated Energy per Day (Wh)							**2,703.7**

ANNEXURE – 02

Reference Torque Data – Office Building Complex @ Narahenpita

No.	Time (s)	Reference Torque (Nm)
1	0	-323
2	29	-284
3	42	-206
4	64	-284
5	90	-127
6	112	-206
7	128	353
8	155	-49
9	184	-284
10	203	-127
11	225	-353
12	238	-402
13	254	-294
14	286	-363
15	327	20
16	355	402
17	374	304
18	391	372
19	407	265
20	433	-284
21	455	-519
22	484	-372
23	510	-333
24	532	-304
25	558	-304
26	594	-98
27	617	-196
28	629	186
29	675	108
30	704	225
31	720	363
32	746	274
33	759	-529
34	778	-108
35	804	-441
36	821	-274
37	843	-431
38	859	-333
39	888	-186
40	920	363
41	940	382
42	964	196
43	981	59
44	997	363
45	1,014	-333
46	1,045	-539
47	1,065	-421
48	1,077	-333
49	1,097	-323
50	1,126	265
51	1,160	372
52	1,172	-235
53	1,203	-441
54	1,225	412
55	1,248	353
56	1,277	137
57	1,303	402
58	1,325	176
59	1,351	314
60	1,363	255
61	1,386	-559
62	1,405	-451
63	1,431	-441
64	1,467	-137
65	1,503	-333
66	1,525	353
67	1,545	412
68	1,569	274
69	1,589	353
70	1,620	402
71	1,649	157
72	1,671	-441
73	1,691	-382
74	1,713	-255
75	1,735	-78
76	1,767	176
77	1,790	402
78	1,806	333
79	1,829	167
80	1,848	245
81	1,870	-343
82	1,902	-441
83	1,931	-304
84	1,948	-196
85	1,960	-216
86	1,980	402
87	2,014	372
88	2,026	333
89	2,046	363
90	2,075	470
91	2,106	392
92	2,128	-255
93	2,141	-372
94	2,160	-441
95	2,186	-274
96	2,208	-157
97	2,225	-265
98	2,237	-108
99	2,269	-127
100	2,305	-265
101	2,318	402
102	2,344	304
103	2,366	-29
104	2,412	304
105	2,439	294
106	2,456	353
107	2,468	216
108	2,497	363
109	2,510	-167
110	2,526	-353
111	2,571	-255
112	2,597	-39
113	2,610	-98
114	2,629	-69
115	2,661	265
116	2,690	216
117	2,722	39
118	2,748	88
119	2,765	167
120	2,777	392
121	2,799	333
122	2,819	480
123	2,831	402
124	2,853	-274
125	2,875	-451
126	2,888	-20
127	2,919	-343
128	2,935	-343
129	2,962	294
130	2,983	-294
131	3,022	-441
132	3,041	167
133	3,073	-137
134	3,090	-274
135	3,106	-294
136	3,126	245
137	3,155	167
138	3,177	39
139	3,209	-49
140	3,253	-235
141	3,273	-59
142	3,299	274
143	3,328	245
144	3,344	69
145	3,364	265
146	3,396	-382
147	3,408	176
148	3,425	-88
149	3,463	-441
150	3,488	431
151	3,514	-412
152	3,540	-118
153	3,557	-235
154	3,586	294
155	3,608	-78
156	3,625	304
157	3,641	88
158	3,658	-59
159	3,687	-323
160	3,713	-343
161	3,740	274
162	3,789	-441
163	3,819	196
164	3,874	-363
165	3,925	323
166	3,953	206
167	3,982	-49
168	4,016	-147
169	4,035	265
170	4,068	-323
171	4,097	137
172	4,133	284
173	4,155	-157
174	4,187	-294
175	4,216	-343
176	4,235	-441
177	4,258	314
178	4,289	294
179	4,305	-343
180	4,325	245
181	4,355	235
182	4,384	-441
183	4,420	-206
184	4,456	-353
185	4,482	372
186	4,512	-304
187	4,552	127
188	4,578	284
189	4,600	-59
190	4,623	49
191	4,658	412
192	4,690	206
193	4,726	127
194	4,748	-392
195	4,788	-20
196	4,817	402
197	4,852	-441
198	4,884	186
199	4,931	-441
200	4,967	255
201	4,986	284
202	5,015	-235
203	5,042	-412
204	5,069	294
205	5,101	-333
206	5,121	-10
207	5,140	255
208	5,160	78
209	5,199	-29
210	5,225	-108
211	5,245	-69
212	5,283	421
213	5,319	-363
214	5,341	294
215	5,370	78
216	5,391	-314
217	5,427	-157
218	5,454	314
219	5,485	108
220	5,517	-314
221	5,538	-372
222	5,570	-49
223	5,602	206
224	5,632	-88
225	5,654	-392
226	5,705	274
227	5,740	-167
228	5,764	137
229	5,784	-137
230	5,813	-382
231	5,842	568
232	5,881	-392
233	5,893	-10
234	5,927	-69
235	5,953	-167
236	5,975	225
237	6,024	-20
238	6,073	255
239	6,094	10
240	6,116	-382
241	6,142	-167
242	6,174	-333
243	6,201	39
244	6,238	-343
245	6,264	-274
246	6,295	431
247	6,323	-274
248	6,372	78
249	6,396	118
250	6,413	-196
251	6,442	39
252	6,478	225
253	6,510	-255
254	6,552	137
255	6,582	-186
256	6,610	-372
257	6,632	294
258	6,665	-363
259	6,700	69
260	6,741	-59
261	6,778	88
262	6,794	-69
263	6,828	196
264	6,860	157
265	6,887	-186
266	6,932	265
267	6,945	255
268	6,967	-392
269	6,999	-29
270	7,035	78
271	7,055	216
272	7,091	-186
273	7,131	255
274	7,143	206
275	7,172	-108
276	7,199	108
277	7,230	-29
278	7,246	-265
279	7,266	284
280	7,288	-265
281	7,320	402
282	7,342	-363
283	7,381	284
284	7,422	265
285	7,442	-294
286	7,478	20
287	7,504	-412
288	7,528	245
289	7,555	206
290	7,584	-323
291	7,603	-284
292	7,634	69
293	7,666	69
294	7,696	-372
295	7,732	235
296	7,744	-392
297	7,780	-49
298	7,809	245
299	7,845	216
300	7,874	274
301	7,910	-304
302	7,951	314
303	7,987	-353
304	8,011	284
305	8,039	-147
306	8,069	157
307	8,103	-88
308	8,128	98
309	8,162	-333
310	8,216	59
311	8,243	-118
312	8,274	-402
313	8,306	363
314	8,365	-245
315	8,405	49
316	8,422	216

Reference Torque Data – Office Building Complex @ Narahenpita

No.	Time (s)	Reference Torque (Nm)
317	8,452	-49
318	8,482	245
319	8,524	-363
320	8,550	-39
321	8,581	294
322	8,623	-49
323	8,652	88
324	8,669	-402
325	8,698	88
326	8,727	-157
327	8,743	-225
328	8,780	274
329	8,803	274
330	8,834	-294
331	8,866	216
332	8,915	-284
333	8,946	255
334	8,975	-127
335	9,006	-127
336	9,032	-402
337	9,048	274
338	9,092	137
339	9,109	-255
340	9,135	-245
341	9,155	294
342	9,191	-353
343	9,235	274
344	9,280	421
345	9,302	-304
346	9,331	314
347	9,352	-157
348	9,381	225
349	9,403	-323
350	9,445	98
351	9,484	176
352	9,521	-78
353	9,554	274
354	9,576	-333
355	9,596	235
356	9,612	-176
357	9,638	-255
358	9,658	-304
359	9,713	-382
360	9,742	314
361	9,781	216
362	9,793	-235
363	9,816	-20
364	9,835	-382
365	9,857	225
366	9,899	-255
367	9,938	-255
368	9,964	88
369	9,996	245
370	10,018	-451
371	10,054	-382
372	10,090	-235
373	10,119	235
374	10,166	-274
375	10,201	235
376	10,247	-78
377	10,268	206
378	10,299	206
379	10,311	-353
380	10,347	235
381	10,369	176
382	10,400	137
383	10,416	284
384	10,448	-343
385	10,479	353
386	10,502	-304
387	10,518	10
388	10,547	-343
389	10,599	500
390	10,651	-78
391	10,668	-304
392	10,698	294
393	10,727	-353
394	10,759	69
395	10,791	274
396	10,804	-323
397	10,835	108
398	10,859	-382
399	10,895	392
400	10,923	-323
401	10,959	88
402	10,978	294
403	11,008	-284
404	11,049	-323
405	11,072	-108
406	11,094	-353
407	11,120	39
408	11,139	-284
409	11,171	196
410	11,200	353
411	11,232	284
412	11,266	-333
413	11,292	-39
414	11,324	176
415	11,340	-470
416	11,363	265
417	11,379	-333
418	11,392	-127
419	11,418	-284
420	11,430	-49
421	11,459	-206
422	11,472	-294
423	11,498	-353
424	11,527	392
425	11,543	176
426	11,566	412
427	11,602	284
428	11,614	363
429	11,640	441
430	11,681	108
431	11,713	-519
432	11,726	-363
433	11,758	-470
434	11,770	-127
435	11,787	-206
436	11,813	-284
437	11,844	-363
438	11,873	-284
439	11,896	-118
440	11,908	382
441	11,934	206
442	11,957	108
443	11,976	255
444	11,996	265
445	12,012	216
446	12,029	-441
447	12,058	59
448	12,092	363
449	12,104	-333
450	12,126	-39
451	12,143	-127
452	12,174	-353
453	12,191	-127
454	12,220	-206
455	12,249	372
456	12,271	216
457	12,297	-441
458	12,329	186
459	12,352	353
460	12,364	-186
461	12,403	-323
462	12,425	-235
463	12,447	-98
464	12,464	-69
465	12,486	-137
466	12,515	-441
467	12,532	274
468	12,558	10
469	12,580	333
470	12,609	127
471	12,629	196
472	12,645	235
473	12,671	274
474	12,684	235
475	12,710	-353
476	12,732	-88
477	12,770	-59
478	12,787	-127
479	12,809	-157
480	12,838	-441
481	12,860	186
482	12,883	274
483	12,905	353
484	12,931	529
485	12,957	284
486	12,983	225
487	12,996	363
488	13,015	402
489	13,028	-255
490	13,040	-137
491	13,053	-20
492	13,079	-284
493	13,091	-98
494	13,120	-29
495	13,140	-274
496	13,172	-441
497	13,208	127
498	13,251	216
499	13,280	39
500	13,302	186
501	13,328	304
502	13,341	539
503	13,360	-127
504	13,382	-78
505	13,418	-206
506	13,444	-235
507	13,460	-98
508	13,480	-314
509	13,511	-235
510	13,527	333
511	13,540	510
512	13,591	186
513	13,610	265
514	13,633	421
515	13,662	-206
516	13,674	-284
517	13,703	-206
518	13,723	-441
519	13,752	-118
520	13,774	-294
521	13,796	274
522	13,828	294
523	13,853	235
524	13,875	235
525	13,904	39
526	13,926	402
527	13,957	-363
528	13,970	-196
529	13,989	-274
530	14,021	-333
531	14,034	-441
532	14,070	323
533	14,099	284
534	14,118	323
535	14,141	245
536	14,170	-137
537	14,202	-206
538	14,218	-265
539	14,244	-216
540	14,257	353

Simulation Speed Data - Office Building Complex @ Narahenpita

No.	Time (s)	Simulation Speed (rpm)
1	0	0
2	19	-190
3	28	0
4	39	190
5	41	0
6	61	190
7	63	0
8	83	190
9	89	0
10	109	190
11	111	0
12	121	190
13	127	0
14	138	-190
15	154	0
16	174	190
17	183	0
18	193	190
19	202	0
20	222	190
21	224	0
22	235	-190
23	237	0
24	247	-190
25	253	0
26	273	-190
27	285	0
28	324	190
29	326	0
30	337	190
31	354	0
32	364	-190
33	373	0
34	384	-190
35	390	0
36	400	-190
37	406	0
38	426	-190
39	432	0
40	452	190
41	454	0
42	474	-190
43	483	0
44	503	-190
45	509	0
46	529	-190
47	531	0
48	551	-190
49	557	0
50	577	-190
51	593	0
52	604	190
53	616	0
54	626	190
55	628	0
56	658	190
57	674	0
58	694	190
59	703	0
60	713	190
61	719	0
62	739	-190
63	745	0
64	756	190
65	758	0
66	768	-190
67	777	0
68	797	190
69	803	0
70	814	190
71	820	0
72	840	190
73	842	0
74	852	-190
75	858	0
76	878	190
77	887	0
78	907	190
79	919	0
80	930	-190
81	939	0
82	949	190
83	963	0
84	974	190
85	980	0
86	990	190
87	996	0
88	1,007	-190
89	1,013	0
90	1,042	190
91	1,044	0
92	1,055	-190
93	1,064	0
94	1,074	-190
95	1,076	0
96	1,087	-190
97	1,096	0
98	1,116	190
99	1,125	0
100	1,145	190
101	1,159	0
102	1,169	-190
103	1,171	0
104	1,182	190
105	1,202	0
106	1,212	190
107	1,224	0
108	1,235	-190
109	1,247	0
110	1,267	-190
111	1,276	0
112	1,296	190
113	1,302	0
114	1,322	-190
115	1,324	0
116	1,344	190
117	1,350	0
118	1,360	-190
119	1,362	0
120	1,373	190
121	1,385	0
122	1,395	-190
123	1,404	0
124	1,424	-190
125	1,430	0
126	1,450	190
127	1,466	0
128	1,486	190
129	1,502	0
130	1,522	190
131	1,524	0
132	1,535	-190
133	1,544	0
134	1,554	190
135	1,568	0
136	1,579	190
137	1,588	0
138	1,617	-190
139	1,619	0
140	1,639	-190
141	1,648	0
142	1,668	190
143	1,670	0
144	1,681	190
145	1,690	0
146	1,710	-190
147	1,712	0
148	1,722	-190
149	1,734	0
150	1,754	190
151	1,766	0
152	1,777	190
153	1,789	0
154	1,799	-190
155	1,805	0
156	1,816	190
157	1,828	0
158	1,838	190
159	1,847	0
160	1,867	-190
161	1,869	0
162	1,889	-190
163	1,901	0
164	1,921	190
165	1,930	0
166	1,941	-190
167	1,947	0
168	1,957	190
169	1,959	0
170	1,970	190
171	1,979	0
172	1,999	-190
173	2,013	0
174	2,023	-190
175	2,025	0
176	2,036	-190
177	2,045	0
178	2,065	190
179	2,074	0
180	2,103	190
181	2,105	0
182	2,125	-190
183	2,127	0
184	2,138	190
185	2,140	0
186	2,150	-190
187	2,159	0
188	2,179	190
189	2,185	0
190	2,205	-190
191	2,207	0
192	2,218	190
193	2,224	0
194	2,234	-190
195	2,236	0
196	2,256	190
197	2,268	0
198	2,288	190
199	2,304	0
200	2,315	190
201	2,317	0
202	2,337	-190
203	2,343	0
204	2,353	-190
205	2,365	0
206	2,395	190
207	2,411	0
208	2,421	190
209	2,438	0
210	2,449	-190
211	2,455	0
212	2,465	-190
213	2,467	0
214	2,487	190
215	2,496	0
216	2,507	-190
217	2,509	0
218	2,519	190
219	2,525	0
220	2,564	190
221	2,570	0
222	2,590	-190
223	2,596	0
224	2,607	190
225	2,609	0
226	2,619	190
227	2,628	0
228	2,648	190
229	2,660	0
230	2,680	-190
231	2,689	0
232	2,709	-190
233	2,721	0
234	2,741	190
235	2,747	0
236	2,758	190
237	2,764	0
238	2,774	190
239	2,776	0
240	2,796	190
241	2,798	0
242	2,809	190
243	2,818	0
244	2,828	190
245	2,830	0
246	2,850	-190
247	2,852	0
248	2,872	190
249	2,874	0
250	2,885	-190
251	2,887	0
252	2,907	190
253	2,918	0
254	2,928	-190
255	2,934	0
256	2,945	-190
257	2,961	0
258	2,971	190
259	2,982	0
260	3,012	-190
261	3,021	0
262	3,031	190
263	3,040	0
264	3,060	190
265	3,072	0
266	3,083	190
267	3,089	0
268	3,099	190
269	3,105	0
270	3,116	190
271	3,125	0
272	3,135	-190
273	3,154	0
274	3,174	190
275	3,176	0
276	3,196	190
277	3,208	0
278	3,228	190
279	3,252	0
280	3,263	190
281	3,272	0
282	3,292	190
283	3,298	0
284	3,318	190
285	3,327	0
286	3,337	-190
287	3,343	0
288	3,354	190
289	3,363	0
290	3,383	-190
291	3,395	0
292	3,405	-190
293	3,407	0
294	3,418	190
295	3,424	0
296	3,453	190
297	3,462	0
298	3,473	190
299	3,487	0
300	3,497	190
301	3,513	0
302	3,533	-190
303	3,539	0
304	3,550	190
305	3,556	0
306	3,576	190
307	3,585	0
308	3,595	190
309	3,607	0
310	3,618	190
311	3,624	0
312	3,634	-190
313	3,640	0
314	3,651	190
315	3,657	0
316	3,677	190

Simulation Speed Data - Office Building Complex @ Narahenpita

No.	Time (s)	Simulation Speed (rpm)
317	3,686	0
318	3,706	190
319	3,712	0
320	3,722	-190
321	3,739	0
322	3,759	190
323	3,788	0
324	3,799	190
325	3,818	0
326	3,857	190
327	3,873	0
328	3,902	-190
329	3,924	0
330	3,935	-190
331	3,952	0
332	3,972	-190
333	3,981	0
334	4,001	190
335	4,015	0
336	4,025	190
337	4,034	0
338	4,045	190
339	4,067	0
340	4,077	-190
341	4,096	0
342	4,116	190
343	4,132	0
344	4,143	-190
345	4,154	0
346	4,174	190
347	4,186	0
348	4,206	190
349	4,215	0
350	4,225	-190
351	4,234	0
352	4,245	190
353	4,257	0
354	4,277	190
355	4,288	0
356	4,298	-190
357	4,304	0
358	4,315	-190
359	4,324	0
360	4,334	190
361	4,354	0
362	4,374	-190
363	4,383	0
364	4,403	190
365	4,419	0
366	4,439	190
367	4,455	0
368	4,475	190
369	4,481	0
370	4,492	190
371	4,511	0
372	4,531	190
373	4,551	0
374	4,571	190
375	4,577	0
376	4,587	190
377	4,599	0
378	4,610	190
379	4,622	0
380	4,651	190
381	4,657	0
382	4,677	190
383	4,689	0
384	4,709	190
385	4,725	0
386	4,745	190
387	4,747	0
388	4,767	-190
389	4,787	0
390	4,807	190
391	4,816	0
392	4,827	-190
393	4,851	0
394	4,861	190
395	4,883	0
396	4,913	-190
397	4,930	0
398	4,950	190
399	4,966	0
400	4,976	-190
401	4,985	0
402	5,005	190
403	5,014	0
404	5,025	190
405	5,041	0
406	5,051	-190
407	5,068	0
408	5,088	-190
409	5,100	0
410	5,111	-190
411	5,120	0
412	5,130	190
413	5,139	0
414	5,150	-190
415	5,159	0
416	5,179	190
417	5,198	0
418	5,208	190
419	5,224	0
420	5,235	190
421	5,244	0
422	5,273	190
423	5,282	0
424	5,302	-190
425	5,318	0
426	5,329	-190
427	5,340	0
428	5,360	-190
429	5,369	0
430	5,379	190
431	5,390	0
432	5,410	-190
433	5,426	0
434	5,437	190
435	5,453	0
436	5,473	190
437	5,484	0
438	5,504	190
439	5,516	0
440	5,526	-190
441	5,537	0
442	5,557	-190
443	5,569	0
444	5,589	190
445	5,601	0
446	5,612	190
447	5,631	0
448	5,641	190
449	5,653	0
450	5,692	-190
451	5,704	0
452	5,715	-190
453	5,739	0
454	5,749	190
455	5,763	0
456	5,774	190
457	5,783	0
458	5,803	190
459	5,812	0
460	5,832	-190
461	5,841	0
462	5,861	190
463	5,880	0
464	5,890	-190
465	5,892	0
466	5,912	190
467	5,926	0
468	5,946	190
469	5,952	0
470	5,972	190
471	5,974	0
472	5,994	-190
473	6,023	0
474	6,053	190
475	6,072	0
476	6,082	-190
477	6,093	0
478	6,104	190
479	6,115	0
480	6,125	-190
481	6,141	0
482	6,161	190
483	6,173	0
484	6,184	-190
485	6,200	0
486	6,210	190
487	6,237	0
488	6,257	-190
489	6,263	0
490	6,283	-190
491	6,294	0
492	6,305	190
493	6,322	0
494	6,342	190
495	6,371	0
496	6,381	190
497	6,395	0
498	6,406	190
499	6,412	0
500	6,432	190
501	6,441	0
502	6,461	190
503	6,477	0
504	6,497	-190
505	6,509	0
506	6,529	-190
507	6,551	0
508	6,561	190
509	6,581	0
510	6,592	190
511	6,609	0
512	6,619	-190
513	6,631	0
514	6,642	-190
515	6,664	0
516	6,674	-190
517	6,699	0
518	6,710	190
519	6,740	0
520	6,760	190
521	6,777	0
522	6,787	190
523	6,793	0
524	6,813	190
525	6,827	0
526	6,847	-190
527	6,859	0
528	6,870	190
529	6,886	0
530	6,915	190
531	6,931	0
532	6,942	-190
533	6,944	0
534	6,954	-190
535	6,966	0
536	6,986	-190
537	6,998	0
538	7,018	190
539	7,034	0
540	7,045	190
541	7,054	0
542	7,074	-190
543	7,090	0
544	7,110	190
545	7,130	0
546	7,140	-190
547	7,142	0
548	7,162	-190
549	7,171	0
550	7,182	190
551	7,198	0
552	7,218	190
553	7,229	0
554	7,239	190
555	7,245	0
556	7,256	-190
557	7,265	0
558	7,275	-190
559	7,287	0
560	7,307	-190
561	7,319	0
562	7,330	190
563	7,341	0
564	7,361	190
565	7,380	0
566	7,409	-190
567	7,421	0
568	7,432	-190
569	7,441	0
570	7,461	-190
571	7,477	0
572	7,497	190
573	7,503	0
574	7,513	-190
575	7,527	0
576	7,538	-190
577	7,554	0
578	7,574	190
579	7,583	0
580	7,593	-190
581	7,602	0
582	7,622	-190
583	7,633	0
584	7,653	190
585	7,665	0
586	7,676	190
587	7,695	0
588	7,715	-190
589	7,731	0
590	7,741	-190
591	7,743	0
592	7,763	-190
593	7,779	0
594	7,799	190
595	7,808	0
596	7,828	190
597	7,844	0
598	7,864	-190
599	7,873	0
600	7,893	190
601	7,909	0
602	7,920	190
603	7,950	0
604	7,970	-190
605	7,986	0
606	7,996	-190
607	8,010	0
608	8,021	-190
609	8,038	0
610	8,048	190
611	8,068	0
612	8,088	190
613	8,102	0
614	8,113	190
615	8,127	0
616	8,137	190
617	8,161	0
618	8,191	190
619	8,215	0
620	8,225	190
621	8,242	0
622	8,262	190
623	8,273	0
624	8,293	-190
625	8,305	0
626	8,344	190
627	8,364	0
628	8,384	-190
629	8,404	0
630	8,415	190
631	8,421	0
632	8,431	-190

Simulation Speed Data - Office Building Complex @ Narahenpita

No.	Time (s)	Simulation Speed (rpm)
633	8,451	0
634	8,462	190
635	8,481	0
636	8,501	-190
637	8,523	0
638	8,533	-190
639	8,549	0
640	8,569	190
641	8,580	0
642	8,600	-190
643	8,622	0
644	8,642	190
645	8,651	0
646	8,662	190
647	8,668	0
648	8,688	-190
649	8,697	0
650	8,717	190
651	8,726	0
652	8,736	190
653	8,742	0
654	8,762	190
655	8,779	0
656	8,790	-190
657	8,802	0
658	8,822	-190
659	8,833	0
660	8,853	-190
661	8,865	0
662	8,894	190
663	8,914	0
664	8,925	-190
665	8,945	0
666	8,965	-190
667	8,974	0
668	8,994	190
669	9,005	0
670	9,025	190
671	9,031	0
672	9,041	-190
673	9,047	0
674	9,067	190
675	9,091	0
676	9,102	190
677	9,108	0
678	9,118	-190
679	9,134	0
680	9,145	-190
681	9,154	0
682	9,174	190
683	9,190	0
684	9,210	-190
685	9,234	0
686	9,254	-190
687	9,279	0
688	9,299	190
689	9,301	0
690	9,321	-190
691	9,330	0
692	9,340	190
693	9,351	0
694	9,371	190
695	9,380	0
696	9,400	190
697	9,402	0
698	9,422	-190
699	9,444	0
700	9,474	190
701	9,483	0
702	9,493	190
703	9,520	0
704	9,531	190
705	9,553	0
706	9,563	-190
707	9,575	0
708	9,586	-190
709	9,595	0
710	9,605	-190
711	9,611	0
712	9,631	190
713	9,637	0
714	9,648	190
715	9,657	0
716	9,696	190
717	9,712	0
718	9,732	190
719	9,741	0
720	9,761	-190
721	9,780	0
722	9,790	-190
723	9,792	0
724	9,803	190
725	9,815	0
726	9,825	190
727	9,834	0
728	9,854	-190
729	9,856	0
730	9,876	-190
731	9,898	0
732	9,918	190
733	9,937	0
734	9,957	-190
735	9,963	0
736	9,983	190
737	9,995	0
738	10,006	-190
739	10,017	0
740	10,037	-190
741	10,053	0
742	10,073	-190
743	10,089	0
744	10,109	190
745	10,118	0
746	10,138	190
747	10,165	0
748	10,175	-190
749	10,200	0
750	10,230	-190
751	10,246	0
752	10,256	190
753	10,267	0
754	10,278	-190
755	10,298	0
756	10,308	190
757	10,310	0
758	10,321	190
759	10,346	0
760	10,366	-190
761	10,368	0
762	10,388	190
763	10,399	0
764	10,409	190
765	10,415	0
766	10,435	-190
767	10,447	0
768	10,467	-190
769	10,478	0
770	10,489	190
771	10,501	0
772	10,511	-190
773	10,517	0
774	10,537	190
775	10,546	0
776	10,566	-190
777	10,598	0
778	10,618	190
779	10,650	0
780	10,661	190
781	10,667	0
782	10,677	-190
783	10,697	0
784	10,717	-190
785	10,726	0
786	10,746	-190
787	10,758	0
788	10,778	190
789	10,790	0
790	10,801	-190
791	10,803	0
792	10,823	-190
793	10,834	0
794	10,844	190
795	10,858	0
796	10,878	190
797	10,894	0
798	10,905	190
799	10,922	0
800	10,942	190
801	10,958	0
802	10,968	190
803	10,977	0
804	10,988	-190
805	11,007	0
806	11,036	-190
807	11,048	0
808	11,059	-190
809	11,071	0
810	11,091	190
811	11,093	0
812	11,113	-190
813	11,119	0
814	11,129	190
815	11,138	0
816	11,158	-190
817	11,170	0
818	11,190	190
819	11,199	0
820	11,219	190
821	11,231	0
822	11,251	-190
823	11,265	0
824	11,285	-190
825	11,291	0
826	11,321	190
827	11,323	0
828	11,333	190
829	11,339	0
830	11,350	-190
831	11,362	0
832	11,372	190
833	11,378	0
834	11,389	-190
835	11,391	0
836	11,411	190
837	11,417	0
838	11,427	-190
839	11,429	0
840	11,449	190
841	11,458	0
842	11,469	190
843	11,471	0
844	11,491	190
845	11,497	0
846	11,517	190
847	11,526	0
848	11,536	-190
849	11,542	0
850	11,553	190
851	11,565	0
852	11,585	190
853	11,601	0
854	11,611	-190
855	11,613	0
856	11,633	-190
857	11,639	0
858	11,678	-190
859	11,680	0
860	11,700	190
861	11,712	0
862	11,723	-190
863	11,725	0
864	11,745	-190
865	11,757	0
866	11,767	-190
867	11,769	0
868	11,780	190
869	11,786	0
870	11,806	190
871	11,812	0
872	11,841	190
873	11,843	0
874	11,863	190
875	11,872	0
876	11,883	190
877	11,895	0
878	11,905	190
879	11,907	0
880	11,927	-190
881	11,933	0
882	11,944	-190
883	11,956	0
884	11,966	190
885	11,975	0
886	11,986	-190
887	11,995	0
888	12,005	-190
889	12,011	0
890	12,022	-190
891	12,028	0
892	12,048	190
893	12,057	0
894	12,077	190
895	12,091	0
896	12,101	-190
897	12,103	0
898	12,123	190
899	12,125	0
900	12,136	190
901	12,142	0
902	12,171	190
903	12,173	0
904	12,184	-190
905	12,190	0
906	12,210	190
907	12,219	0
908	12,239	190
909	12,248	0
910	12,258	190
911	12,270	0
912	12,290	-190
913	12,296	0
914	12,316	190
915	12,328	0
916	12,339	190
917	12,351	0
918	12,361	-190
919	12,363	0
920	12,393	190
921	12,402	0
922	12,422	-190
923	12,424	0
924	12,434	-190
925	12,446	0
926	12,457	190
927	12,463	0
928	12,473	190
929	12,485	0
930	12,505	190
931	12,514	0
932	12,525	190
933	12,531	0
934	12,551	-190
935	12,557	0
936	12,567	190
937	12,579	0
938	12,599	-190
939	12,608	0
940	12,619	190
941	12,628	0
942	12,638	190
943	12,644	0
944	12,664	-190
945	12,670	0
946	12,681	-190
947	12,683	0
948	12,703	-190

Simulation Speed Data - Office Building Complex @ Narahenpita

No.	Time (s)	Simulation Speed (rpm)
949	12,709	0
950	12,729	-190
951	12,731	0
952	12,760	190
953	12,769	0
954	12,780	190
955	12,786	0
956	12,806	190
957	12,808	0
958	12,828	190
959	12,837	0
960	12,847	190
961	12,859	0
962	12,870	190
963	12,882	0
964	12,892	190
965	12,904	0
966	12,924	190
967	12,930	0
968	12,950	190
969	12,956	0
970	12,976	190
971	12,982	0
972	12,993	190
973	12,995	0
974	13,005	190
975	13,014	0
976	13,025	-190
977	13,027	0
978	13,037	190
979	13,039	0
980	13,050	190
981	13,052	0
982	13,072	190
983	13,078	0
984	13,088	-190
985	13,090	0
986	13,110	190
987	13,119	0
988	13,130	190
989	13,139	0
990	13,159	190
991	13,171	0
992	13,191	190
993	13,207	0
994	13,236	190
995	13,250	0
996	13,270	-190
997	13,279	0
998	13,299	190
999	13,301	0
1000	13,321	190
1001	13,327	0
1002	13,338	190
1003	13,340	0
1004	13,350	190
1005	13,359	0
1006	13,379	190
1007	13,381	0
1008	13,411	190
1009	13,417	0
1010	13,437	190
1011	13,443	0
1012	13,453	190
1013	13,459	0
1014	13,470	190
1015	13,479	0
1016	13,499	190
1017	13,510	0
1018	13,520	190
1019	13,526	0
1020	13,537	-190
1021	13,539	0
1022	13,578	190
1023	13,590	0
1024	13,600	190
1025	13,609	0
1026	13,620	190
1027	13,632	0
1028	13,652	190
1029	13,661	0
1030	13,671	190
1031	13,673	0
1032	13,693	190
1033	13,702	0
1034	13,713	190
1035	13,722	0
1036	13,742	190
1037	13,751	0
1038	13,761	190
1039	13,773	0
1040	13,793	190
1041	13,795	0
1042	13,815	-190
1043	13,827	0
1044	13,838	-190
1045	13,852	0
1046	13,872	-190
1047	13,874	0
1048	13,894	190
1049	13,903	0
1050	13,923	190
1051	13,925	0
1052	13,954	-190
1053	13,956	0
1054	13,967	190
1055	13,969	0
1056	13,979	190
1057	13,988	0
1058	14,008	190
1059	14,020	0
1060	14,031	190
1061	14,033	0
1062	14,053	190
1063	14,069	0
1064	14,089	-190
1065	14,098	0
1066	14,108	-190
1067	14,117	0
1068	14,128	190
1069	14,140	0
1070	14,160	-190
1071	14,169	0
1072	14,189	190
1073	14,201	0
1074	14,211	190
1075	14,217	0
1076	14,237	190
1077	14,243	0
1078	14,254	190
1079	14,256	0
1080	14,266	-190
1081	14,278	0

Reference Torque Data – Apartment Building Complex @ Boswell Place

No.	Time (s)	Reference Torque (Nm)
1	0	-59
2	39	-69
3	71	-2
4	84	-22
5	97	69
6	139	-5
7	165	-39
8	201	-5
9	226	-39
10	259	-17
11	275	-74
12	300	-32
13	314	-7
14	340	42
15	372	47
16	401	-5
17	426	44
18	452	-25
19	471	39
20	484	-54
21	517	-10
22	546	-71
23	562	-59
24	578	-34
25	601	-34
26	656	-66
27	682	-54
28	714	-10
29	727	-10
30	744	59
31	779	78
32	798	-29
33	827	-51
34	853	-54
35	869	44
36	892	34
37	921	-22
38	937	-51
39	953	-7
40	976	-27
41	989	-7
42	1,037	54
43	1,072	66
44	1,095	-7
45	1,111	37
46	1,134	49
47	1,150	-27
48	1,166	-22
49	1,189	42
50	1,215	54
51	1,234	88
52	1,264	-5
53	1,280	76
54	1,324	74
55	1,347	-15
56	1,379	49
57	1,412	76
58	1,444	66
59	1,473	78
60	1,502	-37
61	1,547	-39
62	1,580	25
63	1,602	42
64	1,631	66
65	1,647	-10
66	1,670	56
67	1,689	-29
68	1,712	-5
69	1,738	54
70	1,754	-2
71	1,779	-5
72	1,808	-15
73	1,844	-17
74	1,873	-2
75	1,886	56
76	1,915	-10
77	1,935	-39
78	1,948	-61
79	1,983	66
80	2,008	-64
81	2,054	-22
82	2,080	-5
83	2,102	49
84	2,145	-12
85	2,173	59
86	2,196	74
87	2,212	-29
88	2,232	42
89	2,290	86
90	2,326	59
91	2,355	44
92	2,381	29
93	2,416	-61
94	2,455	-51
95	2,511	-34
96	2,536	-61
97	2,578	61
98	2,601	66
99	2,630	-25
100	2,643	37
101	2,672	61
102	2,695	-88
103	2,737	-22
104	2,750	-10
105	2,763	-61
106	2,813	-86
107	2,829	-29
108	2,851	-47
109	2,881	61
110	2,933	37
111	2,965	-56
112	3,017	-2
113	3,036	-32
114	3,059	44
115	3,108	-34
116	3,121	-25
117	3,146	-54
118	3,192	-61
119	3,224	-15
120	3,257	49
121	3,286	32
122	3,314	42
123	3,337	-29
124	3,389	-59
125	3,412	-64
126	3,444	-17
127	3,461	-61
128	3,529	-56
129	3,574	86
130	3,619	-59
131	3,632	47
132	3,657	-27
133	3,687	-25
134	3,719	-51
135	3,751	-44
136	3,774	56
137	3,806	-61
138	3,849	-66
139	3,865	-49
140	3,904	71
141	3,926	76
142	3,942	-12
143	3,971	22
144	4,007	-5
145	4,036	81
146	4,055	-34
147	4,091	76
148	4,127	-34
149	4,155	59
150	4,181	-83
151	4,233	44
152	4,259	-61
153	4,302	-49
154	4,344	-37
155	4,399	-49
156	4,422	-59
157	4,468	34
158	4,493	-17
159	4,536	71
160	4,552	-49
161	4,575	44
162	4,607	-7
163	4,636	42
164	4,674	-71
165	4,733	-61
166	4,775	-15
167	4,791	-12
168	4,817	-51
169	4,843	49
170	4,872	-5
171	4,885	-2
172	4,902	42
173	4,930	-10
174	4,966	-88
175	5,008	-61
176	5,053	-59
177	5,096	78
178	5,118	-34
179	5,160	-83
180	5,206	-10
181	5,235	-12
182	5,257	-44
183	5,283	54
184	5,322	-10
185	5,338	71
186	5,370	-76
187	5,410	-5
188	5,435	-15
189	5,458	61
190	5,481	-59
191	5,529	-61
192	5,585	-10
193	5,617	64
194	5,640	61
195	5,669	-5
196	5,682	-64
197	5,728	-25
198	5,767	-61
199	5,796	-39
200	5,815	91
201	5,851	-47
202	5,864	-59
203	5,900	42
204	5,923	-25
205	5,942	64
206	5,965	76
207	6,000	-29
208	6,033	39
209	6,068	-5
210	6,094	86
211	6,130	-69
212	6,152	27
213	6,172	-61
214	6,211	37
215	6,250	-32
216	6,279	-15
217	6,295	-27
218	6,347	-2
219	6,396	-54
220	6,445	59
221	6,494	-2
222	6,507	-88
223	6,530	78
224	6,543	-49
225	6,585	37
226	6,623	-66
227	6,672	64
228	6,724	47
229	6,740	-15
230	6,763	-22
231	6,788	32
232	6,817	-61
233	6,849	54
234	6,878	64
235	6,894	49
236	6,927	-10
237	6,975	49
238	7,004	32
239	7,048	-54
240	7,074	-15
241	7,090	-2
242	7,104	76
243	7,153	-17
244	7,192	-56
245	7,240	44
246	7,253	71
247	7,266	47
248	7,308	-25
249	7,321	32
250	7,344	-44
251	7,383	42
252	7,425	44
253	7,457	61
254	7,477	-37
255	7,503	32
256	7,541	51
257	7,561	54
258	7,586	-10
259	7,615	76
260	7,635	-49
261	7,674	47
262	7,696	-22
263	7,745	47
264	7,761	-61
265	7,806	71
266	7,829	81
267	7,845	-42
268	7,884	78
269	7,913	-39
270	7,958	69
271	7,981	66
272	8,013	74
273	8,039	-25
274	8,078	29
275	8,124	-20
276	8,166	-47
277	8,195	56
278	8,220	-39
279	8,233	37
280	8,272	78
281	8,292	-42
282	8,324	51
283	8,363	-34
284	8,402	-37
285	8,421	-86
286	8,457	-29
287	8,492	-12
288	8,508	-10
289	8,534	-20
290	8,570	76
291	8,608	-47
292	8,660	-61
293	8,686	37
294	8,711	-61
295	8,763	-34
296	8,806	59
297	8,838	-76
298	8,873	-78
299	8,886	-39
300	8,929	56
301	8,957	-34
302	8,993	-42
303	9,033	-27
304	9,081	-12
305	9,127	-81
306	9,172	-22
307	9,205	-32
308	9,218	61
309	9,253	-2
310	9,289	49
311	9,338	-7
312	9,370	-86
313	9,390	42
314	9,432	37
315	9,457	59
316	9,493	44

Reference Torque Data – Apartment Building Complex @ Boswell Place

No.	Time (s)	Reference Torque (Nm)
317	9,522	47
318	9,538	-81
319	9,584	-61
320	9,617	-5
321	9,642	39
322	9,694	74
323	9,720	-12
324	9,762	37
325	9,821	34
326	9,840	69
327	9,856	83
328	9,908	-69
329	9,964	64
330	10,022	64
331	10,038	27
332	10,094	69
333	10,168	-22
334	10,191	34
335	10,227	-20
336	10,243	59
337	10,269	-2
338	10,288	25
339	10,327	-61
340	10,369	-81
341	10,422	-15
342	10,464	47
343	10,490	-25
344	10,503	66
345	10,545	-39
346	10,571	44
347	10,594	-61
348	10,610	49
349	10,635	39
350	10,674	39
351	10,697	69
352	10,716	-56
353	10,751	34
354	10,777	-74
355	10,797	59
356	10,846	-20
357	10,869	-39
358	10,901	64
359	10,933	-15
360	10,953	-32
361	11,005	37
362	11,028	69
363	11,086	-10
364	11,099	37
365	11,112	-22
366	11,141	56
367	11,164	39
368	11,180	-64
369	11,235	-61
370	11,287	-2
371	11,310	-25
372	11,332	-25
373	11,346	-42
374	11,378	-56
375	11,424	86
376	11,447	-12
377	11,489	-20
378	11,541	44
379	11,583	44
380	11,599	-64
381	11,641	-5
382	11,660	54
383	11,690	-25
384	11,709	-27
385	11,761	-61
386	11,797	76
387	11,820	-42
388	11,839	47
389	11,868	-47
390	11,887	69
391	11,943	34
392	12,008	-10
393	12,041	-2
394	12,054	66
395	12,083	-27
396	12,122	34
397	12,144	-10
398	12,177	56
399	12,200	49
400	12,225	54
401	12,248	-44
402	12,284	-25
403	12,300	44
404	12,322	34
405	12,354	-42
406	12,371	44
407	12,393	-44
408	12,439	51
409	12,468	49
410	12,496	39
411	12,516	-15
412	12,529	-49
413	12,561	-61
414	12,587	27
415	12,606	37
416	12,619	-5
417	12,648	49
418	12,671	-10
419	12,700	-25
420	12,729	47
421	12,761	-27
422	12,774	-27
423	12,800	32
424	12,825	-54
425	12,838	-64
426	12,858	49
427	12,890	44
428	12,906	-2
429	12,935	-61
430	12,961	29
431	12,980	-64
432	13,003	-59
433	13,026	-7
434	13,042	-5
435	13,068	-2
436	13,081	56
437	13,107	-61
438	13,145	71
439	13,161	-64
440	13,187	-47
441	13,203	-7
442	13,226	-39
443	13,254	-56
444	13,274	-25
445	13,297	39
446	13,310	59
447	13,339	56
448	13,365	-10
449	13,381	51
450	13,429	61
451	13,442	-47
452	13,481	-47
453	13,503	32
454	13,519	34
455	13,545	44
456	13,564	-61
457	13,606	-12
458	13,626	-44
459	13,651	-34
460	13,668	-32
461	13,681	-59
462	13,706	32
463	13,726	-27
464	13,751	-15
465	13,774	86
466	13,813	78
467	13,835	-5
468	13,855	66
469	13,868	-2
470	13,884	39
471	13,900	-47
472	13,929	32
473	13,958	-25
474	13,974	-32
475	13,987	34
476	14,013	81
477	14,029	-25
478	14,055	-61
479	14,093	71
480	14,119	61
481	14,135	-59
482	14,178	-34
483	14,213	-29
484	14,242	51
485	14,268	-20
486	14,287	-59
487	14,301	-17
488	14,320	-83
489	14,346	61
490	14,381	56

Simulation Speed Data – Apartment Building Complex @ Boswell Place

No.	Time (s)	Simulation Speed (rpm)
1	0	0
2	19	-382
3	38	0
4	58	-382
5	70	0
6	81	-382
7	83	0
8	94	-382
9	96	0
10	116	382
11	138	0
12	158	382
13	164	0
14	184	382
15	200	0
16	220	-382
17	225	0
18	236	-382
19	258	0
20	268	-382
21	274	0
22	294	-382
23	299	0
24	310	-382
25	313	0
26	323	382
27	339	0
28	368	382
29	371	0
30	391	382
31	400	0
32	420	382
33	425	0
34	445	382
35	451	0
36	461	-382
37	470	0
38	481	-382
39	483	0
40	494	-382
41	516	0
42	536	382
43	545	0
44	555	-382
45	561	0
46	572	-382
47	577	0
48	597	-382
49	600	0
50	620	382
51	655	0
52	666	-382
53	681	0
54	701	-382
55	713	0
56	724	-382
57	726	0
58	737	382
59	743	0
60	763	382
61	778	0
62	789	382
63	797	0
64	817	382
65	826	0
66	846	-382
67	852	0
68	862	-382
69	868	0
70	888	-382
71	891	0
72	911	-382
73	920	0
74	930	-382
75	936	0
76	946	-382
77	952	0
78	972	-382
79	975	0
80	985	-382
81	988	0
82	1,017	382
83	1,036	0
84	1,056	382
85	1,071	0
86	1,091	382
87	1,094	0
88	1,105	382
89	1,110	0
90	1,121	-382
91	1,133	0
92	1,143	-382
93	1,149	0
94	1,160	-382
95	1,165	0
96	1,185	-382
97	1,188	0
98	1,198	-382
99	1,214	0
100	1,224	382
101	1,233	0
102	1,244	382
103	1,263	0
104	1,273	382
105	1,279	0
106	1,318	382
107	1,323	0
108	1,343	382
109	1,346	0
110	1,366	-382
111	1,378	0
112	1,389	-382
113	1,411	0
114	1,431	382
115	1,443	0
116	1,463	382
117	1,472	0
118	1,492	382
119	1,501	0
120	1,511	-382
121	1,546	0
122	1,576	-382
123	1,579	0
124	1,599	-382
125	1,601	0
126	1,621	382
127	1,630	0
128	1,641	382
129	1,646	0
130	1,666	382
131	1,669	0
132	1,679	382
133	1,688	0
134	1,708	382
135	1,711	0
136	1,731	382
137	1,737	0
138	1,747	382
139	1,753	0
140	1,773	-382
141	1,778	0
142	1,798	-382
143	1,807	0
144	1,827	-382
145	1,843	0
146	1,863	-382
147	1,872	0
148	1,882	-382
149	1,885	0
150	1,895	382
151	1,914	0
152	1,925	382
153	1,934	0
154	1,944	382
155	1,947	0
156	1,976	382
157	1,982	0
158	2,002	382
159	2,007	0
160	2,018	-382
161	2,053	0
162	2,073	-382
163	2,079	0
164	2,099	-382
165	2,101	0
166	2,121	382
167	2,144	0
168	2,164	382
169	2,172	0
170	2,192	382
171	2,195	0
172	2,206	382
173	2,211	0
174	2,222	-382
175	2,231	0
176	2,260	-382
177	2,289	0
178	2,299	382
179	2,325	0
180	2,345	382
181	2,354	0
182	2,364	-382
183	2,380	0
184	2,400	-382
185	2,415	0
186	2,426	382
187	2,454	0
188	2,474	-382
189	2,510	0
190	2,530	382
191	2,535	0
192	2,555	382
193	2,577	0
194	2,597	382
195	2,600	0
196	2,620	382
197	2,629	0
198	2,639	-382
199	2,642	0
200	2,662	-382
201	2,671	0
202	2,681	382
203	2,694	0
204	2,704	-382
205	2,736	0
206	2,747	-382
207	2,749	0
208	2,760	-382
209	2,762	0
210	2,773	382
211	2,812	0
212	2,822	-382
213	2,828	0
214	2,838	-382
215	2,850	0
216	2,861	-382
217	2,880	0
218	2,890	382
219	2,932	0
220	2,952	-382
221	2,964	0
222	2,994	-382
223	3,016	0
224	3,026	382
225	3,035	0
226	3,046	-382
227	3,058	0
228	3,078	382
229	3,107	0
230	3,117	382
231	3,120	0
232	3,140	382
233	3,145	0
234	3,156	-382
235	3,191	0
236	3,211	382
237	3,223	0
238	3,243	382
239	3,256	0
240	3,276	-382
241	3,285	0
242	3,305	-382
243	3,313	0
244	3,333	-382
245	3,336	0
246	3,356	382
247	3,388	0
248	3,399	-382
249	3,411	0
250	3,421	-382
251	3,443	0
252	3,454	-382
253	3,460	0
254	3,489	382
255	3,528	0
256	3,548	-382
257	3,573	0
258	3,612	382
259	3,618	0
260	3,628	-382
261	3,631	0
262	3,651	382
263	3,656	0
264	3,667	382
265	3,686	0
266	3,706	-382
267	3,718	0
268	3,728	-382
269	3,750	0
270	3,770	-382
271	3,773	0
272	3,803	382
273	3,805	0
274	3,816	382
275	3,848	0
276	3,858	-382
277	3,864	0
278	3,884	-382
279	3,903	0
280	3,923	382
281	3,925	0
282	3,936	382
283	3,941	0
284	3,961	382
285	3,970	0
286	3,990	-382
287	4,006	0
288	4,026	382
289	4,035	0
290	4,045	382
291	4,054	0
292	4,065	-382
293	4,090	0
294	4,110	382
295	4,126	0
296	4,146	382
297	4,154	0
298	4,174	382
299	4,180	0
300	4,191	-382
301	4,232	0
302	4,252	382
303	4,258	0
304	4,269	382
305	4,301	0
306	4,311	-382
307	4,343	0
308	4,363	382
309	4,398	0
310	4,418	-382
311	4,421	0
312	4,432	-382
313	4,467	0
314	4,487	-382
315	4,492	0
316	4,503	382

Simulation Speed Data – Apartment Building Complex @ Boswell Place

No.	Time (s)	Simulation Speed (rpm)
317	4,535	0
318	4,545	382
319	4,551	0
320	4,571	-382
321	4,574	0
322	4,594	-382
323	4,606	0
324	4,626	382
325	4,635	0
326	4,664	382
327	4,673	0
328	4,693	-382
329	4,732	0
330	4,742	382
331	4,774	0
332	4,785	382
333	4,790	0
334	4,801	-382
335	4,816	0
336	4,827	-382
337	4,842	0
338	4,862	382
339	4,871	0
340	4,882	382
341	4,884	0
342	4,895	382
343	4,901	0
344	4,921	382
345	4,929	0
346	4,959	382
347	4,965	0
348	4,975	-382
349	5,007	0
350	5,027	382
351	5,052	0
352	5,072	-382
353	5,095	0
354	5,115	382
355	5,117	0
356	5,137	382
357	5,159	0
358	5,179	-382
359	5,205	0
360	5,225	-382
361	5,234	0
362	5,254	382
363	5,256	0
364	5,276	-382
365	5,282	0
366	5,302	382
367	5,321	0
368	5,331	-382
369	5,337	0
370	5,347	382
371	5,369	0
372	5,380	-382
373	5,409	0
374	5,429	382
375	5,434	0
376	5,445	382
377	5,457	0
378	5,477	382
379	5,480	0
380	5,500	-382
381	5,528	0
382	5,548	382
383	5,584	0
384	5,594	-382
385	5,616	0
386	5,627	382
387	5,639	0
388	5,659	382
389	5,668	0
390	5,678	-382
391	5,681	0
392	5,691	-382
393	5,727	0
394	5,737	382
395	5,766	0
396	5,786	-382
397	5,795	0
398	5,805	-382
399	5,814	0
400	5,825	382
401	5,850	0
402	5,861	-382
403	5,863	0
404	5,874	-382
405	5,899	0
406	5,910	382
407	5,922	0
408	5,932	-382
409	5,941	0
410	5,961	382
411	5,964	0
412	5,984	382
413	5,999	0
414	6,029	-382
415	6,032	0
416	6,052	-382
417	6,067	0
418	6,087	-382
419	6,093	0
420	6,103	382
421	6,129	0
422	6,139	-382
423	6,151	0
424	6,162	-382
425	6,171	0
426	6,181	382
427	6,210	0
428	6,230	-382
429	6,249	0
430	6,259	382
431	6,278	0
432	6,289	382
433	6,294	0
434	6,314	-382
435	6,346	0
436	6,366	382
437	6,395	0
438	6,405	-382
439	6,444	0
440	6,464	382
441	6,493	0
442	6,503	382
443	6,506	0
444	6,516	-382
445	6,529	0
446	6,539	382
447	6,542	0
448	6,562	382
449	6,584	0
450	6,613	-382
451	6,622	0
452	6,642	-382
453	6,671	0
454	6,691	382
455	6,723	0
456	6,733	-382
457	6,739	0
458	6,749	-382
459	6,762	0
460	6,782	-382
461	6,787	0
462	6,807	-382
463	6,816	0
464	6,836	382
465	6,848	0
466	6,868	382
467	6,877	0
468	6,888	382
469	6,893	0
470	6,913	382
471	6,926	0
472	6,955	-382
473	6,974	0
474	6,994	382
475	7,003	0
476	7,042	-382
477	7,047	0
478	7,058	-382
479	7,073	0
480	7,084	-382
481	7,089	0
482	7,100	-382
483	7,103	0
484	7,113	382
485	7,152	0
486	7,172	-382
487	7,191	0
488	7,220	-382
489	7,239	0
490	7,249	-382
491	7,252	0
492	7,263	382
493	7,265	0
494	7,285	382
495	7,307	0
496	7,318	-382
497	7,320	0
498	7,340	-382
499	7,343	0
500	7,363	-382
501	7,382	0
502	7,402	382
503	7,424	0
504	7,444	382
505	7,456	0
506	7,467	382
507	7,476	0
508	7,486	-382
509	7,502	0
510	7,522	-382
511	7,540	0
512	7,551	382
513	7,560	0
514	7,580	382
515	7,585	0
516	7,605	382
517	7,614	0
518	7,625	382
519	7,634	0
520	7,654	-382
521	7,673	0
522	7,683	382
523	7,695	0
524	7,715	-382
525	7,744	0
526	7,754	-382
527	7,760	0
528	7,780	382
529	7,805	0
530	7,825	382
531	7,828	0
532	7,839	382
533	7,844	0
534	7,864	-382
535	7,883	0
536	7,903	382
537	7,912	0
538	7,932	-382
539	7,957	0
540	7,977	382
541	7,980	0
542	8,009	382
543	8,012	0
544	8,023	382
545	8,038	0
546	8,058	382
547	8,077	0
548	8,087	-382
549	8,123	0
550	8,143	382
551	8,165	0
552	8,185	-382
553	8,194	0
554	8,214	382
555	8,219	0
556	8,230	-382
557	8,232	0
558	8,252	-382
559	8,271	0
560	8,282	382
561	8,291	0
562	8,311	-382
563	8,323	0
564	8,333	382
565	8,362	0
566	8,382	-382
567	8,401	0
568	8,411	382
569	8,420	0
570	8,440	-382
571	8,456	0
572	8,476	382
573	8,491	0
574	8,502	-382
575	8,507	0
576	8,527	-382
577	8,533	0
578	8,543	382
579	8,569	0
580	8,598	382
581	8,607	0
582	8,627	-382
583	8,659	0
584	8,679	-382
585	8,685	0
586	8,705	-382
587	8,710	0
588	8,730	382
589	8,762	0
590	8,782	-382
591	8,805	0
592	8,825	382
593	8,837	0
594	8,857	-382
595	8,872	0
596	8,883	-382
597	8,885	0
598	8,905	382
599	8,928	0
600	8,948	382
601	8,956	0
602	8,967	-382
603	8,992	0
604	9,003	382
605	9,032	0
606	9,052	-382
607	9,080	0
608	9,100	382
609	9,126	0
610	9,136	-382
611	9,171	0
612	9,191	382
613	9,204	0
614	9,214	-382
615	9,217	0
616	9,237	382
617	9,252	0
618	9,263	-382
619	9,288	0
620	9,308	382
621	9,337	0
622	9,357	382
623	9,369	0
624	9,380	-382
625	9,389	0
626	9,409	-382
627	9,431	0
628	9,451	-382
629	9,456	0
630	9,476	382
631	9,492	0
632	9,502	382

Simulation Speed Data – Apartment Building Complex @ Boswell Place

No.	Time (s)	Simulation Speed (rpm)
633	9,521	0
634	9,532	382
635	9,537	0
636	9,548	-382
637	9,583	0
638	9,593	382
639	9,616	0
640	9,636	382
641	9,641	0
642	9,661	-382
643	9,693	0
644	9,704	382
645	9,719	0
646	9,739	382
647	9,761	0
648	9,781	-382
649	9,820	0
650	9,830	382
651	9,839	0
652	9,850	382
653	9,855	0
654	9,885	382
655	9,907	0
656	9,917	-382
657	9,963	0
658	9,983	382
659	10,021	0
660	10,032	382
661	10,037	0
662	10,048	-382
663	10,093	0
664	10,132	382
665	10,167	0
666	10,187	-382
667	10,190	0
668	10,200	-382
669	10,226	0
670	10,236	382
671	10,242	0
672	10,262	382
673	10,268	0
674	10,278	382
675	10,287	0
676	10,307	-382
677	10,326	0
678	10,336	382
679	10,368	0
680	10,379	-382
681	10,421	0
682	10,431	382
683	10,463	0
684	10,483	-382
685	10,489	0
686	10,499	-382
687	10,502	0
688	10,522	382
689	10,544	0
690	10,555	-382
691	10,570	0
692	10,581	382
693	10,593	0
694	10,603	-382
695	10,609	0
696	10,629	-382
697	10,634	0
698	10,654	-382
699	10,673	0
700	10,684	382
701	10,696	0
702	10,706	382
703	10,715	0
704	10,745	-382
705	10,750	0
706	10,761	-382
707	10,776	0
708	10,787	-382
709	10,796	0
710	10,806	382
711	10,845	0
712	10,855	-382
713	10,868	0
714	10,888	-382
715	10,900	0
716	10,910	382
717	10,932	0
718	10,943	382
719	10,952	0
720	10,972	-382
721	11,004	0
722	11,014	-382
723	11,027	0
724	11,056	382
725	11,085	0
726	11,095	-382
727	11,098	0
728	11,108	-382
729	11,111	0
730	11,131	382
731	11,140	0
732	11,150	382
733	11,163	0
734	11,173	-382
735	11,179	0
736	11,199	-382
737	11,234	0
738	11,254	382
739	11,286	0
740	11,297	-382
741	11,309	0
742	11,329	-382
743	11,331	0
744	11,342	-382
745	11,345	0
746	11,355	382
747	11,377	0
748	11,388	-382
749	11,423	0
750	11,443	382
751	11,446	0
752	11,456	382
753	11,488	0
754	11,508	-382
755	11,540	0
756	11,560	382
757	11,582	0
758	11,593	382
759	11,598	0
760	11,628	-382
761	11,640	0
762	11,651	-382
763	11,659	0
764	11,670	382
765	11,689	0
766	11,699	382
767	11,708	0
768	11,728	-382
769	11,760	0
770	11,771	382
771	11,796	0
772	11,816	382
773	11,819	0
774	11,829	-382
775	11,838	0
776	11,858	-382
777	11,867	0
778	11,878	-382
779	11,886	0
780	11,906	382
781	11,942	0
782	11,962	-382
783	12,007	0
784	12,017	382
785	12,040	0
786	12,050	382
787	12,053	0
788	12,073	382
789	12,082	0
790	12,092	-382
791	12,121	0
792	12,141	-382
793	12,143	0
794	12,154	382
795	12,176	0
796	12,196	382
797	12,199	0
798	12,219	382
799	12,224	0
800	12,244	382
801	12,247	0
802	12,267	-382
803	12,283	0
804	12,293	-382
805	12,299	0
806	12,319	-382
807	12,321	0
808	12,351	-382
809	12,353	0
810	12,364	-382
811	12,370	0
812	12,390	-382
813	12,392	0
814	12,412	382
815	12,438	0
816	12,458	382
817	12,467	0
818	12,487	382
819	12,495	0
820	12,506	-382
821	12,515	0
822	12,525	-382
823	12,528	0
824	12,548	-382
825	12,560	0
826	12,580	-382
827	12,586	0
828	12,596	-382
829	12,605	0
830	12,616	-382
831	12,618	0
832	12,638	382
833	12,647	0
834	12,658	382
835	12,670	0
836	12,690	382
837	12,699	0
838	12,719	382
839	12,728	0
840	12,748	-382
841	12,760	0
842	12,770	-382
843	12,773	0
844	12,793	-382
845	12,799	0
846	12,819	-382
847	12,824	0
848	12,835	-382
849	12,837	0
850	12,848	-382
851	12,857	0
852	12,877	382
853	12,889	0
854	12,900	382
855	12,905	0
856	12,916	382
857	12,934	0
858	12,954	-382
859	12,960	0
860	12,971	-382
861	12,979	0
862	12,999	-382
863	13,002	0
864	13,013	-382
865	13,025	0
866	13,035	-382
867	13,041	0
868	13,051	382
869	13,067	0
870	13,077	382
871	13,080	0
872	13,100	382
873	13,106	0
874	13,135	382
875	13,144	0
876	13,155	382
877	13,160	0
878	13,180	-382
879	13,186	0
880	13,196	-382
881	13,202	0
882	13,222	-382
883	13,225	0
884	13,245	-382
885	13,253	0
886	13,264	-382
887	13,273	0
888	13,293	-382
889	13,296	0
890	13,306	-382
891	13,309	0
892	13,329	382
893	13,338	0
894	13,348	382
895	13,364	0
896	13,374	382
897	13,380	0
898	13,419	382
899	13,428	0
900	13,438	382
901	13,441	0
902	13,461	-382
903	13,480	0
904	13,490	-382
905	13,502	0
906	13,513	-382
907	13,518	0
908	13,538	-382
909	13,544	0
910	13,554	382
911	13,563	0
912	13,583	382
913	13,605	0
914	13,616	382
915	13,625	0
916	13,645	-382
917	13,650	0
918	13,661	-382
919	13,667	0
920	13,677	-382
921	13,680	0
922	13,700	-382
923	13,705	0
924	13,716	-382
925	13,725	0
926	13,745	-382
927	13,750	0
928	13,770	-382
929	13,773	0
930	13,793	382
931	13,812	0
932	13,832	382
933	13,834	0
934	13,845	382
935	13,854	0
936	13,864	382
937	13,867	0
938	13,878	382
939	13,883	0
940	13,894	-382
941	13,899	0
942	13,919	-382
943	13,928	0
944	13,948	-382
945	13,957	0
946	13,968	-382
947	13,973	0
948	13,984	-382

Simulation Speed Data – Apartment Building Complex @ Boswell Place

No.	Time (s)	Simulation Speed (rpm)
949	13,986	0
950	14,006	-382
951	14,012	0
952	14,022	382
953	14,028	0
954	14,048	-382
955	14,054	0
956	14,074	382
957	14,092	0
958	14,112	382
959	14,118	0
960	14,129	382
961	14,134	0
962	14,145	-382
963	14,177	0
964	14,197	382
965	14,212	0
966	14,223	382
967	14,241	0
968	14,261	-382
969	14,267	0
970	14,278	-382
971	14,286	0
972	14,297	-382
973	14,300	0
974	14,310	-382
975	14,319	0
976	14,339	-382
977	14,345	0
978	14,365	382
979	14,380	0
980	14,400	382
981	14,416	0

Reference Torque Data – Apartment Building Complex @ Moore's Road

No.	Time (s)	Reference Torque (Nm)
1	0	206
2	52	137
3	94	-304
4	110	-176
5	142	-29
6	171	-137
7	197	265
8	227	-294
9	249	294
10	278	-255
11	304	225
12	342	-78
13	368	216
14	388	255
15	407	-167
16	423	-108
17	455	-20
18	478	-137
19	504	-323
20	530	-245
21	576	-29
22	611	-10
23	637	225
24	670	-69
25	692	-304
26	722	-225
27	750	-39
28	764	255
29	790	-78
30	806	-69
31	835	-69
32	860	186
33	902	314
34	922	-98
35	947	-127
36	983	176
37	1,031	167
38	1,051	-284
39	1,076	-147
40	1,099	-167
41	1,115	-39
42	1,160	284
43	1,176	-108
44	1,196	-225
45	1,231	-353
46	1,247	-147
47	1,261	216
48	1,322	176
49	1,367	-118
50	1,393	-10
51	1,429	-235
52	1,467	-10
53	1,509	118
54	1,525	-157
55	1,561	304
56	1,597	137
57	1,616	-59
58	1,655	304
59	1,674	-127
60	1,706	304
61	1,722	127
62	1,736	-206
63	1,772	274
64	1,820	-176
65	1,869	225
66	1,905	265
67	1,921	-186
68	1,967	-29
69	1,996	255
70	2,028	-39
71	2,060	98
72	2,089	304
73	2,105	255
74	2,134	-29
75	2,176	235
76	2,199	127
77	2,228	-10
78	2,242	216
79	2,258	274
80	2,284	-39
81	2,316	167
82	2,341	-108
83	2,370	-78
84	2,393	216
85	2,426	176
86	2,442	-294
87	2,497	274
88	2,533	-29
89	2,568	-216
90	2,604	216
91	2,643	-235
92	2,672	-186
93	2,688	-304
94	2,714	-49
95	2,736	186
96	2,766	-137
97	2,814	245
98	2,847	294
99	2,863	-59
100	2,885	304
101	2,905	-176
102	2,941	-88
103	2,986	-49
104	3,019	-265
105	3,070	245
106	3,096	-49
107	3,119	274
108	3,154	-167
109	3,186	235
110	3,215	-78
111	3,238	255
112	3,270	-137
113	3,306	137
114	3,344	196
115	3,376	-235
116	3,402	186
117	3,425	-108
118	3,450	314
119	3,476	-294
120	3,547	323
121	3,566	284
122	3,586	284
123	3,602	137
124	3,625	-167
125	3,660	157
126	3,683	225
127	3,709	-255
128	3,735	167
129	3,773	-118
130	3,825	225
131	3,857	-108
132	3,880	147
133	3,909	-118
134	3,935	-29
135	3,974	186
136	3,999	-88
137	4,029	-78
138	4,045	-29
139	4,083	147
140	4,106	294
141	4,119	225
142	4,148	-49
143	4,180	-118
144	4,216	-118
145	4,232	157
146	4,251	-206
147	4,271	-49
148	4,297	196
149	4,322	-88
150	4,355	304
151	4,381	-39
152	4,403	176
153	4,429	127
154	4,452	-20
155	4,465	-225
156	4,504	-255
157	4,520	-20
158	4,539	235
159	4,568	294
160	4,594	-176
161	4,620	314
162	4,633	-274
163	4,675	225
164	4,707	-118
165	4,746	265
166	4,769	157
167	4,792	-245
168	4,824	-314
169	4,850	-59
170	4,870	186
171	4,892	176
172	4,918	333
173	4,934	-284
174	4,963	-196
175	4,992	-88
176	5,008	-157
177	5,034	-147
178	5,063	-88
179	5,076	-49
180	5,105	-186
181	5,131	-78
182	5,161	-108
183	5,177	-157
184	5,215	-245
185	5,267	-78
186	5,287	-20
187	5,319	284
188	5,333	-10
189	5,368	-49
190	5,394	216
191	5,442	-333
192	5,491	-118
193	5,517	-108
194	5,549	-235
195	5,562	-186
196	5,578	-176
197	5,611	-20
198	5,627	-69
199	5,659	245
200	5,695	-29
201	5,708	-186
202	5,730	-137
203	5,744	-127
204	5,763	255
205	5,779	157
206	5,808	-216
207	5,850	-147
208	5,892	-20
209	5,924	225
210	5,953	-274
211	5,969	235
212	5,998	-176
213	6,021	176
214	6,072	-245
215	6,114	147
216	6,146	-10
217	6,172	-304
218	6,224	-78
219	6,259	-20
220	6,279	-118
221	6,304	206
222	6,333	-196
223	6,372	-245
224	6,408	-59
225	6,421	225
226	6,440	-274
227	6,470	-29
228	6,492	-167
229	6,534	-127
230	6,560	235
231	6,599	196
232	6,622	235
233	6,651	-294
234	6,693	-49
235	6,716	127
236	6,732	176
237	6,761	-196
238	6,774	196
239	6,794	-108
240	6,810	255
241	6,823	-235
242	6,865	-245
243	6,907	-245
244	6,947	137
245	6,966	265
246	6,989	-314
247	7,025	-108
248	7,067	-78
249	7,106	274
250	7,128	-20
251	7,183	-108
252	7,212	-216
253	7,226	-20
254	7,248	-265
255	7,277	-118
256	7,306	-323
257	7,329	206
258	7,355	-88
259	7,374	-235
260	7,410	-88
261	7,436	127
262	7,458	-167
263	7,472	-176
264	7,494	-29
265	7,510	-98
266	7,549	-20
267	7,572	-304
268	7,604	-157
269	7,636	-176
270	7,652	-88
271	7,691	-314
272	7,727	-108
273	7,753	196
274	7,775	-284
275	7,808	196
276	7,837	-10
277	7,856	-49
278	7,888	167
279	7,908	294
280	7,927	-127
281	7,953	-333
282	8,011	-69
283	8,053	-196
284	8,082	-29
285	8,115	137
286	8,131	186
287	8,160	245
288	8,185	-314
289	8,221	-10
290	8,250	-167
291	8,266	-216
292	8,289	157
293	8,311	304
294	8,325	196
295	8,379	-314
296	8,422	-39
297	8,454	-235
298	8,474	196
299	8,487	265
300	8,512	-147
301	8,541	-284
302	8,597	176
303	8,616	-39
304	8,655	-274
305	8,694	-69
306	8,716	-245
307	8,765	-235
308	8,830	-88
309	8,875	-59
310	8,898	225
311	8,923	-157
312	8,946	235
313	8,972	-127
314	9,001	137
315	9,020	206
316	9,059	176

Reference Torque Data – Apartment Building Complex @ Moore's Road

No.	Time (s)	Reference Torque (Nm)
317	9,088	147
318	9,117	-255
319	9,156	274
320	9,195	-20
321	9,236	-206
322	9,252	186
323	9,278	-59
324	9,294	-88
325	9,323	255
326	9,349	265
327	9,371	235
328	9,400	-118
329	9,439	206
330	9,475	-49
331	9,524	-147
332	9,549	245
333	9,585	-206
334	9,611	314
335	9,636	255
336	9,669	-333
337	9,715	294
338	9,744	235
339	9,757	-88
340	9,782	245
341	9,815	186
342	9,834	-127
343	9,892	206
344	9,928	-157
345	9,954	-98
346	9,976	-108
347	10,006	-39
348	10,038	-245
349	10,070	274
350	10,087	176
351	10,109	-98
352	10,138	-196
353	10,177	265
354	10,193	-216
355	10,210	-39
356	10,242	-118
357	10,262	-78
358	10,297	245
359	10,316	284
360	10,336	-59
361	10,387	255
362	10,407	225
363	10,423	265
364	10,436	-49
365	10,472	216
366	10,501	-10
367	10,520	-108
368	10,543	-88
369	10,565	225
370	10,591	-29
371	10,607	147
372	10,640	147
373	10,675	98
374	10,714	157
375	10,750	-157
376	10,773	-29
377	10,799	-157
378	10,824	-98
379	10,850	-265
380	10,879	196
381	10,911	-108
382	10,953	196
383	11,002	-353
384	11,015	-20
385	11,044	-186
386	11,076	323
387	11,092	186
388	11,111	127
389	11,147	-49
390	11,163	-157
391	11,186	186
392	11,234	-235
393	11,279	-176
394	11,331	-29
395	11,367	167

No.	Time (s)	Reference Torque (Nm)
396	11,397	-39
397	11,444	-49
398	11,480	294
399	11,506	274
400	11,541	-69
401	11,567	-186
402	11,580	255
403	11,625	186
404	11,654	284
405	11,676	-127
406	11,715	-10
407	11,735	157
408	11,764	294
409	11,792	-167
410	11,818	284
411	11,838	-29
412	11,860	206
413	11,880	-216
414	11,906	-265
415	11,929	216
416	11,954	284
417	11,977	274
418	11,993	196
419	12,019	-147
420	12,057	-108
421	12,092	255
422	12,115	-39
423	12,134	-137
424	12,180	-88
425	12,196	-284
426	12,235	-245
427	12,287	-235
428	12,326	225
429	12,352	-39
430	12,368	176
431	12,387	-304
432	12,423	-176
433	12,455	-118
434	12,481	-235
435	12,507	-196
436	12,520	294
437	12,543	274
438	12,568	-137
439	12,591	-88
440	12,617	274
441	12,630	-10
442	12,669	-69
443	12,737	-39
444	12,753	-118
445	12,795	-88
446	12,821	343
447	12,846	-157
448	12,876	186
449	12,902	127
450	12,918	274
451	12,937	-235
452	12,969	-176
453	12,986	127
454	13,002	294
455	13,057	127
456	13,073	-10
457	13,092	-235
458	13,134	-127
459	13,180	127
460	13,206	-20
461	13,234	-176
462	13,251	-176
463	13,283	118
464	13,315	235
465	13,335	176
466	13,348	-118
467	13,377	206
468	13,419	-69
469	13,461	245
470	13,490	-186
471	13,545	-69
472	13,574	284
473	13,603	-108
474	13,642	-39

No.	Time (s)	Reference Torque (Nm)
475	13,671	-245
476	13,735	-216
477	13,765	323
478	13,787	186
479	13,813	-314
480	13,859	-10
481	13,888	157
482	13,904	176
483	13,943	-206
484	13,976	343
485	14,005	196
486	14,024	186
487	14,050	-167
488	14,075	-176
489	14,088	-314
490	14,121	176

Simulation Speed Data – Apartment Building Complex @ Moore's Road

No.	Time (s)	Simulation Speed (rpm)
1	0	0
2	19	95
3	51	0
4	71	-95
5	93	0
6	104	-95
7	109	0
8	129	95
9	141	0
10	161	95
11	170	0
12	181	-95
13	196	0
14	207	95
15	226	0
16	236	-95
17	248	0
18	268	95
19	277	0
20	297	-95
21	303	0
22	332	95
23	341	0
24	352	-95
25	367	0
26	378	95
27	387	0
28	397	95
29	406	0
30	417	-95
31	422	0
32	442	-95
33	454	0
34	465	-95
35	477	0
36	488	95
37	503	0
38	514	-95
39	529	0
40	540	95
41	575	0
42	595	-95
43	610	0
44	621	-95
45	636	0
46	656	95
47	669	0
48	679	95
49	691	0
50	702	-95
51	721	0
52	741	-95
53	749	0
54	760	95
55	763	0
56	773	95
57	789	0
58	799	95
59	805	0
60	825	95
61	834	0
62	854	-95
63	859	0
64	879	-95
65	901	0
66	912	95
67	921	0
68	941	95
69	946	0
70	966	-95
71	982	0
72	1,002	95
73	1,030	0
74	1,041	-95
75	1,050	0
76	1,070	-95
77	1,075	0
78	1,086	-95
79	1,098	0
80	1,109	-95
81	1,114	0
82	1,144	95
83	1,159	0
84	1,170	95
85	1,175	0
86	1,186	95
87	1,195	0
88	1,215	-95
89	1,230	0
90	1,241	-95
91	1,246	0
92	1,257	-95
93	1,260	0
94	1,299	95
95	1,321	0
96	1,341	-95
97	1,366	0
98	1,377	95
99	1,392	0
100	1,412	95
101	1,428	0
102	1,448	-95
103	1,466	0
104	1,496	95
105	1,508	0
106	1,519	-95
107	1,524	0
108	1,544	-95
109	1,560	0
110	1,570	95
111	1,596	0
112	1,606	-95
113	1,615	0
114	1,635	-95
115	1,654	0
116	1,664	95
117	1,673	0
118	1,693	95
119	1,705	0
120	1,716	95
121	1,721	0
122	1,732	-95
123	1,735	0
124	1,745	-95
125	1,771	0
126	1,791	95
127	1,819	0
128	1,839	-95
129	1,868	0
130	1,878	95
131	1,904	0
132	1,914	95
133	1,920	0
134	1,930	-95
135	1,966	0
136	1,986	95
137	1,995	0
138	2,015	95
139	2,027	0
140	2,056	-95
141	2,059	0
142	2,079	-95
143	2,088	0
144	2,098	95
145	2,104	0
146	2,114	95
147	2,133	0
148	2,153	-95
149	2,175	0
150	2,186	95
151	2,198	0
152	2,209	-95
153	2,227	0
154	2,238	-95
155	2,241	0
156	2,251	95
157	2,257	0
158	2,267	95
159	2,283	0
160	2,303	-95
161	2,315	0
162	2,335	95
163	2,340	0
164	2,360	-95
165	2,369	0
166	2,389	-95
167	2,392	0
168	2,403	95
169	2,425	0
170	2,435	95
171	2,441	0
172	2,461	-95
173	2,496	0
174	2,516	95
175	2,532	0
176	2,552	95
177	2,567	0
178	2,578	-95
179	2,603	0
180	2,623	95
181	2,642	0
182	2,662	-95
183	2,671	0
184	2,681	95
185	2,687	0
186	2,697	-95
187	2,713	0
188	2,733	95
189	2,735	0
190	2,746	95
191	2,765	0
192	2,785	-95
193	2,813	0
194	2,833	95
195	2,846	0
196	2,856	95
197	2,862	0
198	2,882	-95
199	2,884	0
200	2,895	95
201	2,904	0
202	2,914	-95
203	2,940	0
204	2,950	95
205	2,985	0
206	3,005	-95
207	3,018	0
208	3,047	-95
209	3,069	0
210	3,089	95
211	3,095	0
212	3,115	-95
213	3,118	0
214	3,138	95
215	3,153	0
216	3,173	-95
217	3,185	0
218	3,205	95
219	3,214	0
220	3,234	-95
221	3,237	0
222	3,257	95
223	3,269	0
224	3,279	-95
225	3,305	0
226	3,334	95
227	3,343	0
228	3,363	95
229	3,375	0
230	3,395	-95
231	3,401	0
232	3,421	95
233	3,424	0
234	3,444	95
235	3,449	0
236	3,469	95
237	3,475	0
238	3,514	-95
239	3,546	0
240	3,556	95
241	3,565	0
242	3,576	95
243	3,585	0
244	3,595	95
245	3,601	0
246	3,621	-95
247	3,624	0
248	3,644	-95
249	3,659	0
250	3,679	-95
251	3,682	0
252	3,692	95
253	3,708	0
254	3,718	-95
255	3,734	0
256	3,754	95
257	3,772	0
258	3,802	-95
259	3,824	0
260	3,844	95
261	3,856	0
262	3,867	95
263	3,879	0
264	3,889	-95
265	3,908	0
266	3,928	-95
267	3,934	0
268	3,954	95
269	3,973	0
270	3,993	-95
271	3,998	0
272	4,009	95
273	4,028	0
274	4,038	-95
275	4,044	0
276	4,064	-95
277	4,082	0
278	4,102	-95
279	4,105	0
280	4,116	95
281	4,118	0
282	4,138	95
283	4,147	0
284	4,167	-95
285	4,179	0
286	4,199	95
287	4,215	0
288	4,225	95
289	4,231	0
290	4,242	-95
291	4,250	0
292	4,261	-95
293	4,270	0
294	4,280	95
295	4,296	0
296	4,316	95
297	4,321	0
298	4,341	-95
299	4,354	0
300	4,364	95
301	4,380	0
302	4,390	-95
303	4,402	0
304	4,413	95
305	4,428	0
306	4,439	-95
307	4,451	0
308	4,462	95
309	4,464	0
310	4,494	-95
311	4,503	0
312	4,513	-95
313	4,519	0
314	4,529	-95
315	4,538	0
316	4,549	95

Simulation Speed Data – Apartment Building Complex @ Moore's Road

No.	Time (s)	Simulation Speed (rpm)
317	4,567	0
318	4,578	95
319	4,593	0
320	4,613	-95
321	4,619	0
322	4,629	95
323	4,632	0
324	4,652	-95
325	4,674	0
326	4,694	95
327	4,706	0
328	4,726	-95
329	4,745	0
330	4,756	95
331	4,768	0
332	4,778	-95
333	4,791	0
334	4,801	95
335	4,823	0
336	4,834	-95
337	4,849	0
338	4,860	95
339	4,869	0
340	4,889	95
341	4,891	0
342	4,911	95
343	4,917	0
344	4,927	95
345	4,933	0
346	4,944	-95
347	4,962	0
348	4,982	-95
349	4,991	0
350	5,002	95
351	5,007	0
352	5,018	95
353	5,033	0
354	5,053	-95
355	5,062	0
356	5,073	-95
357	5,075	0
358	5,095	95
359	5,104	0
360	5,115	-95
361	5,130	0
362	5,141	95
363	5,160	0
364	5,170	-95
365	5,176	0
366	5,196	-95
367	5,214	0
368	5,234	95
369	5,266	0
370	5,277	-95
371	5,286	0
372	5,296	-95
373	5,318	0
374	5,329	95
375	5,332	0
376	5,352	95
377	5,367	0
378	5,387	-95
379	5,393	0
380	5,422	95
381	5,441	0
382	5,461	-95
383	5,490	0
384	5,500	95
385	5,516	0
386	5,536	-95
387	5,548	0
388	5,558	-95
389	5,561	0
390	5,572	-95
391	5,577	0
392	5,588	95
393	5,610	0
394	5,620	-95
395	5,626	0
396	5,655	-95
397	5,658	0
398	5,678	95
399	5,694	0
400	5,704	95
401	5,707	0
402	5,717	-95
403	5,729	0
404	5,740	-95
405	5,743	0
406	5,753	95
407	5,762	0
408	5,773	95
409	5,778	0
410	5,798	-95
411	5,807	0
412	5,827	-95
413	5,849	0
414	5,869	95
415	5,891	0
416	5,911	-95
417	5,923	0
418	5,943	95
419	5,952	0
420	5,963	-95
421	5,968	0
422	5,988	95
423	5,997	0
424	6,017	-95
425	6,020	0
426	6,059	-95
427	6,071	0
428	6,091	95
429	6,113	0
430	6,133	-95
431	6,145	0
432	6,165	95
433	6,171	0
434	6,201	-95
435	6,223	0
436	6,243	95
437	6,258	0
438	6,269	95
439	6,278	0
440	6,298	95
441	6,303	0
442	6,323	-95
443	6,332	0
444	6,352	-95
445	6,371	0
446	6,381	95
447	6,407	0
448	6,417	-95
449	6,420	0
450	6,430	95
451	6,439	0
452	6,450	-95
453	6,469	0
454	6,489	-95
455	6,491	0
456	6,511	95
457	6,533	0
458	6,544	-95
459	6,559	0
460	6,589	95
461	6,598	0
462	6,608	-95
463	6,621	0
464	6,631	95
465	6,650	0
466	6,660	-95
467	6,692	0
468	6,712	95
469	6,715	0
470	6,725	95
471	6,731	0
472	6,751	95
473	6,760	0
474	6,770	-95
475	6,773	0
476	6,784	95
477	6,793	0
478	6,803	-95
479	6,809	0
480	6,819	95
481	6,822	0
482	6,842	-95
483	6,864	0
484	6,874	95
485	6,906	0
486	6,917	-95
487	6,946	0
488	6,956	95
489	6,965	0
490	6,976	95
491	6,988	0
492	6,998	-95
493	7,024	0
494	7,044	95
495	7,066	0
496	7,086	-95
497	7,105	0
498	7,125	95
499	7,127	0
500	7,157	95
501	7,182	0
502	7,193	-95
503	7,211	0
504	7,222	-95
505	7,225	0
506	7,235	95
507	7,247	0
508	7,267	-95
509	7,276	0
510	7,287	95
511	7,305	0
512	7,316	-95
513	7,328	0
514	7,348	95
515	7,354	0
516	7,364	-95
517	7,373	0
518	7,393	-95
519	7,409	0
520	7,419	95
521	7,435	0
522	7,445	-95
523	7,457	0
524	7,468	-95
525	7,471	0
526	7,481	95
527	7,493	0
528	7,504	-95
529	7,509	0
530	7,529	95
531	7,548	0
532	7,568	95
533	7,571	0
534	7,591	-95
535	7,603	0
536	7,623	-95
537	7,635	0
538	7,646	-95
539	7,651	0
540	7,662	95
541	7,690	0
542	7,710	-95
543	7,726	0
544	7,746	95
545	7,752	0
546	7,762	95
547	7,774	0
548	7,785	-95
549	7,807	0
550	7,827	95
551	7,836	0
552	7,846	95
553	7,855	0
554	7,875	-95
555	7,887	0
556	7,898	95
557	7,907	0
558	7,917	95
559	7,926	0
560	7,946	-95
561	7,952	0
562	7,981	-95
563	8,010	0
564	8,030	95
565	8,052	0
566	8,063	-95
567	8,081	0
568	8,101	95
569	8,114	0
570	8,124	-95
571	8,130	0
572	8,150	95
573	8,159	0
574	8,179	95
575	8,184	0
576	8,195	-95
577	8,220	0
578	8,240	95
579	8,249	0
580	8,259	95
581	8,265	0
582	8,285	-95
583	8,288	0
584	8,308	95
585	8,310	0
586	8,321	95
587	8,324	0
588	8,363	95
589	8,378	0
590	8,389	-95
591	8,421	0
592	8,431	95
593	8,453	0
594	8,464	-95
595	8,473	0
596	8,483	95
597	8,486	0
598	8,506	95
599	8,511	0
600	8,531	95
601	8,540	0
602	8,560	-95
603	8,596	0
604	8,606	95
605	8,615	0
606	8,635	95
607	8,654	0
608	8,674	-95
609	8,693	0
610	8,713	-95
611	8,715	0
612	8,735	95
613	8,764	0
614	8,793	-95
615	8,829	0
616	8,849	95
617	8,874	0
618	8,885	-95
619	8,897	0
620	8,917	95
621	8,922	0
622	8,933	-95
623	8,945	0
624	8,956	95
625	8,971	0
626	8,991	-95
627	9,000	0
628	9,011	-95
629	9,019	0
630	9,039	95
631	9,058	0
632	9,078	95

Simulation Speed Data – Apartment Building Complex @ Moore's Road

No.	Time (s)	Simulation Speed (rpm)
633	9,087	0
634	9,107	-95
635	9,116	0
636	9,136	-95
637	9,155	0
638	9,175	95
639	9,194	0
640	9,223	95
641	9,235	0
642	9,246	-95
643	9,251	0
644	9,271	-95
645	9,277	0
646	9,288	-95
647	9,293	0
648	9,313	-95
649	9,322	0
650	9,342	95
651	9,348	0
652	9,358	95
653	9,370	0
654	9,390	95
655	9,399	0
656	9,410	-95
657	9,438	0
658	9,449	95
659	9,474	0
660	9,504	-95
661	9,523	0
662	9,543	-95
663	9,548	0
664	9,568	95
665	9,584	0
666	9,594	-95
667	9,610	0
668	9,630	95
669	9,635	0
670	9,646	95
671	9,668	0
672	9,678	-95
673	9,714	0
674	9,734	95
675	9,743	0
676	9,753	95
677	9,756	0
678	9,776	-95
679	9,781	0
680	9,801	95
681	9,814	0
682	9,824	95
683	9,833	0
684	9,862	-95
685	9,891	0
686	9,911	95
687	9,927	0
688	9,937	95
689	9,953	0
690	9,973	95
691	9,975	0
692	9,986	-95
693	10,005	0
694	10,025	-95
695	10,037	0
696	10,047	95
697	10,069	0
698	10,080	95
699	10,086	0
700	10,096	-95
701	10,108	0
702	10,128	95
703	10,137	0
704	10,148	-95
705	10,176	0
706	10,187	95
707	10,192	0
708	10,203	-95
709	10,209	0
710	10,219	95
711	10,241	0
712	10,252	95
713	10,261	0
714	10,281	-95
715	10,296	0
716	10,307	95
717	10,315	0
718	10,326	95
719	10,335	0
720	10,364	-95
721	10,386	0
722	10,397	95
723	10,406	0
724	10,416	95
725	10,422	0
726	10,432	95
727	10,435	0
728	10,455	-95
729	10,471	0
730	10,491	95
731	10,500	0
732	10,510	-95
733	10,519	0
734	10,529	95
735	10,542	0
736	10,552	-95
737	10,564	0
738	10,575	95
739	10,590	0
740	10,601	-95
741	10,606	0
742	10,626	-95
743	10,639	0
744	10,659	95
745	10,674	0
746	10,685	-95
747	10,713	0
748	10,733	95
749	10,749	0
750	10,759	-95
751	10,772	0
752	10,782	95
753	10,798	0
754	10,818	95
755	10,823	0
756	10,843	95
757	10,849	0
758	10,869	-95
759	10,878	0
760	10,898	95
761	10,910	0
762	10,920	-95
763	10,952	0
764	10,982	95
765	11,001	0
766	11,011	-95
767	11,014	0
768	11,034	95
769	11,043	0
770	11,063	-95
771	11,075	0
772	11,085	95
773	11,091	0
774	11,101	95
775	11,110	0
776	11,130	-95
777	11,146	0
778	11,156	-95
779	11,162	0
780	11,182	-95
781	11,185	0
782	11,214	95
783	11,233	0
784	11,253	-95
785	11,278	0
786	11,298	95
787	11,330	0
788	11,341	-95
789	11,366	0
790	11,377	95
791	11,396	0
792	11,435	-95
793	11,443	0
794	11,463	-95
795	11,479	0
796	11,499	95
797	11,505	0
798	11,525	95
799	11,540	0
800	11,560	-95
801	11,566	0
802	11,576	-95
803	11,579	0
804	11,608	95
805	11,624	0
806	11,644	-95
807	11,653	0
808	11,663	95
809	11,675	0
810	11,695	-95
811	11,714	0
812	11,725	-95
813	11,734	0
814	11,754	95
815	11,763	0
816	11,783	95
817	11,791	0
818	11,802	-95
819	11,817	0
820	11,828	95
821	11,837	0
822	11,857	95
823	11,859	0
824	11,870	95
825	11,879	0
826	11,889	-95
827	11,905	0
828	11,925	-95
829	11,928	0
830	11,948	95
831	11,953	0
832	11,973	95
833	11,976	0
834	11,986	95
835	11,992	0
836	12,012	95
837	12,018	0
838	12,047	-95
839	12,056	0
840	12,076	-95
841	12,091	0
842	12,111	95
843	12,114	0
844	12,125	-95
845	12,133	0
846	12,153	95
847	12,179	0
848	12,189	95
849	12,195	0
850	12,205	-95
851	12,234	0
852	12,254	95
853	12,286	0
854	12,306	-95
855	12,325	0
856	12,345	95
857	12,351	0
858	12,361	95
859	12,367	0
860	12,377	-95
861	12,386	0
862	12,406	-95
863	12,422	0
864	12,432	95
865	12,454	0
866	12,465	-95
867	12,480	0
868	12,500	-95
869	12,506	0
870	12,516	-95
871	12,519	0
872	12,529	95
873	12,542	0
874	12,562	95
875	12,567	0
876	12,578	-95
877	12,590	0
878	12,600	95
879	12,616	0
880	12,626	95
881	12,629	0
882	12,649	-95
883	12,668	0
884	12,707	95
885	12,736	0
886	12,746	-95
887	12,752	0
888	12,772	-95
889	12,794	0
890	12,804	95
891	12,820	0
892	12,840	95
893	12,845	0
894	12,856	-95
895	12,875	0
896	12,885	95
897	12,901	0
898	12,911	-95
899	12,917	0
900	12,927	95
901	12,936	0
902	12,956	-95
903	12,968	0
904	12,979	-95
905	12,985	0
906	12,995	-95
907	13,001	0
908	13,030	95
909	13,056	0
910	13,066	-95
911	13,072	0
912	13,082	95
913	13,091	0
914	13,111	-95
915	13,133	0
916	13,153	95
917	13,179	0
918	13,189	-95
919	13,205	0
920	13,225	95
921	13,233	0
922	13,244	-95
923	13,250	0
924	13,270	95
925	13,282	0
926	13,292	-95
927	13,314	0
928	13,325	95
929	13,334	0
930	13,344	95
931	13,347	0
932	13,357	-95
933	13,376	0
934	13,396	95
935	13,418	0
936	13,438	-95
937	13,460	0
938	13,480	95
939	13,489	0
940	13,528	-95
941	13,544	0
942	13,554	95
943	13,573	0
944	13,593	95
945	13,602	0
946	13,622	-95
947	13,641	0
948	13,661	-95

Simulation Speed Data – Apartment Building Complex @ Moore's Road

No.	Time (s)	Simulation Speed (rpm)
949	13,670	0
950	13,699	95
951	13,734	0
952	13,745	-95
953	13,764	0
954	13,774	95
955	13,786	0
956	13,806	95
957	13,812	0
958	13,823	-95
959	13,858	0
960	13,878	95
961	13,887	0
962	13,897	-95
963	13,903	0
964	13,913	95
965	13,942	0
966	13,953	-95
967	13,975	0
968	13,995	95
969	14,004	0
970	14,014	95
971	14,023	0
972	14,043	95
973	14,049	0
974	14,069	-95
975	14,074	0
976	14,085	-95
977	14,087	0
978	14,107	-95
979	14,120	0
980	14,140	95
981	14,148	0

Reference Torque Data – Apartment Building Complex @ Frankfort Place

No.	Time (s)	Reference Torque (Nm)
1	0	-294
2	26	284
3	55	-314
4	83	-235
5	100	-108
6	119	-451
7	161	-225
8	193	-39
9	209	372
10	222	255
11	248	225
12	277	-137
13	290	-88
14	319	-39
15	355	-147
16	377	-147
17	400	118
18	413	-235
19	442	-323
20	465	-314
21	494	-245
22	517	157
23	539	343
24	578	-29
25	594	157
26	619	235
27	642	-78
28	658	412
29	674	323
30	716	-314
31	745	-20
32	768	-353
33	800	-39
34	813	206
35	851	235
36	877	-108
37	900	-343
38	916	-98
39	932	-314
40	967	-69
41	980	-186
42	1,006	-88
43	1,032	-147
44	1,061	274
45	1,083	-88
46	1,112	-392
47	1,125	304
48	1,148	-20
49	1,187	-167
50	1,209	-333
51	1,245	-314
52	1,271	-196
53	1,296	304
54	1,319	206
55	1,338	363
56	1,354	-323
57	1,383	-88
58	1,396	255
59	1,425	245
60	1,438	-127
61	1,464	-225
62	1,493	196
63	1,519	-49
64	1,547	274
65	1,580	431
66	1,609	-137
67	1,631	147
68	1,657	225
69	1,676	-274
70	1,711	314
71	1,744	333
72	1,772	-176
73	1,789	245
74	1,817	-98
75	1,831	-216
76	1,850	363
77	1,876	-137
78	1,901	-29
79	1,924	-69
80	1,940	147
81	1,959	304
82	1,992	-353
83	2,011	265
84	2,056	-265
85	2,075	-314
86	2,108	-274
87	2,121	206
88	2,156	235
89	2,192	-78
90	2,217	-49
91	2,231	-29
92	2,247	265
93	2,263	127
94	2,298	304
95	2,330	-176
96	2,356	216
97	2,382	-59
98	2,407	-206
99	2,440	-431
100	2,469	-88
101	2,501	-39
102	2,537	-255
103	2,569	323
104	2,582	-245
105	2,602	-69
106	2,628	-235
107	2,644	314
108	2,660	-78
109	2,682	-10
110	2,699	372
111	2,712	137
112	2,737	167
113	2,770	-314
114	2,799	137
115	2,812	-137
116	2,844	245
117	2,883	167
118	2,908	-274
119	2,921	-167
120	2,951	-88
121	2,986	-167
122	2,999	-78
123	3,032	-206
124	3,048	167
125	3,067	-323
126	3,090	265
127	3,119	-255
128	3,144	304
129	3,164	-304
130	3,196	294
131	3,221	284
132	3,241	245
133	3,257	-274
134	3,290	-167
135	3,322	294
136	3,338	-88
137	3,351	-127
138	3,377	-235
139	3,399	-314
140	3,435	-147
141	3,470	294
142	3,499	-392
143	3,535	-39
144	3,560	-88
145	3,592	-88
146	3,618	-196
147	3,647	-59
148	3,670	196
149	3,683	-206
150	3,699	176
151	3,712	-127
152	3,735	314
153	3,757	265
154	3,786	-20
155	3,806	353
156	3,822	-137
157	3,848	-235
158	3,873	353
159	3,906	186
160	3,928	-137
161	3,954	-196
162	3,970	196
163	3,993	-49
164	4,015	-353
165	4,054	-88
166	4,083	-235
167	4,106	-167
168	4,135	-10
169	4,157	284
170	4,180	-176
171	4,216	-314
172	4,254	-69
173	4,287	-186
174	4,310	382
175	4,323	196
176	4,368	-157
177	4,400	-59
178	4,451	294
179	4,467	363
180	4,490	-333
181	4,509	-98
182	4,525	-88
183	4,551	186
184	4,583	-255
185	4,615	-127
186	4,635	-127
187	4,661	-284
188	4,699	284
189	4,712	-245
190	4,726	-176
191	4,755	-314
192	4,793	-186
193	4,809	-363
194	4,842	-225
195	4,868	-108
196	4,893	-78
197	4,913	-98
198	4,945	-176
199	4,980	-392
200	5,003	-108
201	5,019	255
202	5,032	-157
203	5,067	-382
204	5,106	-314
205	5,132	-176
206	5,155	225
207	5,180	-10
208	5,213	-127
209	5,242	-59
210	5,267	274
211	5,287	-10
212	5,325	-186
213	5,348	-137
214	5,364	-235
215	5,377	-304
216	5,393	265
217	5,406	-235
218	5,422	-314
219	5,438	-314
220	5,468	-118
221	5,493	-392
222	5,522	225
223	5,548	225
224	5,573	-451
225	5,609	225
226	5,644	-78
227	5,670	-196
228	5,689	245
229	5,708	-294
230	5,734	-49
231	5,754	-20
232	5,773	-196
233	5,786	-118
234	5,812	-196
235	5,828	245
236	5,847	-431
237	5,880	323
238	5,896	265
239	5,915	255
240	5,938	-176
241	5,961	-10
242	5,989	323
243	6,012	-314
244	6,051	-206
245	6,086	-88
246	6,102	-392
247	6,122	-127
248	6,154	-39
249	6,183	-108
250	6,215	-206
251	6,231	-363
252	6,283	-69
253	6,305	-167
254	6,328	-314
255	6,351	304
256	6,376	206
257	6,408	-167
258	6,424	-108
259	6,469	-98
260	6,498	-304
261	6,524	186
262	6,549	-176
263	6,578	-29
264	6,601	265
265	6,623	-343
266	6,649	-59
267	6,665	265
268	6,694	-88
269	6,710	-78
270	6,739	372
271	6,752	-255
272	6,781	-69
273	6,814	-176
274	6,843	-304
275	6,882	235
276	6,895	-314
277	6,921	-265
278	6,949	284
279	6,966	-225
280	6,985	-10
281	6,998	353
282	7,024	372
283	7,040	-245
284	7,078	225
285	7,094	-176
286	7,123	-196
287	7,156	-98
288	7,188	265
289	7,204	118
290	7,230	-206
291	7,259	-284
292	7,281	-314
293	7,311	-225
294	7,333	255
295	7,359	-20
296	7,388	-196
297	7,408	-127
298	7,436	-78
299	7,450	274
300	7,488	-196
301	7,520	-88
302	7,540	196
303	7,566	-235
304	7,604	186
305	7,630	-88
306	7,653	304
307	7,678	-206
308	7,701	-29
309	7,739	274
310	7,765	-392
311	7,791	-314
312	7,814	216
313	7,833	-196
314	7,846	-127
315	7,875	245
316	7,901	-284

Reference Torque Data – Apartment Building Complex @ Frankfort Place

No.	Time (s)	Reference Torque (Nm)
317	7,923	206
318	7,949	216
319	7,965	-284
320	7,997	294
321	8,020	-245
322	8,049	-206
323	8,082	-235
324	8,107	-196
325	8,133	-118
326	8,159	-255
327	8,191	235
328	8,204	-108
329	8,217	-157
330	8,240	333
331	8,263	-196
332	8,308	-49
333	8,333	353
334	8,346	284
335	8,362	284
336	8,379	-20
337	8,414	-314
338	8,443	-176
339	8,472	-59
340	8,498	333
341	8,523	245
342	8,578	-225
343	8,594	-225
344	8,623	-78
345	8,637	157
346	8,659	-49
347	8,688	-186
348	8,704	265
349	8,727	-78
350	8,753	-392
351	8,798	-98
352	8,833	-147
353	8,856	-363
354	8,891	363
355	8,920	274
356	8,933	-274
357	8,959	421
358	8,988	-29
359	9,014	-69
360	9,039	-78
361	9,062	206
362	9,085	-167
363	9,117	-127
364	9,143	-49
365	9,169	-186
366	9,197	-235
367	9,233	-49
368	9,252	412
369	9,281	-10
370	9,307	333
371	9,326	-118
372	9,365	-314
373	9,394	-20
374	9,423	-20
375	9,449	-118
376	9,468	-69
377	9,500	-108
378	9,536	-255
379	9,575	225
380	9,617	-147
381	9,636	-353
382	9,665	294
383	9,691	-157
384	9,707	216
385	9,739	-412
386	9,778	363
387	9,797	-206
388	9,820	-304
389	9,843	-69
390	9,862	-29
391	9,875	-186
392	9,901	-235
393	9,917	-176
394	9,943	-235
395	9,982	294
396	9,998	-118
397	10,020	-10
398	10,036	323
399	10,069	-167
400	10,085	235
401	10,120	-206
402	10,150	-59
403	10,185	-186
404	10,221	-78
405	10,246	265
406	10,266	-235
407	10,288	353
408	10,327	-137
409	10,362	-127
410	10,382	274
411	10,404	-402
412	10,437	-206
413	10,466	-147
414	10,517	245
415	10,533	304
416	10,550	-225
417	10,563	284
418	10,595	-441
419	10,630	-225
420	10,660	-157
421	10,692	333
422	10,724	353
423	10,737	-363
424	10,769	-88
425	10,786	294
426	10,805	225
427	10,834	-294
428	10,857	-412
429	10,876	284
430	10,892	245

Simulation Speed Data – Apartment Building Complex @ Frankfort Place

No.	Time (s)	Simulation Speed (rpm)
1	0	0
2	19	-95
3	25	0
4	45	95
5	54	0
6	74	95
7	82	0
8	93	-95
9	99	0
10	109	95
11	118	0
12	138	-95
13	160	0
14	180	95
15	192	0
16	203	-95
17	208	0
18	219	95
19	221	0
20	241	-95
21	247	0
22	267	95
23	276	0
24	286	95
25	289	0
26	309	-95
27	318	0
28	338	95
29	354	0
30	364	-95
31	376	0
32	396	-95
33	399	0
34	409	-95
35	412	0
36	432	95
37	441	0
38	451	-95
39	464	0
40	474	95
41	493	0
42	513	-95
43	516	0
44	536	-95
45	538	0
46	568	95
47	577	0
48	587	-95
49	593	0
50	613	-95
51	618	0
52	638	-95
53	641	0
54	652	-95
55	657	0
56	668	95
57	673	0
58	712	95
59	715	0
60	735	95
61	744	0
62	764	-95
63	767	0
64	787	-95
65	799	0
66	809	-95
67	812	0
68	841	95
69	850	0
70	870	-95
71	876	0
72	886	95
73	899	0
74	909	-95
75	915	0
76	925	-95
77	931	0
78	951	95
79	966	0
80	977	95
81	979	0
82	999	-95
83	1,005	0
84	1,025	-95
85	1,031	0
86	1,051	-95
87	1,060	0
88	1,080	95
89	1,082	0
90	1,102	95
91	1,111	0
92	1,122	-95
93	1,124	0
94	1,135	95
95	1,147	0
96	1,167	-95
97	1,186	0
98	1,206	95
99	1,208	0
100	1,238	-95
101	1,244	0
102	1,254	95
103	1,270	0
104	1,290	-95
105	1,295	0
106	1,306	95
107	1,318	0
108	1,328	-95
109	1,337	0
110	1,348	95
111	1,353	0
112	1,373	-95
113	1,382	0
114	1,393	-95
115	1,395	0
116	1,415	95
117	1,424	0
118	1,435	-95
119	1,437	0
120	1,457	95
121	1,463	0
122	1,483	-95
123	1,492	0
124	1,512	-95
125	1,518	0
126	1,538	95
127	1,546	0
128	1,566	-95
129	1,579	0
130	1,599	95
131	1,608	0
132	1,618	95
133	1,630	0
134	1,650	-95
135	1,656	0
136	1,666	-95
137	1,675	0
138	1,705	-95
139	1,710	0
140	1,730	95
141	1,743	0
142	1,763	95
143	1,771	0
144	1,782	-95
145	1,788	0
146	1,808	-95
147	1,816	0
148	1,827	95
149	1,830	0
150	1,840	-95
151	1,849	0
152	1,869	95
153	1,875	0
154	1,895	95
155	1,900	0
156	1,920	95
157	1,923	0
158	1,933	-95
159	1,939	0
160	1,950	-95
161	1,958	0
162	1,978	95
163	1,991	0
164	2,001	-95
165	2,010	0
166	2,049	95
167	2,055	0
168	2,065	-95
169	2,074	0
170	2,085	95
171	2,107	0
172	2,117	-95
173	2,120	0
174	2,140	-95
175	2,155	0
176	2,175	95
177	2,191	0
178	2,211	-95
179	2,216	0
180	2,227	-95
181	2,230	0
182	2,240	95
183	2,246	0
184	2,256	95
185	2,262	0
186	2,282	-95
187	2,297	0
188	2,317	95
189	2,329	0
190	2,349	-95
191	2,355	0
192	2,375	-95
193	2,381	0
194	2,401	-95
195	2,406	0
196	2,417	95
197	2,439	0
198	2,449	-95
199	2,468	0
200	2,488	95
201	2,500	0
202	2,520	-95
203	2,536	0
204	2,565	95
205	2,568	0
206	2,579	95
207	2,581	0
208	2,592	95
209	2,601	0
210	2,611	-95
211	2,627	0
212	2,637	95
213	2,643	0
214	2,653	95
215	2,659	0
216	2,679	-95
217	2,681	0
218	2,692	95
219	2,698	0
220	2,708	95
221	2,711	0
222	2,731	-95
223	2,736	0
224	2,756	-95
225	2,769	0
226	2,779	95
227	2,798	0
228	2,808	-95
229	2,811	0
230	2,831	-95
231	2,843	0
232	2,873	95
233	2,882	0
234	2,902	-95
235	2,907	0
236	2,918	-95
237	2,920	0
238	2,931	95
239	2,950	0
240	2,970	-95
241	2,985	0
242	2,996	-95
243	2,998	0
244	3,018	95
245	3,031	0
246	3,041	95
247	3,047	0
248	3,057	-95
249	3,066	0
250	3,077	-95
251	3,089	0
252	3,109	95
253	3,118	0
254	3,138	-95
255	3,143	0
256	3,154	95
257	3,163	0
258	3,183	-95
259	3,195	0
260	3,215	95
261	3,220	0
262	3,231	95
263	3,240	0
264	3,250	95
265	3,256	0
266	3,266	-95
267	3,289	0
268	3,318	95
269	3,321	0
270	3,331	95
271	3,337	0
272	3,347	95
273	3,350	0
274	3,370	95
275	3,376	0
276	3,386	-95
277	3,398	0
278	3,418	95
279	3,434	0
280	3,454	-95
281	3,469	0
282	3,489	95
283	3,498	0
284	3,518	-95
285	3,534	0
286	3,554	95
287	3,559	0
288	3,579	95
289	3,591	0
290	3,611	-95
291	3,617	0
292	3,637	95
293	3,646	0
294	3,656	-95
295	3,669	0
296	3,679	-95
297	3,682	0
298	3,692	-95
299	3,698	0
300	3,708	95
301	3,711	0
302	3,722	95
303	3,734	0
304	3,754	95
305	3,756	0
306	3,776	-95
307	3,785	0
308	3,796	-95
309	3,805	0
310	3,815	95
311	3,821	0
312	3,831	95
313	3,847	0
314	3,867	-95
315	3,872	0
316	3,902	95

Simulation Speed Data – Apartment Building Complex @ Frankfort Place

No.	Time (s)	Simulation Speed (rpm)
317	3,905	0
318	3,915	-95
319	3,927	0
320	3,947	95
321	3,953	0
322	3,963	-95
323	3,969	0
324	3,980	95
325	3,992	0
326	4,012	95
327	4,014	0
328	4,034	-95
329	4,053	0
330	4,073	95
331	4,082	0
332	4,102	-95
333	4,105	0
334	4,125	95
335	4,134	0
336	4,144	-95
337	4,156	0
338	4,167	95
339	4,179	0
340	4,199	-95
341	4,215	0
342	4,235	95
343	4,253	0
344	4,264	-95
345	4,286	0
346	4,296	95
347	4,309	0
348	4,319	95
349	4,322	0
350	4,351	-95
351	4,367	0
352	4,387	95
353	4,399	0
354	4,438	-95
355	4,450	0
356	4,461	95
357	4,466	0
358	4,486	95
359	4,489	0
360	4,499	-95
361	4,508	0
362	4,519	95
363	4,524	0
364	4,544	95
365	4,550	0
366	4,570	-95
367	4,582	0
368	4,602	95
369	4,614	0
370	4,625	-95
371	4,634	0
372	4,644	95
373	4,660	0
374	4,689	-95
375	4,698	0
376	4,709	95
377	4,711	0
378	4,722	-95
379	4,725	0
380	4,745	-95
381	4,754	0
382	4,774	95
383	4,792	0
384	4,803	-95
385	4,808	0
386	4,828	-95
387	4,841	0
388	4,851	95
389	4,867	0
390	4,887	95
391	4,892	0
392	4,903	-95
393	4,912	0
394	4,932	-95
395	4,944	0
396	4,964	95
397	4,979	0
398	4,990	-95
399	5,002	0
400	5,013	95
401	5,018	0
402	5,029	95
403	5,031	0
404	5,061	95
405	5,066	0
406	5,086	-95
407	5,105	0
408	5,116	95
409	5,131	0
410	5,142	-95
411	5,154	0
412	5,174	95
413	5,179	0
414	5,199	95
415	5,212	0
416	5,232	-95
417	5,241	0
418	5,261	-95
419	5,266	0
420	5,277	95
421	5,286	0
422	5,315	-95
423	5,324	0
424	5,334	95
425	5,347	0
426	5,357	-95
427	5,363	0
428	5,373	95
429	5,376	0
430	5,386	-95
431	5,392	0
432	5,403	95
433	5,405	0
434	5,416	-95
435	5,421	0
436	5,432	-95
437	5,437	0
438	5,448	95
439	5,467	0
440	5,487	-95
441	5,492	0
442	5,512	-95
443	5,521	0
444	5,541	95
445	5,547	0
446	5,567	95
447	5,572	0
448	5,592	-95
449	5,608	0
450	5,637	95
451	5,643	0
452	5,663	-95
453	5,669	0
454	5,679	95
455	5,688	0
456	5,699	95
457	5,707	0
458	5,718	-95
459	5,733	0
460	5,744	95
461	5,753	0
462	5,763	95
463	5,772	0
464	5,783	-95
465	5,785	0
466	5,805	-95
467	5,811	0
468	5,821	-95
469	5,827	0
470	5,838	95
471	5,846	0
472	5,866	-95
473	5,879	0
474	5,889	95
475	5,895	0
476	5,905	95
477	5,914	0
478	5,934	95
479	5,937	0
480	5,947	-95
481	5,960	0
482	5,980	-95
483	5,988	0
484	6,008	95
485	6,011	0
486	6,031	95
487	6,050	0
488	6,079	-95
489	6,085	0
490	6,096	-95
491	6,101	0
492	6,112	-95
493	6,121	0
494	6,141	95
495	6,153	0
496	6,173	-95
497	6,182	0
498	6,202	95
499	6,214	0
500	6,224	95
501	6,230	0
502	6,259	-95
503	6,282	0
504	6,302	95
505	6,304	0
506	6,315	95
507	6,327	0
508	6,337	-95
509	6,350	0
510	6,370	95
511	6,375	0
512	6,395	95
513	6,407	0
514	6,418	-95
515	6,423	0
516	6,462	95
517	6,468	0
518	6,488	-95
519	6,497	0
520	6,517	-95
521	6,523	0
522	6,543	-95
523	6,548	0
524	6,568	95
525	6,577	0
526	6,597	95
527	6,600	0
528	6,620	95
529	6,622	0
530	6,642	-95
531	6,648	0
532	6,659	-95
533	6,664	0
534	6,684	95
535	6,693	0
536	6,704	-95
537	6,709	0
538	6,729	95
539	6,738	0
540	6,749	95
541	6,751	0
542	6,762	-95
543	6,780	0
544	6,810	95
545	6,813	0
546	6,823	95
547	6,842	0
548	6,862	-95
549	6,881	0
550	6,891	95
551	6,894	0
552	6,914	95
553	6,920	0
554	6,940	-95
555	6,948	0
556	6,959	95
557	6,965	0
558	6,975	-95
559	6,984	0
560	6,994	95
561	6,997	0
562	7,017	95
563	7,023	0
564	7,033	95
565	7,039	0
566	7,068	-95
567	7,077	0
568	7,088	95
569	7,093	0
570	7,113	95
571	7,122	0
572	7,133	-95
573	7,155	0
574	7,175	95
575	7,187	0
576	7,197	95
577	7,203	0
578	7,223	-95
579	7,229	0
580	7,249	-95
581	7,258	0
582	7,278	-95
583	7,280	0
584	7,291	95
585	7,310	0
586	7,320	-95
587	7,332	0
588	7,343	95
589	7,358	0
590	7,378	-95
591	7,387	0
592	7,398	-95
593	7,407	0
594	7,427	95
595	7,435	0
596	7,446	-95
597	7,449	0
598	7,478	95
599	7,487	0
600	7,507	-95
601	7,519	0
602	7,530	95
603	7,539	0
604	7,549	-95
605	7,565	0
606	7,585	95
607	7,603	0
608	7,623	-95
609	7,629	0
610	7,640	-95
611	7,652	0
612	7,672	95
613	7,677	0
614	7,688	95
615	7,700	0
616	7,730	-95
617	7,738	0
618	7,758	95
619	7,764	0
620	7,775	-95
621	7,790	0
622	7,801	95
623	7,813	0
624	7,823	95
625	7,832	0
626	7,843	-95
627	7,845	0
628	7,865	-95
629	7,874	0
630	7,894	95
631	7,900	0
632	7,920	-95

Simulation Speed Data – Apartment Building Complex @ Frankfort Place

No.	Time (s)	Simulation Speed (rpm)
633	7,922	0
634	7,942	95
635	7,948	0
636	7,959	-95
637	7,964	0
638	7,984	-95
639	7,996	0
640	8,016	95
641	8,019	0
642	8,030	95
643	8,048	0
644	8,068	-95
645	8,081	0
646	8,101	-95
647	8,106	0
648	8,117	95
649	8,132	0
650	8,152	-95
651	8,158	0
652	8,178	-95
653	8,190	0
654	8,200	95
655	8,203	0
656	8,214	95
657	8,216	0
658	8,227	95
659	8,239	0
660	8,259	95
661	8,262	0
662	8,291	-95
663	8,307	0
664	8,327	-95
665	8,332	0
666	8,343	95
667	8,345	0
668	8,356	95
669	8,361	0
670	8,372	95
671	8,378	0
672	8,398	-95
673	8,413	0
674	8,424	95
675	8,442	0
676	8,462	-95
677	8,471	0
678	8,491	95
679	8,497	0
680	8,517	95
681	8,522	0
682	8,561	-95
683	8,577	0
684	8,587	-95
685	8,593	0
686	8,604	95
687	8,622	0
688	8,633	-95
689	8,636	0
690	8,646	-95
691	8,658	0
692	8,678	95
693	8,687	0
694	8,698	-95
695	8,703	0
696	8,723	95
697	8,726	0
698	8,746	95
699	8,752	0
700	8,781	-95
701	8,797	0
702	8,817	95
703	8,832	0
704	8,852	95
705	8,855	0
706	8,875	-95
707	8,890	0
708	8,910	95
709	8,919	0
710	8,930	95
711	8,932	0
712	8,943	-95
713	8,958	0
714	8,978	95
715	8,987	0
716	9,007	95
717	9,013	0
718	9,033	95
719	9,038	0
720	9,049	-95
721	9,061	0
722	9,081	-95
723	9,084	0
724	9,104	95
725	9,116	0
726	9,126	-95
727	9,142	0
728	9,162	95
729	9,168	0
730	9,188	-95
731	9,196	0
732	9,216	95
733	9,232	0
734	9,242	-95
735	9,251	0
736	9,271	95
737	9,280	0
738	9,300	-95
739	9,306	0
740	9,316	95
741	9,325	0
742	9,345	-95
743	9,364	0
744	9,375	95
745	9,393	0
746	9,413	-95
747	9,422	0
748	9,442	95
749	9,448	0
750	9,458	-95
751	9,467	0
752	9,497	-95
753	9,499	0
754	9,519	95
755	9,535	0
756	9,555	-95
757	9,574	0
758	9,594	95
759	9,616	0
760	9,626	-95
761	9,635	0
762	9,655	-95
763	9,664	0
764	9,684	95
765	9,690	0
766	9,700	95
767	9,706	0
768	9,735	95
769	9,738	0
770	9,758	-95
771	9,777	0
772	9,787	95
773	9,796	0
774	9,807	95
775	9,819	0
776	9,829	-95
777	9,842	0
778	9,852	95
779	9,861	0
780	9,871	95
781	9,874	0
782	9,885	-95
783	9,900	0
784	9,911	95
785	9,916	0
786	9,936	95
787	9,942	0
788	9,962	-95
789	9,981	0
790	9,991	95
791	9,997	0
792	10,017	-95
793	10,019	0
794	10,030	95
795	10,035	0
796	10,065	95
797	10,068	0
798	10,078	-95
799	10,084	0
800	10,104	95
801	10,119	0
802	10,130	-95
803	10,149	0
804	10,169	95
805	10,184	0
806	10,204	-95
807	10,220	0
808	10,240	95
809	10,245	0
810	10,256	95
811	10,265	0
812	10,275	-95
813	10,287	0
814	10,317	95
815	10,326	0
816	10,346	-95
817	10,361	0
818	10,372	95
819	10,381	0
820	10,391	95
821	10,403	0
822	10,414	-95
823	10,436	0
824	10,446	95
825	10,465	0
826	10,504	-95
827	10,516	0
828	10,527	-95
829	10,532	0
830	10,543	95
831	10,549	0
832	10,559	-95
833	10,562	0
834	10,582	95
835	10,594	0
836	10,614	-95
837	10,629	0
838	10,640	95
839	10,659	0
840	10,679	-95
841	10,691	0
842	10,711	95
843	10,723	0
844	10,734	95
845	10,736	0
846	10,756	-95
847	10,768	0
848	10,779	-95
849	10,785	0
850	10,795	95
851	10,804	0
852	10,824	95
853	10,833	0
854	10,843	-95
855	10,856	0
856	10,866	-95
857	10,875	0
858	10,885	95
859	10,891	0
860	10,902	95
861	10,904	0

ANNEXURE – 03

PID Model Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	404.1	567	-23.4	50	780	0	-43.1
2	398.2	674	17.0	51	160	1	9.9
3	398.8	676	11.3	49	240	1	6.3
4	402.1	671	16.9	50	160	1	21.0
5	404.6	676	6.6	50	320	1	2.9
6	395.2	680	12.3	49	240	1	14.3
7	396.4	568	-22.5	51	90	0	-68.5
8	398.2	678	1.1	51	400	1	1.1
9	402.3	678	17.6	50	160	1	30.9
10	404.7	679	6.6	51	320	1	3.6
11	398.1	563	-26.1	50	810	0	-15.4
12	402.4	562	-28.4	50	860	0	-36.2
13	401.4	567	-21.4	51	750	0	-50.0
14	396.8	675	21.7	49	80	1	13.6
15	403.2	673	3.2	51	470	1	10.4
16	402.5	563	-23.8	50	40	0	-43.9
17	396.8	564	-18.6	49	140	0	-24.2
18	402.3	565	-22.5	51	70	0	-29.3
19	396.6	567	-16.2	51	180	0	-19.1
20	401.7	672	17.9	51	160	1	11.4
21	398.0	562	-35.3	50	980	0	-67.0
22	402.5	568	-26.8	49	830	0	-31.2
23	398.6	562	-23.5	50	790	0	-15.7
24	399.9	561	-22.4	50	760	0	-28.8
25	397.1	563	-23.2	49	760	0	-65.7
26	399.5	670	4.5	50	350	1	11.9
27	404.6	677	10.2	50	250	1	6.6
28	398.8	677	13.6	50	640	1	43.2
29	404.7	671	9.1	51	560	1	16.0
30	404.3	677	17.9	50	680	1	21.8
31	403.7	563	-22.4	50	80	0	-25.6
32	396.7	678	21.3	51	730	1	11.4
33	405.0	568	-38.7	49	990	0	-65.5
34	396.9	674	5.4	50	340	1	5.9
35	397.1	677	28.5	51	0	1	32.5
36	404.3	679	16.4	50	170	1	8.4
37	396.9	565	-31.2	50	890	0	-37.2
38	400.4	677	20.0	51	110	1	36.5
39	400.4	678	10.6	51	260	1	25.3
40	402.8	570	-22.7	49	80	0	-40.9
41	404.5	673	27.1	51	840	1	72.3
42	400.1	675	15.5	51	650	1	18.1
43	404.2	676	6.5	50	510	1	6.6
44	399.6	560	-23.6	49	80	0	-28.1
45	403.0	675	19.7	49	110	1	12.2
46	404.1	567	-37.7	51	1000	0	-70.1
47	403.6	569	-30.1	49	880	0	-18.5
48	404.3	564	-24.8	50	790	0	-46.6
49	398.0	674	18.7	49	120	1	33.9
50	401.1	677	19.7	51	720	1	56.4
51	396.7	561	-23.0	49	70	0	-13.4
52	396.7	677	14.2	51	210	1	55.2
53	396.7	674	27.1	50	0	1	65.1
54	398.9	567	-26.6	50	30	0	-63.7
55	402.1	569	-20.5	49	90	0	-38.2
56	400.8	676	11.2	49	590	1	13.2
57	395.4	563	-25.9	51	40	0	-15.3
58	399.0	672	13.4	49	630	1	16.1
59	398.7	568	-17.7	50	130	0	-12.9
60	395.1	680	17.8	49	710	1	46.8
61	397.3	565	-38.2	51	1020	0	-68.7
62	397.2	567	-33.2	50	910	0	-37.6
63	395.9	674	28.7	49	0	1	83.2
64	401.8	678	7.3	50	310	1	22.3
65	396.3	678	21.0	50	110	1	13.0
66	402.3	561	-22.2	51	90	0	-39.2
67	396.5	678	29.5	50	870	1	83.8
68	400.8	676	18.9	49	730	1	37.2
69	403.2	566	-21.2	50	90	0	-14.1
70	396.0	565	-25.9	50	40	0	-45.5
71	401.6	680	12.4	51	610	1	7.3
72	402.4	671	28.9	49	0	1	48.1

PID Model Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
73	404.7	560	-26.7	51	840	0	-16.8
74	403.5	565	-19.3	50	710	0	-47.4
75	397.1	671	3.4	50	370	1	6.8
76	395.1	674	13.3	51	630	1	34.2
77	395.9	568	-24.2	49	40	0	-29.2
78	400.6	671	23.6	51	790	1	61.2
79	398.4	679	13.2	49	620	1	24.8
80	400.8	569	-14.6	50	200	0	-8.6
81	395.1	566	-25.3	51	800	0	-57.6
82	399.7	673	28.8	49	0	1	48.5
83	398.9	565	-22.0	50	760	0	-26.1
84	395.8	673	10.4	49	250	1	6.1
85	403.0	674	12.3	49	230	1	22.3
86	399.5	565	-23.3	51	40	0	-68.2
87	395.3	566	-23.9	50	70	0	-14.8
88	403.2	565	-19.1	50	110	0	-35.1
89	405.0	675	27.2	51	820	1	49.1
90	403.6	679	33.6	50	930	1	20.0
91	396.4	561	-23.8	50	50	0	-15.4
92	401.9	674	14.7	50	190	1	8.1
93	399.9	567	-26.9	50	830	0	-50.7
94	397.4	670	27.6	51	0	1	33.5
95	400.7	569	-21.2	50	730	0	-13.0
96	396.0	674	8.6	49	290	1	9.0
97	396.3	564	-19.1	50	720	0	-11.2
98	397.9	673	5.3	50	340	1	12.2
99	395.5	670	6.8	51	320	1	20.1
100	399.9	678	15.2	49	180	1	9.1
101	399.0	560	-26.3	50	40	0	-30.5
102	395.1	566	-17.1	49	140	0	-46.1
103	400.3	673	0.1	50	420	1	0.4
104	395.8	676	21.5	50	760	1	74.6
105	400.4	562	-18.4	51	150	0	-21.9
106	401.1	565	-21.6	49	90	0	-12.5
107	402.1	678	15.8	50	670	1	29.0
108	403.2	561	-22.4	51	80	0	-13.4
109	398.2	678	9.2	50	280	1	11.9
110	404.2	672	22.1	49	90	1	25.1
111	403.5	566	-19.8	49	710	0	-23.8
112	402.9	673	0.4	49	410	1	0.2
113	397.3	678	4.7	49	350	1	7.2
114	402.1	674	2.2	50	380	1	5.4
115	399.9	562	-15.5	50	180	0	-27.2
116	400.9	570	-12.5	50	230	0	-31.9
117	403.2	677	4.2	50	490	1	5.9
118	404.9	673	7.5	50	540	1	10.0
119	401.0	679	13.5	50	620	1	7.4
120	404.2	671	27.2	51	850	1	15.3
121	403.9	670	24.5	50	790	1	44.2
122	395.9	671	32.7	51	940	1	20.1
123	401.8	564	-25.8	51	40	0	-14.2
124	396.7	675	16.6	50	170	1	10.9
125	395.3	565	-32.7	50	910	0	-20.8
126	399.0	679	1.0	49	430	1	2.0
127	397.2	570	-24.3	50	800	0	-30.5
128	399.0	564	-24.1	50	800	0	-72.2
129	401.4	672	21.5	50	750	1	45.7
130	398.1	564	-22.6	49	750	0	-39.9
131	395.8	671	28.5	49	0	1	51.8
132	399.1	675	13.7	49	620	1	32.8
133	401.5	676	7.8	51	310	1	7.9
134	403.4	679	17.4	50	170	1	20.4
135	401.9	677	16.5	49	150	1	30.2
136	400.6	561	-13.6	49	200	0	-49.8
137	396.3	674	13.0	50	620	1	8.5
138	396.3	675	5.1	50	490	1	9.8
139	404.3	675	1.8	50	400	1	5.9
140	397.5	679	14.1	49	210	1	23.8
141	404.5	672	1.6	50	390	1	2.2
142	403.9	675	20.2	49	730	1	38.1
143	399.1	565	-14.3	50	200	0	-16.2
144	397.5	671	6.4	49	520	1	11.8

PID Model Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
145	398.9	561	-15.3	50	180	0	-40.8
146	397.7	565	-26.3	50	840	0	-16.0
147	404.5	680	13.9	51	630	1	16.4
148	398.3	673	3.8	49	360	1	8.0
149	404.6	676	28.7	51	0	1	75.0
150	401.6	676	30.5	50	890	1	89.5
151	398.4	570	-28.7	50	870	0	-34.7
152	404.8	679	6.0	50	330	1	7.4
153	402.9	679	14.0	51	210	1	24.7
154	402.1	676	22.6	50	750	1	50.3
155	403.7	672	3.6	50	370	1	3.1
156	401.6	569	-18.3	51	140	0	-23.2
157	404.8	672	7.2	50	540	1	8.8
158	398.5	678	1.4	50	390	1	3.2
159	397.4	673	19.5	51	120	1	25.4
160	401.0	567	-25.3	50	800	0	-83.1
161	401.4	674	20.0	49	730	1	107.3
162	403.4	676	26.8	50	0	1	101.7
163	395.6	674	14.6	51	650	1	47.2
164	401.8	563	-26.8	50	820	0	-106.2
165	395.5	565	-20.1	50	120	0	-66.0
166	396.6	565	-11.8	51	240	0	-21.5
167	397.2	673	1.4	50	400	1	4.1
168	399.1	678	8.0	50	300	1	14.6
169	403.2	671	18.5	50	720	1	87.4
170	399.3	566	-23.6	51	780	0	-86.3
171	399.9	680	11.7	50	590	1	31.9
172	403.0	563	-16.4	50	160	0	-36.5
173	399.3	672	8.5	50	290	1	20.0
174	396.5	676	17.0	51	150	1	31.8
175	395.3	567	-24.3	50	800	0	-45.0
176	402.9	674	27.9	51	0	1	65.5
177	403.6	670	23.2	49	770	1	47.6
178	401.3	566	-18.3	50	150	0	-21.9
179	404.3	561	-24.2	49	800	0	-44.6
180	402.3	677	19.3	49	700	1	75.8
181	403.7	562	-14.8	50	210	0	-25.9
182	399.0	671	27.1	50	0	1	84.3
183	396.1	677	10.8	50	240	1	34.4
184	397.1	670	20.6	51	90	1	26.6
185	401.3	672	26.7	50	830	1	101.5
186	398.7	674	18.1	49	140	1	71.2
187	398.2	672	10.6	51	580	1	11.2
188	395.6	674	21.7	51	740	1	49.1
189	402.7	672	2.4	50	390	1	5.0
190	399.6	672	5.5	50	500	1	5.9
191	396.6	678	29.6	50	870	1	73.9
192	395.1	678	15.8	50	660	1	48.9
193	396.9	680	11.4	50	580	1	7.1
194	398.3	567	-28.7	50	850	0	-113.8
195	397.6	672	1.1	50	430	1	0.9
196	398.3	563	-24.4	49	40	0	-109.1
197	398.2	672	26.1	50	0	1	114.0
198	404.3	566	-10.4	50	260	0	-35.7
199	400.1	674	27.4	50	0	1	86.4
200	403.2	562	-16.1	49	190	0	-27.2
201	398.1	674	21.5	51	740	1	38.5
202	398.4	676	13.6	49	210	1	42.2
203	396.3	569	-30.6	50	870	0	-92.8
204	396.0	566	-17.8	50	150	0	-45.3
205	399.7	567	-23.6	50	790	0	-45.4
206	401.8	672	1.4	50	440	1	1.6
207	403.7	561	-15.6	50	190	0	-25.6
208	401.7	671	7.2	50	530	1	26.4
209	401.3	677	0.4	50	420	1	0.2
210	403.8	671	5.2	50	340	1	9.4
211	401.9	674	2.9	49	380	1	3.7
212	404.2	562	-25.3	49	20	0	-77.6
213	399.7	562	-27.4	49	820	0	-57.3
214	402.9	569	-16.7	51	150	0	-30.4
215	399.0	680	6.9	51	530	1	16.2
216	396.7	563	-22.8	49	770	0	-68.8

PID Model Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
217	395.5	674	8.5	50	290	1	24.8
218	402.7	674	22.3	50	770	1	46.0
219	401.6	678	9.3	49	560	1	21.5
220	401.3	564	-22.5	51	770	0	-51.6
221	400.4	566	-28.2	51	830	0	-67.1
222	399.9	670	1.3	50	400	1	2.6
223	395.1	678	15.5	51	660	1	58.3
224	400.6	679	4.1	51	360	1	8.1
225	398.8	563	-29.5	51	850	0	-67.9
226	403.8	566	-16.0	50	170	0	-70.2
227	398.4	670	9.5	50	280	1	24.9
228	398.4	676	11.1	49	590	1	20.5
229	395.1	673	7.4	51	310	1	11.9
230	397.2	569	-25.9	50	840	0	-48.8
231	401.0	672	40.0	50	1030	1	150.4
232	399.5	561	-27.2	50	850	0	-17.1
233	398.2	671	1.2	49	440	1	3.3
234	404.3	673	2.5	50	380	1	3.8
235	404.0	679	8.7	50	280	1	5.1
236	401.7	560	-13.4	49	220	0	-69.3
237	403.9	677	0.7	50	430	1	1.7
238	396.1	564	-14.4	50	190	0	-32.9
239	399.0	675	2.8	51	460	1	5.1
240	402.9	567	-26.2	49	840	0	-79.8
241	401.2	672	9.2	50	280	1	21.9
242	398.2	561	-23.7	49	790	0	-78.1
243	402.2	673	4.2	49	490	1	23.9
244	400.8	565	-26.1	49	800	0	-29.9
245	399.5	561	-20.9	49	730	0	-43.8
246	396.7	677	31.2	50	890	1	107.3
247	403.6	674	16.6	49	170	1	86.6
248	401.6	673	6.9	51	530	1	19.6
249	396.4	675	10.8	49	570	1	12.3
250	395.9	674	10.8	50	250	1	19.5
251	397.4	676	4.2	50	490	1	14.5
252	398.9	560	-12.6	49	220	0	-33.3
253	399.3	560	-19.5	50	710	0	-79.3
254	402.1	674	10.7	51	590	1	45.2
255	396.0	674	10.1	49	260	1	35.6
256	399.5	561	-25.7	51	830	0	-66.2
257	399.0	564	-17.4	51	150	0	-77.8
258	401.9	569	-25.4	51	820	0	-126.1
259	398.7	680	6.9	50	520	1	36.7
260	401.6	675	2.1	49	390	1	6.9
261	402.9	670	7.7	51	540	1	9.6
262	402.7	678	3.1	50	380	1	7.2
263	402.3	566	-11.5	49	250	0	-25.9
264	402.6	678	12.6	50	610	1	39.2
265	396.6	680	11.1	50	260	1	30.6
266	400.3	563	-15.4	49	180	0	-10.7
267	397.8	569	-15.0	50	190	0	-35.1
268	404.3	567	-27.2	50	850	0	-67.9
269	398.0	679	0.1	50	420	1	-1.0
270	397.3	679	7.3	51	530	1	13.1
271	401.5	569	-12.3	50	230	0	-38.6
272	398.9	675	9.9	50	260	1	39.2
273	399.6	560	-15.6	51	190	0	-9.8
274	403.3	561	-12.3	51	240	0	-20.6
275	399.0	673	5.2	51	340	1	14.7
276	399.9	671	9.2	50	560	1	20.6
277	396.7	679	0.1	50	420	1	0.5
278	404.0	564	-20.8	51	720	0	-37.8
279	402.8	563	-16.4	50	160	0	-41.3
280	396.3	562	-19.7	51	720	0	-46.7
281	403.8	674	30.2	51	860	1	61.7
282	398.5	671	22.7	51	80	1	80.3
283	397.7	569	-16.8	50	160	0	-43.6
284	396.8	568	-14.6	50	180	0	-30.4
285	395.8	564	-21.9	50	750	0	-62.9
286	400.9	676	3.5	50	470	1	3.9
287	395.5	562	-30.1	50	870	0	-81.9
288	395.1	565	-13.7	50	200	0	-42.5

PID Model Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
289	395.9	670	14.9	49	660	1	28.9
290	400.8	564	-23.3	50	780	0	-43.5
291	400.7	566	-21.3	49	740	0	-44.4
292	398.0	672	6.8	50	520	1	15.0
293	397.0	670	6.7	49	520	1	22.7
294	395.4	564	-28.1	51	830	0	-77.3
295	402.6	564	-13.8	51	210	0	-7.9
296	400.8	564	-28.8	50	850	0	-84.6
297	395.5	672	1.5	50	400	1	1.1
298	396.1	678	18.0	50	700	1	58.2
299	401.5	562	-12.6	49	230	0	-22.4
300	396.5	677	20.7	51	730	1	63.5
301	395.0	676	19.5	50	140	1	106.4
302	399.3	564	-18.2	49	130	0	-60.3
303	395.5	562	-24.7	50	810	0	-71.7
304	399.2	566	-17.3	50	160	0	-55.2
305	397.5	672	7.9	50	300	1	30.6
306	400.3	675	12.4	50	610	1	34.2
307	400.8	673	3.4	51	360	1	9.9
308	404.1	672	7.8	51	550	1	39.6
309	395.9	678	20.4	50	110	1	88.0
310	395.9	675	6.0	50	510	1	20.7
311	402.2	679	5.8	50	330	1	13.6
312	397.3	564	-28.5	49	860	0	-66.4
313	401.6	672	26.8	51	820	1	106.7
314	397.8	564	-18.4	51	700	0	-72.7
315	399.9	678	5.2	49	500	1	6.1
316	402.5	561	-12.4	51	230	0	-50.6
317	404.3	675	1.5	50	400	1	4.8
318	395.2	569	-15.2	51	200	0	-60.8
319	398.3	562	-26.4	50	820	0	-80.7
320	396.0	673	0.3	50	410	1	0.7
321	395.4	568	-17.8	50	150	0	-73.6
322	399.8	671	1.1	50	400	1	1.9
323	397.4	676	8.2	50	540	1	9.7
324	395.6	568	-28.6	51	860	0	-50.3
325	402.6	675	7.8	50	540	1	13.6
326	397.2	671	9.1	50	290	1	10.4
327	395.5	676	13.6	49	220	1	41.3
328	396.9	561	-16.8	50	170	0	-42.0
329	401.6	569	-16.8	49	170	0	-35.2
330	402.8	561	-21.7	50	750	0	-51.6
331	396.1	673	16.5	50	670	1	67.7
332	404.5	570	-21.3	50	740	0	-80.3
333	404.8	568	-15.1	51	190	0	-28.7
334	403.2	673	7.0	50	320	1	12.3
335	399.2	674	6.9	49	320	1	8.6
336	395.1	569	-27.3	49	860	0	-36.6
337	402.6	680	20.3	49	730	1	94.5
338	401.6	674	10.8	50	590	1	12.3
339	398.8	569	-18.8	51	710	0	-61.4
340	404.4	566	-18.5	50	700	0	-33.8
341	397.8	674	20.2	50	750	1	66.4
342	395.4	566	-24.7	49	810	0	-110.0
343	403.7	561	-16.6	51	170	0	-76.2
344	398.7	672	30.0	50	880	1	16.2
345	396.8	567	-21.6	50	760	0	-39.8
346	398.5	672	22.3	50	770	1	45.5
347	400.3	679	7.7	51	290	1	15.5
348	397.5	679	17.2	49	680	1	9.8
349	397.6	563	-23.2	49	780	0	-101.2
350	402.0	671	8.4	50	550	1	14.8
351	396.4	676	14.5	51	630	1	68.1
352	396.3	671	3.1	49	370	1	13.1
353	401.4	562	-16.6	50	170	0	-38.0
354	396.1	562	-25.4	51	790	0	-45.6
355	404.2	567	-14.4	50	210	0	-17.8
356	401.8	676	10.1	49	270	1	11.5
357	396.9	676	14.9	50	190	1	25.5
358	398.7	677	19.2	50	140	1	56.7
359	403.1	677	22.5	51	60	1	41.6
360	398.0	561	-18.8	50	130	0	-67.5

PID Model Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
361	397.2	565	-13.3	49	230	0	-8.6
362	397.9	677	14.3	50	210	1	32.5
363	403.6	678	0.7	51	430	1	1.1
364	398.8	569	-27.9	50	840	0	-15.6
365	395.7	564	-14.0	51	220	0	-56.5
366	401.6	677	15.9	50	190	1	54.8
367	395.3	561	-19.2	51	710	0	-24.3
368	403.5	675	8.6	50	540	1	19.3
369	395.4	570	-13.5	50	200	0	-33.1
370	401.7	560	-33.0	50	910	0	-92.6
371	395.1	566	-27.4	50	840	0	-84.0
372	404.2	673	13.5	50	210	1	25.4
373	395.7	673	18.2	50	690	1	92.9
374	402.8	563	-21.3	50	730	0	-94.1
375	397.1	568	-13.9	49	210	0	-40.0
376	396.3	680	3.6	50	370	1	5.8
377	398.1	565	-12.0	51	240	0	-47.8
378	400.0	676	16.8	50	660	1	8.3
379	396.6	678	22.9	50	90	1	99.6
380	398.3	562	-13.6	51	210	0	-9.1
381	404.2	674	13.5	51	630	1	28.8
382	399.8	671	11.1	50	590	1	13.6
383	395.8	563	-16.2	49	160	0	-42.3
384	398.3	569	-24.7	49	800	0	-50.0
385	396.2	671	25.2	49	810	1	60.6
386	404.0	564	-21.6	50	760	0	-26.0
387	402.9	671	2.3	50	460	1	4.9
388	400.0	566	-25.2	50	800	0	-150.6
389	397.7	671	35.6	50	960	1	220.0
390	402.9	672	2.9	50	370	1	4.2
391	395.9	563	-23.3	50	760	0	-84.5
392	396.6	562	-17.9	51	150	0	-31.5
393	401.9	564	-24.8	50	810	0	-64.5
394	397.2	673	7.0	51	520	1	14.5
395	403.1	564	-16.8	49	170	0	-10.5
396	403.5	561	-24.4	50	780	0	-50.8
397	401.9	672	9.0	49	560	1	23.0
398	399.0	673	22.9	50	60	1	72.4
399	403.8	673	28.2	50	850	1	92.1
400	398.6	676	19.4	50	120	1	60.7
401	403.6	672	7.1	49	540	1	13.2
402	402.1	563	-16.5	49	150	0	-64.1
403	404.6	568	-20.2	51	740	0	-51.9
404	400.5	568	-24.4	51	780	0	-58.8
405	396.4	674	5.0	50	340	1	2.9
406	397.9	561	-24.9	51	810	0	-31.2
407	397.4	677	4.4	50	490	1	8.3
408	403.6	568	-20.0	51	740	0	-50.6
409	396.8	679	14.0	49	650	1	26.6
410	402.7	671	24.5	50	810	1	59.3
411	398.2	564	-16.0	50	160	0	-47.4
412	398.7	566	-24.5	50	790	0	-28.6
413	401.5	675	0.7	51	410	1	0.6
414	397.9	672	14.4	51	630	1	17.2
415	404.1	562	-33.7	50	930	0	-79.9
416	399.9	679	19.2	50	720	1	24.2
417	396.1	561	-25.7	49	790	0	-14.6
418	397.5	672	6.4	50	320	1	6.6
419	401.0	567	-20.3	49	740	0	-12.1
420	404.8	673	1.8	50	400	1	1.2
421	399.6	674	11.9	49	240	1	7.7
422	402.1	677	17.8	49	150	1	21.4
423	402.6	678	20.6	50	90	1	41.5
424	401.7	562	-25.6	51	50	0	-31.8
425	397.6	672	13.7	49	630	1	33.2
426	398.6	670	28.8	50	870	1	92.6
427	404.3	567	-16.9	50	160	0	-9.9
428	399.6	561	-22.3	50	80	0	-27.2
429	401.0	565	-27.6	51	0	0	-15.8
430	395.7	670	8.7	50	560	1	21.5
431	401.4	565	-36.9	50	980	0	-22.4
432	396.6	567	-25.5	50	820	0	-61.3

PID Model Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
433	395.8	568	-31.8	50	930	0	-21.4
434	398.0	672	6.5	51	320	1	8.3
435	396.8	672	11.8	50	240	1	14.0
436	400.2	679	16.6	50	160	1	10.5
437	397.6	677	23.8	50	80	1	39.5
438	404.9	670	16.5	49	160	1	40.5
439	398.7	675	6.3	50	330	1	3.5
440	399.4	564	-22.9	50	60	0	-28.3
441	400.1	568	-11.7	49	240	0	-28.4
442	398.4	679	9.1	50	560	1	16.2
443	399.4	561	-14.4	51	190	0	-28.3
444	400.0	564	-16.4	49	180	0	-18.9
445	397.2	566	-12.6	51	230	0	-15.8
446	403.3	679	27.8	49	0	1	50.7
447	396.9	677	6.0	50	510	1	15.6
448	395.2	563	-21.3	50	80	0	-12.7
449	400.8	671	20.9	49	110	1	12.0
450	398.5	674	1.0	50	410	1	0.1
451	395.4	676	7.2	51	320	1	3.4
452	397.8	565	-26.9	49	810	0	-30.5
453	399.4	677	6.7	51	320	1	12.5
454	399.2	675	11.9	50	240	1	21.1
455	400.9	679	27.9	49	830	1	65.5
456	398.3	567	-12.7	50	230	0	-16.5
457	400.8	679	26.6	50	0	1	66.7
458	397.4	671	13.9	49	640	1	34.5
459	397.8	569	-22.0	50	90	0	-13.6
460	402.1	673	10.3	50	260	1	20.1
461	403.4	567	-24.2	51	780	0	-15.7
462	397.4	565	-17.6	49	690	0	-42.6
463	404.5	678	4.7	50	350	1	4.4
464	404.0	678	2.3	50	380	1	5.4
465	403.8	679	7.2	50	310	1	12.8
466	403.0	674	26.2	50	0	1	33.9
467	401.1	564	-16.5	51	170	0	-20.1
468	401.4	673	2.1	50	460	1	6.9
469	404.3	569	-20.4	49	110	0	-38.3
470	402.0	678	10.3	51	580	1	17.6
471	403.1	677	15.2	50	650	1	18.9
472	403.1	565	-13.4	50	210	0	-15.8
473	403.0	560	-15.7	51	170	0	-9.6
474	402.0	563	-13.9	49	210	0	-18.1
475	397.9	565	-25.0	50	810	0	-16.9
476	397.6	676	4.2	51	360	1	6.5
477	397.2	670	1.9	51	390	1	1.4
478	398.4	672	6.0	51	320	1	3.7
479	401.6	680	9.1	50	290	1	15.0
480	404.1	678	27.4	50	0	1	67.1
481	402.1	675	14.0	51	640	1	36.8
482	402.2	672	20.9	50	730	1	51.1
483	398.8	671	24.3	50	810	1	29.3
484	396.5	677	35.7	50	990	1	43.3
485	404.2	671	21.0	49	740	1	26.9
486	400.0	675	17.4	50	680	1	10.8
487	404.1	674	25.9	50	820	1	44.6
488	403.8	561	-25.8	50	40	0	-15.8
489	402.1	673	14.3	49	190	1	8.9
490	401.3	671	7.1	50	310	1	4.7
491	404.5	678	0.4	49	430	1	0.8
492	402.6	570	-20.1	50	740	0	-12.8
493	399.1	672	5.1	51	350	1	7.0
494	403.0	676	0.4	50	420	1	-0.5
495	403.8	673	15.1	50	170	1	38.4
496	401.3	671	28.3	49	0	1	81.6
497	397.1	674	10.3	51	580	1	29.4
498	395.1	562	-12.5	50	230	0	-22.4
499	401.3	674	4.6	50	490	1	2.2
500	396.9	679	14.1	50	640	1	16.8
501	401.5	674	21.8	50	760	1	14.3
502	404.2	673	36.6	50	1000	1	72.0
503	402.9	675	5.9	50	320	1	4.0
504	402.3	677	3.0	50	370	1	4.3

PID Model Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
505	399.1	672	11.2	51	240	1	13.2
506	398.2	674	14.1	49	210	1	17.5
507	397.8	680	3.9	50	350	1	7.3
508	402.8	674	18.7	50	130	1	39.1
509	401.6	671	14.6	49	210	1	15.7
510	398.7	569	-20.1	49	110	0	-12.6
511	396.4	674	34.6	49	970	1	84.7
512	400.2	679	14.8	51	640	1	25.2
513	398.9	670	19.3	49	720	1	49.3
514	395.1	674	30.1	49	880	1	55.2
515	397.8	672	11.9	51	240	1	6.7
516	399.4	675	16.5	50	160	1	31.2
517	402.1	675	12.2	50	240	1	22.7
518	404.3	672	27.7	49	0	1	49.3
519	399.6	679	6.2	51	330	1	13.8
520	403.4	678	17.1	50	150	1	10.9
521	401.4	561	-16.1	50	170	0	-39.9
522	396.2	567	-18.9	50	150	0	-47.4
523	395.5	563	-13.5	50	210	0	-9.4
524	404.9	673	17.5	50	690	1	32.3
525	401.7	671	4.3	50	490	1	3.4
526	401.1	563	-25.4	49	40	0	-14.0
527	396.2	676	23.5	51	80	1	13.2
528	400.8	679	11.8	51	250	1	20.6
529	403.7	674	17.1	50	170	1	38.3
530	400.5	677	20.0	49	110	1	11.6
531	396.0	679	28.0	49	0	1	82.2
532	398.2	562	-20.7	49	120	0	-35.6
533	400.1	567	-17.3	50	160	0	-30.9
534	400.5	677	23.6	50	780	1	57.4
535	396.8	562	-14.6	50	200	0	-25.1
536	402.4	679	6.5	51	310	1	17.4
537	401.6	673	12.0	50	240	1	14.2
538	396.3	679	14.9	49	180	1	20.3
539	404.4	678	11.7	51	230	1	6.6
540	396.0	567	-21.8	51	90	0	-52.2
Total Regenerated Energy per Day by 1 Elevator (Wh)							**235.0**
Total Regenerated Energy per Day by all the 5 Elevators (kWh)							**1.2**

PID Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	395.2	670	12.8	50	490	0	46.5
2	399.4	678	14.2	50	530	0	37.4
3	400.6	677	0.5	51	260	0	0.4
4	403.8	679	4.9	49	340	0	3.2
5	402.4	562	-15.3	50	530	1	-62.9
6	395.2	671	1.0	50	230	1	1.3
7	401.8	678	8.7	50	90	1	26.0
8	398.2	674	1.1	50	270	0	1.3
9	402.2	675	8.8	50	410	0	36.2
10	404.0	677	3.8	49	320	0	4.5
11	402.1	680	15.5	50	550	0	19.5
12	399.0	674	7.2	50	380	0	4.6
13	399.5	678	1.6	50	220	1	4.6
14	402.5	566	-8.7	51	420	1	-5.9
15	404.7	562	-10.2	50	440	1	-18.4
16	395.8	672	1.0	51	230	1	1.3
17	396.3	565	-9.2	49	430	1	-11.6
18	403.8	671	5.5	50	350	0	10.1
19	396.0	566	-8.4	50	90	0	-6.0
20	402.6	672	11.3	50	470	0	51.9
21	398.0	677	2.0	50	210	1	3.9
22	395.1	671	14.7	51	540	0	17.6
23	404.1	675	13.2	49	490	0	15.4
24	398.3	674	7.3	51	390	0	4.8
25	400.9	676	7.4	49	110	1	51.7
26	403.0	673	14.0	50	520	0	41.8
27	403.4	672	11.5	49	470	0	29.5
28	399.5	677	2.0	50	290	0	1.4
29	396.3	678	2.0	49	210	1	2.6
30	399.7	567	-12.2	50	490	1	-37.4
31	401.5	567	-16.2	50	570	1	-32.3
32	398.7	676	6.3	50	130	1	11.5
33	404.4	672	10.6	49	460	0	13.6
34	399.9	675	11.6	50	470	0	14.4
35	403.0	566	-9.9	49	70	0	-6.2
36	396.3	563	-7.2	51	110	0	-13.1
37	398.1	674	4.8	49	340	0	5.4
38	400.8	677	10.8	50	460	0	12.9
39	404.0	675	1.6	51	280	0	1.1
40	403.7	673	5.6	51	360	0	4.0
41	395.3	674	1.6	50	220	1	5.8
42	399.5	560	-11.7	49	470	1	-34.8
43	397.2	568	-14.3	50	520	1	-10.1
44	400.1	674	1.6	50	220	1	2.0
45	399.3	564	-7.9	50	100	0	-20.0
46	396.5	565	-10.5	50	50	0	-13.1
47	404.8	676	5.9	51	360	0	6.8
48	395.7	676	4.6	50	340	0	3.1
49	402.7	561	-8.9	49	80	0	-28.1
50	404.3	569	-11.2	50	470	1	-21.4
51	402.8	567	-18.1	50	610	1	-68.2
52	396.0	676	1.0	50	230	1	1.3
53	399.1	561	-17.1	49	560	1	-20.5
54	395.6	570	-16.2	49	550	1	-10.7
55	399.9	670	3.0	50	310	0	7.5
56	395.7	561	-11.1	51	50	0	-43.4
57	400.2	566	-16.5	50	560	1	-38.8
58	400.6	562	-13.9	50	520	1	-26.7
59	399.3	561	-17.5	51	570	1	-30.3
60	404.6	678	8.1	51	400	0	52.3
61	396.8	673	8.6	50	410	0	5.8
62	400.8	564	-5.3	51	150	0	-3.5
63	396.7	566	-9.4	50	420	1	-15.6
64	402.6	564	-14.2	50	520	1	-18.0
65	404.8	671	2.2	50	210	1	1.4
66	402.9	566	-12.6	51	480	1	-20.8
67	397.1	672	6.3	49	130	1	4.3
68	402.1	675	1.1	49	230	1	1.3
69	402.2	566	-11.5	49	470	1	-14.1
70	401.1	672	0.5	51	260	0	0.7
71	403.3	671	1.1	50	270	0	1.9
72	397.5	677	3.1	50	310	0	9.3
73	395.8	679	3.6	50	320	0	6.4
74	400.9	673	0.5	51	260	0	0.3
75	403.9	562	-12.1	51	480	1	-44.2
76	396.5	678	2.2	50	210	1	3.7
77	403.3	675	8.3	50	90	1	5.6
78	400.4	676	13.8	51	0	1	15.7

PID Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
79	404.2	567	-14.6	50	520	1	-17.8
80	403.2	670	13.1	50	510	0	95.2
81	395.3	678	5.0	50	340	0	5.7
82	404.6	672	1.1	49	270	0	0.7
83	399.9	562	-11.0	51	450	1	-44.0
84	401.9	679	2.7	51	200	1	4.8
85	401.7	564	-13.3	51	490	1	-8.8
86	399.2	561	-15.3	50	550	1	-18.3
87	403.1	675	6.0	51	370	0	11.4
88	395.3	570	-9.1	49	80	0	-49.7
89	398.6	564	-17.8	50	600	1	-90.5
90	401.9	565	-12.2	49	490	1	-23.4
91	401.0	569	-9.5	50	70	0	-29.5
92	399.1	564	-6.5	49	130	0	-19.1
93	399.3	671	13.3	51	0	1	73.2
94	401.4	671	10.8	49	460	0	71.8
95	401.9	673	7.6	49	110	1	9.1
96	401.0	679	12.8	50	0	1	57.7
97	404.4	567	-13.5	50	500	1	-8.5
98	401.4	567	-14.3	49	520	1	-25.4
99	398.2	670	5.1	49	350	0	3.5
100	400.1	567	-7.8	50	100	0	-14.0
101	404.9	569	-12.9	50	500	1	-32.8
102	400.2	678	18.5	50	610	0	119.6
103	401.0	672	5.0	50	340	0	3.3
104	400.4	673	2.2	50	290	0	1.4
105	399.8	676	12.9	51	0	1	92.4
106	401.0	671	19.0	50	600	0	22.4
107	403.1	678	6.6	51	370	0	14.8
108	395.9	678	10.5	51	440	0	37.6
109	404.4	563	-13.3	49	500	1	-105.9
110	404.8	562	-7.8	49	100	0	-19.7
111	399.3	677	11.8	50	480	0	53.1
112	398.2	675	0.5	50	240	1	0.9
113	396.6	670	7.1	51	380	0	16.1
114	401.4	566	-9.6	49	430	1	-53.1
115	395.6	680	7.5	51	110	1	5.1
116	401.4	678	5.2	49	150	1	6.6
117	403.0	673	12.1	50	470	0	80.9
118	404.1	675	13.7	49	0	1	31.6
119	397.3	671	3.0	49	190	1	7.3
120	404.4	561	-10.7	50	50	0	-19.1
121	395.1	566	-7.1	50	120	0	-12.6
122	400.4	560	-8.7	50	80	0	-5.8
123	398.2	678	6.2	50	130	1	38.8
124	403.8	672	12.7	50	490	0	29.8
125	396.8	673	13.4	49	510	0	56.7
126	401.5	679	3.8	50	320	0	4.6
127	403.6	671	13.2	50	0	1	93.6
128	397.6	673	12.8	50	480	0	57.8
129	401.3	564	-18.1	49	600	1	-22.4
130	401.1	676	13.0	49	490	0	8.2
131	398.2	563	-9.9	49	440	1	-12.1
132	403.3	675	6.1	50	140	1	20.7
133	397.0	676	5.3	50	350	0	12.6
134	398.4	672	10.8	49	460	0	47.8
135	403.2	674	9.1	50	430	0	6.2
136	399.2	564	-11.7	50	480	1	-8.1
137	396.8	675	13.5	51	0	1	77.7
138	396.0	678	14.6	50	520	0	16.4
139	400.3	680	11.0	50	450	0	40.0
140	396.8	561	-15.3	51	540	1	-10.3
141	397.6	562	-16.3	51	560	1	-19.3
142	399.2	674	2.8	50	200	1	4.6
143	397.1	567	-4.8	49	160	0	-14.4
144	397.5	674	1.0	51	230	1	1.8
145	403.3	562	-17.0	49	580	1	-30.3
146	396.0	671	7.5	51	390	0	34.8
147	396.4	567	-16.1	50	560	1	-50.8
148	397.0	679	7.5	49	110	1	12.8
149	397.7	570	-12.8	49	490	1	-14.5
150	397.7	675	18.0	50	590	0	135.6
151	397.9	569	-9.1	50	430	1	-12.0
152	395.5	675	12.9	50	0	1	82.7
153	395.8	672	10.6	51	450	0	62.6
154	404.9	678	7.8	51	100	1	54.0
155	395.8	677	11.1	50	450	0	7.3
156	400.7	673	12.1	50	490	0	86.1

PID Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
157	399.0	562	-7.6	51	110	0	-9.3
158	400.4	680	3.6	50	180	1	23.5
159	397.0	561	-14.9	50	540	1	-19.6
160	402.6	670	11.1	50	450	0	6.8
161	403.8	568	-9.4	49	70	0	-21.9
162	395.7	676	1.6	51	220	1	2.7
163	404.8	565	-8.7	50	420	1	-16.4
164	401.1	671	15.4	51	540	0	115.0
165	398.7	673	13.5	50	0	1	75.8
166	401.8	678	3.1	49	190	1	4.0
167	401.7	673	2.7	51	300	0	8.0
168	399.6	680	11.7	49	460	0	33.7
169	396.2	567	-10.5	49	450	1	-19.6
170	403.9	671	1.0	49	230	1	0.7
171	404.1	679	0.5	49	240	1	0.6
172	397.6	569	-9.0	51	420	1	-17.0
173	397.5	677	2.1	49	210	1	2.6
174	396.3	671	19.5	50	610	0	111.8
175	401.4	679	13.1	51	0	1	64.1
176	399.1	676	12.7	50	490	0	54.6
177	402.6	565	-17.6	50	570	1	-12.0
178	402.9	672	7.2	51	110	1	30.8
179	395.8	679	18.6	49	590	0	84.5
180	398.5	672	2.2	50	290	0	3.9
181	397.8	673	2.6	50	200	1	1.8
182	401.6	674	9.2	49	430	0	11.6
183	404.1	568	-11.2	49	470	1	-40.4
184	404.4	678	2.2	51	290	0	2.5
185	404.4	569	-14.7	49	540	1	-64.9
186	400.1	674	15.7	49	560	0	92.0
187	403.4	671	1.0	50	230	1	1.2
188	397.9	670	3.0	50	190	1	7.9
189	397.0	563	-13.5	50	500	1	-9.2
190	402.4	678	13.1	49	490	0	67.7
191	397.4	678	13.7	51	0	1	86.8
192	398.7	678	2.2	50	290	0	8.7
193	398.4	561	-13.8	50	510	1	-34.5
194	400.8	569	-13.8	51	500	1	-24.6
195	402.4	671	1.1	50	270	0	0.7
196	403.6	680	14.3	49	510	0	87.8
197	397.0	670	5.5	51	150	1	28.4
198	405.0	673	12.8	51	500	0	23.0
199	400.5	680	8.1	50	410	0	15.4
200	403.3	569	-19.7	51	620	1	-92.9
201	399.5	671	10.0	51	440	0	6.4
202	397.2	671	12.5	51	490	0	62.5
203	404.6	562	-8.6	50	420	1	-21.7
204	399.2	672	5.3	49	350	0	9.9
205	396.5	565	-13.4	50	510	1	-8.8
206	396.2	561	-16.2	49	560	1	-47.7
207	402.3	676	6.2	50	370	0	4.4
208	402.3	570	-8.5	51	90	0	-26.6
209	395.6	679	1.0	50	270	0	1.3
210	403.5	560	-18.2	49	600	1	-89.7
211	400.8	671	15.5	50	530	0	34.3
212	404.1	565	-5.6	50	140	0	-10.2
213	401.8	675	13.2	50	0	1	75.5
214	398.1	562	-7.9	49	100	0	-28.0
215	396.8	675	7.2	50	120	1	25.3
216	398.9	678	3.1	49	190	1	3.9
217	399.7	673	5.7	51	360	0	34.1
218	401.1	679	0.5	50	240	1	2.9
219	405.0	676	11.9	51	470	0	82.0
220	400.5	561	-13.0	50	490	1	-68.1
221	400.1	677	0.5	49	240	1	0.4
222	405.7	672	19.8	49	610	0	44.3
223	404.0	562	-16.9	50	570	1	-11.0
224	403.5	673	11.1	51	50	1	45.2
225	403.6	563	-7.6	50	100	0	-14.3
226	404.0	678	14.8	49	520	0	80.9
227	405.9	566	-13.5	49	510	1	-87.0
228	401.4	564	-9.6	50	60	0	-11.7
229	401.9	678	3.1	50	310	0	7.7
230	402.5	675	4.9	51	340	0	5.9
231	397.3	564	-7.0	49	120	0	-12.6
232	407.0	677	13.6	49	0	1	34.0
233	397.1	569	-11.9	50	470	1	-20.4
234	397.3	564	-13.7	50	510	1	-16.2

PID Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
235	407.0	563	-10.5	49	450	1	-24.7
236	400.5	677	2.2	50	290	0	7.7
237	400.0	560	-10.5	50	450	1	-18.1
238	402.0	561	-6.6	49	120	0	-8.1
239	405.6	675	11.9	50	470	0	37.0
240	401.7	677	3.2	51	310	0	4.0
241	399.8	679	0.5	51	260	0	0.4
242	402.3	560	-17.0	50	560	1	-116.4
243	400.9	674	3.6	50	320	0	12.8
244	406.4	679	11.8	51	480	0	44.3
245	405.6	561	-9.9	51	70	0	-6.3
246	406.8	560	-15.8	50	540	1	-9.9
247	399.1	561	-10.5	51	440	1	-42.6
248	397.4	676	5.2	49	350	0	3.4
249	400.4	568	-6.9	50	120	0	-4.7
250	399.7	674	9.6	49	430	0	35.7
251	397.8	561	-9.3	50	420	1	-36.6
252	405.8	561	-9.2	49	430	1	-23.7
253	405.6	570	-13.6	50	500	1	-23.5
254	401.1	677	8.2	50	400	0	24.3
255	397.8	564	-7.2	50	120	0	-24.5
256	406.4	562	-11.2	50	460	1	-20.2
257	399.1	562	-12.2	50	470	1	-13.5
258	401.1	674	2.1	50	210	1	3.8
259	400.9	561	-15.6	49	560	1	-29.6
260	403.1	670	11.0	50	450	0	37.8
261	402.4	567	-9.9	51	440	1	-23.2
262	402.4	670	4.9	50	340	0	25.5
263	401.0	569	-10.0	51	60	0	-11.9
264	399.1	670	13.0	51	0	1	66.6
265	398.7	563	-15.8	49	540	1	-10.8
266	406.1	562	-17.6	51	580	1	-20.7
267	401.1	671	8.6	50	420	0	33.5
268	398.9	566	-17.8	50	570	1	-31.4
269	406.1	674	8.3	49	410	0	40.4
270	403.9	561	-14.5	49	530	1	-10.0
271	402.3	565	-13.8	49	520	1	-9.3
272	404.0	563	-15.8	50	550	1	-48.6
273	405.1	672	5.2	49	150	1	19.7
274	405.1	564	-6.0	51	130	0	-43.4
275	404.1	676	4.4	50	170	1	17.2
276	401.0	678	9.7	50	440	0	18.0
277	399.7	564	-11.7	49	480	1	-15.5
278	396.8	674	8.4	51	410	0	5.4
279	402.6	563	-8.3	50	100	0	-29.8
280	400.6	566	-17.7	49	570	1	-29.6
281	402.2	677	8.7	50	420	0	21.8
282	404.7	565	-10.7	51	460	1	-58.8
283	399.0	671	7.1	50	390	0	27.1
284	400.1	677	8.0	49	100	1	14.7
285	401.7	671	19.1	51	600	0	56.7
286	397.4	679	6.4	50	130	1	18.4
287	402.8	676	2.6	50	300	0	3.2
288	397.7	671	2.1	49	290	0	2.5
289	401.2	673	4.4	51	170	1	20.9
290	401.6	564	-15.8	51	560	1	-31.0
291	404.7	678	10.2	49	440	0	62.7
292	402.3	677	12.6	50	500	0	15.9
293	401.2	561	-8.2	51	100	0	-9.4
294	402.1	673	13.5	50	0	1	82.6
295	399.4	678	7.3	50	390	0	32.7
296	400.4	567	-12.4	50	490	1	-30.3
297	399.2	673	16.9	50	560	0	47.3
298	396.0	672	16.2	49	570	0	11.5
299	396.2	680	8.7	49	90	1	35.7
300	400.2	564	-12.5	49	480	1	-21.5
301	402.2	674	7.3	50	390	0	34.2
302	404.7	671	8.9	49	80	1	50.5
303	402.4	677	5.7	51	360	0	32.3
304	399.9	673	2.8	51	200	1	12.8
305	395.1	673	17.4	50	580	0	109.3
306	403.4	674	5.0	50	160	1	11.6
307	401.7	671	7.2	51	380	0	4.8
308	396.3	564	-13.8	50	500	1	-40.4
309	398.4	673	0.5	49	260	0	2.7
310	400.5	567	-10.3	49	450	1	-57.9
311	401.5	678	1.7	49	220	1	4.0
312	402.2	671	17.7	49	600	0	32.1

PID Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
313	396.6	570	-8.9	51	80	0	-36.9
314	399.3	567	-7.6	51	100	0	-9.3
315	402.7	569	-12.7	51	490	1	-36.5
316	396.9	570	-9.7	49	430	1	-34.3
317	399.9	567	-9.6	50	440	1	-12.2
318	397.9	675	18.1	50	580	0	110.3
319	402.2	670	13.5	51	0	1	55.8
320	402.1	677	1.1	51	230	1	1.3
321	403.0	560	-8.8	50	90	0	-49.9
322	404.1	566	-15.2	51	550	1	-46.5
323	404.2	675	2.7	50	200	1	11.1
324	400.4	561	-8.3	51	100	0	-54.1
325	401.5	569	-7.2	51	390	1	-13.1
326	397.9	564	-15.2	51	530	1	-17.2
327	396.3	564	-18.1	50	590	1	-78.4
328	402.4	679	14.8	51	530	0	132.0
329	396.5	570	-13.4	49	510	1	-101.0
330	397.3	561	-14.2	50	510	1	-16.4
331	401.6	561	-5.7	51	140	0	-48.3
332	402.1	567	-15.2	50	530	1	-101.7
333	402.9	675	4.5	50	340	0	3.1
334	402.8	569	-7.4	49	110	0	-35.7
335	401.2	675	4.4	50	170	1	5.1
336	403.8	569	-12.7	50	490	1	-15.9
337	402.9	673	0.5	49	240	1	1.0
338	400.2	561	-5.4	50	150	0	-20.3
339	400.9	677	13.7	50	0	1	80.5
340	395.2	676	17.0	50	580	0	128.9
341	399.3	673	3.2	50	190	1	18.4
342	401.3	567	-10.3	51	60	0	-12.1
343	400.6	670	5.5	50	350	0	3.4
344	403.2	564	-14.6	49	520	1	-62.6
345	395.2	673	8.3	50	410	0	24.3
346	403.9	568	-9.4	50	430	1	-23.4
347	403.4	677	13.3	49	500	0	16.7
348	395.3	566	-10.4	49	50	0	-13.3
349	397.2	562	-8.8	50	90	0	-30.4
350	402.3	564	-8.3	50	410	1	-19.5
351	398.2	565	-14.8	49	530	1	-27.3
352	397.0	672	11.6	50	480	0	15.1
353	397.7	567	-7.4	50	110	0	-21.7
354	396.5	675	16.3	49	550	0	29.6
355	397.1	561	-12.2	51	490	1	-94.6
356	403.9	673	4.3	49	330	0	10.7
357	395.2	673	8.1	50	410	0	20.6
358	398.9	569	-14.2	50	510	1	-59.5
359	402.1	679	3.1	50	190	1	5.6
360	401.3	674	7.1	49	380	0	41.1
361	396.3	569	-7.8	51	100	0	-18.9
362	401.7	569	-14.8	50	530	1	-80.2
363	400.6	675	2.0	49	290	0	1.4
364	397.4	566	-7.7	50	100	0	-5.2
365	398.1	672	4.9	50	160	1	8.5
366	399.1	563	-11.8	50	480	1	-30.0
367	395.4	562	-8.2	49	90	0	-9.8
368	403.3	678	14.4	50	510	0	88.9
369	399.5	676	12.9	49	0	1	80.2
370	399.8	679	0.5	51	260	0	1.2
371	403.1	679	5.2	51	350	0	3.5
372	399.2	672	5.0	49	350	0	3.5
373	402.5	675	9.1	49	80	1	39.2
374	397.5	676	12.8	50	480	0	84.1
375	402.9	561	-18.0	49	600	1	-12.1
376	397.8	678	2.6	49	200	1	16.4
377	401.8	674	4.1	50	330	0	25.8
378	403.0	560	-9.1	49	430	1	-38.2
379	400.5	562	-9.1	50	430	1	-11.8
380	400.4	671	13.3	50	510	0	34.2
381	403.6	673	1.1	51	270	0	1.9
382	400.8	560	-12.0	51	470	1	-40.6
383	404.1	675	5.4	51	150	1	9.5
384	397.3	675	6.0	50	360	0	35.4
385	404.2	671	13.2	50	0	1	66.5
386	402.4	567	-15.8	50	560	1	-11.0
387	399.7	671	8.6	49	420	0	16.3
388	397.8	568	-10.0	49	60	0	-19.1
389	402.0	678	9.9	49	440	0	18.1
390	402.9	566	-14.3	50	530	1	-98.4

PID Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
391	400.6	569	-7.2	51	110	0	-66.1
392	404.6	679	2.2	49	210	1	9.4
393	402.8	680	0.5	49	240	1	0.3
394	403.9	564	-13.9	51	520	1	-26.6
395	402.1	676	5.7	50	360	0	31.6
396	400.3	561	-7.7	49	110	0	-5.1
397	395.0	677	2.0	49	210	1	9.0
398	401.2	563	-11.8	49	480	1	-8.0
399	397.5	564	-10.4	51	450	1	-13.3
400	400.3	563	-11.1	49	470	1	-7.8
401	404.1	672	9.3	49	430	0	27.9
402	400.6	676	5.3	50	350	0	6.7
403	401.9	569	-9.5	49	70	0	-6.3
404	396.2	562	-7.7	49	110	0	-5.0
405	403.6	676	8.8	50	420	0	11.3
406	400.5	563	-9.6	49	70	0	-6.1
407	398.8	672	10.0	49	70	1	46.1
408	400.5	561	-11.1	49	460	1	-19.3
409	398.0	567	-10.2	51	450	1	-19.4
410	398.1	561	-8.7	49	90	0	-15.3
411	402.5	677	3.3	50	310	0	2.1
412	404.1	677	10.6	49	450	0	25.4
413	397.6	674	13.5	50	500	0	16.0
414	402.3	563	-6.0	51	140	0	-10.9
415	403.2	562	-8.1	49	100	0	-5.3
416	397.7	670	1.0	49	230	1	1.8
417	403.9	570	-10.3	50	450	1	-26.9
418	399.7	676	2.0	49	210	1	3.7
419	397.5	679	5.1	50	150	1	9.6
420	401.7	566	-9.6	49	60	0	-23.4
421	398.2	680	6.1	49	360	0	3.8
422	404.7	678	5.9	50	360	0	7.3
423	404.6	567	-6.9	50	120	0	-8.3
424	399.8	672	11.8	51	470	0	8.1
425	396.3	674	13.4	51	510	0	24.6
426	398.9	565	-10.8	51	450	1	-26.4
427	403.5	565	-9.3	49	430	1	-11.4
428	402.5	679	0.6	51	240	1	2.0
429	404.0	677	12.6	50	500	0	16.2
430	402.5	562	-6.1	51	130	0	-11.9
431	395.4	672	14.1	50	510	0	9.5
432	396.0	672	12.5	49	490	0	31.0
433	404.0	677	1.6	51	280	0	2.0
434	396.6	670	1.1	51	230	1	3.1
435	398.8	676	0.5	50	240	1	0.4
436	403.6	563	-12.1	50	480	1	-15.1
437	402.5	677	13.6	51	0	1	23.6
438	400.0	562	-15.1	49	540	1	-18.3
439	403.2	677	13.6	50	510	0	16.7
440	398.8	673	10.3	50	440	0	12.0
441	401.7	670	1.6	50	280	0	1.1
442	403.3	674	8.3	50	410	0	15.6
443	398.2	676	11.7	49	480	0	21.4
444	404.7	674	5.4	51	350	0	3.7
445	404.2	566	-8.5	50	90	0	-5.6
446	401.8	570	-12.9	49	490	1	-22.6
447	401.3	564	-11.9	49	480	1	-36.5
448	395.9	672	2.1	50	210	1	2.5
449	400.8	566	-11.0	51	460	1	-19.5
450	397.7	563	-13.6	49	500	1	-8.8
451	396.0	674	10.5	50	440	0	36.1
452	403.3	679	9.6	50	440	0	23.3
453	402.0	566	-7.2	50	120	0	-8.0
454	402.6	569	-7.5	49	110	0	-8.6
455	395.2	566	-9.1	50	430	1	-16.7
456	398.1	679	13.3	50	0	1	55.9
457	403.7	678	2.7	50	200	1	4.9
458	398.0	679	9.7	50	430	0	11.3
459	396.1	677	7.1	50	390	0	9.2
460	396.5	672	6.8	50	380	0	4.6
461	402.5	679	13.1	50	490	0	15.0
462	399.5	563	-6.8	50	120	0	-12.9
463	400.9	672	5.6	49	360	0	7.3
464	395.6	676	3.1	50	310	0	2.0
465	403.7	569	-17.8	51	600	1	-70.3
466	403.8	563	-17.6	49	570	1	-11.2
467	402.3	676	1.0	50	230	1	1.9
468	403.1	560	-14.9	50	520	1	-9.6

PID Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
469	400.0	671	0.5	50	240	1	0.6
470	399.5	561	-8.8	50	90	0	-9.9
471	403.2	672	10.4	51	440	0	18.1
472	399.7	564	-7.2	50	120	0	-12.4
473	396.0	678	5.5	51	350	0	6.6
474	401.2	679	7.2	50	380	0	4.6
475	397.2	562	-7.2	50	110	0	-8.9
476	395.2	564	-18.0	50	580	1	-21.5
477	399.5	677	5.3	50	350	0	6.5
478	402.4	677	13.0	51	0	1	47.3
479	395.3	562	-15.1	49	540	1	-18.5
480	402.5	561	-12.9	51	500	1	-15.7
481	398.3	670	12.5	50	490	0	78.1
482	397.8	678	7.7	51	110	1	21.6
483	396.7	678	6.6	50	130	1	21.8
484	398.2	565	-10.9	50	40	0	-13.4
485	398.0	674	4.2	51	330	0	7.8
486	404.2	679	12.6	50	490	0	8.6
487	401.1	674	3.7	50	320	0	6.4
488	401.7	679	17.6	50	590	0	20.8
489	395.5	564	-12.6	50	500	1	-38.7
490	403.3	567	-12.6	50	480	1	-36.2
Total Regenerated Energy per Day (Wh)							**1,826.6**

PID Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	402.9	567	-11.6	50	460	1	-69.9
2	402.7	566	-7.5	50	110	0	-30.5
3	402.5	674	16.2	50	560	0	20.3
4	404.4	677	9.7	49	70	1	24.2
5	400.5	679	1.5	51	220	1	3.0
6	400.3	679	7.6	51	390	0	23.0
7	402.9	570	-14.2	50	520	1	-51.6
8	404.5	679	15.9	49	550	0	39.3
9	404.6	568	-15.3	49	550	1	-29.3
10	397.6	670	13.1	49	510	0	16.9
11	396.3	564	-11.6	51	480	1	-21.4
12	405.2	675	4.1	49	330	0	12.9
13	398.7	563	-11.5	49	470	1	-21.4
14	398.1	560	-13.8	51	510	1	-25.5
15	403.4	670	8.9	50	420	0	11.2
16	397.8	671	5.7	50	360	0	14.6
17	405.1	679	1.0	50	270	0	2.7
18	400.2	679	7.3	51	110	1	22.1
19	404.6	671	17.9	49	580	0	53.3
20	404.4	677	12.9	50	0	1	84.9
21	403.6	672	1.6	50	280	0	4.7
22	402.0	672	0.5	49	260	0	1.6
23	403.6	561	-12.6	50	480	1	-29.9
24	404.0	671	3.8	51	180	1	8.7
25	405.5	671	16.8	50	560	0	58.5
26	402.6	672	12.3	50	480	0	22.6
27	403.3	670	2.2	49	210	1	1.5
28	402.9	570	-13.8	50	510	1	-44.0
29	396.1	671	4.1	51	170	1	4.9
30	402.0	675	3.8	51	180	1	6.9
31	399.3	671	3.7	50	320	0	4.4
32	403.6	562	-9.7	50	60	0	-41.1
33	398.6	570	-17.3	51	570	1	-30.8
34	402.1	672	5.3	49	150	1	6.1
35	396.7	673	7.1	49	380	0	20.2
36	399.4	567	-9.7	51	430	1	-53.1
37	403.8	560	-8.8	50	80	0	-16.7
38	396.3	676	15.5	50	540	0	18.1
39	400.2	670	8.0	49	400	0	19.6
40	404.7	680	9.1	51	420	0	11.0
41	400.1	675	2.2	50	210	1	6.5
42	400.6	562	-15.4	50	540	1	-19.1
43	399.3	674	5.7	50	140	1	10.7
44	396.4	677	12.6	50	480	0	37.4
45	396.8	678	19.8	50	610	0	23.1
46	401.2	674	7.7	49	400	0	5.2
47	403.8	569	-11.8	51	470	1	-48.6
48	402.1	560	-9.2	49	70	0	-44.6
49	403.2	673	6.1	50	130	1	19.5
50	400.0	676	0.5	49	240	1	1.6
51	399.2	679	12.7	51	490	0	47.5
52	400.4	676	0.5	51	240	1	1.3
53	405.0	567	-6.6	50	130	0	-7.5
54	400.9	671	8.8	50	410	0	24.7
55	396.3	565	-16.3	51	560	1	-78.2
56	403.5	563	-7.2	51	110	0	-13.7
57	404.8	670	3.2	49	310	0	11.4
58	398.7	562	-16.1	50	560	1	-30.6
59	404.1	672	6.7	51	120	1	17.4
60	401.7	562	-17.0	50	560	1	-20.8
61	401.1	564	-6.6	51	120	0	-4.5
62	403.9	675	11.1	50	460	0	52.1
63	397.9	566	-14.2	50	530	1	-81.0
64	404.3	673	9.7	51	430	0	50.7
65	401.6	566	-12.0	50	480	1	-59.4
66	405.0	570	-13.8	50	520	1	-16.9
67	405.9	674	10.3	49	440	0	66.6
68	397.5	680	1.6	50	220	1	3.0
69	401.8	564	-14.2	51	510	1	-34.2
70	400.9	672	2.0	49	290	0	1.4
71	405.7	562	-5.5	50	150	0	-9.3
72	398.8	564	-17.1	50	560	1	-19.5
73	403.5	565	-14.3	50	510	1	-47.1
74	404.1	675	1.6	50	280	0	6.8
75	401.7	566	-12.1	51	490	1	-32.1
76	403.4	565	-7.0	51	120	0	-24.1
77	402.6	673	0.5	49	260	0	0.4
78	404.5	565	-12.2	51	470	1	-13.9

PID Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
79	400.8	567	-15.5	49	530	1	-43.0
80	401.3	678	2.2	49	290	0	5.3
81	398.1	569	-8.7	50	420	1	-10.6
82	401.1	679	6.0	50	360	0	10.1
83	400.3	679	4.1	50	330	0	2.8
84	399.3	568	-11.6	51	470	1	-48.7
85	401.7	568	-9.5	50	430	1	-11.6
86	400.1	671	15.3	51	550	0	100.6
87	403.7	564	-14.9	50	530	1	-45.4
88	398.5	671	1.6	50	220	1	4.7
89	398.4	673	12.0	50	470	0	55.1
90	401.4	570	-12.2	51	470	1	-42.7
91	404.9	678	12.9	50	490	0	22.6
92	396.8	671	10.2	50	60	1	12.6
93	405.7	678	17.0	50	560	0	50.9
94	399.6	676	2.6	50	200	1	1.7
95	402.3	568	-10.3	50	440	1	-36.0
96	400.3	674	7.4	50	390	0	38.7
97	396.9	565	-13.6	49	500	1	-31.4
98	402.9	561	-15.6	49	550	1	-18.2
99	396.9	679	3.0	49	310	0	2.2
100	398.2	563	-15.9	51	560	1	-30.0
101	397.7	679	9.3	51	430	0	44.5
102	405.4	679	4.7	49	160	1	31.2
103	400.2	676	2.8	50	300	0	6.3
104	404.7	678	14.7	51	520	0	59.4
105	404.7	560	-13.4	49	500	1	-16.7
106	399.7	674	2.6	50	300	0	1.8
107	397.2	566	-14.3	50	530	1	-45.4
108	396.0	678	8.7	49	420	0	21.3
109	399.1	561	-13.1	49	490	1	-22.9
110	399.1	672	4.2	50	330	0	2.8
111	398.3	563	-14.0	50	510	1	-31.5
112	404.4	679	7.3	50	390	0	36.3
113	396.8	567	-7.5	51	390	1	-12.9
114	398.3	567	-11.0	50	450	1	-25.3
115	396.8	675	12.2	49	490	0	15.6
116	400.9	566	-10.0	49	440	1	-6.5
117	399.9	676	6.0	50	140	1	6.8
118	402.2	568	-17.6	50	570	1	-20.2
119	397.9	672	15.5	51	550	0	96.4
120	403.7	563	-17.7	51	580	1	-30.3
121	401.4	563	-14.9	49	540	1	-29.1
122	397.1	567	-16.0	50	540	1	-17.7
123	403.1	564	-7.3	50	110	0	-4.8
124	397.2	670	9.0	51	420	0	25.9
125	401.5	562	-8.7	51	90	0	-5.5
126	397.7	566	-12.5	50	480	1	-36.5
127	399.9	672	13.3	50	510	0	40.6
128	397.4	561	-9.1	50	420	1	-33.6
129	400.0	672	6.5	50	370	0	26.3
130	399.6	568	-12.1	50	480	1	-30.6
131	396.3	674	5.8	49	140	1	14.0
132	400.5	566	-8.1	50	100	0	-29.0
133	403.8	675	6.1	50	370	0	7.4
134	399.0	675	1.6	49	220	1	5.7
135	404.7	565	-10.3	51	60	0	-12.2
136	397.4	672	5.0	49	160	1	17.3
137	399.0	674	4.1	49	330	0	5.2
138	401.7	675	1.6	50	280	0	5.7
139	404.4	568	-7.7	50	100	0	-5.5
140	396.2	568	-16.5	50	550	1	-11.0
141	402.2	562	-12.4	49	480	1	-22.5
142	400.1	672	2.8	50	300	0	6.2
143	403.6	677	6.4	49	130	1	20.0
144	400.5	673	6.5	49	130	1	7.8
145	404.1	564	-8.7	50	90	0	-14.5
146	405.9	675	11.6	50	460	0	19.7
147	402.3	673	2.6	49	200	1	8.0
148	401.1	561	-10.3	50	450	1	-12.7
149	401.4	680	4.8	50	340	0	11.0
150	405.2	569	-15.9	49	560	1	-50.8
151	398.5	672	2.1	51	290	0	5.3
152	405.7	560	-9.7	50	430	1	-29.3
153	399.8	568	-6.8	50	120	0	-17.5
154	404.9	675	1.0	49	230	1	0.7
155	397.0	678	12.3	50	480	0	22.0
156	398.1	678	13.1	49	510	0	16.5

PID Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
157	405.5	672	1.0	50	270	0	2.0
158	403.6	564	-12.2	50	490	1	-44.4
159	405.9	567	-15.6	50	550	1	-45.9
160	397.2	674	9.5	51	430	0	11.9
161	396.4	562	-16.1	50	570	1	-10.9
162	401.3	672	15.4	50	530	0	60.8
163	403.1	561	-11.6	51	480	1	-28.4
164	396.6	678	6.3	49	370	0	23.4
165	404.3	565	-14.1	49	520	1	-33.4
166	401.3	560	-8.8	50	90	0	-21.5
167	405.3	676	12.8	50	0	1	55.6
168	400.7	676	16.7	50	570	0	52.5
169	396.1	678	3.1	49	190	1	5.4
170	405.0	569	-10.3	49	440	1	-6.9
171	403.1	566	-9.6	51	430	1	-11.6
172	402.7	567	-17.3	51	590	1	-21.8
173	397.0	679	14.8	50	540	0	52.6
174	398.5	672	10.1	51	450	0	19.3
175	402.9	674	4.7	50	160	1	5.9
176	402.6	671	8.7	51	90	1	24.5
177	401.5	678	7.8	49	400	0	14.2
178	404.4	675	4.7	49	340	0	3.2
179	400.2	679	2.7	51	200	1	5.0
180	404.8	680	9.9	50	440	0	31.7
181	402.0	670	4.0	50	170	1	16.1
182	398.9	676	5.8	50	360	0	7.3
183	398.9	675	8.7	50	410	0	29.3
184	404.6	678	12.6	51	0	1	84.3
185	402.8	677	4.1	50	330	0	7.8
186	403.4	680	1.1	49	270	0	4.3
187	399.2	566	-15.4	50	540	1	-10.7
188	402.1	671	0.5	50	240	1	1.5
189	398.3	671	2.6	51	300	0	3.1
190	405.3	563	-11.5	50	470	1	-42.6
191	396.0	677	18.2	51	590	0	92.3
192	399.6	672	6.4	50	130	1	19.4
193	402.9	676	5.9	51	360	0	14.5
194	398.5	672	12.9	51	490	0	8.9
195	397.0	678	10.1	51	440	0	11.9
196	400.3	679	9.4	49	70	1	38.4
197	402.5	676	1.1	50	270	0	1.3
198	403.8	673	3.7	50	320	0	2.4
199	401.3	565	-12.7	50	500	1	-39.5
200	396.5	670	1.7	50	220	1	1.0
201	399.0	673	10.4	51	440	0	24.9
202	403.9	676	7.6	50	390	0	5.0
203	398.6	675	6.7	50	120	1	12.0
204	398.4	566	-14.4	49	510	1	-16.6
205	405.9	567	-8.1	51	90	0	-15.7
206	402.6	678	11.1	49	470	0	49.6
207	400.6	672	7.8	50	100	1	33.4
208	405.1	673	1.0	50	270	0	2.5
209	401.7	566	-12.5	50	480	1	-22.7
210	400.9	676	14.4	49	530	0	18.6
211	403.6	569	-12.1	51	490	1	-22.0
212	398.6	676	9.4	50	430	0	6.5
213	404.0	570	-9.6	49	70	0	-23.5
214	396.4	674	13.6	49	0	1	53.1
215	404.9	566	-7.8	50	100	0	-19.7
216	405.8	674	0.5	50	240	1	0.7
217	396.5	675	17.2	51	560	0	67.9
218	403.5	679	4.1	51	170	1	13.5
219	401.6	676	1.1	51	230	1	1.9
220	399.9	680	6.5	50	130	1	7.5
221	398.1	566	-11.2	51	40	0	-21.4
222	400.5	680	10.3	49	450	0	37.6
223	397.3	680	13.5	51	0	1	61.0
224	404.4	679	3.1	50	310	0	2.2
225	399.1	566	-12.6	50	480	1	-21.3
226	404.6	672	15.1	50	530	0	55.3
227	396.5	678	1.5	49	280	0	1.1
228	401.6	677	8.6	50	80	1	40.0
229	405.0	671	6.7	50	380	0	21.4
230	405.2	561	-13.2	50	490	1	-22.5
231	404.8	566	-10.7	50	50	0	-26.7
232	397.7	567	-12.5	50	490	1	-46.6
233	396.5	680	15.5	50	550	0	92.5
234	403.3	670	2.7	51	200	1	1.8

PID Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
235	398.8	562	-6.7	51	380	1	-8.6
236	400.2	569	-9.8	50	430	1	-17.4
237	404.0	673	11.0	50	450	0	7.2
238	400.6	565	-10.9	51	450	1	-19.2
239	399.0	674	6.0	50	360	0	7.3
240	397.2	562	-13.7	49	510	1	-8.9
241	399.1	678	12.3	49	490	0	53.1
242	401.4	680	13.1	50	0	1	83.1
243	401.9	677	13.7	49	500	0	75.3
244	396.4	567	-7.3	50	390	1	-13.1
245	401.2	561	-14.9	51	520	1	-35.5
246	404.8	675	17.3	50	570	0	86.8
247	399.4	677	5.8	51	140	1	25.3
248	396.7	680	4.1	50	330	0	14.9
249	404.2	569	-14.6	51	530	1	-10.3
250	396.9	678	1.1	50	230	1	4.9
251	402.9	674	6.0	50	360	0	21.8
252	397.0	678	12.0	49	470	0	7.4
253	398.5	679	1.0	49	230	1	2.5
254	402.1	671	14.7	49	520	0	26.5
255	405.3	677	6.3	51	130	1	24.3
256	403.2	677	18.3	49	580	0	44.5
257	400.3	563	-10.9	50	460	1	-13.3
258	405.6	676	4.7	50	340	0	8.8
259	396.3	680	13.1	49	490	0	37.2
260	400.3	671	4.8	51	160	1	14.4
261	396.8	566	-6.9	51	120	0	-15.8
262	397.3	679	8.6	50	420	0	5.9
263	396.9	672	9.8	50	70	1	22.0
264	396.7	675	1.6	50	280	0	1.9
265	404.0	675	5.1	50	150	1	20.0
266	402.7	677	1.1	50	230	1	0.7
267	401.5	672	15.8	49	560	0	39.1
268	402.9	673	8.2	50	410	0	21.1
269	403.4	677	9.1	51	430	0	11.4
270	396.6	677	4.9	50	160	1	26.0
271	405.4	678	16.2	49	570	0	53.4
272	403.3	676	5.6	50	140	1	7.2
273	399.3	563	-11.0	50	450	1	-24.9
274	405.3	674	14.7	50	540	0	64.6
275	400.9	564	-10.8	50	450	1	-19.2
276	405.0	675	0.5	50	240	1	1.0
277	399.2	674	2.5	50	300	0	6.2
278	401.2	568	-9.1	50	420	1	-16.8
279	402.5	563	-16.2	50	550	1	-29.6
280	401.1	679	6.6	50	380	0	8.3
281	397.5	673	17.6	49	590	0	101.9
282	404.8	675	3.8	50	180	1	15.3
283	401.8	675	10.2	50	450	0	38.6
284	405.2	671	1.6	49	220	1	3.8
285	399.7	560	-7.6	49	110	0	-9.4
286	398.7	566	-9.9	51	440	1	-17.2
287	399.3	568	-12.8	51	500	1	-15.6
288	399.0	679	16.8	50	570	0	78.3
289	396.9	671	0.5	49	240	1	0.9
290	397.7	678	9.1	51	80	1	10.6
291	397.4	679	12.0	49	470	0	8.0
292	402.4	570	-8.9	50	410	1	-5.6
293	398.3	561	-17.1	51	560	1	-11.1
294	396.2	567	-10.4	49	450	1	-32.0
295	400.6	677	17.1	50	570	0	98.5
296	396.4	680	2.1	50	210	1	8.9
297	400.7	675	12.2	50	490	0	22.8
298	397.1	566	-10.9	49	450	1	-7.4
299	401.1	570	-13.7	49	520	1	-17.8
300	397.0	675	7.6	51	100	1	14.3
301	400.0	675	14.7	49	540	0	101.7
302	402.2	560	-9.9	49	430	1	-16.9
303	404.5	675	2.1	51	210	1	8.0
304	400.7	678	15.2	51	530	0	52.0
305	405.8	671	3.6	51	320	0	2.5
306	404.2	672	12.8	49	0	1	72.2
307	404.2	674	12.4	51	490	0	81.4
308	403.3	670	4.8	49	160	1	22.8
309	402.0	679	3.2	51	310	0	7.8
310	403.6	561	-12.5	49	480	1	-15.0
311	402.5	671	8.9	50	410	0	20.5
312	405.2	569	-12.8	50	490	1	-37.6

PID Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
313	397.9	674	7.0	51	380	0	12.2
314	401.0	562	-7.2	50	110	0	-12.8
315	397.1	567	-10.9	50	460	1	-40.3
316	402.6	567	-9.7	49	430	1	-17.7
317	401.6	562	-8.3	50	100	0	-14.7
318	398.7	676	13.4	50	510	0	49.9
319	396.8	562	-14.3	51	530	1	-56.0
320	400.0	670	1.1	51	230	1	2.6
321	398.3	680	10.8	50	460	0	12.9
322	402.7	563	-10.2	50	60	0	-11.7
323	402.3	673	3.3	49	310	0	4.0
324	400.4	674	4.9	50	340	0	8.6
325	398.4	563	-14.1	49	510	1	-16.0
326	396.5	565	-13.7	49	520	1	-35.4
327	403.7	569	-12.1	50	490	1	-23.6
328	401.1	671	6.6	49	370	0	34.3
329	396.0	567	-10.6	50	460	1	-52.7
330	404.4	677	2.5	51	300	0	9.8
331	400.8	673	7.9	50	400	0	10.1
332	405.1	562	-13.5	50	500	1	-39.0
333	403.4	674	10.7	51	460	0	33.9
334	401.4	569	-17.8	50	570	1	-20.6
335	401.7	561	-13.7	49	510	1	-57.0
336	400.7	680	18.8	51	590	0	118.3
337	401.9	563	-16.5	51	550	1	-28.4
338	399.2	560	-12.2	49	490	1	-8.8
339	399.7	679	4.7	50	340	0	5.8
340	403.7	567	-13.8	50	500	1	-33.3
341	397.4	569	-10.0	51	440	1	-17.9
342	400.1	674	7.2	50	380	0	39.2
343	396.7	565	-11.6	50	460	1	-32.2
344	396.7	672	8.1	50	90	1	25.0
345	404.0	678	5.3	50	150	1	3.7
346	403.9	676	5.7	49	360	0	22.3
347	399.8	677	2.2	50	290	0	5.0
348	399.4	670	13.6	49	0	1	53.7
349	401.2	568	-15.3	51	530	1	-18.2
350	405.3	569	-9.4	49	70	0	-22.1
351	397.4	672	5.3	49	150	1	9.6
352	398.4	675	10.4	50	450	0	54.9
353	398.0	567	-14.1	51	520	1	-17.5
354	402.4	675	11.1	49	470	0	14.6
355	402.0	676	2.0	50	210	1	9.3
356	403.0	670	6.5	51	130	1	11.5
357	401.3	676	4.4	51	330	0	12.2
358	399.3	566	-12.6	49	500	1	-24.6
359	405.3	565	-15.0	49	540	1	-26.9
360	399.9	680	3.0	49	310	0	13.5
361	400.2	563	-14.0	49	510	1	-24.8
362	401.6	566	-12.7	51	480	1	-14.4
363	396.3	568	-14.6	49	520	1	-9.6
364	399.3	678	2.6	49	300	0	8.0
365	399.8	565	-11.6	51	470	1	-21.1
366	402.0	672	0.5	51	260	0	0.9
367	398.7	677	6.1	51	140	1	13.8
368	398.7	674	4.6	50	340	0	11.5
369	396.9	566	-12.3	50	480	1	-37.3
370	397.6	677	1.6	50	280	0	2.0
371	405.9	568	-8.0	50	100	0	-19.9
372	402.9	570	-7.9	50	400	1	-23.6
373	396.0	565	-5.1	49	150	0	-28.4
374	405.1	563	-8.6	50	410	1	-25.1
375	404.6	672	8.1	50	410	0	19.8
376	399.0	672	1.6	50	220	1	4.7
377	405.6	678	8.4	51	90	1	10.3
378	399.8	671	5.3	50	150	1	6.4
379	401.5	677	13.7	50	520	0	26.1
380	396.3	563	-10.6	49	450	1	-24.5
381	397.7	670	5.7	49	360	0	34.9
382	403.9	565	-10.3	49	450	1	-36.8
383	397.4	670	19.0	51	610	0	13.3
384	403.3	678	1.1	51	230	1	1.9
385	402.2	679	9.8	51	440	0	24.5
386	404.2	566	-17.4	49	580	1	-20.6
387	398.6	562	-10.2	50	440	1	-18.3
388	401.9	568	-6.6	50	120	0	-20.5
389	400.7	671	2.6	49	300	0	3.1
390	400.7	677	8.8	51	410	0	6.0

PID Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
391	398.7	567	-10.1	51	440	1	-37.7
392	400.4	671	13.2	49	490	0	61.6
393	399.0	677	9.4	50	70	1	56.9
394	405.0	676	1.5	51	280	0	7.8
395	399.1	563	-8.9	50	420	1	-34.1
396	405.3	673	2.0	50	290	0	3.8
397	402.8	675	2.6	50	300	0	7.7
398	396.8	563	-16.3	49	550	1	-19.5
399	401.1	563	-14.4	50	530	1	-44.7
400	398.1	670	3.8	49	320	0	4.4
401	405.8	671	9.6	50	440	0	7.0
402	398.5	564	-13.2	51	510	1	-42.7
403	399.9	565	-10.1	49	60	0	-18.8
404	402.0	564	-14.7	49	540	1	-38.5
405	399.8	676	6.6	49	380	0	25.6
406	402.1	677	0.5	49	260	0	1.0
407	396.9	561	-8.5	49	410	1	-16.1
408	397.9	566	-15.7	49	550	1	-29.5
409	405.4	678	9.2	50	420	0	27.8
410	399.6	568	-15.3	50	540	1	-29.1
411	399.0	680	1.6	51	220	1	1.0
412	404.9	568	-10.8	49	460	1	-20.4
413	403.7	674	12.1	49	470	0	34.1
414	402.7	676	14.5	49	520	0	9.9
415	397.1	563	-11.8	50	470	1	-13.9
416	396.8	566	-15.9	50	540	1	-9.9
417	396.4	562	-14.3	50	530	1	-17.1
418	401.3	568	-10.2	50	450	1	-12.5
419	401.3	675	7.7	50	400	0	14.6
420	399.5	672	5.6	50	360	0	18.1
421	403.1	568	-13.4	51	510	1	-9.4
422	404.4	677	2.1	49	290	0	4.0
423	401.6	676	7.1	50	110	1	36.3
424	403.2	675	4.7	49	160	1	5.9
425	402.3	671	14.7	50	540	0	87.0
426	397.0	672	13.2	49	0	1	82.4
427	404.5	671	13.3	51	490	0	46.9
428	396.5	562	-11.6	49	480	1	-15.3
429	399.8	679	2.2	50	210	1	2.4
430	402.0	569	-9.8	49	70	0	-17.1
431	399.4	671	16.3	50	560	0	50.2
432	402.8	677	9.3	49	70	1	39.9
433	404.7	678	6.6	50	370	0	19.1
434	400.3	673	12.4	50	490	0	15.1
435	397.3	679	10.1	51	450	0	6.8
436	398.8	568	-16.6	50	550	1	-37.5
437	402.5	562	-14.7	50	530	1	-17.7
438	403.7	676	7.2	49	390	0	18.2
439	403.2	680	4.9	50	160	1	15.2
440	398.3	568	-14.8	51	530	1	-9.9
441	398.5	676	0.5	50	260	0	1.9
442	396.7	672	3.9	51	180	1	20.0
443	404.6	677	2.1	50	290	0	2.5
444	401.4	672	6.4	50	370	0	28.0
445	401.4	679	5.0	50	160	1	14.5
446	404.7	561	-18.9	50	600	1	-22.4
447	401.5	673	8.7	49	410	0	31.4
448	397.7	569	-10.0	50	440	1	-29.1
449	399.6	568	-7.1	50	120	0	-8.2
450	397.8	563	-15.2	51	530	1	-27.9
451	402.4	675	12.1	49	490	0	30.8
452	401.0	670	9.1	49	430	0	11.2
453	403.9	563	-7.0	50	120	0	-8.3
454	405.8	570	-15.2	50	550	1	-76.1
455	402.3	564	-7.2	49	120	0	-8.3
456	397.2	678	0.5	50	240	1	1.0
457	398.5	675	13.0	50	490	0	52.8
458	405.5	676	7.0	50	120	1	32.4
459	398.8	568	-7.0	50	120	0	-21.4
460	398.6	670	1.1	49	230	1	1.9
461	402.6	672	9.1	50	430	0	11.7
462	405.0	676	9.5	50	70	1	23.7
463	396.4	567	-6.6	51	130	0	-28.3
464	396.2	569	-13.2	51	490	1	-21.6
465	400.2	561	-9.7	49	430	1	-6.4
466	399.2	679	6.2	50	370	0	23.0
467	404.4	568	-11.1	49	460	1	-46.4
468	403.4	675	3.6	51	320	0	16.1

PID Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
469	404.7	565	-13.6	51	500	1	-25.1
470	400.8	676	10.0	50	440	0	31.1
471	402.5	677	3.5	50	180	1	13.8
472	397.9	565	-14.7	50	540	1	-27.3
473	397.9	679	5.6	49	360	0	21.8
474	403.3	671	2.2	51	290	0	3.7
475	399.2	674	13.9	49	0	1	91.3
476	403.0	675	11.1	50	470	0	41.9
477	397.7	567	-17.4	49	580	1	-41.1
478	399.4	560	-10.5	50	440	1	-12.6
479	403.7	674	16.6	51	570	0	113.9
480	400.3	679	0.5	49	240	1	0.9
481	397.7	567	-8.4	49	90	0	-10.6
482	398.8	567	-9.2	50	430	1	-49.8
483	397.1	671	11.6	50	460	0	45.8
484	405.6	569	-17.7	51	600	1	-34.6
485	397.8	568	-10.5	51	450	1	-19.5
486	397.9	568	-10.0	50	440	1	-12.5
487	401.2	679	8.8	50	420	0	11.2
488	403.6	677	9.2	51	430	0	6.7
489	406.0	679	17.8	50	570	0	40.1
490	402.5	561	-9.3	49	430	1	-16.5
Total Regenerated Energy per Day (Wh)							**1,970.7**

PID Model Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	406.4	678	14.0	51	620	0	17.6
2	406.7	560	-13.1	49	610	1	-24.1
3	402.8	673	15.1	50	0	1	26.7
4	403.8	674	10.7	51	560	0	13.2
5	400.7	670	4.9	49	210	1	9.4
6	402.8	673	22.0	49	780	0	94.5
7	407.5	674	10.7	49	90	1	25.3
8	398.0	674	1.9	50	360	0	2.3
9	403.6	564	-18.3	49	700	1	-12.3
10	406.9	563	-12.5	50	60	0	-15.0
11	398.8	563	-10.2	49	550	1	-20.0
12	404.0	676	6.5	50	180	1	4.5
13	405.5	675	4.0	51	410	0	7.8
14	401.1	678	1.8	50	280	1	5.6
15	405.2	671	7.1	51	470	0	17.3
16	406.6	674	6.8	49	470	0	4.9
17	405.9	567	-5.5	49	200	0	-3.6
18	404.3	677	11.2	51	80	1	21.0
19	401.0	675	15.3	51	650	0	37.5
20	406.3	678	14.6	51	0	1	52.6
21	404.0	674	11.5	51	570	0	8.2
22	399.4	567	-7.2	51	160	0	-4.9
23	405.7	564	-16.6	49	670	1	-29.3
24	403.0	673	1.4	50	350	0	1.6
25	406.3	564	-7.3	49	160	0	-8.9
26	400.0	564	-11.1	50	80	0	-7.4
27	400.8	677	3.8	49	400	0	4.6
28	403.7	567	-19.9	51	740	1	-22.2
29	403.2	563	-14.9	50	650	1	-10.5
30	401.0	677	15.0	49	0	1	26.3
31	403.5	677	0.9	49	340	0	0.6
32	407.0	675	15.8	49	680	0	39.9
33	398.2	672	1.9	51	360	0	1.2
34	407.8	565	-9.9	50	530	1	-17.8
35	406.1	565	-11.2	50	80	0	-13.3
36	401.8	676	5.0	49	210	1	12.5
37	403.0	672	15.6	51	670	0	19.2
38	398.5	676	4.8	49	420	0	5.6
39	405.3	671	14.9	50	0	1	43.5
40	401.7	675	3.4	51	250	1	2.2
41	407.0	677	8.7	51	510	0	11.2
42	400.0	676	4.2	50	410	0	4.9
43	407.5	675	7.0	49	470	0	12.9
44	406.9	561	-12.7	51	600	1	-8.7
45	398.6	679	4.2	49	230	1	7.8
46	405.4	679	18.9	50	720	0	12.1
47	400.7	563	-13.8	49	630	1	-34.0
48	402.9	677	0.9	51	340	0	3.5
49	405.1	678	7.5	50	150	1	5.5
50	404.9	680	16.1	51	660	0	19.4
51	405.9	677	14.2	50	0	1	43.4
52	407.2	672	9.5	49	520	0	11.4
53	400.7	569	-14.2	51	630	1	-34.6
54	399.7	565	-9.3	50	110	0	-17.5
55	401.9	564	-16.3	51	690	1	-21.2
56	407.3	671	15.6	49	650	0	27.4
57	404.9	675	4.3	49	410	0	2.8
58	404.3	569	-11.6	50	580	1	-22.7
59	405.1	563	-11.0	50	70	0	-7.7
60	399.9	672	5.9	49	190	1	7.1
61	401.8	677	10.8	50	550	0	18.7
62	402.0	566	-9.5	49	120	0	-11.7
63	407.3	678	2.3	49	270	1	4.1
64	400.4	567	-13.1	50	40	0	-32.3
65	406.4	567	-20.1	51	760	1	-36.9
66	402.4	671	6.5	50	180	1	15.2
67	400.8	560	-6.7	49	170	0	-8.2
68	407.9	568	-11.0	50	90	0	-19.9
69	407.2	673	12.5	51	600	0	16.1
70	403.1	563	-14.5	51	640	1	-35.8
71	398.9	569	-16.3	51	660	1	-27.4
72	402.8	674	8.7	50	500	0	9.7
73	407.1	567	-12.1	51	70	0	-20.1
74	402.4	676	4.5	49	220	1	3.1
75	406.6	671	10.2	51	540	0	18.5
76	399.2	563	-17.2	50	690	1	-21.8
77	406.8	680	6.2	50	180	1	7.9
78	405.1	679	1.3	50	290	1	0.9

PID Model Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
79	404.8	679	3.1	50	390	0	3.9
80	406.5	567	-7.2	51	170	0	-12.0
81	403.1	566	-13.8	50	630	1	-33.8
82	403.4	670	16.0	50	680	0	30.3
83	401.1	567	-12.0	50	590	1	-14.5
84	404.6	674	12.3	50	590	0	21.9
85	408.0	678	14.6	49	0	1	66.6
86	401.2	678	12.5	51	600	0	8.5
87	400.2	569	-9.5	49	110	0	-29.6
88	403.2	561	-11.1	50	560	1	-32.8
89	405.7	679	3.7	50	400	0	4.6
90	400.9	678	2.3	51	370	0	1.5
91	407.3	673	1.4	49	290	1	1.7
92	407.9	569	-12.7	51	590	1	-15.3
93	406.8	565	-5.7	49	190	0	-18.2
94	406.0	562	-15.0	50	630	1	-35.1
95	405.9	674	8.3	49	500	0	10.1
96	401.2	562	-9.8	49	100	0	-12.7
97	404.1	679	2.8	49	380	0	3.4
98	402.6	676	9.6	50	110	1	41.8
99	405.4	679	19.9	50	760	0	73.3
100	404.0	672	4.4	50	230	1	10.3
101	407.3	679	1.8	51	360	0	5.4
102	403.5	675	11.5	49	60	1	7.8
103	404.6	567	-15.3	51	650	1	-10.4
104	401.1	676	11.7	51	70	1	20.2
105	407.4	670	3.1	50	390	0	10.1
106	405.0	680	10.8	50	80	1	13.8
107	405.4	566	-14.7	50	640	1	-18.3
108	407.5	672	3.7	49	400	0	2.6
109	400.4	678	0.4	50	310	1	0.6
110	405.9	569	-17.2	50	700	1	-11.6
111	407.8	568	-6.2	50	180	0	-7.5
112	405.0	562	-7.7	51	150	0	-19.8
113	399.6	673	15.1	50	0	1	52.9
114	399.0	566	-6.5	51	180	0	-4.3
115	406.4	679	6.3	51	460	0	16.5
116	404.0	566	-11.3	50	570	1	-21.7
117	401.3	561	-8.0	50	150	0	-9.5
118	403.9	676	13.2	50	600	0	8.9
119	404.2	680	7.6	51	150	1	28.7
120	403.1	675	4.1	49	410	0	12.9
121	401.8	676	7.5	51	490	0	5.4
122	403.2	679	3.7	49	240	1	9.2
123	400.3	678	10.0	51	110	1	12.1
124	405.9	560	-7.9	50	150	0	-14.7
125	407.4	671	15.0	49	650	0	37.6
126	402.6	563	-12.8	51	590	1	-22.9
127	399.2	680	12.2	49	580	0	14.2
128	403.3	566	-14.3	51	630	1	-24.9
129	405.9	670	14.4	51	630	0	34.7
130	400.6	564	-13.8	50	620	1	-16.1
131	405.9	563	-12.8	49	610	1	-24.6
132	407.9	563	-11.2	51	570	1	-14.6
133	401.0	679	12.8	50	600	0	52.0
134	399.2	671	8.0	49	150	1	5.2
135	401.2	568	-13.9	49	620	1	-16.6
136	399.3	675	4.1	49	230	1	2.7
137	401.1	677	6.3	49	190	1	7.1
138	405.6	671	10.9	49	560	0	28.2
139	402.8	670	14.6	51	0	1	43.5
140	398.3	680	7.0	51	470	0	20.5
141	399.4	561	-13.6	49	620	1	-24.4
142	398.5	678	19.1	51	720	0	55.8
143	403.3	676	1.8	51	280	1	2.2
144	407.3	671	4.0	51	230	1	10.6
145	401.2	678	4.1	49	410	0	5.0
146	405.3	676	9.2	49	120	1	16.4
147	399.4	676	2.6	51	380	0	6.7
148	401.6	560	-9.2	50	120	0	-6.1
149	400.7	671	10.1	50	530	0	11.2
150	398.9	566	-8.2	50	500	1	-5.4
151	406.6	672	6.2	50	190	1	15.0
152	400.8	566	-15.1	50	640	1	-9.6
153	399.8	562	-12.9	50	50	0	-22.2
154	407.9	677	0.9	51	340	0	1.7
155	402.7	561	-16.2	50	680	1	-19.4
156	400.4	671	6.1	49	180	1	19.4

PID Model Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
157	407.0	671	11.1	50	560	0	13.6
158	402.2	560	-16.3	50	680	1	-10.6
159	400.7	570	-8.7	49	130	0	-22.0
160	399.4	671	6.3	50	180	1	7.9
161	400.2	678	9.1	51	520	0	10.7
162	404.3	565	-9.7	49	520	1	-22.4
163	403.6	673	2.2	50	270	1	1.6
164	400.0	672	15.9	51	680	0	57.2
165	404.6	680	4.2	50	230	1	7.9
166	405.1	677	11.3	49	560	0	7.8
167	404.4	675	7.9	49	150	1	14.3
168	401.3	673	0.4	50	330	0	1.1
169	406.3	566	-13.1	49	610	1	-30.8
170	405.7	677	8.4	49	500	0	24.8
171	399.0	676	14.9	49	0	1	55.4
172	401.2	676	3.3	50	390	0	13.3
173	406.9	675	8.5	50	130	1	20.6
174	402.2	565	-17.7	51	710	1	-12.2
175	407.6	565	-9.7	51	120	0	-27.9
176	400.5	680	7.2	51	160	1	17.2
177	400.7	672	2.7	50	380	0	6.6
178	406.6	565	-13.3	49	620	1	-16.7
179	408.0	565	-16.8	50	690	1	-11.9
180	398.7	672	15.8	49	660	0	27.6
181	400.8	674	4.6	50	220	1	5.6
182	406.7	677	4.0	51	230	1	4.9
183	402.7	564	-8.9	49	130	0	-20.4
184	407.7	673	11.9	51	60	1	30.2
185	404.0	673	5.9	49	450	0	11.3
186	399.4	676	6.3	51	190	1	17.4
187	406.8	676	12.7	50	610	0	23.8
188	404.9	566	-13.5	49	610	1	-8.7
189	404.3	671	12.0	50	570	0	8.1
190	400.0	670	8.5	49	500	0	14.7
191	403.6	679	14.2	49	0	1	51.8
192	407.1	676	8.4	49	510	0	11.2
193	403.2	677	16.5	51	690	0	41.1
194	398.8	679	10.4	51	90	1	31.3
195	405.2	670	4.9	49	210	1	6.5
196	400.9	678	3.8	49	400	0	6.6
197	403.2	676	4.7	50	420	0	10.9
198	402.1	675	8.3	51	140	1	24.6
199	407.1	675	18.3	49	720	0	44.8
200	402.5	676	4.9	51	210	1	6.2
201	401.8	565	-11.4	51	580	1	-7.9
202	406.2	674	7.6	50	160	1	9.2
203	407.8	671	17.9	49	710	0	69.3
204	401.0	676	14.9	49	0	1	43.4
205	399.3	671	7.9	50	500	0	19.6
206	399.6	564	-10.3	50	550	1	-12.6
207	404.1	674	0.4	51	310	1	1.1
208	407.8	678	5.9	51	450	0	11.4
209	402.5	677	2.7	50	380	0	3.4
210	405.5	566	-12.8	51	600	1	-22.8
211	398.6	673	0.5	50	330	0	0.9
212	406.6	678	8.4	50	130	1	21.2
213	404.4	674	6.3	49	460	0	7.8
214	400.0	672	11.3	50	80	1	7.5
215	398.8	678	13.8	49	630	0	16.7
216	406.7	564	-12.6	49	590	1	-8.5
217	405.3	676	11.0	51	560	0	13.5
218	398.8	672	14.5	51	640	0	17.4
219	403.6	673	14.2	49	0	1	56.3
220	400.8	675	5.8	49	440	0	7.0
221	406.5	675	18.4	49	720	0	33.1
222	402.4	562	-11.0	49	550	1	-12.7
223	399.0	561	-10.6	49	550	1	-13.2
224	404.4	674	21.1	51	780	0	64.9
225	404.4	564	-10.1	49	550	1	-12.8
226	404.7	679	3.6	51	400	0	4.5
227	399.5	672	8.8	49	120	1	17.1
228	401.0	562	-12.0	50	570	1	-20.4
229	407.4	670	14.4	49	620	0	42.6
230	404.7	673	2.4	49	270	1	4.1
231	403.1	671	0.9	51	300	1	1.7
232	402.9	675	9.4	51	520	0	5.9
233	401.2	676	5.6	51	440	0	6.5
234	404.4	673	9.5	50	520	0	10.8

PID Model Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
235	404.6	566	-12.0	51	570	1	-20.7
236	402.7	670	20.0	49	760	0	51.7
237	405.4	561	-15.6	50	650	1	-18.3
238	406.0	568	-12.4	51	590	1	-23.3
239	407.7	565	-11.5	49	580	1	-8.0
240	398.3	671	8.6	49	500	0	19.8
241	400.6	680	0.4	50	330	0	0.9
242	400.6	564	-15.2	50	650	1	-10.2
243	398.4	678	14.0	50	0	1	53.4
244	403.9	670	9.7	50	530	0	12.2
245	407.1	675	4.3	49	410	0	5.0
246	401.5	674	18.9	51	720	0	34.9
247	398.5	678	6.2	49	190	1	14.4
248	403.5	672	1.9	49	360	0	3.3
249	398.4	679	5.1	50	210	1	12.7
250	401.5	680	9.7	51	110	1	11.7
251	398.4	679	17.5	50	690	0	69.2
252	404.5	677	3.2	50	250	1	2.1
253	402.4	679	7.5	50	150	1	19.6
254	398.7	671	14.6	51	640	0	36.4
255	398.8	566	-14.1	50	630	1	-17.7
256	403.8	570	-10.0	51	530	1	-23.3
257	399.4	670	7.8	49	490	0	9.3
258	403.2	676	5.1	51	210	1	6.4
259	406.6	680	4.6	51	420	0	8.3
260	402.8	674	14.4	50	630	0	17.5
261	401.3	561	-8.5	49	130	0	-10.4
262	403.0	677	8.6	51	140	1	15.7
263	398.1	680	1.4	50	290	1	0.9
264	401.4	565	-12.7	51	590	1	-8.5
265	406.7	680	16.1	50	670	0	19.4
266	402.9	676	2.9	49	380	0	3.3
267	404.3	569	-13.0	51	590	1	-22.0
268	406.2	672	4.2	50	410	0	5.3
269	405.9	678	3.7	50	240	1	7.0
270	398.7	565	-18.3	49	700	1	-11.2
271	399.6	675	11.6	50	580	0	41.2
272	407.1	672	3.3	51	250	1	2.3
273	399.8	673	8.6	50	140	1	31.2
274	401.8	671	14.6	49	630	0	51.6
275	406.2	567	-10.7	49	560	1	-7.4
276	405.8	679	15.0	50	0	1	18.3
277	405.6	678	12.5	50	590	0	22.4
278	404.6	563	-13.1	50	610	1	-16.1
279	404.1	673	10.2	50	550	0	19.5
280	404.6	670	0.5	49	310	1	0.3
281	405.2	565	-16.6	49	680	1	-19.7
282	405.6	565	-18.1	51	700	1	-20.0
283	405.5	672	11.2	50	570	0	20.6
284	398.3	564	-10.5	49	550	1	-13.0
285	403.0	674	8.5	50	140	1	14.7
286	400.4	680	9.7	51	520	0	38.8
287	398.4	675	4.5	51	220	1	11.5
288	403.4	565	-12.6	50	590	1	-15.2
289	401.9	563	-5.6	50	200	0	-6.8
290	399.9	671	10.1	51	530	0	17.9
291	400.6	678	13.3	49	610	0	8.8
292	401.4	675	15.0	50	0	1	52.0
293	407.4	677	11.1	51	550	0	25.9
294	402.0	562	-11.4	49	580	1	-37.1
295	404.7	672	1.0	49	340	0	1.7
296	403.5	671	9.3	51	520	0	17.6
297	406.5	678	6.0	50	190	1	10.8
298	404.5	671	3.6	51	400	0	2.4
299	401.3	564	-13.4	51	600	1	-24.1
300	403.7	675	9.1	51	520	0	22.4
301	398.6	670	4.2	51	230	1	7.7
302	406.2	569	-9.3	51	120	0	-27.2
303	403.3	670	10.6	50	80	1	38.4
304	401.3	566	-8.4	49	130	0	-10.4
305	406.4	670	4.3	50	410	0	10.1
306	405.1	562	-14.7	50	630	1	-16.6
307	407.6	671	9.6	50	110	1	25.0
308	403.3	671	1.4	50	350	0	2.6
309	401.2	563	-12.4	49	600	1	-15.2
310	399.6	671	18.8	50	720	0	57.3
311	402.0	672	14.4	51	0	1	36.9
312	400.9	569	-10.0	51	540	1	-18.9

PID Model Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
313	404.2	679	9.2	49	520	0	6.3
314	405.8	677	6.2	51	450	0	11.4
315	407.9	562	-11.5	49	570	1	-13.5
316	404.4	675	13.8	51	610	0	8.7
317	407.6	568	-9.7	51	530	1	-12.0
318	402.6	562	-9.7	49	100	0	-12.6
319	398.6	674	13.7	51	610	0	32.4
320	407.4	568	-13.4	50	620	1	-8.9
321	401.5	672	11.1	51	70	1	41.6
322	401.1	672	10.0	51	530	0	24.3
323	407.9	671	10.5	49	560	0	13.2
324	400.1	673	9.3	50	120	1	27.5
325	405.9	673	5.3	50	440	0	6.9
326	401.7	676	12.5	49	580	0	29.0
327	403.9	564	-10.8	49	560	1	-7.7
328	400.4	678	4.9	50	210	1	3.3
329	401.1	675	7.1	50	160	1	18.6
330	403.4	568	-15.9	50	660	1	-10.8
331	406.0	676	9.5	51	520	0	28.6
332	399.9	674	2.3	51	370	0	2.7
333	402.5	562	-16.5	50	680	1	-11.2
334	403.1	569	-13.4	49	610	1	-16.7
335	399.7	566	-13.8	49	610	1	-16.9
336	403.4	677	0.9	50	340	0	2.7
337	400.8	674	14.7	51	0	1	56.1
338	398.7	673	8.3	51	500	0	14.6
339	402.5	673	2.7	49	260	1	3.2
340	398.1	566	-15.6	50	660	1	-18.3
341	400.9	568	-11.8	51	70	0	-34.1
342	404.2	671	10.1	51	550	0	12.5
343	400.1	676	10.3	49	90	1	37.6
344	400.6	677	3.7	51	400	0	2.4
345	399.7	569	-7.4	49	160	0	-16.9
346	404.1	675	2.4	50	270	1	4.4
347	406.3	675	8.6	49	510	0	11.1
348	401.8	563	-12.4	50	590	1	-8.0
349	402.4	670	3.8	50	240	1	4.3
350	404.2	676	18.1	49	720	0	54.9
351	407.4	679	4.7	49	220	1	13.8
352	400.5	674	6.7	49	170	1	4.6
353	400.3	677	17.1	49	690	0	51.9
354	398.7	566	-17.8	49	690	1	-29.6
355	404.2	561	-12.6	50	600	1	-8.4
356	400.1	674	13.3	49	600	0	40.4
357	406.5	561	-19.5	51	750	1	-37.0
358	407.4	672	1.4	49	290	1	1.7
359	407.0	673	3.1	51	250	1	3.9
360	407.9	678	3.6	51	400	0	8.9
361	402.8	564	-10.0	49	110	0	-6.3
362	401.6	673	7.5	50	150	1	18.5
363	403.2	677	6.1	49	450	0	18.8
364	403.8	674	2.4	51	270	1	2.8
365	406.5	673	8.4	51	510	0	16.3
366	404.4	675	10.8	50	80	1	34.9
367	399.2	679	2.3	50	370	0	4.0
368	405.9	569	-19.8	51	740	1	-35.4
369	404.1	678	0.5	50	330	0	0.5
370	399.6	562	-15.4	51	660	1	-28.3
371	401.0	679	5.3	49	440	0	19.7
372	405.8	680	14.1	50	0	1	54.5
373	402.0	674	1.0	49	340	0	1.7
374	400.0	677	0.9	50	300	1	1.1
375	400.7	676	5.5	51	440	0	10.0
376	407.8	672	3.1	50	390	0	2.2
377	406.1	675	4.9	50	210	1	15.7
378	403.3	674	12.0	51	580	0	45.2
379	406.0	561	-10.4	50	550	1	-42.9
380	402.4	672	7.0	49	470	0	13.1
381	405.2	679	16.6	51	680	0	30.0
382	402.5	560	-13.4	49	620	1	-16.3
383	403.7	675	7.1	50	160	1	9.2
384	404.0	565	-10.0	49	540	1	-6.8
385	398.9	677	19.9	50	740	0	69.3
386	402.9	564	-16.9	49	690	1	-32.1
387	407.4	675	9.8	51	110	1	23.3
388	400.5	674	14.9	51	630	0	35.9
389	405.1	677	3.1	51	250	1	6.2
390	407.3	679	1.4	50	290	1	0.9

PID Model Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
391	404.3	673	8.7	50	510	0	26.7
392	399.2	676	10.5	50	80	1	12.9
393	406.3	678	8.0	49	140	1	9.9
394	398.9	679	11.3	50	560	0	40.4
395	399.9	570	-13.9	50	620	1	-16.3
396	398.7	676	5.3	50	440	0	3.6
397	402.2	672	0.5	49	310	1	0.5
398	399.3	569	-15.5	50	650	1	-10.5
399	400.3	675	7.6	51	490	0	9.7
400	407.1	562	-10.8	49	560	1	-32.2
401	401.2	680	9.9	51	530	0	36.3
402	402.7	677	2.8	49	260	1	8.1
403	403.7	680	8.9	51	510	0	25.9
404	406.0	675	3.7	50	240	1	4.6
405	401.2	567	-12.2	50	590	1	-22.5
406	400.8	680	10.6	49	560	0	26.9
407	406.7	569	-15.9	50	680	1	-29.4
408	405.9	677	6.3	51	460	0	19.0
409	403.4	675	5.9	49	190	1	11.2
410	407.1	570	-13.3	50	600	1	-32.8
411	403.0	673	18.2	50	730	0	82.9
412	407.6	672	9.5	49	110	1	36.9
413	398.8	675	6.8	50	470	0	16.7
414	401.1	569	-11.3	51	70	0	-13.9
415	402.0	568	-13.8	49	630	1	-17.7
416	406.9	678	10.8	50	550	0	7.1
417	404.1	570	-13.0	49	610	1	-34.1
418	405.7	673	20.0	51	770	0	60.9
419	401.0	674	10.6	51	90	1	39.4
420	401.2	679	7.5	50	480	0	17.2
421	400.5	562	-16.4	51	660	1	-38.1
422	403.0	563	-16.3	51	680	1	-10.8
423	401.4	678	17.4	50	690	0	39.7
424	398.8	671	4.0	50	410	0	4.9
425	406.1	561	-13.2	50	620	1	-25.9
426	401.4	569	-11.1	49	550	1	-19.8
427	405.0	676	14.4	50	620	0	35.2
428	407.3	679	19.3	50	740	0	36.6
429	401.2	568	-13.3	51	610	1	-16.6
430	407.6	568	-11.9	49	570	1	-8.1
Total Regenerated Energy per Day (Wh)							**2,906.9**

ANNEXURE – 04

NN Model Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	401.8	562	-28.9	50	780	0	-47.8
2	400.4	673	19.7	51	160	1	6.1
3	398.5	673	13.7	50	240	1	8.5
4	397.9	676	19.6	50	160	1	21.0
5	402.3	679	7.0	50	320	1	-1.4
6	400.9	676	13.8	49	240	1	15.0
7	398.8	569	-23.9	49	90	0	-63.1
8	402.3	674	1.5	51	400	1	1.4
9	399.5	673	20.2	49	160	1	37.3
10	397.8	674	7.2	50	320	1	-1.5
11	400.0	567	-28.8	50	810	0	-19.9
12	400.3	561	-34.5	49	860	0	-37.8
13	398.4	568	-26.0	50	750	0	-59.7
14	399.4	676	25.9	49	80	1	13.9
15	398.6	673	4.2	51	470	1	11.4
16	402.1	563	-28.4	50	40	0	-45.2
17	398.5	569	-22.1	49	140	0	-26.6
18	402.3	565	-27.2	51	70	0	-29.0
19	397.6	569	-17.9	50	180	0	-20.3
20	400.0	680	19.8	49	160	1	7.5
21	399.2	561	-43.7	49	980	0	-68.7
22	399.3	569	-31.6	50	830	0	-34.7
23	399.5	567	-28.6	50	790	0	-20.7
24	399.1	567	-26.6	50	760	0	-28.3
25	401.9	565	-26.3	51	760	0	-65.9
26	399.2	676	5.6	49	350	1	7.4
27	400.0	674	13.4	50	250	1	3.8
28	401.9	678	16.8	50	640	1	46.6
29	400.1	673	10.5	51	560	1	17.6
30	400.2	675	18.3	49	680	1	15.6
31	401.6	561	-25.4	50	80	0	-32.5
32	400.8	679	23.3	49	730	1	11.7
33	399.3	564	-44.8	50	990	0	-67.5
34	397.9	671	6.4	49	340	1	1.3
35	398.6	677	30.6	50	0	1	34.1
36	402.4	672	19.9	51	170	1	11.3
37	400.3	563	-35.5	50	890	0	-38.1
38	399.6	675	24.2	50	110	1	40.2
39	397.6	672	12.1	50	260	1	28.4
40	397.7	564	-25.3	49	80	0	-41.7
41	400.6	675	32.5	50	840	1	89.3
42	398.6	673	16.9	50	650	1	14.3
43	400.7	671	6.9	50	510	1	10.7
44	401.2	568	-25.3	49	80	0	-28.0
45	400.6	671	24.9	51	110	1	16.1
46	402.3	564	-44.6	50	1000	0	-76.0
47	398.9	568	-36.5	51	880	0	-23.6
48	402.4	562	-27.5	50	790	0	-47.7
49	400.6	672	22.2	50	120	1	40.6
50	400.1	674	21.8	49	720	1	53.3
51	400.2	562	-25.7	49	70	0	-14.6
52	397.6	674	15.3	50	210	1	64.7
53	397.9	671	31.3	49	0	1	75.0
54	402.4	567	-28.0	49	30	0	-64.6
55	402.5	561	-26.6	51	90	0	-43.8
56	401.6	676	12.5	50	590	1	8.9
57	399.3	560	-30.1	50	40	0	-19.2
58	397.5	677	16.5	50	630	1	17.7
59	399.8	560	-23.2	50	130	0	-17.4
60	397.8	672	22.6	49	710	1	52.8
61	397.7	569	-45.4	50	1020	0	-73.9
62	397.6	565	-38.2	49	910	0	-40.3
63	400.7	677	32.3	49	0	1	94.7
64	398.4	674	8.5	51	310	1	26.4
65	402.4	672	23.3	49	110	1	11.8
66	399.6	567	-25.1	50	90	0	-41.7
67	400.0	671	33.8	50	870	1	92.6
68	398.6	675	24.9	50	730	1	39.0
69	400.0	562	-25.8	49	90	0	-19.2
70	401.4	562	-29.1	49	40	0	-47.7
71	400.7	670	14.4	51	610	1	2.3
72	402.2	679	32.4	51	0	1	53.2

NN Model Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
73	399.3	568	-31.4	51	840	0	-18.6
74	400.8	570	-21.7	51	710	0	-45.5
75	399.6	678	3.9	50	370	1	1.8
76	401.3	672	15.6	50	630	1	29.6
77	397.8	570	-28.2	50	40	0	-32.1
78	401.3	679	27.7	49	790	1	68.1
79	402.2	673	14.6	50	620	1	29.7
80	398.6	563	-16.9	50	200	0	-8.9
81	399.1	566	-28.9	50	800	0	-62.7
82	400.8	672	32.1	51	0	1	57.6
83	399.7	564	-24.5	50	760	0	-26.3
84	398.9	679	13.2	50	250	1	7.1
85	397.8	679	15.0	51	230	1	19.5
86	402.0	565	-28.0	50	40	0	-69.7
87	397.5	565	-27.4	49	70	0	-19.2
88	398.3	567	-24.4	50	110	0	-44.6
89	398.8	675	29.7	51	820	1	50.7
90	400.7	671	40.4	49	930	1	18.3
91	398.4	562	-27.7	49	50	0	-16.2
92	401.8	676	17.5	50	190	1	4.3
93	400.9	565	-31.7	51	830	0	-52.8
94	397.6	679	33.5	49	0	1	41.3
95	401.0	566	-22.7	50	730	0	-18.4
96	401.8	671	9.8	51	290	1	6.4
97	397.5	561	-23.2	51	720	0	-15.9
98	399.4	678	5.9	51	340	1	9.5
99	401.9	674	7.4	49	320	1	23.6
100	398.9	678	18.1	51	180	1	6.7
101	397.8	566	-29.5	50	40	0	-34.7
102	398.1	561	-22.7	50	140	0	-42.5
103	398.5	672	0.1	50	420	1	-5.1
104	398.1	671	26.5	49	760	1	88.8
105	401.2	569	-20.0	50	150	0	-24.6
106	400.1	565	-26.4	49	90	0	-13.1
107	402.0	672	19.2	50	670	1	29.3
108	401.0	562	-24.9	49	80	0	-17.1
109	399.4	673	10.0	50	280	1	10.3
110	398.8	676	25.1	51	90	1	22.0
111	397.9	561	-23.2	51	710	0	-25.2
112	399.0	671	0.6	51	410	1	-5.4
113	399.2	676	4.9	49	350	1	6.5
114	400.3	678	3.4	50	380	1	5.2
115	402.3	561	-18.5	49	180	0	-32.9
116	401.6	560	-14.4	51	230	0	-34.5
117	397.9	676	5.3	51	490	1	4.6
118	398.7	676	9.1	51	540	1	11.7
119	400.5	672	14.7	51	620	1	9.4
120	400.4	676	32.4	50	850	1	19.0
121	401.7	680	29.1	50	790	1	48.5
122	399.4	676	37.2	50	940	1	25.5
123	399.9	565	-27.7	50	40	0	-19.2
124	398.7	674	18.4	49	170	1	14.1
125	401.3	565	-36.4	50	910	0	-21.4
126	400.7	676	0.3	51	430	1	-4.6
127	398.2	564	-30.0	50	800	0	-31.1
128	398.4	568	-28.4	50	800	0	-80.4
129	398.6	670	24.2	49	750	1	48.0
130	398.5	567	-24.5	49	750	0	-40.3
131	401.5	674	31.8	49	0	1	55.8
132	400.9	675	14.1	50	620	1	38.4
133	402.3	676	9.0	50	310	1	4.5
134	399.2	678	19.2	50	170	1	19.3
135	399.8	672	21.5	49	150	1	30.6
136	399.4	569	-16.9	49	200	0	-49.3
137	399.8	672	15.5	50	620	1	9.0
138	398.3	674	5.1	49	490	1	10.8
139	398.4	678	1.3	50	400	1	5.6
140	399.3	672	14.9	50	210	1	22.0
141	402.3	673	2.1	50	390	1	2.1
142	399.4	677	23.6	50	730	1	36.6
143	401.0	569	-17.1	50	200	0	-19.6
144	399.7	671	7.7	50	520	1	13.8

NN Model Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
145	401.9	561	-17.4	51	180	0	-39.2
146	400.1	565	-30.7	49	840	0	-18.0
147	400.7	675	15.8	50	630	1	18.7
148	398.5	678	4.5	49	360	1	7.7
149	401.7	674	31.3	51	0	1	83.4
150	399.7	674	35.5	50	890	1	98.9
151	399.0	569	-35.3	50	870	0	-37.2
152	399.8	676	6.3	50	330	1	7.8
153	398.4	678	15.3	50	210	1	24.4
154	399.4	672	25.2	50	750	1	53.5
155	402.3	674	4.2	49	370	1	0.5
156	401.4	568	-21.3	50	140	0	-22.6
157	399.2	679	8.7	50	540	1	10.2
158	398.6	674	2.2	49	390	1	2.2
159	400.1	674	22.6	50	120	1	27.2
160	398.4	561	-29.6	51	800	0	-88.2
161	399.1	671	23.0	50	730	1	132.8
162	402.4	672	31.2	50	0	1	111.2
163	399.5	672	17.3	49	650	1	43.6
164	399.0	563	-31.2	51	820	0	-114.1
165	402.0	566	-22.4	50	120	0	-67.6
166	401.5	560	-14.1	50	240	0	-24.9
167	399.5	680	1.7	51	400	1	4.1
168	397.7	673	9.1	50	300	1	11.2
169	400.4	679	22.4	50	720	1	98.3
170	397.9	564	-27.6	50	780	0	-88.9
171	401.3	675	13.4	49	590	1	40.3
172	401.9	565	-19.1	51	160	0	-41.5
173	399.4	672	10.4	51	290	1	24.2
174	400.5	672	20.7	50	150	1	37.6
175	399.0	567	-29.9	49	800	0	-49.4
176	398.7	671	32.5	50	0	1	75.6
177	402.2	671	25.2	49	770	1	56.9
178	397.6	567	-22.0	50	150	0	-25.6
179	398.6	569	-29.8	49	800	0	-48.0
180	400.6	679	20.9	50	700	1	78.7
181	398.5	567	-15.9	51	210	0	-28.6
182	398.3	674	31.6	50	0	1	100.1
183	401.0	680	14.3	50	240	1	37.4
184	400.1	674	25.3	49	90	1	26.3
185	400.8	674	31.0	51	830	1	106.7
186	400.0	671	20.0	51	140	1	80.8
187	397.8	675	12.5	51	580	1	10.6
188	398.1	673	24.0	49	740	1	54.0
189	400.0	675	2.6	51	390	1	4.8
190	397.8	678	6.2	50	500	1	5.4
191	398.2	675	34.9	51	870	1	78.0
192	398.1	672	18.1	49	660	1	46.6
193	399.8	673	13.2	51	580	1	5.5
194	399.9	560	-31.6	51	850	0	-111.1
195	400.4	678	0.3	49	430	1	-4.3
196	401.7	563	-28.0	49	40	0	-116.8
197	400.8	671	33.2	50	0	1	127.7
198	400.5	564	-12.0	49	260	0	-39.9
199	401.7	679	32.8	51	0	1	97.9
200	398.6	569	-18.5	50	190	0	-29.2
201	398.5	675	24.8	51	740	1	41.6
202	402.1	672	15.7	51	210	1	41.5
203	398.5	565	-34.1	50	870	0	-104.2
204	400.7	564	-19.8	50	150	0	-44.9
205	398.2	570	-27.1	50	790	0	-45.9
206	399.1	677	1.2	50	440	1	3.8
207	402.1	560	-17.8	49	190	0	-27.9
208	399.6	672	8.6	49	530	1	24.6
209	399.6	677	-0.4	50	420	1	-4.3
210	398.3	673	6.8	50	340	1	11.1
211	397.9	677	3.2	49	380	1	4.3
212	401.3	567	-29.6	50	20	0	-80.8
213	400.2	566	-29.1	51	820	0	-53.9
214	399.0	565	-19.8	50	150	0	-30.8
215	401.5	671	9.1	51	530	1	12.5
216	400.6	563	-25.9	49	770	0	-68.4

NN Model Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
217	398.3	678	9.1	51	290	1	29.4
218	397.8	679	25.4	49	770	1	51.5
219	401.5	679	11.0	50	560	1	25.4
220	398.4	567	-25.7	50	770	0	-50.1
221	400.1	568	-29.9	50	830	0	-65.2
222	397.9	672	1.5	50	400	1	-0.6
223	399.3	672	19.2	49	660	1	58.6
224	398.7	677	4.1	51	360	1	9.5
225	398.1	565	-31.9	50	850	0	-70.4
226	398.7	564	-18.9	49	170	0	-82.0
227	402.4	675	10.3	50	280	1	29.7
228	400.7	675	12.3	50	590	1	20.5
229	398.5	675	7.9	50	310	1	9.4
230	397.8	566	-33.7	50	840	0	-52.1
231	402.4	670	45.7	49	1030	1	172.1
232	398.0	561	-33.0	50	850	0	-18.9
233	400.1	676	1.4	50	440	1	0.6
234	400.8	679	3.0	50	380	1	6.3
235	400.8	673	10.8	49	280	1	5.1
236	400.4	567	-14.3	51	220	0	-76.1
237	401.7	675	0.5	49	430	1	1.4
238	401.5	568	-17.2	50	190	0	-36.8
239	400.1	679	3.1	51	460	1	8.6
240	401.8	569	-32.4	50	840	0	-85.8
241	400.1	674	10.7	49	280	1	24.2
242	398.7	568	-28.9	50	790	0	-70.2
243	400.1	676	4.8	51	490	1	28.4
244	399.3	563	-27.5	49	800	0	-31.7
245	400.3	564	-22.8	51	730	0	-44.9
246	402.0	679	37.1	50	890	1	111.7
247	399.1	679	17.8	51	170	1	99.4
248	402.3	680	8.6	50	530	1	16.1
249	397.7	676	11.1	50	570	1	12.1
250	399.2	673	14.0	49	250	1	16.6
251	402.2	680	5.6	49	490	1	12.9
252	401.7	568	-14.3	49	220	0	-36.2
253	400.3	568	-21.3	49	710	0	-77.0
254	400.6	678	12.6	50	590	1	42.1
255	401.8	674	12.0	50	260	1	35.2
256	397.7	570	-29.7	49	830	0	-66.5
257	401.6	566	-20.9	50	150	0	-76.8
258	401.8	569	-30.4	50	820	0	-130.6
259	399.6	676	7.9	51	520	1	36.2
260	401.2	672	2.7	50	390	1	8.7
261	398.4	676	8.7	50	540	1	10.7
262	399.0	679	3.0	50	380	1	2.0
263	402.0	564	-12.3	50	250	0	-29.1
264	397.7	677	14.2	50	610	1	39.8
265	398.0	670	12.3	50	260	1	29.0
266	399.9	569	-17.6	51	180	0	-9.2
267	400.9	560	-18.1	49	190	0	-40.7
268	399.0	565	-34.3	50	850	0	-75.6
269	397.9	677	0.4	50	420	1	-1.6
270	399.8	674	8.0	51	530	1	7.6
271	398.2	563	-13.9	49	230	0	-39.4
272	400.3	671	11.7	50	260	1	41.4
273	397.8	561	-17.7	51	190	0	-12.6
274	399.0	564	-14.2	50	240	0	-23.5
275	398.2	679	6.0	50	340	1	12.0
276	402.2	673	10.1	50	560	1	20.9
277	402.4	679	0.2	50	420	1	-2.5
278	402.1	561	-22.1	50	720	0	-36.7
279	401.6	567	-20.8	49	160	0	-45.5
280	398.6	566	-22.7	50	720	0	-46.8
281	400.5	670	32.2	51	860	1	70.1
282	401.6	679	26.2	51	80	1	86.2
283	399.3	567	-20.2	49	160	0	-45.4
284	397.5	562	-18.5	51	180	0	-33.5
285	402.1	563	-24.7	51	750	0	-73.4
286	400.1	678	4.0	51	470	1	3.8
287	398.4	565	-34.6	49	870	0	-83.3
288	398.5	565	-17.7	50	200	0	-45.0

NN Model Elevator Data - Office Building Complex @ Narahenpita

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
289	401.1	678	17.2	49	660	1	28.1
290	397.7	570	-27.7	51	780	0	-44.6
291	400.5	568	-24.4	49	740	0	-50.3
292	399.9	679	7.9	50	520	1	18.2
293	400.4	672	8.0	51	520	1	28.0
294	397.9	569	-32.2	50	830	0	-83.9
295	397.8	567	-16.1	51	210	0	-8.5
296	398.9	561	-33.3	49	850	0	-88.6
297	400.3	677	1.5	50	400	1	2.1
298	399.2	673	20.7	50	700	1	61.6
299	402.0	568	-13.4	50	230	0	-25.5
300	398.1	675	22.7	51	730	1	67.8
301	400.4	671	21.8	50	140	1	126.2
302	401.2	561	-21.0	49	130	0	-62.1
303	398.0	565	-30.5	49	810	0	-74.0
304	401.5	564	-20.6	50	160	0	-62.5
305	397.6	673	9.0	51	300	1	32.8
306	402.5	679	14.0	50	610	1	38.4
307	400.9	677	4.6	49	360	1	12.6
308	397.9	672	9.7	50	550	1	37.4
309	399.4	670	23.2	50	110	1	100.6
310	398.2	671	6.5	50	510	1	25.3
311	397.9	678	7.1	50	330	1	9.2
312	402.1	567	-33.1	51	860	0	-71.7
313	402.0	670	31.2	50	820	1	125.6
314	401.8	561	-21.1	50	700	0	-73.7
315	402.3	674	5.8	51	500	1	7.4
316	399.9	565	-13.9	50	230	0	-52.4
317	402.1	673	1.8	51	400	1	-1.5
318	400.1	562	-17.2	49	200	0	-68.5
319	401.4	565	-31.0	51	820	0	-82.4
320	401.3	674	0.8	50	410	1	0.0
321	399.7	566	-21.3	50	150	0	-73.3
322	401.2	673	1.7	49	400	1	2.9
323	402.1	677	9.0	51	540	1	7.3
324	399.1	568	-33.2	51	860	0	-55.9
325	400.0	677	9.6	50	540	1	11.1
326	400.6	675	9.7	51	290	1	6.2
327	399.3	673	16.3	51	220	1	49.3
328	400.5	561	-20.1	50	170	0	-45.7
329	400.8	567	-18.6	50	170	0	-37.9
330	401.2	566	-25.6	50	750	0	-53.6
331	400.9	676	18.1	51	670	1	70.9
332	399.5	567	-23.4	50	740	0	-86.0
333	400.1	564	-17.5	50	190	0	-30.3
334	399.8	678	8.2	49	320	1	10.7
335	401.5	671	7.3	49	320	1	6.5
336	400.9	566	-34.5	50	860	0	-38.0
337	401.9	678	22.2	50	730	1	105.3
338	400.1	672	12.8	50	590	1	15.5
339	400.4	566	-22.7	50	710	0	-62.7
340	399.7	567	-21.9	50	700	0	-36.6
341	400.2	671	24.5	50	750	1	73.3
342	400.6	569	-30.8	49	810	0	-121.9
343	402.2	564	-19.5	50	170	0	-78.4
344	399.1	677	35.1	50	880	1	17.5
345	400.3	564	-27.0	50	760	0	-44.1
346	398.9	670	26.5	50	770	1	54.8
347	399.3	678	10.1	50	290	1	13.6
348	398.2	672	19.4	50	680	1	8.8
349	398.3	567	-28.9	50	780	0	-103.6
350	398.0	673	10.2	49	550	1	10.2
351	401.4	671	16.7	50	630	1	85.0
352	398.5	678	3.8	51	370	1	13.3
353	400.4	561	-18.7	49	170	0	-46.6
354	402.0	565	-28.0	51	790	0	-43.8
355	398.6	565	-17.0	51	210	0	-16.0
356	400.4	680	12.0	50	270	1	15.8
357	401.3	670	18.2	50	190	1	32.8
358	400.7	675	20.7	51	140	1	63.9
359	399.4	677	26.3	49	60	1	49.3
360	400.6	567	-22.4	50	130	0	-72.5

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No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
361	398.5	569	-14.0	50	230	0	-12.5
362	401.8	670	14.7	50	210	1	41.5
363	400.6	673	0.4	50	430	1	0.1
364	401.2	563	-31.5	51	840	0	-19.6
365	400.3	567	-14.7	51	220	0	-56.6
366	401.3	677	17.9	50	190	1	60.0
367	400.9	562	-23.0	50	710	0	-23.6
368	399.5	673	9.9	50	540	1	23.4
369	402.1	568	-16.2	50	200	0	-34.8
370	401.8	562	-37.5	51	910	0	-102.7
371	402.5	561	-30.7	51	840	0	-80.4
372	398.4	678	15.3	50	210	1	24.9
373	401.8	680	20.1	51	690	1	104.4
374	400.8	563	-22.9	49	730	0	-97.3
375	398.5	568	-16.2	49	210	0	-42.2
376	399.1	673	3.8	51	370	1	2.0
377	398.3	565	-14.0	50	240	0	-49.2
378	400.1	672	17.7	50	660	1	3.5
379	400.3	680	24.6	50	90	1	117.9
380	399.4	563	-15.5	50	210	0	-13.1
381	398.0	673	17.0	51	630	1	36.2
382	401.2	678	12.9	49	590	1	16.0
383	401.4	560	-20.3	49	160	0	-46.0
384	398.2	562	-28.1	50	800	0	-54.1
385	399.8	670	29.3	50	810	1	72.0
386	399.9	564	-24.4	50	760	0	-28.5
387	402.2	671	2.8	49	460	1	5.5
388	402.4	560	-29.4	50	800	0	-157.8
389	399.4	678	42.7	49	960	1	246.6
390	399.9	670	3.8	50	370	1	5.8
391	400.5	565	-24.9	49	760	0	-87.2
392	401.0	562	-21.3	49	150	0	-37.9
393	398.3	570	-31.1	49	810	0	-67.5
394	399.2	676	7.2	49	520	1	19.0
395	400.7	563	-19.3	49	170	0	-13.0
396	398.1	566	-26.8	51	780	0	-53.3
397	397.8	673	10.6	50	560	1	23.9
398	402.3	676	27.9	49	60	1	82.0
399	402.2	675	31.5	50	850	1	105.7
400	399.5	674	23.6	51	120	1	65.5
401	398.0	680	9.5	50	540	1	11.0
402	398.7	564	-20.9	49	150	0	-66.0
403	399.0	570	-25.2	49	740	0	-55.4
404	401.2	568	-28.2	50	780	0	-61.8
405	397.6	680	5.9	50	340	1	4.5
406	399.7	561	-30.9	49	810	0	-34.2
407	401.7	675	5.6	50	490	1	11.1
408	399.3	565	-25.9	50	740	0	-52.5
409	400.7	679	17.5	50	650	1	34.3
410	397.6	671	29.6	49	810	1	67.5
411	401.4	567	-19.5	50	160	0	-50.1
412	401.4	570	-27.6	51	790	0	-31.8
413	399.9	677	1.0	50	410	1	-4.5
414	397.7	673	16.7	51	630	1	14.5
415	397.9	562	-39.8	51	930	0	-81.7
416	397.7	679	22.7	51	720	1	23.5
417	399.3	568	-27.6	49	790	0	-21.3
418	402.3	680	7.2	49	320	1	8.1
419	397.8	565	-24.4	51	740	0	-14.0
420	399.9	680	1.1	49	400	1	3.8
421	399.7	674	14.0	49	240	1	2.9
422	399.7	674	20.0	50	150	1	21.9
423	399.0	674	24.7	50	90	1	41.7
424	398.4	562	-28.9	50	50	0	-31.5
425	399.8	678	16.4	51	630	1	32.8
426	400.6	679	35.6	51	870	1	102.3
427	398.7	563	-18.9	49	160	0	-13.4
428	398.7	564	-27.1	51	80	0	-29.7
429	400.3	566	-31.1	50	0	0	-18.3
430	397.7	673	10.8	50	560	1	27.2
431	401.0	568	-40.8	50	980	0	-26.8
432	399.0	566	-30.9	50	820	0	-71.9

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No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
433	398.3	566	-36.6	50	930	0	-20.2
434	401.6	670	7.4	49	320	1	11.2
435	401.4	673	13.4	49	240	1	9.4
436	399.8	676	20.2	50	160	1	4.3
437	398.7	677	25.8	51	80	1	38.0
438	399.4	672	19.1	50	160	1	41.4
439	399.9	670	6.7	49	330	1	3.7
440	400.7	560	-26.7	49	60	0	-31.8
441	401.8	562	-12.9	49	240	0	-32.6
442	401.1	677	10.9	51	560	1	17.2
443	401.7	561	-18.4	51	190	0	-32.9
444	401.3	566	-18.3	50	180	0	-20.5
445	400.8	562	-15.4	49	230	0	-15.4
446	402.0	674	31.6	50	0	1	55.6
447	399.7	674	7.5	50	510	1	13.6
448	398.1	566	-25.9	51	80	0	-14.8
449	397.6	675	23.1	50	110	1	11.7
450	402.0	670	0.8	49	410	1	2.0
451	397.9	671	7.9	49	320	1	0.2
452	399.9	561	-29.9	51	810	0	-35.5
453	401.7	671	7.7	51	320	1	13.0
454	398.8	672	14.2	49	240	1	27.4
455	402.3	673	31.3	50	830	1	75.9
456	401.4	563	-15.1	51	230	0	-19.5
457	401.9	672	30.9	49	0	1	76.4
458	400.3	671	16.9	49	640	1	37.4
459	401.0	564	-25.0	50	90	0	-19.7
460	397.8	672	12.3	51	260	1	17.8
461	398.0	564	-27.4	51	780	0	-17.6
462	400.6	564	-21.0	51	690	0	-44.0
463	399.0	672	5.0	50	350	1	6.0
464	397.7	677	3.2	49	380	1	2.2
465	400.9	678	8.0	50	310	1	13.4
466	399.8	676	32.8	51	0	1	40.6
467	400.2	563	-18.7	50	170	0	-20.4
468	399.6	676	3.3	49	460	1	7.7
469	400.7	560	-24.0	50	110	0	-41.4
470	398.2	676	12.1	50	580	1	21.0
471	400.6	673	16.8	51	650	1	18.7
472	397.8	563	-16.0	50	210	0	-21.5
473	400.0	567	-18.9	50	170	0	-14.1
474	400.3	561	-15.2	51	210	0	-18.0
475	399.5	562	-28.9	50	810	0	-18.2
476	398.5	676	4.4	51	360	1	2.9
477	399.9	671	2.2	51	390	1	4.4
478	400.5	674	7.1	50	320	1	5.4
479	398.1	671	9.6	50	290	1	12.7
480	398.1	677	33.3	50	0	1	68.2
481	401.2	673	16.6	51	640	1	41.0
482	398.1	670	22.1	50	730	1	59.8
483	397.7	671	29.8	50	810	1	35.3
484	400.6	678	41.6	50	990	1	53.5
485	399.2	679	24.9	50	740	1	28.0
486	400.4	671	19.7	50	680	1	8.7
487	399.1	673	31.6	50	820	1	50.9
488	399.8	566	-27.4	50	40	0	-17.1
489	399.6	670	16.9	49	190	1	10.7
490	401.6	673	8.6	51	310	1	6.3
491	400.1	671	0.9	49	430	1	0.5
492	398.3	569	-23.0	50	740	0	-17.6
493	398.8	671	5.1	50	350	1	4.2
494	398.3	679	0.3	49	420	1	-6.1
495	402.4	678	19.4	49	170	1	44.7
496	399.7	675	33.5	50	0	1	96.8
497	400.7	674	11.8	50	580	1	30.8
498	397.8	567	-13.9	50	230	0	-23.1
499	400.8	671	5.6	50	490	1	1.4
500	402.4	675	17.4	51	640	1	14.1
501	400.3	678	25.3	50	760	1	11.7
502	400.3	678	45.4	50	1000	1	77.0
503	400.9	671	8.3	50	320	1	6.9
504	400.0	676	3.6	49	370	1	3.6

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No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
505	399.2	672	13.9	51	240	1	15.5
506	399.0	674	16.6	50	210	1	16.3
507	398.2	677	5.8	49	350	1	5.9
508	399.4	673	22.5	49	130	1	46.9
509	400.6	677	15.7	49	210	1	14.4
510	402.2	566	-22.6	50	110	0	-17.1
511	399.5	673	43.8	49	970	1	92.4
512	399.5	675	17.7	51	640	1	30.6
513	402.3	679	22.3	50	720	1	52.1
514	398.4	676	33.9	50	880	1	58.8
515	401.8	675	13.4	50	240	1	10.3
516	400.8	672	19.1	50	160	1	35.8
517	398.0	673	13.1	49	240	1	16.8
518	399.6	680	32.8	49	0	1	55.1
519	400.5	678	7.0	49	330	1	10.7
520	401.8	679	19.4	50	150	1	9.0
521	401.3	566	-19.6	51	170	0	-45.4
522	402.4	566	-20.4	50	150	0	-53.0
523	398.8	562	-15.8	50	210	0	-11.7
524	401.8	678	19.8	50	690	1	38.2
525	399.2	672	5.5	50	490	1	0.7
526	398.0	561	-27.7	51	40	0	-18.3
527	399.7	671	26.7	51	80	1	12.8
528	402.2	679	12.5	50	250	1	20.9
529	402.1	677	19.0	49	170	1	44.9
530	398.2	673	23.3	49	110	1	10.0
531	399.9	677	32.6	49	0	1	91.8
532	398.6	567	-22.6	50	120	0	-33.8
533	402.2	563	-19.6	51	160	0	-31.4
534	398.5	671	28.3	49	780	1	60.4
535	401.9	562	-17.5	49	200	0	-31.1
536	398.2	670	7.9	51	310	1	14.3
537	398.2	672	13.5	49	240	1	15.7
538	400.9	671	17.6	50	180	1	18.6
539	397.5	670	15.2	50	230	1	7.0
540	400.0	566	-24.3	50	90	0	-51.0
Total Regenerated Energy per Day by 1 Elevator (Wh)							**347.5**
Total Regenerated Energy per Day by all the 5 Elevators (kWh)							**1.74**

NN Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	403.6	673	15.1	50	490	0	51.8
2	397.1	671	16.9	51	530	0	37.8
3	403.6	676	0.8	50	260	0	0.9
4	397.9	678	6.1	51	340	0	3.2
5	397.1	562	-16.5	50	530	1	-63.6
6	400.0	677	1.1	51	230	1	0.6
7	395.1	670	9.8	50	90	1	29.3
8	397.4	673	1.5	49	270	0	0.8
9	402.6	672	9.4	50	410	0	38.8
10	404.1	676	4.0	50	320	0	3.1
11	400.6	674	18.0	50	550	0	19.2
12	398.2	670	8.4	50	380	0	5.7
13	402.8	674	1.8	50	220	1	4.3
14	400.5	565	-10.1	50	420	1	-8.2
15	397.2	568	-11.5	49	440	1	-18.5
16	402.3	673	1.7	50	230	1	1.4
17	404.3	567	-11.0	50	430	1	-11.3
18	399.6	676	6.2	51	350	0	8.6
19	395.3	568	-9.8	49	90	0	-5.7
20	404.6	671	13.6	50	470	0	57.1
21	404.5	677	2.8	49	210	1	3.2
22	401.0	672	18.3	50	540	0	20.0
23	401.6	672	15.4	49	490	0	17.9
24	395.0	672	8.3	49	390	0	3.8
25	395.8	673	8.3	49	110	1	57.2
26	403.5	676	15.8	49	520	0	49.0
27	395.7	678	13.2	51	470	0	28.9
28	397.7	675	2.3	49	290	0	0.9
29	404.1	675	2.3	49	210	1	0.9
30	402.7	568	-14.5	49	490	1	-36.0
31	404.7	568	-19.1	50	570	1	-33.7
32	396.6	674	7.6	51	130	1	12.4
33	396.4	675	12.2	49	460	0	14.8
34	398.4	680	12.6	50	470	0	14.2
35	404.3	563	-10.9	50	70	0	-5.7
36	397.4	564	-8.1	49	110	0	-13.1
37	403.5	672	5.5	50	340	0	6.3
38	397.9	676	13.1	50	460	0	17.1
39	398.1	680	1.5	50	280	0	2.2
40	395.5	672	6.5	50	360	0	2.7
41	397.8	678	2.0	50	220	1	5.9
42	404.3	569	-14.2	51	470	1	-34.8
43	401.5	561	-16.8	51	520	1	-9.8
44	398.5	671	1.7	51	220	1	2.8
45	403.3	566	-8.8	50	100	0	-21.1
46	403.1	560	-12.6	49	50	0	-12.5
47	403.6	672	7.3	50	360	0	7.8
48	404.9	678	5.3	49	340	0	2.6
49	396.6	563	-11.2	51	80	0	-28.7
50	395.0	569	-13.1	50	470	1	-22.7
51	396.8	564	-23.2	50	610	1	-67.7
52	399.9	680	1.3	50	230	1	0.5
53	400.5	565	-19.6	49	560	1	-21.1
54	395.6	568	-18.3	50	550	1	-13.0
55	402.3	679	3.7	49	310	0	9.6
56	398.9	562	-12.9	50	50	0	-43.0
57	404.3	568	-18.8	51	560	1	-43.5
58	398.4	562	-16.3	50	520	1	-26.2
59	401.2	570	-19.6	51	570	1	-33.4
60	397.8	675	9.6	50	400	0	57.5
61	398.4	676	9.4	50	410	0	6.3
62	399.3	567	-6.5	51	150	0	-4.2
63	404.4	560	-10.8	50	420	1	-17.0
64	399.7	567	-16.3	50	520	1	-19.2
65	395.6	672	2.9	49	210	1	2.1
66	398.5	569	-13.4	49	480	1	-22.5
67	395.4	675	7.5	50	130	1	2.4
68	401.2	677	1.4	49	230	1	2.3
69	402.3	570	-14.1	50	470	1	-13.6
70	400.5	675	0.4	50	260	0	-0.2
71	395.8	674	1.2	51	270	0	3.1
72	404.1	672	3.8	50	310	0	10.1
73	398.8	676	4.3	49	320	0	9.1
74	404.6	679	0.6	49	260	0	-0.1
75	397.6	566	-14.9	49	480	1	-45.0
76	401.4	680	2.3	49	210	1	3.9
77	402.8	679	9.7	50	90	1	7.1
78	402.0	675	15.5	50	0	1	19.0

NN Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
79	403.7	569	-16.6	50	520	1	-16.6
80	403.4	670	15.9	50	510	0	104.8
81	398.3	674	5.0	49	340	0	5.9
82	402.9	679	1.2	51	270	0	-0.8
83	395.4	569	-12.5	51	450	1	-44.4
84	403.7	673	3.2	50	200	1	6.2
85	403.7	565	-14.4	50	490	1	-8.4
86	396.2	566	-18.4	50	550	1	-20.6
87	400.3	680	6.9	50	370	0	14.0
88	397.1	565	-10.5	51	80	0	-46.5
89	404.5	562	-21.3	50	600	1	-90.3
90	403.9	568	-14.3	50	490	1	-21.9
91	397.0	565	-10.3	51	70	0	-26.8
92	395.7	564	-7.5	51	130	0	-21.2
93	402.6	680	16.1	51	0	1	79.7
94	399.2	674	13.0	50	460	0	87.4
95	402.8	675	8.6	50	110	1	9.9
96	400.1	677	16.3	49	0	1	64.1
97	399.6	563	-15.1	51	500	1	-8.6
98	404.7	570	-16.3	49	520	1	-27.9
99	403.2	674	6.5	50	350	0	3.2
100	399.8	561	-9.2	50	100	0	-16.6
101	396.1	565	-16.1	49	500	1	-31.6
102	396.6	679	21.4	50	610	0	133.8
103	403.4	679	5.3	50	340	0	3.9
104	401.1	678	2.5	51	290	0	1.9
105	402.7	679	15.2	50	0	1	105.7
106	397.4	672	21.3	49	600	0	26.2
107	397.8	678	7.4	49	370	0	15.9
108	400.0	673	11.6	49	440	0	41.7
109	401.4	563	-15.3	51	500	1	-103.3
110	401.5	567	-9.1	49	100	0	-18.2
111	395.1	674	13.5	51	480	0	61.7
112	402.4	678	0.7	51	240	1	2.0
113	404.1	670	7.7	51	380	0	18.6
114	398.9	563	-11.6	50	430	1	-51.0
115	395.1	680	8.5	50	110	1	4.2
116	400.9	676	6.6	50	150	1	6.9
117	404.8	672	13.5	51	470	0	94.8
118	398.8	679	15.1	50	0	1	36.3
119	404.0	674	3.2	51	190	1	9.6
120	404.2	570	-12.5	49	50	0	-21.1
121	397.4	565	-8.1	50	120	0	-12.4
122	401.4	568	-10.2	51	80	0	-5.7
123	400.0	676	7.4	49	130	1	44.4
124	401.7	679	13.7	50	490	0	32.9
125	398.6	676	16.6	51	510	0	67.7
126	398.8	677	4.3	50	320	0	3.4
127	402.7	670	14.9	50	0	1	106.7
128	402.0	670	14.9	51	480	0	69.7
129	404.9	566	-21.3	51	600	1	-24.4
130	400.1	679	15.1	49	490	0	7.7
131	397.2	568	-12.0	49	440	1	-14.5
132	397.6	679	6.7	49	140	1	22.7
133	396.5	671	6.7	49	350	0	15.2
134	404.0	672	13.5	49	460	0	55.9
135	400.2	672	11.4	50	430	0	6.1
136	405.0	563	-14.7	50	480	1	-7.9
137	403.3	672	15.1	50	0	1	91.3
138	401.1	679	17.4	51	520	0	19.7
139	396.1	672	11.8	49	450	0	44.0
140	397.0	563	-18.4	50	540	1	-9.1
141	395.1	562	-20.1	51	560	1	-18.6
142	395.1	678	3.0	50	200	1	6.6
143	395.6	568	-5.7	50	160	0	-14.8
144	396.2	675	1.1	50	230	1	2.4
145	401.1	568	-19.7	49	580	1	-31.9
146	398.4	670	8.1	51	390	0	40.5
147	401.8	570	-18.6	50	560	1	-50.3
148	397.4	676	8.2	51	110	1	13.5
149	395.7	567	-13.9	49	490	1	-17.6
150	403.6	679	20.7	50	590	0	165.1
151	396.9	560	-11.7	51	430	1	-12.2
152	396.4	673	15.6	51	0	1	87.0
153	395.2	677	12.6	50	450	0	76.1
154	396.6	676	9.5	49	100	1	61.1
155	401.6	674	12.6	51	450	0	6.7
156	396.8	677	15.0	50	490	0	100.4

NN Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
157	402.0	564	-8.2	49	110	0	-9.3
158	403.1	671	4.1	49	180	1	24.7
159	399.6	570	-17.1	50	540	1	-20.1
160	395.5	674	12.4	50	450	0	7.7
161	397.3	566	-10.7	49	70	0	-23.2
162	404.7	680	1.9	50	220	1	4.4
163	398.8	563	-10.4	50	420	1	-18.6
164	395.2	678	18.8	49	540	0	130.3
165	403.5	671	15.9	51	0	1	92.7
166	400.0	677	3.6	51	190	1	2.2
167	400.0	674	3.2	49	300	0	9.1
168	401.9	678	13.0	50	460	0	40.5
169	395.3	564	-11.8	51	450	1	-21.7
170	402.4	672	0.9	49	230	1	1.1
171	398.4	671	0.2	51	240	1	1.2
172	396.6	570	-10.9	50	420	1	-17.7
173	401.1	677	2.8	50	210	1	0.8
174	400.8	676	22.9	51	610	0	135.3
175	395.2	676	16.0	50	0	1	68.7
176	400.6	679	14.8	50	490	0	66.3
177	404.2	562	-20.1	50	570	1	-11.9
178	401.5	676	8.5	50	110	1	34.0
179	398.5	679	21.0	50	590	0	100.4
180	396.4	679	2.8	50	290	0	4.3
181	400.1	675	3.4	51	200	1	1.8
182	395.3	671	10.2	51	430	0	14.1
183	404.7	564	-14.2	50	470	1	-44.2
184	399.3	672	3.0	49	290	0	1.0
185	398.6	567	-18.6	49	540	1	-60.6
186	397.3	676	18.8	50	560	0	97.4
187	398.9	678	1.0	49	230	1	0.1
188	396.5	672	3.4	51	190	1	9.6
189	402.3	566	-15.3	50	500	1	-8.5
190	398.1	672	14.9	49	490	0	79.3
191	402.3	673	15.0	49	0	1	100.4
192	395.9	673	2.9	51	290	0	9.5
193	398.9	562	-16.4	49	510	1	-32.7
194	398.5	562	-15.0	51	500	1	-23.6
195	398.1	678	1.6	49	270	0	1.0
196	397.8	675	15.8	49	510	0	107.3
197	402.4	675	5.9	51	150	1	34.5
198	400.0	675	16.1	50	500	0	29.5
199	396.1	671	10.6	49	410	0	17.0
200	404.6	569	-24.0	49	620	1	-96.7
201	404.2	672	11.0	50	440	0	5.7
202	402.9	676	14.5	51	490	0	69.5
203	403.0	565	-10.8	50	420	1	-23.1
204	403.0	674	5.9	51	350	0	11.6
205	403.3	562	-15.7	49	510	1	-11.3
206	397.3	566	-18.2	49	560	1	-50.6
207	400.6	679	7.6	49	370	0	4.6
208	399.8	566	-9.7	50	90	0	-25.9
209	399.2	678	1.4	50	270	0	1.5
210	395.8	562	-20.5	49	600	1	-94.0
211	399.3	676	18.0	49	530	0	38.9
212	404.7	568	-6.8	49	140	0	-10.2
213	403.4	677	15.7	49	0	1	86.8
214	398.2	565	-9.2	50	100	0	-28.2
215	404.4	678	8.0	50	120	1	28.3
216	397.0	679	4.0	50	190	1	4.8
217	404.0	673	6.6	49	360	0	42.9
218	398.5	679	0.7	49	240	1	2.5
219	404.6	679	13.8	50	470	0	95.3
220	399.5	564	-14.0	50	490	1	-69.0
221	404.9	678	0.7	51	240	1	0.7
222	399.4	679	22.8	50	610	0	51.0
223	403.8	560	-19.9	49	570	1	-11.3
224	398.8	679	12.4	51	50	1	52.5
225	399.3	568	-9.3	51	100	0	-14.3
226	403.8	672	16.8	49	520	0	89.2
227	401.0	567	-16.7	51	510	1	-88.8
228	395.3	564	-12.1	50	60	0	-13.6
229	401.6	670	3.4	50	310	0	8.8
230	404.8	673	5.7	50	340	0	6.7
231	398.3	569	-8.1	51	120	0	-12.9
232	403.7	671	14.7	51	0	1	35.7
233	396.0	568	-13.3	50	470	1	-20.8
234	400.2	568	-15.8	51	510	1	-18.2

NN Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
235	396.6	566	-12.7	51	450	1	-25.2
236	399.8	673	2.8	49	290	0	7.8
237	399.5	563	-11.9	50	450	1	-21.4
238	399.5	568	-8.2	49	120	0	-8.2
239	402.7	673	13.3	50	470	0	41.1
240	395.8	674	4.0	50	310	0	4.1
241	396.9	679	0.9	50	260	0	0.8
242	403.9	562	-20.4	50	560	1	-117.7
243	400.1	677	4.9	49	320	0	15.0
244	401.9	672	14.2	50	480	0	51.5
245	402.4	567	-10.5	51	70	0	-8.5
246	402.2	560	-17.3	49	540	1	-10.6
247	396.9	563	-12.7	50	440	1	-43.0
248	398.2	679	5.8	49	350	0	3.1
249	404.0	569	-7.6	49	120	0	-5.9
250	400.5	679	11.3	51	430	0	39.8
251	401.4	566	-10.0	50	420	1	-35.9
252	402.5	568	-10.6	49	430	1	-23.1
253	396.3	563	-15.4	50	500	1	-26.4
254	398.3	670	8.6	49	400	0	29.5
255	400.2	564	-7.4	50	120	0	-25.8
256	402.9	564	-13.1	49	460	1	-21.2
257	404.2	570	-13.8	49	470	1	-14.1
258	401.9	677	2.8	50	210	1	3.4
259	398.1	563	-19.2	50	560	1	-28.8
260	399.0	672	12.5	51	450	0	42.9
261	395.2	569	-11.7	50	440	1	-22.8
262	395.8	676	5.5	50	340	0	28.5
263	401.6	568	-11.7	50	60	0	-12.7
264	395.2	675	15.8	51	0	1	75.6
265	403.9	562	-18.4	50	540	1	-10.1
266	403.4	569	-20.4	50	580	1	-21.4
267	403.6	670	10.8	50	420	0	38.6
268	397.9	561	-18.9	49	570	1	-31.2
269	401.7	674	10.4	50	410	0	49.2
270	397.0	562	-17.5	49	530	1	-10.8
271	396.2	564	-16.7	49	520	1	-10.7
272	402.0	569	-18.7	50	550	1	-46.2
273	404.0	670	6.4	50	150	1	22.5
274	404.0	563	-7.1	49	130	0	-42.2
275	398.4	674	4.6	50	170	1	18.3
276	404.2	678	12.3	49	440	0	19.4
277	395.3	566	-13.6	50	480	1	-14.2
278	398.8	676	9.4	49	410	0	4.1
279	395.5	566	-9.2	50	100	0	-28.5
280	400.2	560	-19.3	50	570	1	-31.3
281	396.4	674	10.9	50	420	0	23.0
282	403.1	566	-12.3	49	460	1	-62.4
283	396.1	674	9.2	50	390	0	29.0
284	397.4	671	9.3	50	100	1	14.8
285	398.6	671	21.0	50	600	0	64.9
286	402.8	678	6.6	50	130	1	20.4
287	403.7	678	3.5	49	300	0	2.0
288	402.5	673	2.7	49	290	0	1.6
289	395.3	675	5.5	50	170	1	21.3
290	404.2	561	-19.3	50	560	1	-29.7
291	403.1	673	12.0	49	440	0	69.2
292	395.9	679	15.0	51	500	0	17.0
293	396.0	567	-8.6	50	100	0	-9.3
294	397.3	674	14.9	51	0	1	93.4
295	395.1	676	8.8	50	390	0	33.4
296	396.0	561	-15.2	51	490	1	-30.1
297	403.2	672	18.1	50	560	0	58.8
298	395.8	670	18.9	51	570	0	12.9
299	401.5	680	9.7	50	90	1	40.9
300	398.4	567	-14.4	50	480	1	-23.0
301	401.2	676	8.6	50	390	0	41.9
302	400.6	675	11.2	50	80	1	54.6
303	402.7	678	7.0	50	360	0	35.1
304	397.9	670	3.4	50	200	1	15.8
305	396.2	673	19.6	50	580	0	139.2
306	399.2	678	6.0	51	160	1	13.1
307	404.3	672	7.9	51	380	0	4.5
308	397.6	566	-15.9	49	500	1	-38.7
309	399.2	680	0.3	51	260	0	1.2
310	402.3	564	-12.7	50	450	1	-59.5
311	404.4	677	1.4	50	220	1	5.4
312	398.3	675	20.8	49	600	0	40.2

NN Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
313	395.7	568	-10.7	50	80	0	-35.9
314	398.6	563	-9.5	51	100	0	-11.4
315	395.9	565	-14.7	50	490	1	-37.8
316	396.2	566	-11.6	50	430	1	-35.5
317	397.2	569	-11.4	50	440	1	-12.9
318	396.0	675	20.2	51	580	0	132.9
319	400.8	673	15.5	50	0	1	64.5
320	395.6	679	1.6	49	230	1	1.7
321	403.3	567	-9.5	50	90	0	-49.9
322	397.6	561	-18.4	51	550	1	-47.7
323	403.0	674	3.4	50	200	1	12.4
324	401.3	566	-9.5	51	100	0	-59.5
325	399.7	562	-8.9	49	390	1	-15.3
326	403.9	565	-16.8	51	530	1	-17.0
327	396.1	570	-21.0	50	590	1	-78.3
328	398.1	677	17.5	50	530	0	141.8
329	402.1	564	-15.4	51	510	1	-95.6
330	401.3	561	-15.3	50	510	1	-18.2
331	398.7	569	-7.5	50	140	0	-50.6
332	402.2	566	-18.0	50	530	1	-97.5
333	396.4	671	5.8	51	340	0	2.9
334	396.1	563	-8.1	50	110	0	-35.1
335	399.1	674	4.5	49	170	1	4.2
336	400.5	566	-15.1	49	490	1	-18.1
337	399.4	680	0.4	50	240	1	0.8
338	400.1	570	-5.9	49	150	0	-21.5
339	397.2	676	15.0	50	0	1	91.5
340	401.5	672	20.5	49	580	0	159.5
341	401.0	679	3.9	49	190	1	20.9
342	404.9	562	-12.1	51	60	0	-13.3
343	395.8	673	6.7	50	350	0	3.4
344	400.9	567	-15.9	50	520	1	-57.2
345	398.1	671	9.6	51	410	0	28.6
346	402.5	565	-11.6	49	430	1	-22.1
347	404.7	672	16.2	50	500	0	17.6
348	400.7	567	-12.6	49	50	0	-12.0
349	404.6	567	-9.4	50	90	0	-31.2
350	398.1	560	-9.7	50	410	1	-20.3
351	395.8	564	-17.1	50	530	1	-26.5
352	401.8	679	14.2	50	480	0	15.3
353	395.6	567	-8.3	51	110	0	-23.7
354	396.5	677	19.0	49	550	0	33.9
355	403.3	570	-15.1	50	490	1	-88.9
356	404.7	674	5.2	50	330	0	10.7
357	401.1	671	9.8	50	410	0	22.3
358	398.9	566	-16.1	49	510	1	-54.6
359	398.5	673	3.7	51	190	1	6.7
360	400.5	678	7.7	50	380	0	48.6
361	403.8	562	-9.4	49	100	0	-20.8
362	403.2	560	-16.7	49	530	1	-84.7
363	400.7	672	2.8	50	290	0	0.6
364	396.5	561	-8.7	50	100	0	-7.2
365	401.1	680	5.5	51	160	1	8.0
366	397.5	564	-13.4	50	480	1	-29.8
367	397.4	566	-9.7	50	90	0	-11.5
368	398.6	675	16.4	50	510	0	107.0
369	397.3	672	16.0	50	0	1	92.5
370	397.0	676	0.2	49	260	0	1.9
371	402.4	673	6.3	49	350	0	2.0
372	400.7	670	5.8	50	350	0	4.3
373	403.1	674	10.3	50	80	1	43.8
374	399.7	680	13.6	49	480	0	89.9
375	396.0	563	-21.5	49	600	1	-13.1
376	395.1	673	3.5	50	200	1	16.4
377	397.6	679	4.7	49	330	0	26.5
378	400.7	569	-11.1	50	430	1	-42.9
379	397.8	565	-10.5	51	430	1	-13.4
380	404.6	679	15.6	50	510	0	41.7
381	400.5	672	1.1	51	270	0	3.2
382	396.4	569	-13.7	50	470	1	-42.8
383	402.9	672	6.1	49	150	1	12.1
384	400.4	674	6.7	50	360	0	43.0
385	401.7	680	14.7	51	0	1	76.0
386	403.0	569	-19.6	51	560	1	-10.0
387	402.2	677	10.4	50	420	0	18.9
388	403.5	560	-12.3	50	60	0	-18.4
389	398.7	680	11.5	50	440	0	19.1
390	397.4	568	-17.1	51	530	1	-104.6

NN Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
391	402.9	567	-9.4	50	110	0	-67.4
392	401.6	676	2.6	50	210	1	9.8
393	397.4	674	0.8	49	240	1	-0.2
394	399.6	562	-16.0	49	520	1	-24.4
395	404.5	670	6.0	50	360	0	36.0
396	399.6	561	-8.9	51	110	0	-4.1
397	400.4	675	2.2	50	210	1	10.8
398	403.0	570	-15.0	50	480	1	-7.5
399	398.1	562	-12.5	50	450	1	-12.4
400	398.6	561	-14.0	50	470	1	-9.2
401	395.4	672	11.9	49	430	0	33.5
402	401.7	670	6.3	51	350	0	7.0
403	402.7	569	-11.6	50	70	0	-5.7
404	396.9	563	-8.4	49	110	0	-6.2
405	404.2	672	10.2	50	420	0	10.8
406	395.3	566	-11.2	50	70	0	-8.0
407	400.5	673	10.5	50	70	1	53.8
408	401.2	560	-12.9	49	460	1	-22.1
409	397.9	565	-12.3	49	450	1	-19.6
410	397.7	560	-10.5	49	90	0	-15.5
411	400.7	678	3.4	49	310	0	1.5
412	404.2	676	12.8	49	450	0	31.2
413	395.7	680	16.4	51	500	0	17.6
414	404.0	565	-6.5	50	140	0	-10.7
415	399.9	563	-9.4	50	100	0	-6.6
416	403.9	677	1.5	51	230	1	1.3
417	395.2	566	-11.8	49	450	1	-27.3
418	397.1	673	2.1	50	210	1	2.7
419	402.5	675	6.7	50	150	1	11.3
420	399.6	566	-11.8	49	60	0	-26.8
421	397.0	676	6.8	49	360	0	3.2
422	404.6	676	6.0	51	360	0	6.3
423	395.7	570	-7.9	51	120	0	-7.3
424	396.4	675	12.8	50	470	0	8.3
425	401.8	671	14.8	50	510	0	25.8
426	397.0	563	-13.1	51	450	1	-26.9
427	397.2	568	-11.4	50	430	1	-12.4
428	404.1	680	0.7	51	240	1	0.5
429	403.6	675	16.1	49	500	0	18.6
430	398.6	564	-7.3	51	130	0	-11.4
431	400.9	672	16.4	50	510	0	10.6
432	398.3	679	14.3	50	490	0	34.7
433	398.3	672	2.3	49	280	0	0.4
434	401.2	674	1.4	50	230	1	1.2
435	401.9	676	0.5	50	240	1	0.9
436	397.0	562	-14.6	50	480	1	-16.4
437	399.7	676	14.4	50	0	1	27.2
438	396.3	569	-18.0	49	540	1	-20.5
439	397.3	674	16.8	51	510	0	20.3
440	395.1	672	11.2	50	440	0	13.4
441	401.3	679	1.9	50	280	0	-0.5
442	401.9	670	9.9	50	410	0	16.8
443	401.6	672	14.0	50	480	0	26.7
444	400.5	672	6.1	49	350	0	4.6
445	399.5	564	-9.6	51	90	0	-6.9
446	397.4	561	-14.5	50	490	1	-20.8
447	401.1	565	-14.1	50	480	1	-37.7
448	402.6	680	2.1	49	210	1	4.1
449	403.9	560	-13.0	49	460	1	-20.1
450	395.2	567	-16.3	50	500	1	-9.3
451	395.5	676	11.4	49	440	0	39.1
452	395.5	673	12.0	50	440	0	28.0
453	397.1	561	-8.0	50	120	0	-9.5
454	404.6	562	-8.6	50	110	0	-9.1
455	403.7	563	-10.3	51	430	1	-18.8
456	404.8	676	15.0	49	0	1	68.6
457	398.4	672	2.8	50	200	1	6.3
458	402.9	674	10.7	50	430	0	13.9
459	398.2	671	9.2	50	390	0	7.8
460	399.5	670	7.2	51	380	0	4.1
461	396.4	675	14.2	49	490	0	16.3
462	404.2	569	-7.6	49	120	0	-13.9
463	402.1	678	6.5	51	360	0	5.8
464	395.7	675	4.2	49	310	0	1.8
465	399.8	570	-21.3	51	600	1	-68.0
466	401.6	568	-19.6	51	570	1	-12.6
467	402.9	677	1.2	49	230	1	2.3
468	399.1	570	-16.3	51	520	1	-11.6

NN Model Elevator Data - Apartment Building Complex @ Boswell Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
469	395.2	675	0.5	50	240	1	1.0
470	404.4	568	-9.8	50	90	0	-11.2
471	396.0	677	11.4	49	440	0	20.5
472	404.2	569	-8.4	49	120	0	-13.3
473	402.6	676	6.0	51	350	0	6.4
474	403.4	680	8.3	51	380	0	5.5
475	402.0	568	-9.0	50	110	0	-10.0
476	402.8	564	-20.9	50	580	1	-21.1
477	396.6	674	6.1	49	350	0	6.7
478	402.9	672	15.2	51	0	1	55.3
479	401.7	561	-18.0	50	540	1	-19.2
480	402.8	568	-15.1	49	500	1	-16.0
481	405.0	679	15.3	49	490	0	85.4
482	404.8	671	8.6	50	110	1	26.4
483	399.4	679	7.0	49	130	1	26.5
484	398.1	564	-13.8	50	40	0	-12.8
485	400.7	670	4.3	49	330	0	8.7
486	401.6	677	14.6	50	490	0	7.8
487	399.8	680	4.2	50	320	0	6.6
488	404.3	678	20.5	51	590	0	22.3
489	396.3	561	-14.9	50	500	1	-37.5
490	399.6	561	-15.1	50	480	1	-37.2
Total Regenerated Energy per Day (Wh)							**2,720.2**

NN Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	404.3	566	-13.0	50	460	1	-67.3
2	406.0	568	-8.9	49	110	0	-31.3
3	405.9	678	19.7	49	560	0	22.4
4	399.4	670	11.3	51	70	1	25.9
5	396.4	680	2.0	49	220	1	1.6
6	405.5	679	8.2	50	390	0	27.0
7	402.6	563	-17.2	49	520	1	-55.5
8	396.9	674	18.9	49	550	0	44.8
9	404.0	569	-18.2	50	550	1	-30.7
10	400.3	673	15.7	50	510	0	16.7
11	402.7	563	-13.3	51	480	1	-22.4
12	404.9	670	5.2	51	330	0	14.1
13	401.6	565	-13.1	50	470	1	-21.4
14	399.2	567	-15.0	49	510	1	-25.5
15	398.2	675	10.5	51	420	0	13.7
16	404.7	677	7.0	50	360	0	13.7
17	399.8	678	0.8	51	270	0	2.4
18	400.4	674	9.4	50	110	1	27.7
19	405.0	674	19.2	51	580	0	63.3
20	397.8	677	15.4	50	0	1	100.6
21	403.5	671	1.9	50	280	0	3.7
22	397.4	677	0.6	50	260	0	0.7
23	404.2	568	-14.7	50	480	1	-28.7
24	396.6	674	4.1	49	180	1	9.6
25	400.8	677	18.4	51	560	0	69.6
26	396.5	675	13.3	50	480	0	22.8
27	397.4	677	2.5	50	210	1	2.3
28	396.5	569	-15.2	49	510	1	-43.9
29	398.2	680	4.2	49	170	1	5.6
30	402.1	679	4.1	50	180	1	8.5
31	398.5	678	3.9	51	320	0	3.5
32	404.8	569	-11.3	49	60	0	-42.1
33	400.0	567	-20.2	50	570	1	-32.8
34	402.7	673	6.5	50	150	1	6.5
35	403.0	676	8.3	51	380	0	25.0
36	402.3	563	-11.7	50	430	1	-55.5
37	400.4	567	-10.6	49	80	0	-16.2
38	398.1	673	17.8	51	540	0	22.6
39	401.2	675	9.3	49	400	0	24.1
40	402.1	675	10.7	51	420	0	13.9
41	403.4	672	2.5	49	210	1	6.4
42	403.4	569	-18.0	50	540	1	-19.4
43	401.2	676	6.9	50	140	1	11.7
44	399.6	673	13.7	51	480	0	38.9
45	401.8	671	21.7	51	610	0	26.0
46	400.1	679	9.3	50	400	0	7.0
47	398.4	569	-13.9	49	470	1	-51.2
48	403.9	564	-11.2	50	70	0	-47.3
49	402.9	677	7.0	49	130	1	21.7
50	400.2	675	0.5	50	240	1	0.3
51	401.6	678	14.1	50	490	0	54.3
52	401.8	677	0.6	50	240	1	0.8
53	401.8	563	-6.7	51	130	0	-8.1
54	400.3	676	9.6	50	410	0	28.6
55	396.7	565	-18.7	51	560	1	-76.0
56	405.2	564	-8.3	51	110	0	-14.1
57	404.2	679	3.7	49	310	0	11.2
58	398.0	569	-18.9	50	560	1	-29.6
59	403.7	673	7.6	50	120	1	20.5
60	400.2	565	-20.0	50	560	1	-21.7
61	404.5	567	-8.1	49	120	0	-6.1
62	401.7	676	12.6	49	460	0	65.3
63	403.7	565	-18.2	50	530	1	-82.3
64	397.6	677	11.5	51	430	0	57.8
65	398.9	566	-13.9	50	480	1	-58.2
66	402.4	568	-15.7	51	520	1	-16.7
67	402.8	677	11.5	50	440	0	75.9
68	396.4	675	2.2	50	220	1	3.2
69	405.6	569	-16.7	49	510	1	-36.0
70	399.8	672	2.9	51	290	0	0.4
71	404.1	561	-5.8	51	150	0	-10.7
72	397.4	569	-19.5	51	560	1	-21.9
73	398.1	560	-15.7	49	510	1	-53.4
74	403.7	672	2.0	50	280	0	7.1
75	402.6	567	-15.1	51	490	1	-30.1
76	398.3	567	-8.5	50	120	0	-26.2
77	397.1	679	0.7	50	260	0	0.0
78	402.8	567	-13.5	50	470	1	-15.0

NN Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
79	400.2	568	-17.0	49	530	1	-44.1
80	397.5	680	2.8	50	290	0	5.0
81	398.5	568	-10.5	49	420	1	-12.3
82	402.8	674	7.3	49	360	0	12.1
83	404.7	670	4.7	50	330	0	3.9
84	397.8	564	-14.2	50	470	1	-47.1
85	405.0	569	-11.5	51	430	1	-11.0
86	404.5	672	18.9	49	550	0	119.9
87	402.3	563	-16.1	49	530	1	-47.0
88	398.8	672	2.3	49	220	1	6.2
89	403.5	678	13.7	51	470	0	66.3
90	397.5	568	-13.0	49	470	1	-45.8
91	399.3	678	14.3	50	490	0	26.9
92	405.7	672	11.7	50	60	1	12.7
93	400.7	678	19.4	50	560	0	56.4
94	400.6	674	3.4	50	200	1	2.7
95	402.0	570	-11.7	50	440	1	-36.8
96	401.7	674	8.8	50	390	0	44.8
97	401.7	563	-15.3	49	500	1	-33.5
98	403.6	566	-18.9	50	550	1	-19.5
99	403.2	680	3.7	49	310	0	2.4
100	397.1	567	-19.1	50	560	1	-32.6
101	400.3	674	10.5	51	430	0	53.8
102	401.9	674	5.7	50	160	1	35.9
103	402.7	672	2.6	49	300	0	7.9
104	397.4	677	16.1	51	520	0	70.0
105	402.4	565	-15.9	50	500	1	-17.4
106	405.2	673	2.5	51	300	0	0.5
107	403.3	562	-17.6	51	530	1	-45.2
108	399.8	671	10.9	50	420	0	24.9
109	400.5	566	-15.3	49	490	1	-24.3
110	401.9	673	5.5	50	330	0	3.0
111	398.3	569	-15.6	49	510	1	-34.8
112	404.2	675	8.2	51	390	0	39.1
113	399.9	567	-8.6	50	390	1	-15.2
114	403.8	564	-12.5	51	450	1	-24.9
115	402.2	671	14.3	51	490	0	18.5
116	402.0	565	-11.5	50	440	1	-6.7
117	402.0	676	6.7	51	140	1	8.1
118	402.9	561	-19.3	51	570	1	-19.9
119	404.3	679	18.5	50	550	0	112.2
120	402.4	564	-20.8	50	580	1	-32.9
121	404.5	562	-17.4	51	540	1	-28.5
122	402.3	564	-18.2	49	540	1	-18.5
123	404.8	561	-9.0	49	110	0	-6.3
124	396.9	680	10.4	50	420	0	30.4
125	402.4	562	-9.6	50	90	0	-5.9
126	398.4	563	-13.4	49	480	1	-40.0
127	401.5	674	16.9	51	510	0	49.2
128	402.2	563	-10.4	50	420	1	-34.5
129	404.9	674	6.9	50	370	0	31.6
130	401.1	563	-14.1	50	480	1	-30.4
131	396.7	678	7.4	50	140	1	14.8
132	401.4	563	-9.0	50	100	0	-28.7
133	402.4	676	7.7	50	370	0	9.3
134	398.5	676	2.0	49	220	1	6.1
135	404.1	569	-11.5	50	60	0	-12.8
136	396.0	677	5.3	50	160	1	19.7
137	404.2	671	5.4	50	330	0	6.8
138	404.1	675	2.0	50	280	0	6.4
139	396.6	561	-9.1	50	100	0	-5.8
140	403.9	564	-19.2	51	550	1	-11.8
141	399.2	568	-14.5	49	480	1	-23.0
142	400.0	680	2.8	49	300	0	5.1
143	405.2	675	7.2	49	130	1	21.2
144	405.1	675	7.3	50	130	1	7.6
145	404.8	562	-9.0	49	90	0	-17.1
146	397.2	672	12.7	49	460	0	23.9
147	396.3	671	2.5	51	200	1	7.4
148	399.1	563	-12.4	50	450	1	-13.5
149	404.8	670	5.5	49	340	0	13.2
150	402.9	569	-19.6	49	560	1	-47.8
151	405.2	679	2.6	49	290	0	5.1
152	404.2	563	-10.8	50	430	1	-28.0
153	396.6	566	-7.5	50	120	0	-18.8
154	404.1	680	1.2	50	230	1	1.7
155	398.7	677	14.4	50	480	0	26.6
156	401.1	671	15.1	51	510	0	19.1

NN Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
157	399.0	675	1.4	50	270	0	0.3
158	402.7	560	-14.7	49	490	1	-46.5
159	400.8	564	-19.1	49	550	1	-46.7
160	399.3	678	11.0	51	430	0	13.6
161	400.9	562	-20.6	50	570	1	-12.5
162	401.8	678	17.0	51	530	0	70.0
163	400.9	568	-13.4	51	480	1	-30.7
164	402.1	671	7.4	50	370	0	26.4
165	401.2	570	-15.3	51	520	1	-35.4
166	405.7	562	-9.6	50	90	0	-20.0
167	399.2	673	15.2	50	0	1	65.8
168	396.9	679	20.7	51	570	0	56.9
169	404.9	674	3.9	51	190	1	4.9
170	399.1	565	-11.2	50	440	1	-8.2
171	403.5	564	-10.9	50	430	1	-12.6
172	401.1	564	-20.1	51	590	1	-22.0
173	400.5	671	17.8	50	540	0	64.1
174	403.4	672	12.4	51	450	0	22.9
175	405.2	675	5.2	49	160	1	5.5
176	403.2	678	9.3	50	90	1	30.5
177	405.7	680	10.0	51	400	0	15.7
178	398.2	675	5.5	49	340	0	2.2
179	401.7	675	3.3	50	200	1	4.0
180	400.5	674	11.6	51	440	0	34.4
181	397.5	670	5.2	50	170	1	17.8
182	397.1	677	7.0	49	360	0	8.1
183	402.4	673	9.6	50	410	0	35.8
184	398.1	673	14.9	49	0	1	90.5
185	397.3	671	5.0	49	330	0	7.7
186	398.3	676	1.0	50	270	0	4.8
187	401.0	560	-17.6	51	540	1	-9.7
188	397.5	677	0.9	50	240	1	1.1
189	404.3	676	2.8	51	300	0	2.2
190	401.6	563	-14.1	50	470	1	-43.6
191	405.4	679	20.1	51	590	0	108.2
192	398.8	674	7.4	50	130	1	20.8
193	396.3	678	6.5	49	360	0	16.1
194	401.7	677	14.9	51	490	0	7.7
195	405.8	680	11.8	49	440	0	14.4
196	396.3	676	10.8	50	70	1	42.8
197	398.8	671	1.3	50	270	0	1.8
198	396.1	676	4.7	49	320	0	1.7
199	400.5	561	-16.1	50	500	1	-40.7
200	405.1	675	1.9	50	220	1	0.4
201	400.4	677	11.3	51	440	0	25.9
202	406.0	679	9.1	50	390	0	5.7
203	399.7	675	7.7	50	120	1	13.2
204	397.8	565	-16.1	50	510	1	-15.7
205	397.1	567	-10.6	49	90	0	-16.1
206	405.7	671	14.4	50	470	0	57.1
207	400.2	680	9.1	49	100	1	37.7
208	399.1	673	0.9	50	270	0	1.9
209	397.6	568	-15.1	49	480	1	-21.9
210	403.8	673	17.7	49	530	0	18.8
211	400.8	564	-14.4	50	490	1	-24.9
212	396.4	674	10.5	49	430	0	5.4
213	397.9	562	-11.9	49	70	0	-23.5
214	397.1	679	15.2	49	0	1	64.9
215	405.4	566	-9.2	50	100	0	-21.0
216	400.0	675	0.7	49	240	1	1.1
217	398.5	677	17.9	50	560	0	81.3
218	399.6	677	4.5	49	170	1	15.1
219	401.7	672	1.5	50	230	1	2.4
220	398.7	674	7.1	50	130	1	8.8
221	403.3	569	-12.1	50	40	0	-21.0
222	397.6	677	11.9	50	450	0	45.8
223	400.7	677	14.8	49	0	1	69.4
224	398.8	672	3.8	49	310	0	0.9
225	397.9	566	-14.0	51	480	1	-22.3
226	403.5	676	17.8	50	530	0	65.5
227	399.1	673	1.8	51	280	0	-0.7
228	397.5	672	10.8	50	80	1	46.5
229	405.5	679	7.7	49	380	0	25.4
230	397.5	565	-14.7	49	490	1	-22.6
231	403.3	564	-12.7	50	50	0	-28.9
232	396.8	567	-15.2	50	490	1	-43.9
233	404.2	674	17.8	51	550	0	114.3
234	403.6	679	2.8	50	200	1	1.8

NN Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
235	404.7	567	-8.3	49	380	1	-10.4
236	400.5	560	-10.9	51	430	1	-17.4
237	405.6	676	13.2	51	450	0	6.6
238	403.6	568	-11.7	50	450	1	-19.2
239	404.2	671	6.4	51	360	0	7.7
240	397.3	560	-16.2	49	510	1	-11.8
241	398.3	678	15.2	51	490	0	61.1
242	397.8	672	15.1	51	0	1	87.7
243	396.8	672	16.5	50	500	0	84.5
244	396.3	562	-9.1	51	390	1	-13.2
245	405.0	563	-17.5	50	520	1	-36.7
246	402.9	675	20.0	50	570	0	95.4
247	396.8	675	7.0	49	140	1	28.4
248	402.0	673	4.8	49	330	0	16.7
249	396.5	567	-15.9	49	530	1	-11.0
250	403.3	676	0.8	51	230	1	6.6
251	402.3	674	6.6	50	360	0	23.2
252	397.0	678	13.0	49	470	0	7.4
253	398.2	678	1.7	49	230	1	3.0
254	403.6	670	17.4	50	520	0	29.1
255	401.9	671	6.8	49	130	1	28.0
256	402.3	680	21.2	50	580	0	50.4
257	400.4	566	-13.5	50	460	1	-14.6
258	399.2	671	5.7	50	340	0	9.1
259	402.7	675	13.7	50	490	0	42.8
260	401.2	680	5.5	50	160	1	15.2
261	398.9	567	-8.8	50	120	0	-16.2
262	401.8	675	9.7	49	420	0	6.0
263	396.3	678	11.2	50	70	1	26.9
264	404.1	677	1.9	49	280	0	2.8
265	398.9	679	5.9	51	150	1	22.6
266	401.1	674	1.6	50	230	1	-1.0
267	401.6	677	18.7	50	560	0	48.4
268	402.8	675	9.7	50	410	0	23.1
269	402.2	677	11.3	49	430	0	13.8
270	401.4	676	5.2	50	160	1	30.8
271	397.7	672	20.8	50	570	0	56.4
272	402.9	676	6.6	51	140	1	8.0
273	396.9	567	-12.3	49	450	1	-27.6
274	399.0	676	17.9	50	540	0	71.2
275	396.5	569	-12.8	50	450	1	-21.0
276	400.7	677	0.3	49	240	1	-0.6
277	397.9	673	3.5	49	300	0	5.9
278	401.8	561	-10.5	50	420	1	-16.8
279	405.2	561	-18.6	51	550	1	-27.1
280	400.9	676	7.4	50	380	0	8.6
281	403.2	673	21.1	51	590	0	112.7
282	400.9	680	3.7	50	180	1	17.8
283	402.9	677	11.4	50	450	0	45.2
284	398.5	674	1.7	50	220	1	4.7
285	405.2	568	-9.1	50	110	0	-10.3
286	404.6	568	-10.9	50	440	1	-19.1
287	397.0	567	-15.1	50	500	1	-16.1
288	403.0	679	18.3	50	570	0	96.4
289	401.1	680	0.7	50	240	1	0.0
290	401.6	671	10.8	49	80	1	11.5
291	405.2	676	13.6	49	470	0	7.9
292	398.8	569	-9.9	49	410	1	-7.6
293	402.4	562	-18.6	49	560	1	-12.9
294	398.0	566	-12.4	51	450	1	-32.2
295	404.6	677	19.5	49	570	0	118.7
296	397.8	670	2.5	50	210	1	9.1
297	405.6	674	13.8	51	490	0	26.8
298	402.6	564	-13.1	51	450	1	-9.1
299	403.3	565	-16.2	49	520	1	-18.5
300	401.5	675	9.1	51	100	1	17.2
301	405.2	671	17.8	51	540	0	115.3
302	400.4	569	-11.1	49	430	1	-18.2
303	397.7	676	2.6	49	210	1	7.1
304	403.1	673	17.3	51	530	0	60.6
305	401.0	675	4.8	49	320	0	2.7
306	401.4	674	15.5	49	0	1	85.1
307	401.2	671	14.9	50	490	0	101.7
308	401.9	680	5.3	50	160	1	25.8
309	403.8	675	3.4	50	310	0	7.2
310	404.6	563	-14.2	50	480	1	-16.4
311	405.3	678	9.6	50	410	0	25.5
312	401.9	562	-15.1	51	490	1	-40.6

NN Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
313	397.9	674	8.2	50	380	0	13.1
314	402.5	568	-8.5	50	110	0	-12.1
315	405.5	564	-13.5	51	460	1	-41.7
316	399.4	566	-10.8	50	430	1	-16.1
317	404.1	567	-8.8	51	100	0	-14.3
318	401.6	676	16.5	49	510	0	59.2
319	405.6	560	-17.8	51	530	1	-53.5
320	397.4	672	1.0	51	230	1	3.0
321	404.4	675	13.0	50	460	0	14.6
322	403.5	565	-10.8	50	60	0	-13.1
323	399.2	679	3.6	50	310	0	2.8
324	402.2	671	5.7	51	340	0	9.6
325	398.2	565	-16.6	50	510	1	-16.2
326	397.8	563	-16.8	50	520	1	-35.7
327	399.6	568	-14.7	49	490	1	-25.0
328	398.2	675	7.6	49	370	0	39.1
329	396.9	565	-12.5	50	460	1	-56.6
330	405.8	671	2.8	51	300	0	10.7
331	398.7	679	9.8	49	400	0	8.7
332	400.5	561	-15.4	50	500	1	-39.8
333	403.7	677	12.7	50	460	0	36.2
334	404.3	566	-19.2	50	570	1	-20.9
335	396.2	564	-16.3	51	510	1	-57.3
336	403.2	670	21.4	51	590	0	132.4
337	397.0	567	-19.2	49	550	1	-31.2
338	402.8	569	-15.0	50	490	1	-10.0
339	405.3	678	5.3	49	340	0	5.8
340	402.1	567	-14.8	51	500	1	-32.8
341	398.5	568	-11.8	49	440	1	-18.9
342	400.0	677	8.2	49	380	0	45.3
343	396.7	564	-12.8	50	460	1	-33.8
344	398.5	676	9.5	50	90	1	26.6
345	396.4	675	6.3	50	150	1	3.6
346	403.0	673	6.2	50	360	0	25.8
347	404.5	673	2.8	49	290	0	6.4
348	402.5	679	14.8	51	0	1	64.6
349	399.8	566	-17.8	49	530	1	-18.4
350	404.4	564	-10.3	50	70	0	-24.2
351	401.1	677	6.2	49	150	1	10.1
352	396.2	674	12.2	50	450	0	66.0
353	396.1	566	-16.3	51	520	1	-18.4
354	402.0	676	13.6	50	470	0	16.9
355	400.4	680	2.2	50	210	1	10.7
356	405.5	672	6.8	50	130	1	11.6
357	401.9	679	4.9	50	330	0	15.9
358	398.1	561	-15.8	50	500	1	-25.4
359	403.1	567	-18.3	50	540	1	-28.8
360	398.4	676	4.1	51	310	0	13.3
361	397.7	565	-16.2	51	510	1	-23.7
362	396.6	568	-14.4	49	480	1	-13.9
363	397.4	566	-17.8	49	520	1	-12.0
364	400.3	676	3.3	50	300	0	8.1
365	399.4	562	-12.9	50	470	1	-22.2
366	405.4	674	0.6	50	260	0	-0.9
367	398.2	675	6.7	51	140	1	16.9
368	404.3	671	5.3	49	340	0	11.6
369	396.9	563	-13.2	50	480	1	-38.0
370	399.8	672	2.2	50	280	0	3.1
371	402.5	564	-9.8	51	100	0	-21.7
372	406.0	569	-8.7	50	400	1	-22.5
373	399.7	560	-6.7	51	150	0	-30.2
374	405.7	569	-9.8	49	410	1	-25.6
375	397.6	679	9.1	49	410	0	22.7
376	397.3	676	2.3	50	220	1	4.5
377	401.2	676	10.0	49	90	1	10.3
378	398.1	677	6.8	49	150	1	8.0
379	399.7	677	16.1	49	520	0	29.2
380	397.2	569	-12.0	49	450	1	-28.1
381	397.5	678	6.0	50	360	0	38.6
382	403.2	569	-12.9	51	450	1	-40.2
383	396.0	673	22.4	49	610	0	16.0
384	402.1	678	1.3	49	230	1	1.4
385	404.5	670	12.1	49	440	0	27.7
386	400.3	566	-20.2	50	580	1	-22.2
387	398.4	563	-11.1	51	440	1	-18.8
388	400.3	565	-8.4	50	120	0	-21.1
389	404.1	678	3.3	50	300	0	3.2
390	399.1	673	10.4	50	410	0	6.4

NN Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
391	401.8	568	-11.5	50	440	1	-38.9
392	398.4	675	14.5	51	490	0	74.7
393	397.1	679	10.5	50	70	1	62.7
394	398.4	679	2.0	50	280	0	8.3
395	402.4	569	-10.2	51	420	1	-32.8
396	397.0	676	2.5	49	290	0	5.0
397	399.9	672	3.5	50	300	0	8.2
398	400.0	569	-19.6	50	550	1	-18.2
399	399.9	567	-16.7	50	530	1	-46.4
400	402.3	672	4.3	50	320	0	5.0
401	402.4	679	12.2	51	440	0	7.2
402	399.3	569	-15.5	49	510	1	-41.5
403	405.6	560	-12.1	50	60	0	-18.9
404	400.8	562	-16.7	51	540	1	-38.7
405	397.7	679	7.9	50	380	0	28.3
406	401.6	678	0.8	49	260	0	0.5
407	404.4	562	-9.4	50	410	1	-14.5
408	404.6	564	-18.9	50	550	1	-29.8
409	396.7	675	10.2	51	420	0	30.6
410	398.0	562	-18.9	50	540	1	-26.9
411	398.1	671	1.6	49	220	1	1.2
412	403.1	560	-12.6	50	460	1	-21.0
413	399.2	673	13.4	49	470	0	39.7
414	397.8	675	17.3	51	520	0	11.0
415	397.7	566	-13.5	49	470	1	-13.9
416	401.7	561	-17.9	50	540	1	-9.5
417	405.3	560	-17.4	50	530	1	-18.6
418	404.1	562	-11.7	50	450	1	-13.3
419	402.8	671	9.3	51	400	0	16.0
420	402.8	672	6.3	51	360	0	18.6
421	399.7	565	-15.8	50	510	1	-8.8
422	400.1	674	2.1	49	290	0	3.8
423	401.6	670	8.3	51	110	1	41.2
424	401.4	672	6.2	50	160	1	6.8
425	403.7	676	18.1	50	540	0	96.2
426	397.2	676	15.1	50	0	1	89.4
427	399.1	680	14.9	49	490	0	53.6
428	397.4	569	-14.7	50	480	1	-15.9
429	397.6	680	2.0	49	210	1	3.8
430	399.9	564	-11.7	49	70	0	-17.1
431	402.1	677	19.8	50	560	0	56.5
432	399.1	675	10.7	51	70	1	47.3
433	402.5	679	7.6	51	370	0	20.9
434	401.3	679	15.3	51	490	0	14.9
435	398.8	674	12.7	50	450	0	7.9
436	403.3	569	-18.4	51	550	1	-38.1
437	405.3	570	-16.6	50	530	1	-19.0
438	405.9	671	8.8	51	390	0	18.6
439	399.6	672	5.4	49	160	1	17.8
440	402.3	564	-18.2	50	530	1	-9.8
441	405.0	671	0.2	50	260	0	1.0
442	397.8	677	4.9	51	180	1	24.0
443	403.2	677	2.5	51	290	0	1.3
444	396.0	680	7.9	51	370	0	31.2
445	403.1	678	5.4	49	160	1	14.7
446	398.5	566	-21.2	51	600	1	-24.0
447	398.4	675	10.1	50	410	0	36.8
448	397.7	561	-12.7	50	440	1	-30.5
449	406.0	561	-7.6	50	120	0	-9.0
450	397.4	561	-16.2	50	530	1	-28.7
451	400.0	674	14.7	51	490	0	34.1
452	404.4	675	10.9	50	430	0	14.0
453	404.8	560	-8.3	50	120	0	-8.5
454	401.9	564	-18.1	50	550	1	-77.5
455	405.5	561	-8.0	50	120	0	-8.9
456	399.7	678	0.5	51	240	1	0.9
457	400.0	675	15.5	50	490	0	65.0
458	400.9	676	7.2	50	120	1	37.1
459	403.6	563	-7.5	49	120	0	-20.7
460	397.8	676	1.1	50	230	1	1.1
461	399.7	675	11.1	50	430	0	13.3
462	399.1	679	11.9	49	70	1	24.4
463	403.2	568	-7.0	50	130	0	-29.1
464	398.7	569	-15.1	49	490	1	-22.4
465	398.5	569	-11.0	49	430	1	-7.3
466	400.2	677	7.9	49	370	0	24.9
467	401.5	570	-13.2	50	460	1	-46.5
468	402.1	676	4.6	51	320	0	17.7

NN Model Elevator Data - Apartment Building Complex @ Moore's Road

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
469	405.3	569	-14.5	50	500	1	-25.4
470	397.3	674	12.1	49	440	0	35.1
471	401.3	673	4.8	50	180	1	14.2
472	404.9	564	-17.2	50	540	1	-28.0
473	401.6	679	6.7	51	360	0	23.0
474	400.9	674	2.2	50	290	0	2.6
475	396.7	672	16.4	50	0	1	103.2
476	401.0	670	14.0	51	470	0	47.4
477	404.0	569	-19.9	49	580	1	-43.9
478	399.8	563	-10.7	50	440	1	-14.2
479	400.0	677	19.3	50	570	0	122.1
480	401.6	673	0.8	51	240	1	0.4
481	405.2	564	-9.8	51	90	0	-10.1
482	401.3	564	-11.3	51	430	1	-51.0
483	400.4	670	12.7	49	460	0	52.2
484	400.8	560	-22.5	49	600	1	-33.9
485	398.7	562	-12.3	51	450	1	-20.4
486	404.4	570	-11.7	50	440	1	-11.6
487	405.7	680	11.2	50	420	0	11.5
488	396.5	671	10.9	50	430	0	6.2
489	403.9	679	19.6	51	570	0	46.8
490	404.0	562	-11.0	50	430	1	-18.0
Total Regenerated Energy per Day (Wh)							**2,760.5**

NN Model Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
1	401.9	680	16.3	49	620	0	20.3
2	404.3	567	-15.3	50	610	1	-24.7
3	406.9	673	17.4	51	0	1	30.3
4	400.2	680	12.7	49	560	0	15.1
5	404.5	670	6.1	50	210	1	10.6
6	402.9	674	24.6	50	780	0	108.0
7	402.5	672	12.0	49	90	1	29.7
8	400.9	679	2.1	49	360	0	2.6
9	404.5	560	-19.6	49	700	1	-11.7
10	400.0	567	-14.0	49	60	0	-15.1
11	405.8	567	-11.9	51	550	1	-18.7
12	401.5	673	7.5	50	180	1	5.0
13	403.6	676	4.7	50	410	0	9.2
14	404.0	674	2.1	49	280	1	6.2
15	399.8	674	8.1	49	470	0	19.4
16	401.3	680	7.7	51	470	0	5.1
17	405.5	569	-6.2	50	200	0	-3.5
18	406.5	671	12.5	51	80	1	22.5
19	403.6	677	17.7	50	650	0	43.5
20	397.1	678	17.2	50	0	1	58.9
21	404.2	674	13.6	49	570	0	8.9
22	405.6	567	-8.3	49	160	0	-5.1
23	401.4	565	-18.5	50	670	1	-30.7
24	405.5	676	1.6	50	350	0	1.9
25	400.3	562	-8.3	49	160	0	-9.1
26	404.7	566	-12.2	50	80	0	-7.6
27	404.7	676	4.5	51	400	0	5.3
28	406.6	561	-22.4	49	740	1	-23.8
29	401.3	561	-18.2	50	650	1	-9.9
30	399.9	672	17.0	51	0	1	30.3
31	400.0	672	1.0	51	340	0	0.7
32	401.9	671	18.8	49	680	0	45.7
33	403.8	677	2.1	49	360	0	1.5
34	406.0	561	-11.7	50	530	1	-17.5
35	401.5	566	-13.0	51	80	0	-13.1
36	405.5	674	5.8	49	210	1	14.6
37	405.4	674	19.6	49	670	0	22.1
38	406.8	678	5.6	49	420	0	6.3
39	402.5	679	16.4	50	0	1	51.3
40	398.9	670	3.7	51	250	1	2.6
41	405.8	675	10.4	50	510	0	12.7
42	402.7	679	4.7	49	410	0	5.9
43	406.0	674	7.7	49	470	0	14.8
44	397.5	560	-14.9	49	600	1	-9.0
45	398.4	678	4.7	50	230	1	8.3
46	404.9	679	21.7	51	720	0	14.1
47	406.2	569	-17.3	49	630	1	-33.4
48	398.8	677	1.1	50	340	0	3.8
49	400.2	672	9.5	51	150	1	5.8
50	397.5	675	18.3	51	660	0	20.7
51	403.6	679	17.3	49	0	1	53.3
52	403.1	680	10.8	51	520	0	13.3
53	399.6	563	-16.2	50	630	1	-34.9
54	402.6	570	-10.8	49	110	0	-16.9
55	404.2	561	-19.9	49	690	1	-20.4
56	403.3	673	17.6	51	650	0	33.7
57	402.0	672	4.8	50	410	0	3.3
58	398.2	568	-14.2	51	580	1	-21.8
59	404.8	567	-13.1	51	70	0	-7.5
60	406.0	678	7.1	51	190	1	8.8
61	397.2	673	12.9	50	550	0	22.4
62	405.4	566	-10.7	49	120	0	-11.1
63	400.1	674	2.7	51	270	1	5.0
64	398.6	563	-15.7	51	40	0	-29.5
65	401.9	563	-23.5	50	760	1	-37.8
66	404.3	680	7.6	51	180	1	17.7
67	402.0	567	-7.9	51	170	0	-8.6
68	397.4	562	-12.3	49	90	0	-19.8
69	399.3	676	15.3	49	600	0	17.4
70	401.8	564	-16.8	50	640	1	-35.5
71	401.9	566	-17.7	50	660	1	-27.4
72	404.7	678	9.2	50	500	0	11.9
73	404.5	562	-12.9	50	70	0	-20.3
74	401.6	676	5.1	50	220	1	3.4
75	398.8	674	12.1	50	540	0	22.2
76	403.3	568	-20.5	50	690	1	-21.4
77	401.6	670	7.7	49	180	1	8.7
78	398.5	671	1.6	49	290	1	1.0

NN Model Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
79	406.1	671	3.9	50	390	0	4.8
80	400.0	570	-8.1	51	170	0	-12.1
81	402.6	569	-17.4	51	630	1	-34.5
82	403.5	677	19.7	49	680	0	35.0
83	399.0	564	-14.3	50	590	1	-14.4
84	397.6	679	15.0	50	590	0	25.7
85	406.8	674	16.4	50	0	1	70.8
86	399.3	672	14.6	49	600	0	10.0
87	406.8	566	-10.9	50	110	0	-27.6
88	399.3	565	-12.8	50	560	1	-33.1
89	399.6	671	4.3	50	400	0	5.1
90	402.5	673	2.6	49	370	0	1.8
91	399.6	673	1.7	51	290	1	1.9
92	400.5	569	-15.1	50	590	1	-14.4
93	403.8	565	-7.1	51	190	0	-18.9
94	405.1	566	-17.0	49	630	1	-34.7
95	401.5	674	9.6	51	500	0	11.7
96	398.0	561	-12.3	50	100	0	-12.6
97	405.8	671	3.2	49	380	0	4.1
98	397.9	674	11.5	50	110	1	46.3
99	399.5	671	24.0	49	760	0	83.4
100	397.7	680	4.9	51	230	1	11.8
101	398.7	678	2.1	50	360	0	6.4
102	402.1	674	14.1	50	60	1	9.2
103	404.6	562	-17.1	51	650	1	-9.8
104	406.2	674	14.0	49	70	1	23.9
105	403.4	676	3.7	49	390	0	10.9
106	400.0	676	12.4	50	80	1	15.7
107	404.7	566	-17.3	49	640	1	-18.4
108	406.0	670	4.1	49	400	0	3.0
109	400.1	677	0.6	49	310	1	0.7
110	400.8	568	-19.3	49	700	1	-12.3
111	399.5	569	-7.4	50	180	0	-8.1
112	398.2	567	-9.0	49	150	0	-19.3
113	397.9	676	16.9	51	0	1	62.0
114	398.4	566	-7.7	50	180	0	-4.5
115	398.8	678	7.6	51	460	0	18.3
116	406.1	561	-13.9	50	570	1	-21.6
117	397.1	562	-9.0	50	150	0	-9.5
118	403.3	677	15.0	51	600	0	10.5
119	404.9	678	9.4	51	150	1	32.9
120	402.8	672	4.9	50	410	0	15.2
121	399.5	672	9.3	49	490	0	6.2
122	405.3	670	4.3	49	240	1	11.0
123	406.9	673	11.0	50	110	1	14.4
124	406.1	568	-9.5	50	150	0	-14.8
125	400.3	672	17.3	50	650	0	43.3
126	400.8	565	-14.2	51	590	1	-21.7
127	403.7	677	13.3	51	580	0	17.1
128	406.2	564	-16.3	51	630	1	-25.0
129	403.8	670	16.6	50	630	0	39.6
130	402.7	564	-15.9	51	620	1	-17.3
131	400.6	562	-15.6	51	610	1	-24.0
132	399.1	564	-13.7	49	570	1	-13.5
133	398.0	672	15.1	49	600	0	60.4
134	400.2	677	8.9	50	150	1	5.9
135	403.1	567	-15.9	51	620	1	-16.9
136	405.2	677	5.0	50	230	1	3.4
137	403.9	672	7.2	50	190	1	8.6
138	399.2	680	12.6	49	560	0	30.9
139	399.2	671	16.9	51	0	1	50.5
140	406.7	674	7.6	50	470	0	25.7
141	405.6	569	-16.6	51	620	1	-23.9
142	399.2	674	20.6	51	720	0	67.0
143	399.1	680	2.2	49	280	1	2.5
144	405.8	680	4.6	51	230	1	12.0
145	400.6	677	4.6	51	410	0	6.0
146	405.6	673	11.0	50	120	1	19.8
147	399.0	678	3.1	49	380	0	7.9
148	401.7	561	-10.6	50	120	0	-5.9
149	399.3	670	11.7	51	530	0	13.3
150	403.3	569	-9.8	49	500	1	-5.3
151	398.9	670	6.6	49	190	1	16.9
152	399.4	566	-17.9	49	640	1	-9.8
153	405.1	562	-14.3	50	50	0	-22.4
154	406.4	679	1.1	49	340	0	2.0
155	402.5	569	-18.9	51	680	1	-20.3
156	397.3	672	7.3	50	180	1	23.3

NN Model Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
157	397.1	678	12.4	49	560	0	15.0
158	403.4	567	-19.8	49	680	1	-11.0
159	405.7	570	-9.8	49	130	0	-20.2
160	399.5	677	7.2	51	180	1	8.7
161	398.1	679	10.3	50	520	0	13.0
162	404.0	561	-10.7	50	520	1	-22.2
163	406.6	680	2.6	50	270	1	1.8
164	399.0	670	18.7	51	680	0	70.3
165	398.4	671	4.9	50	230	1	8.8
166	397.2	673	12.6	51	560	0	8.4
167	405.5	677	8.7	50	150	1	16.6
168	405.7	674	0.5	51	330	0	1.4
169	399.0	569	-14.8	50	610	1	-32.1
170	404.7	670	9.2	51	500	0	29.3
171	402.7	679	18.0	50	0	1	63.2
172	400.3	679	3.7	50	390	0	15.8
173	406.4	673	10.6	51	130	1	23.9
174	404.3	560	-21.4	50	710	1	-11.9
175	406.2	564	-10.6	50	120	0	-29.3
176	405.5	675	8.7	51	160	1	20.6
177	403.4	675	3.1	51	380	0	7.8
178	405.8	563	-16.1	51	620	1	-17.0
179	402.8	565	-19.4	50	690	1	-11.9
180	404.4	672	18.1	51	660	0	34.5
181	397.6	678	5.3	51	220	1	6.2
182	400.2	674	5.0	49	230	1	5.9
183	406.6	570	-10.1	49	130	0	-22.3
184	397.6	680	13.8	50	60	1	34.6
185	401.2	676	7.1	50	450	0	12.3
186	404.5	678	7.0	50	190	1	21.0
187	402.0	680	15.2	50	610	0	28.2
188	403.6	569	-15.9	50	610	1	-8.7
189	401.8	671	13.7	49	570	0	9.2
190	402.8	677	9.4	49	500	0	17.6
191	397.3	679	16.7	50	0	1	64.3
192	405.7	671	9.7	51	510	0	12.6
193	406.9	675	19.4	51	690	0	46.9
194	397.2	677	12.6	49	90	1	35.5
195	403.6	671	6.0	50	210	1	7.3
196	397.7	673	4.3	51	400	0	8.0
197	400.6	679	5.2	50	420	0	13.3
198	406.3	676	9.9	50	140	1	28.4
199	401.3	674	21.5	51	720	0	53.3
200	399.3	680	5.8	50	210	1	6.8
201	404.3	569	-13.9	50	580	1	-8.1
202	400.8	680	8.9	50	160	1	10.5
203	402.3	670	21.9	51	710	0	79.5
204	406.2	672	17.0	51	0	1	49.9
205	402.4	676	10.1	49	500	0	22.6
206	401.8	563	-11.9	51	550	1	-13.2
207	403.9	676	0.5	49	310	1	1.4
208	397.8	672	6.9	51	450	0	12.5
209	404.6	671	3.2	50	380	0	3.8
210	403.1	562	-15.7	49	600	1	-22.5
211	403.0	679	0.5	49	330	0	1.0
212	404.1	671	9.8	50	130	1	24.3
213	398.8	675	7.3	49	460	0	9.0
214	400.3	674	13.1	50	80	1	8.5
215	402.3	670	16.5	51	630	0	20.7
216	402.7	566	-14.3	49	590	1	-8.5
217	404.5	670	12.2	49	560	0	15.2
218	405.1	674	17.2	50	640	0	20.4
219	402.1	674	17.7	51	0	1	63.0
220	399.4	679	6.1	51	440	0	7.9
221	404.0	675	20.9	50	720	0	39.7
222	404.6	565	-11.9	50	550	1	-13.4
223	404.1	567	-12.3	49	550	1	-13.0
224	400.2	671	24.2	49	780	0	74.0
225	404.5	565	-12.1	50	550	1	-12.2
226	405.7	673	4.1	51	400	0	5.4
227	400.7	678	11.2	50	120	1	19.5
228	397.4	562	-13.2	51	570	1	-20.9
229	404.1	674	15.7	50	620	0	49.4
230	403.4	679	2.6	50	270	1	4.8
231	398.5	678	1.1	50	300	1	1.9
232	403.6	678	10.6	50	520	0	7.2
233	405.3	676	6.6	50	440	0	8.2
234	403.4	675	10.8	50	520	0	13.3

NN Model Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
235	406.5	566	-13.9	51	570	1	-21.5
236	398.0	677	23.8	49	760	0	54.5
237	406.0	565	-18.5	50	650	1	-19.3
238	401.4	563	-15.2	51	590	1	-22.1
239	401.1	570	-13.8	49	580	1	-8.3
240	398.8	679	9.4	50	500	0	23.5
241	397.1	670	0.5	49	330	0	0.9
242	397.6	560	-17.1	51	650	1	-10.0
243	397.1	672	17.8	50	0	1	61.9
244	397.3	675	11.0	50	530	0	13.2
245	403.9	670	5.0	50	410	0	5.9
246	405.7	673	21.6	49	720	0	40.0
247	399.9	677	6.8	50	190	1	17.4
248	405.0	674	2.2	49	360	0	4.0
249	403.6	673	5.7	49	210	1	14.6
250	399.6	670	11.4	50	110	1	13.1
251	401.6	672	18.8	50	690	0	86.0
252	402.5	676	3.7	50	250	1	2.6
253	400.9	671	8.8	51	150	1	22.0
254	405.5	680	17.9	50	640	0	42.9
255	400.1	570	-16.6	50	630	1	-17.5
256	404.6	563	-11.4	50	530	1	-23.5
257	398.7	675	9.4	49	490	0	11.0
258	397.1	679	5.8	49	210	1	6.8
259	406.8	676	5.5	50	420	0	10.2
260	397.3	672	16.6	51	630	0	19.5
261	404.4	567	-10.3	49	130	0	-10.7
262	400.4	680	9.7	50	140	1	18.2
263	397.2	675	1.6	49	290	1	1.0
264	407.0	568	-15.1	50	590	1	-8.0
265	402.7	673	18.7	51	670	0	21.7
266	397.2	678	3.1	51	380	0	4.0
267	402.1	569	-14.1	51	590	1	-23.0
268	398.5	671	4.9	51	410	0	5.8
269	405.9	677	4.1	51	240	1	7.6
270	405.9	560	-20.0	51	700	1	-11.5
271	398.6	675	14.2	51	580	0	52.5
272	400.1	677	3.9	50	250	1	2.5
273	400.0	675	9.8	50	140	1	34.1
274	402.0	672	17.0	49	630	0	60.8
275	404.3	567	-12.7	50	560	1	-7.5
276	397.4	680	16.5	51	0	1	21.1
277	400.6	670	14.7	50	590	0	27.1
278	406.9	564	-14.9	50	610	1	-16.2
279	406.5	680	12.4	50	550	0	22.4
280	400.8	670	0.5	49	310	1	0.4
281	397.5	564	-18.6	51	680	1	-21.1
282	402.5	570	-19.3	51	700	1	-21.6
283	398.0	676	13.3	49	570	0	24.2
284	397.4	569	-12.6	50	550	1	-13.0
285	399.0	679	9.9	50	140	1	17.6
286	397.5	672	10.5	49	520	0	46.9
287	404.7	676	5.2	50	220	1	12.7
288	402.4	566	-14.8	51	590	1	-14.7
289	397.2	568	-6.7	50	200	0	-6.9
290	397.5	677	11.7	49	530	0	20.4
291	402.9	675	16.1	49	610	0	10.3
292	404.5	679	17.3	50	0	1	61.7
293	401.4	674	12.6	51	550	0	29.5
294	399.1	565	-14.1	49	580	1	-34.6
295	402.2	677	1.1	51	340	0	1.9
296	402.1	672	10.2	50	520	0	18.9
297	406.7	674	7.1	50	190	1	12.4
298	397.2	671	4.1	50	400	0	2.7
299	406.3	563	-14.4	50	600	1	-24.1
300	401.6	672	10.6	51	520	0	26.3
301	402.7	672	4.9	51	230	1	8.8
302	402.3	567	-11.1	51	120	0	-26.9
303	399.0	673	13.1	51	80	1	47.8
304	399.2	567	-10.4	50	130	0	-10.7
305	397.9	676	4.6	49	410	0	12.0
306	400.6	561	-16.2	50	630	1	-17.1
307	400.0	671	10.9	49	110	1	27.3
308	401.3	674	1.7	50	350	0	3.0
309	399.8	567	-14.7	49	600	1	-15.9
310	398.1	678	21.1	50	720	0	66.8
311	397.5	671	16.8	51	0	1	39.8
312	402.0	567	-12.1	50	540	1	-17.7

NN Model Elevator Data - Apartment Building Complex @ Frankfort Place

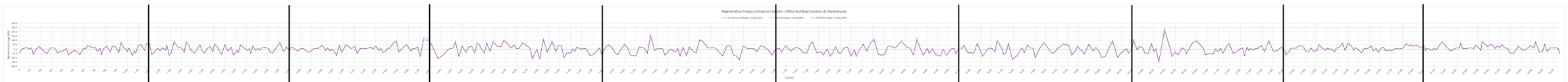
No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
313	401.8	672	11.1	49	520	0	7.2
314	401.8	680	6.7	49	450	0	12.1
315	405.6	560	-13.7	49	570	1	-13.9
316	397.6	679	15.5	50	610	0	10.1
317	403.5	566	-11.3	51	530	1	-11.1
318	405.4	566	-11.4	50	100	0	-11.9
319	405.8	672	15.5	49	610	0	37.8
320	403.7	566	-16.5	50	620	1	-9.5
321	401.6	671	13.4	49	70	1	46.6
322	403.0	677	11.1	49	530	0	27.6
323	401.0	678	13.3	50	560	0	15.5
324	405.4	674	11.0	51	120	1	33.7
325	405.1	670	6.4	50	440	0	7.5
326	401.8	678	13.3	51	580	0	34.5
327	399.8	561	-12.4	50	560	1	-7.7
328	400.6	679	5.8	49	210	1	3.8
329	406.2	675	8.2	50	160	1	21.7
330	406.5	569	-17.3	50	660	1	-10.9
331	398.3	675	10.9	51	520	0	30.7
332	403.2	678	2.6	51	370	0	3.2
333	404.9	560	-20.0	51	680	1	-10.6
334	403.1	569	-16.1	49	610	1	-15.3
335	400.7	565	-15.0	51	610	1	-15.5
336	397.2	675	1.0	49	340	0	3.4
337	404.9	673	16.5	49	0	1	61.6
338	403.7	676	9.7	50	500	0	17.7
339	405.5	675	3.1	50	260	1	3.8
340	403.8	561	-18.9	50	660	1	-18.5
341	403.8	562	-13.4	49	70	0	-35.3
342	401.4	672	12.5	51	550	0	14.3
343	404.7	676	11.7	50	90	1	46.5
344	402.0	670	4.2	50	400	0	3.0
345	403.0	567	-8.7	50	160	0	-18.2
346	397.2	675	2.7	50	270	1	4.9
347	401.0	678	10.6	50	510	0	12.3
348	406.6	566	-15.0	50	590	1	-8.0
349	397.0	679	4.1	49	240	1	5.2
350	404.7	674	22.1	51	720	0	62.3
351	404.0	671	5.6	51	220	1	17.1
352	398.0	672	8.3	49	170	1	5.2
353	406.7	678	18.9	50	690	0	59.2
354	406.2	567	-19.4	50	690	1	-30.2
355	397.7	568	-15.6	49	600	1	-9.0
356	397.8	672	14.9	50	600	0	44.6
357	398.3	569	-23.6	49	750	1	-34.4
358	405.2	676	1.5	49	290	1	1.9
359	397.4	671	3.8	50	250	1	4.5
360	406.6	673	4.3	49	400	0	10.1
361	403.5	562	-11.1	50	110	0	-6.3
362	403.6	671	9.4	50	150	1	22.2
363	404.2	677	7.2	50	450	0	20.3
364	399.0	675	2.7	50	270	1	3.2
365	404.8	673	10.5	49	510	0	18.6
366	405.7	675	13.2	51	80	1	37.6
367	404.5	673	2.5	49	370	0	4.9
368	398.2	565	-23.6	51	740	1	-33.4
369	398.3	677	0.6	51	330	0	0.7
370	404.7	568	-18.2	51	660	1	-28.2
371	402.1	672	6.3	50	440	0	22.3
372	403.9	680	17.0	51	0	1	63.2
373	402.8	677	1.0	50	340	0	1.9
374	400.2	670	1.1	50	300	1	1.3
375	405.9	677	6.6	49	440	0	11.7
376	397.7	670	3.6	51	390	0	2.4
377	397.9	674	5.8	51	210	1	17.5
378	406.2	675	14.0	50	580	0	51.5
379	400.2	564	-12.6	50	550	1	-42.6
380	397.3	676	7.6	51	470	0	15.0
381	401.8	674	19.7	49	680	0	33.6
382	402.7	564	-16.4	49	620	1	-16.0
383	398.5	676	8.4	49	160	1	10.0
384	398.2	566	-12.2	50	540	1	-6.8
385	406.0	676	23.1	50	740	0	82.5
386	398.1	564	-19.0	49	690	1	-31.2
387	404.8	674	11.0	51	110	1	28.3
388	405.4	677	16.7	51	630	0	39.1
389	406.9	679	3.6	50	250	1	6.9
390	401.2	672	1.6	49	290	1	1.1

NN Model Elevator Data - Apartment Building Complex @ Frankfort Place

No.	Utility Side 3ϕ Voltage (V)	DC Bus Voltage (V)	Utility Side 3ϕ Current (A)	Utility Side 3ϕ Power Freq. (Hz)	Elevator Load (kg)	Travelling Direction [Up/Down] (1/0)	Regen. Energy (Wh)
391	400.3	678	10.1	50	510	0	31.7
392	406.2	670	12.4	51	80	1	15.1
393	405.0	679	10.0	51	140	1	11.3
394	403.7	677	12.2	50	560	0	48.1
395	404.6	562	-16.3	51	620	1	-16.1
396	400.6	679	6.3	49	440	0	4.5
397	398.1	671	0.5	51	310	1	0.6
398	406.0	563	-18.2	50	650	1	-10.0
399	397.9	676	9.3	50	490	0	11.2
400	406.2	569	-13.1	51	560	1	-34.8
401	405.5	670	10.9	51	530	0	40.3
402	402.5	676	3.2	49	260	1	9.8
403	401.1	671	9.7	49	510	0	31.3
404	402.5	678	4.1	49	240	1	5.2
405	399.8	565	-15.0	50	590	1	-22.7
406	404.8	673	12.9	49	560	0	32.1
407	399.0	564	-18.5	50	680	1	-31.2
408	399.9	674	7.6	51	460	0	23.3
409	399.4	677	6.9	50	190	1	12.3
410	397.4	560	-14.5	49	600	1	-31.0
411	406.2	680	22.3	49	730	0	98.2
412	402.4	680	11.2	51	110	1	42.2
413	406.4	676	8.0	49	470	0	19.4
414	397.1	570	-13.6	49	70	0	-14.0
415	405.4	561	-16.1	49	630	1	-17.0
416	400.3	671	12.5	49	550	0	7.9
417	399.1	565	-16.0	49	610	1	-32.4
418	405.0	672	24.8	49	770	0	74.0
419	399.4	678	12.7	50	90	1	44.3
420	405.0	675	8.2	50	480	0	20.9
421	403.4	565	-17.3	51	660	1	-38.4
422	401.6	561	-18.4	51	680	1	-11.0
423	404.7	678	19.5	49	690	0	47.2
424	404.9	676	4.9	50	410	0	5.6
425	402.6	568	-15.6	50	620	1	-26.2
426	405.3	568	-12.9	49	550	1	-18.9
427	406.2	672	16.3	49	620	0	40.2
428	398.4	670	23.1	51	740	0	40.6
429	403.5	567	-15.6	50	610	1	-15.7
430	402.6	569	-13.2	49	570	1	-8.0
Total Regenerated Energy per Day (Wh)							**3,774.9**

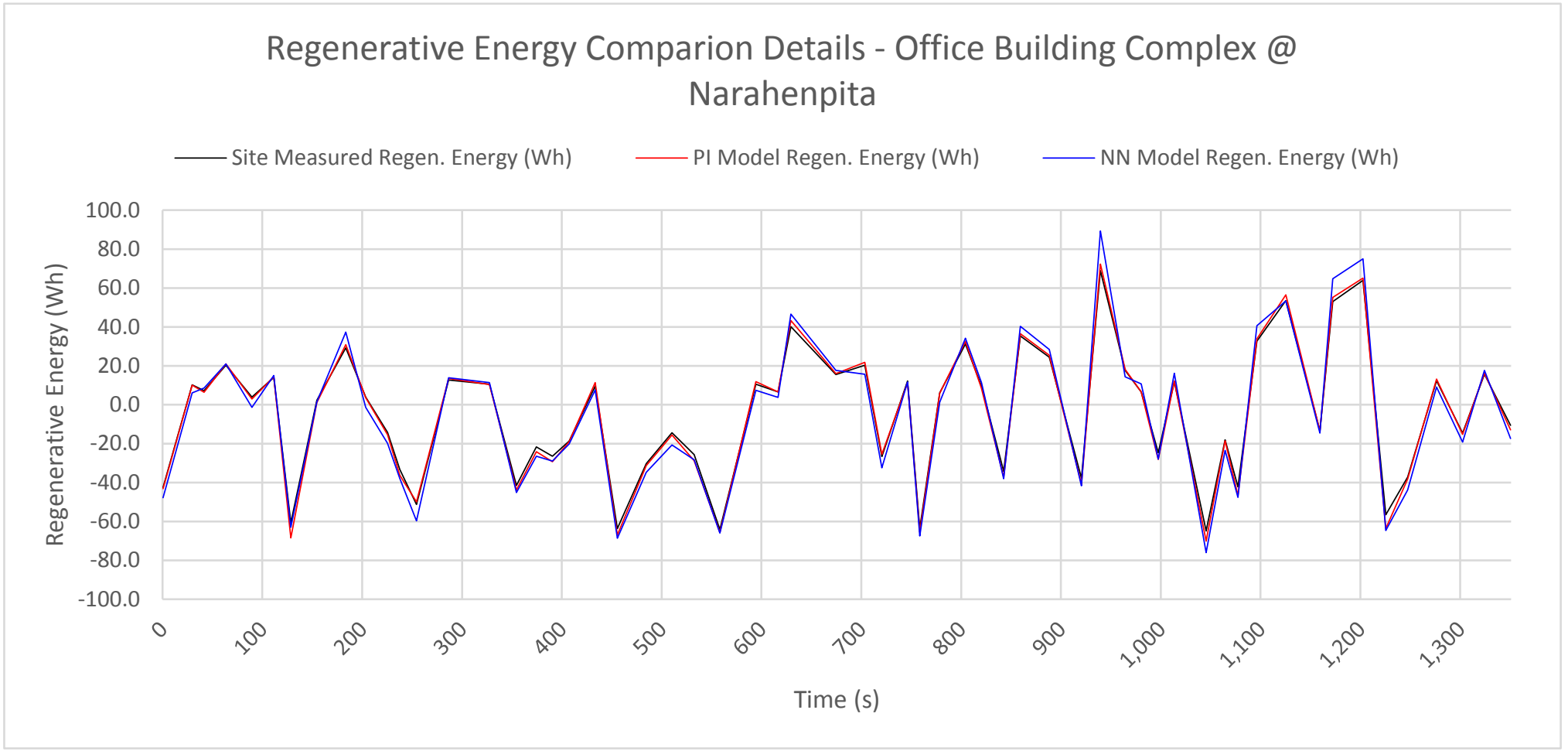
ANNEXURE – 05

Regenerative Energy Comparison Details - Office Building Complex @ Narahenpita

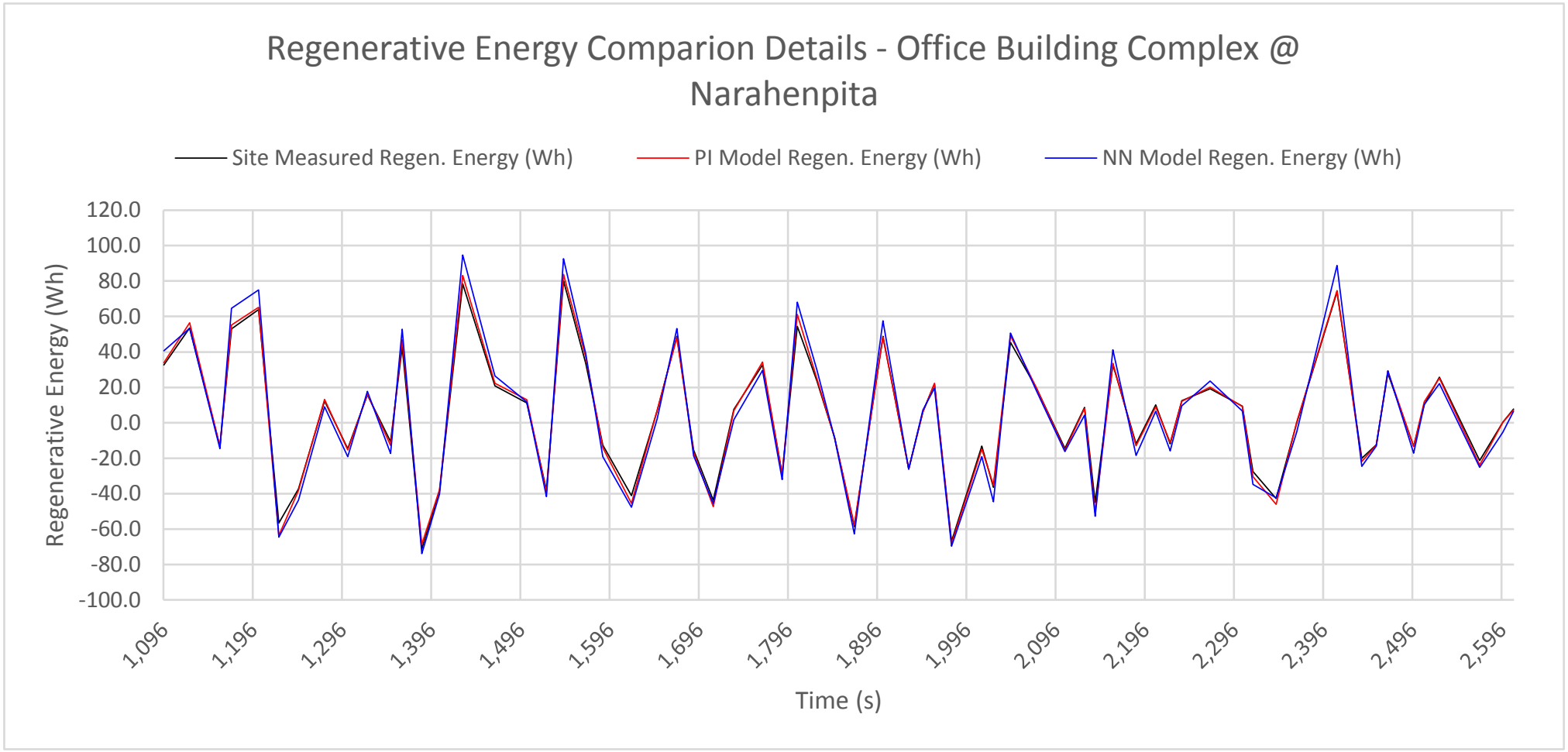


Enlargement 1 of 10 | Enlargement 2 of 10 | Enlargement 3 of 10 | Enlargement 4 of 10 | Enlargement 5 of 10 | Enlargement 6 of 10 | Enlargement 7 of 10 | Enlargement 8 of 10 | Enlargement 9 of 10 | Enlargement 10 of 10

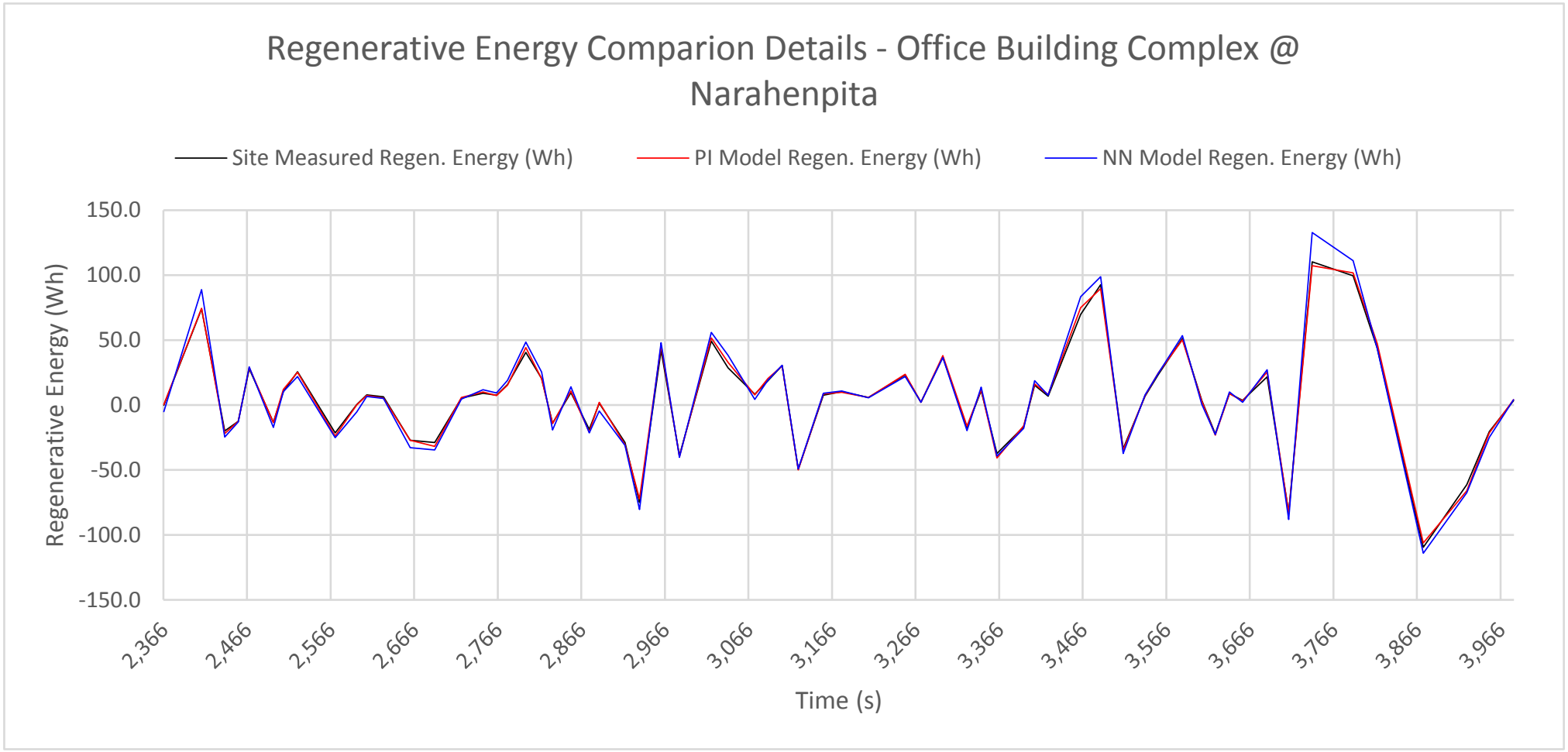
Note: Enlargement Views from 1 ~ 10 are attached in following pages.



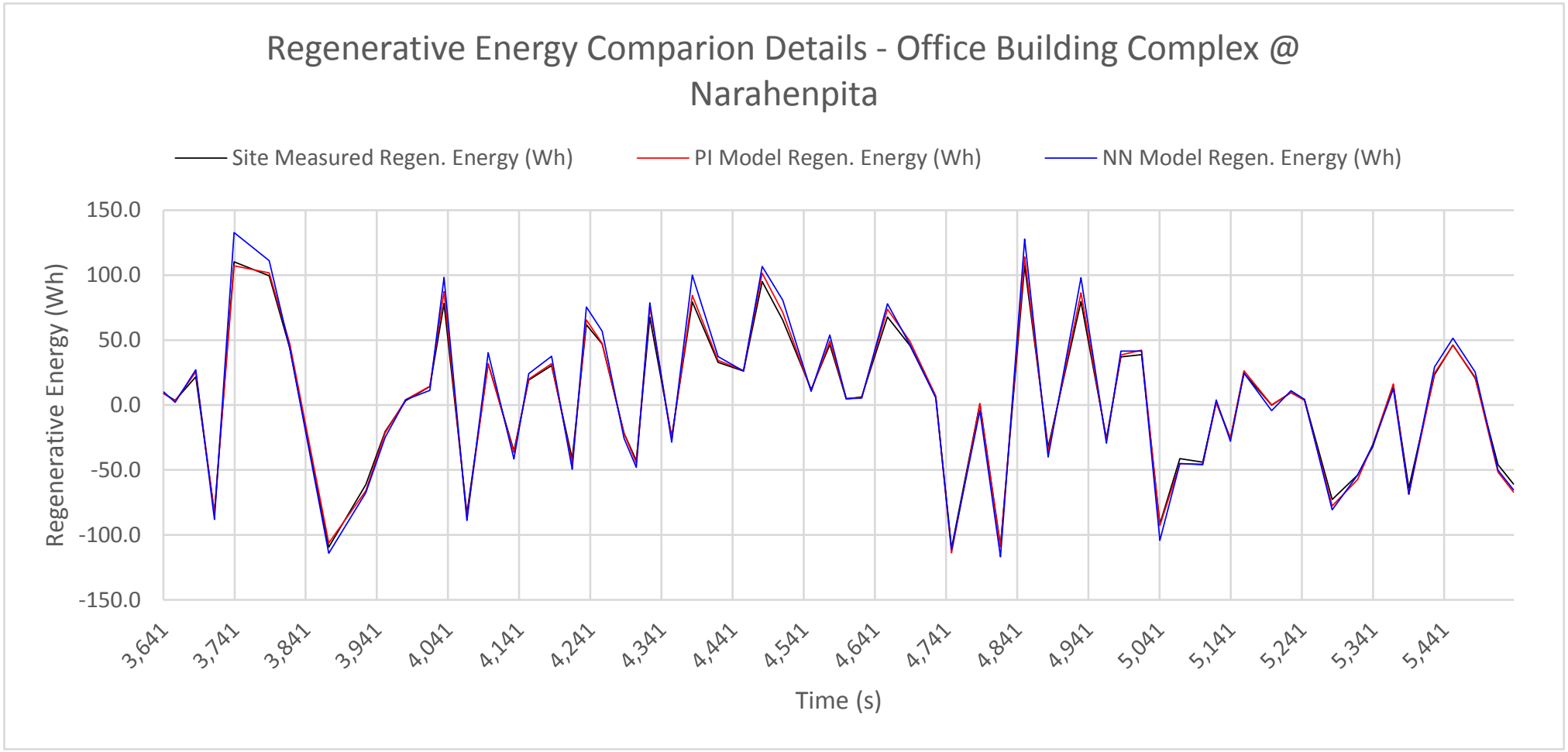
Enlargement 1 of 10



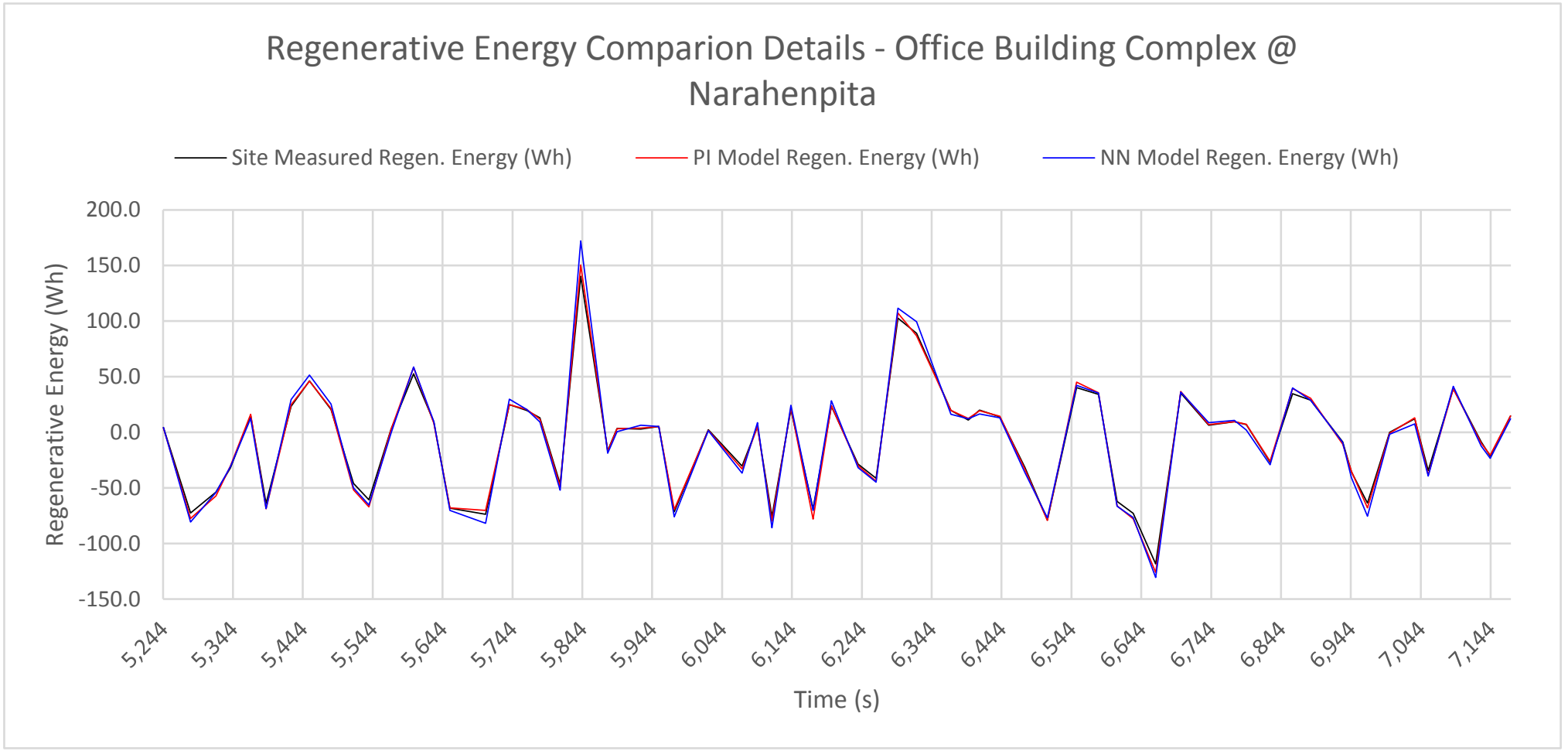
Enlargement 2 of 10



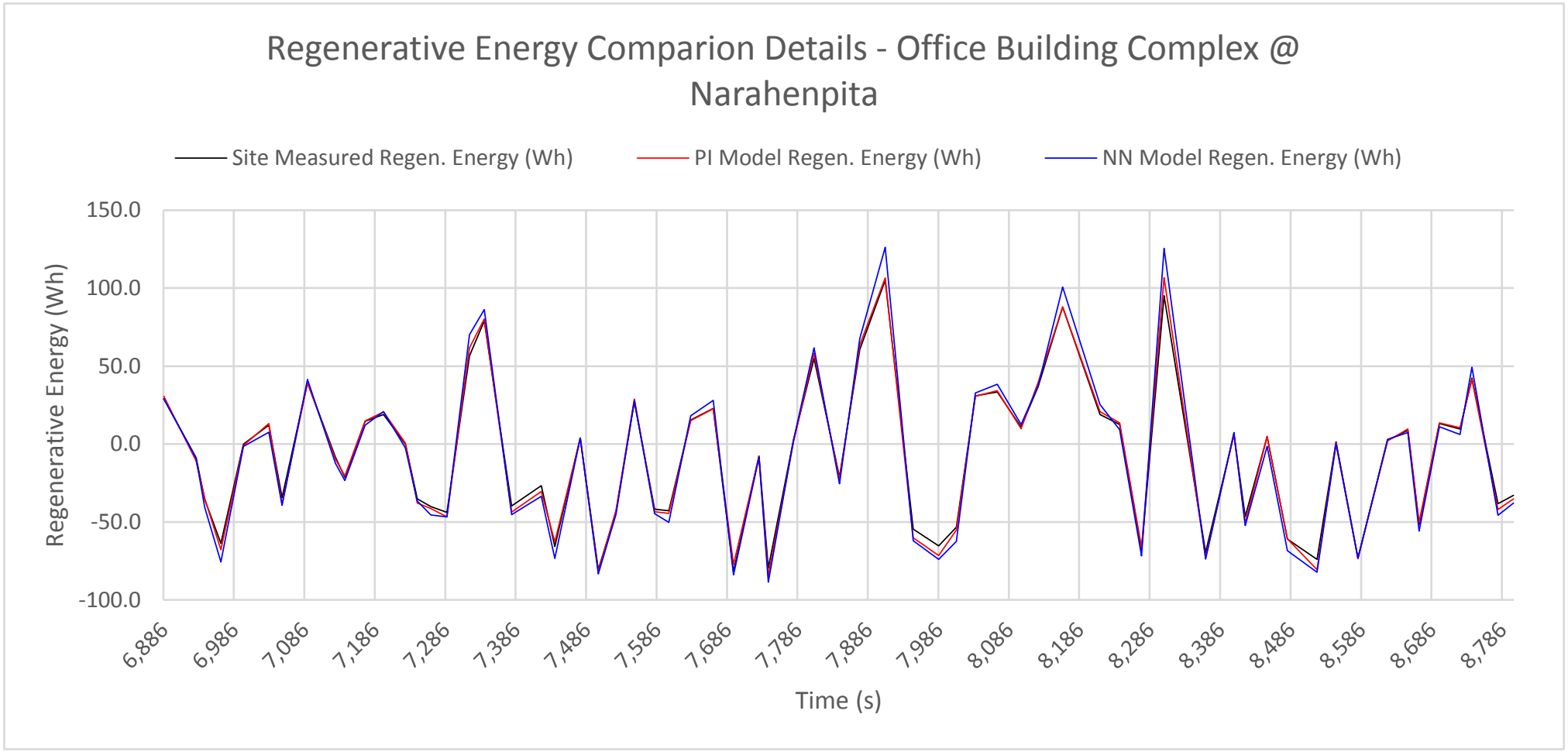
Enlargement 3 of 10



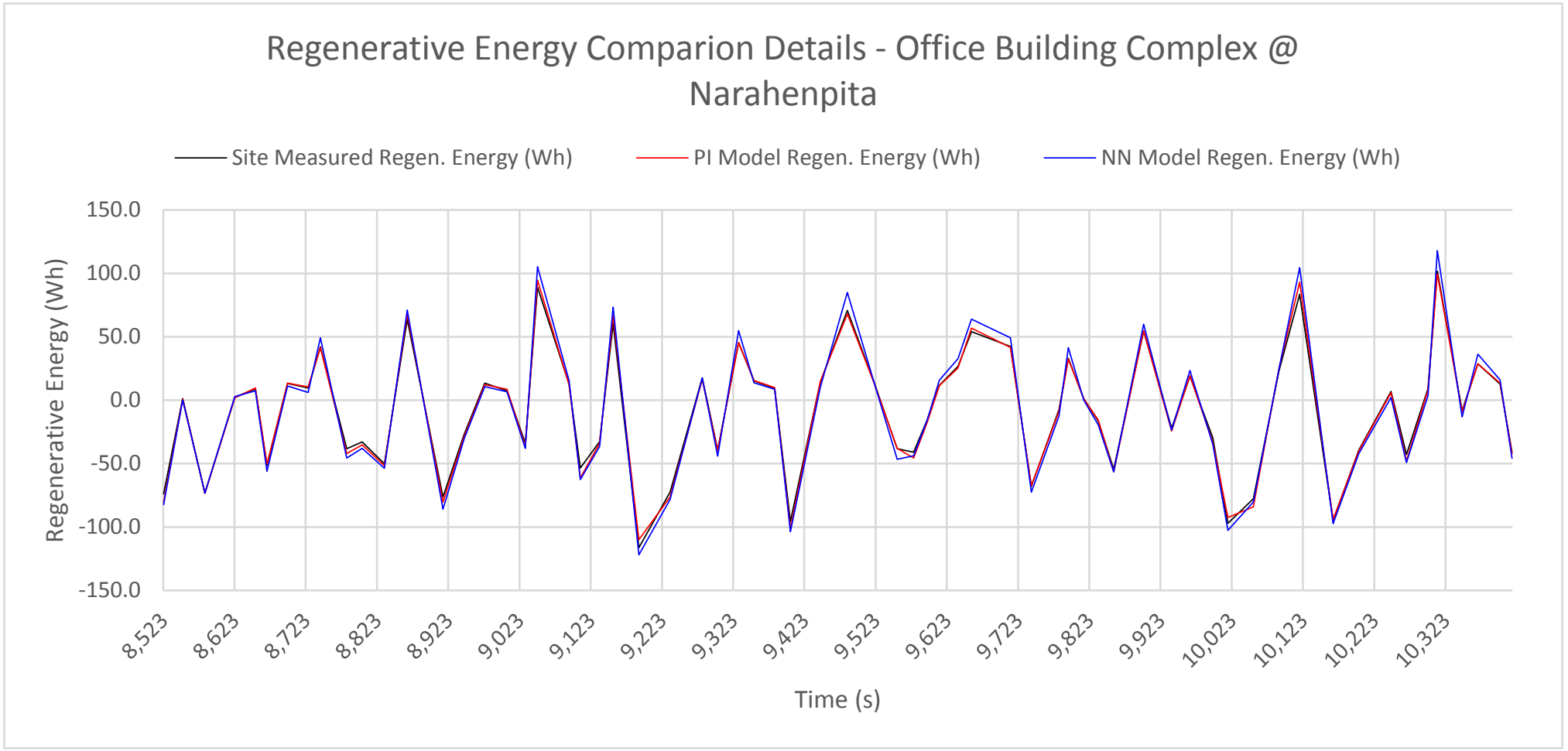
Enlargement 4 of 10

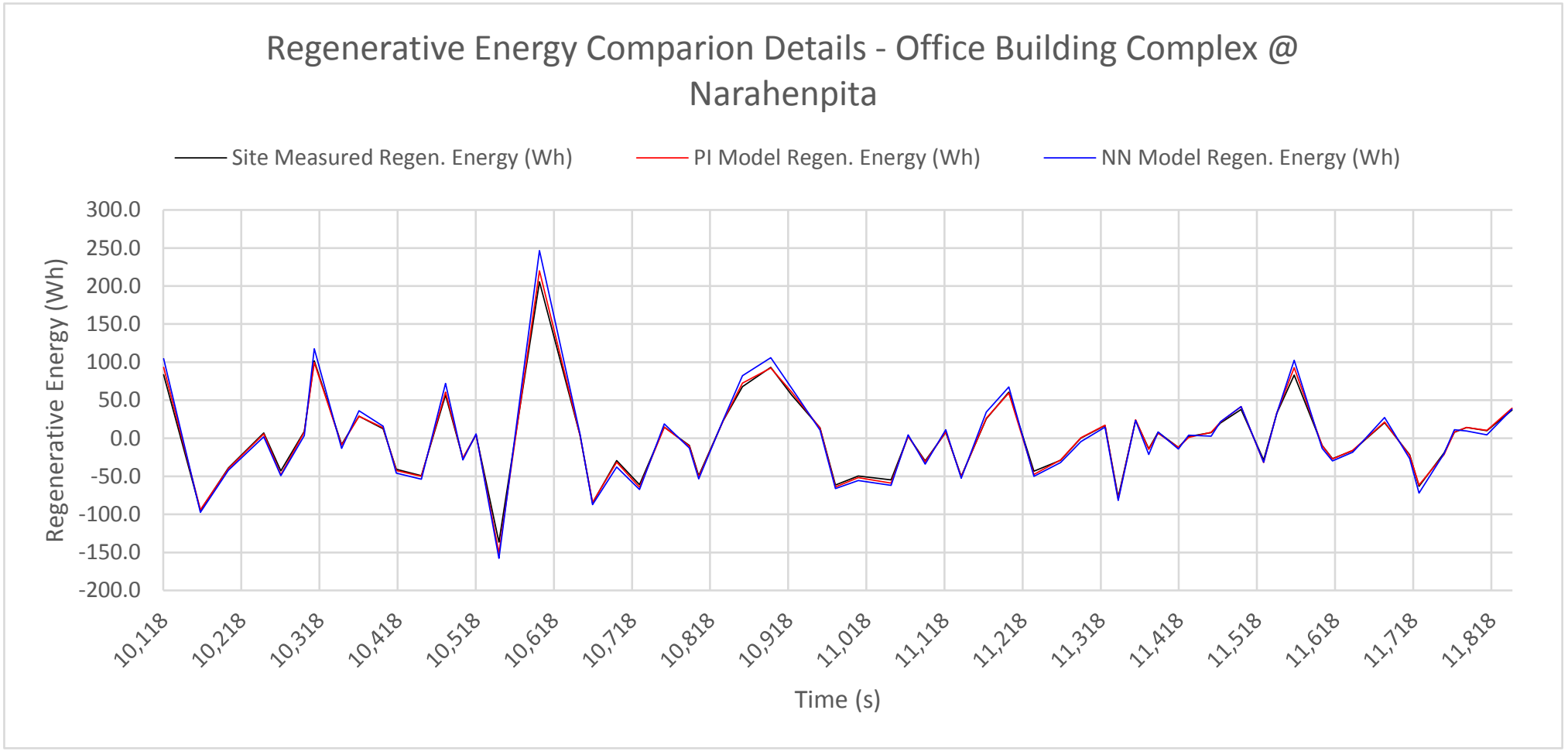


Enlargement 5 of 10

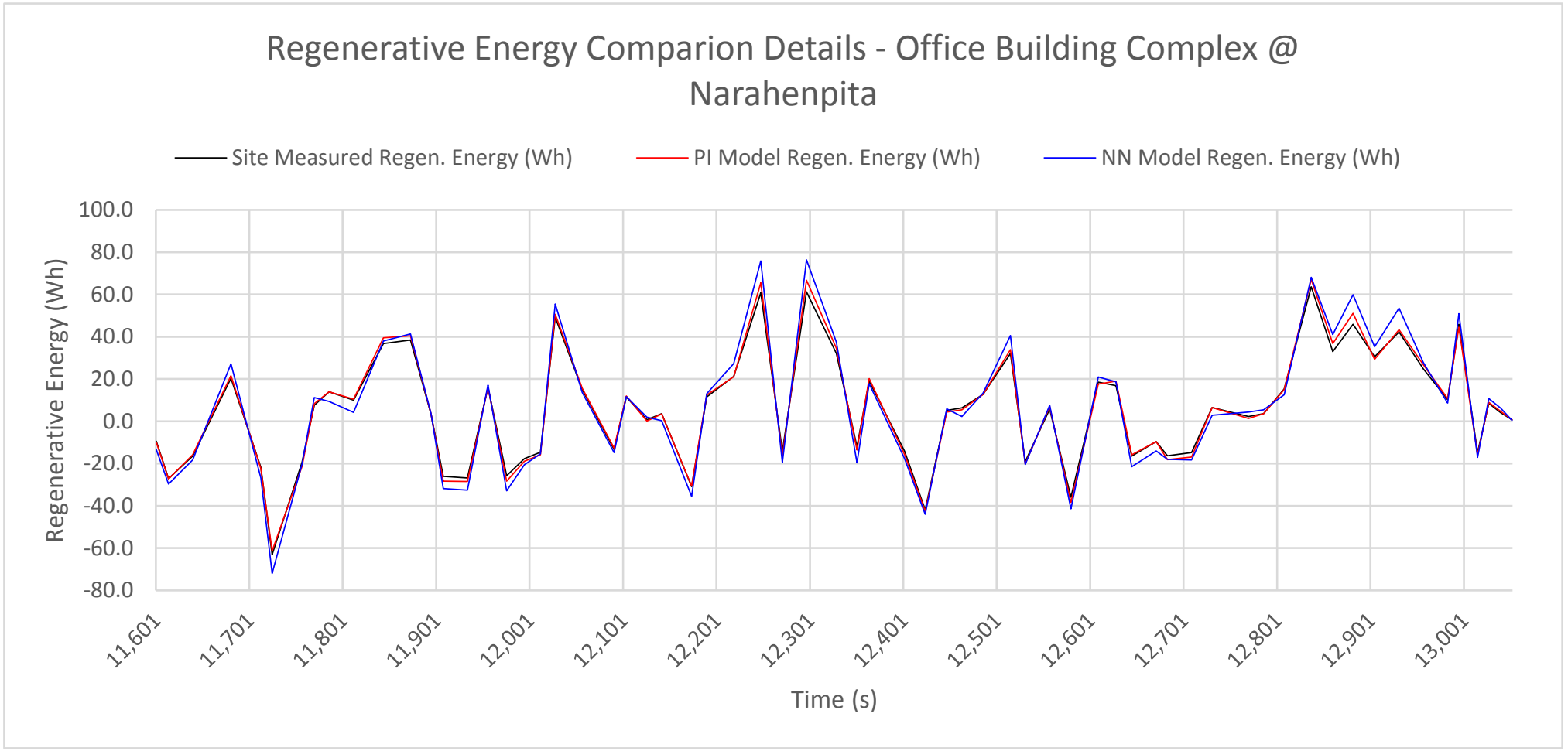


Enlargement 6 of 10

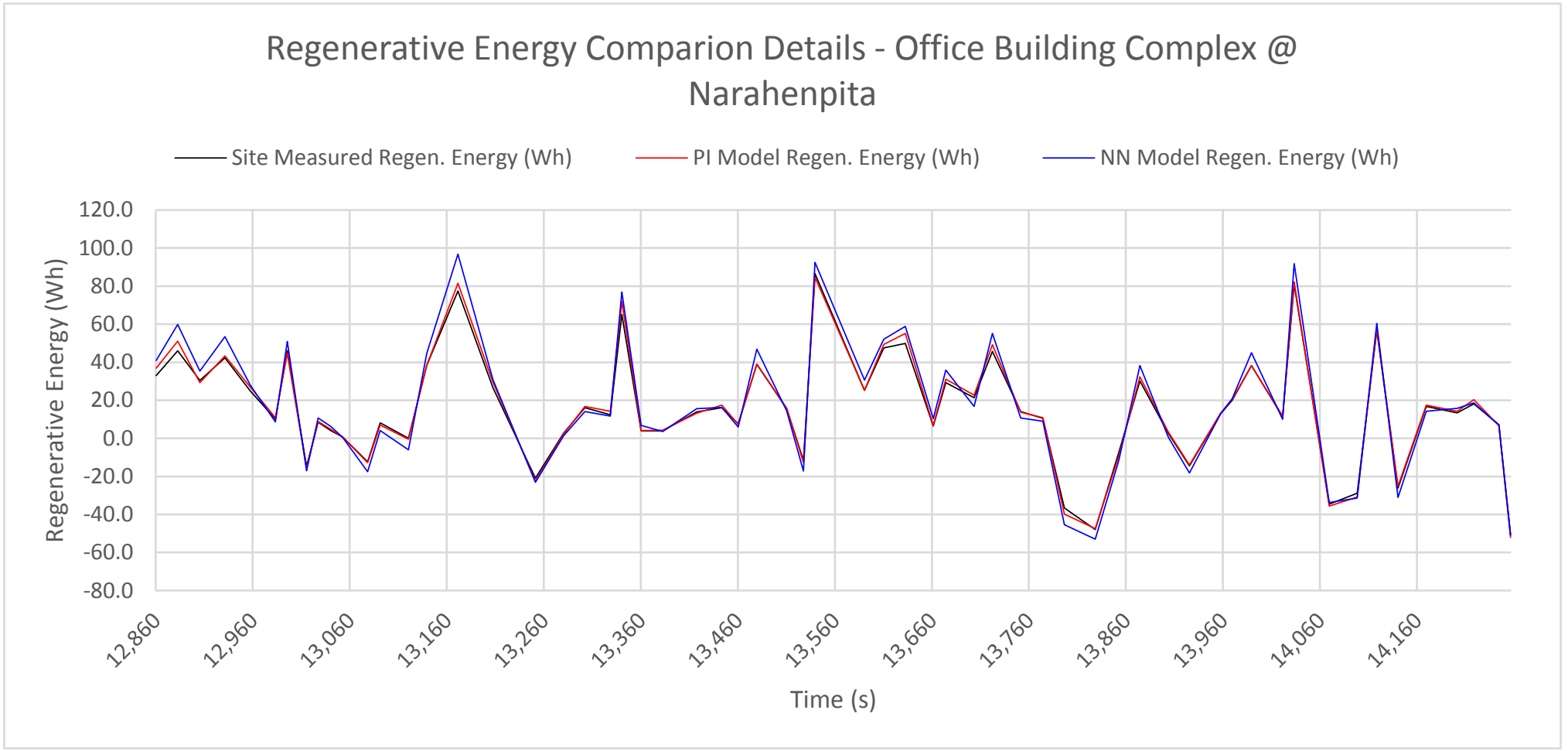

Regenerative Energy Comparion Details - Office Building Complex @ Narahenpita
Site Measured Regen. Energy (Wh)
PI Model Regen. Energy (Wh)
NN Model Regen. Energy (Wh)
Regenerative Energy (Wh)
150.0
100.0
50.0
0.0
-50.0
-100.0
-150.0
8,523
8,623
8,723
8,823
8,923
9,023
9,123
9,223
9,323
9,423
9,523
9,623
9,723
9,823
9,923
10,023
10,123
10,223
10,323
Time (s)



Enlargement 8 of 10



Enlargement 9 of 10

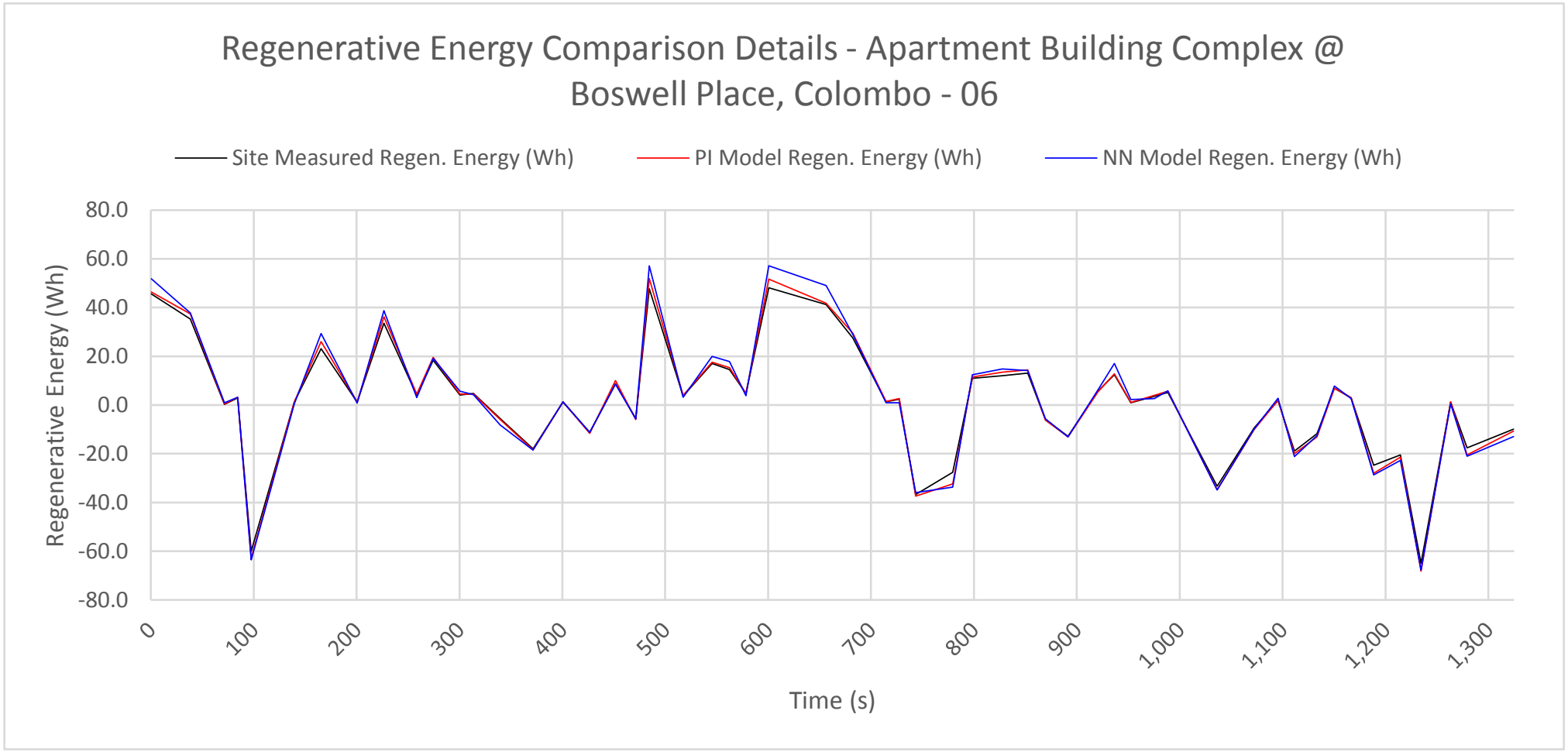


Enlargement 10 of 10

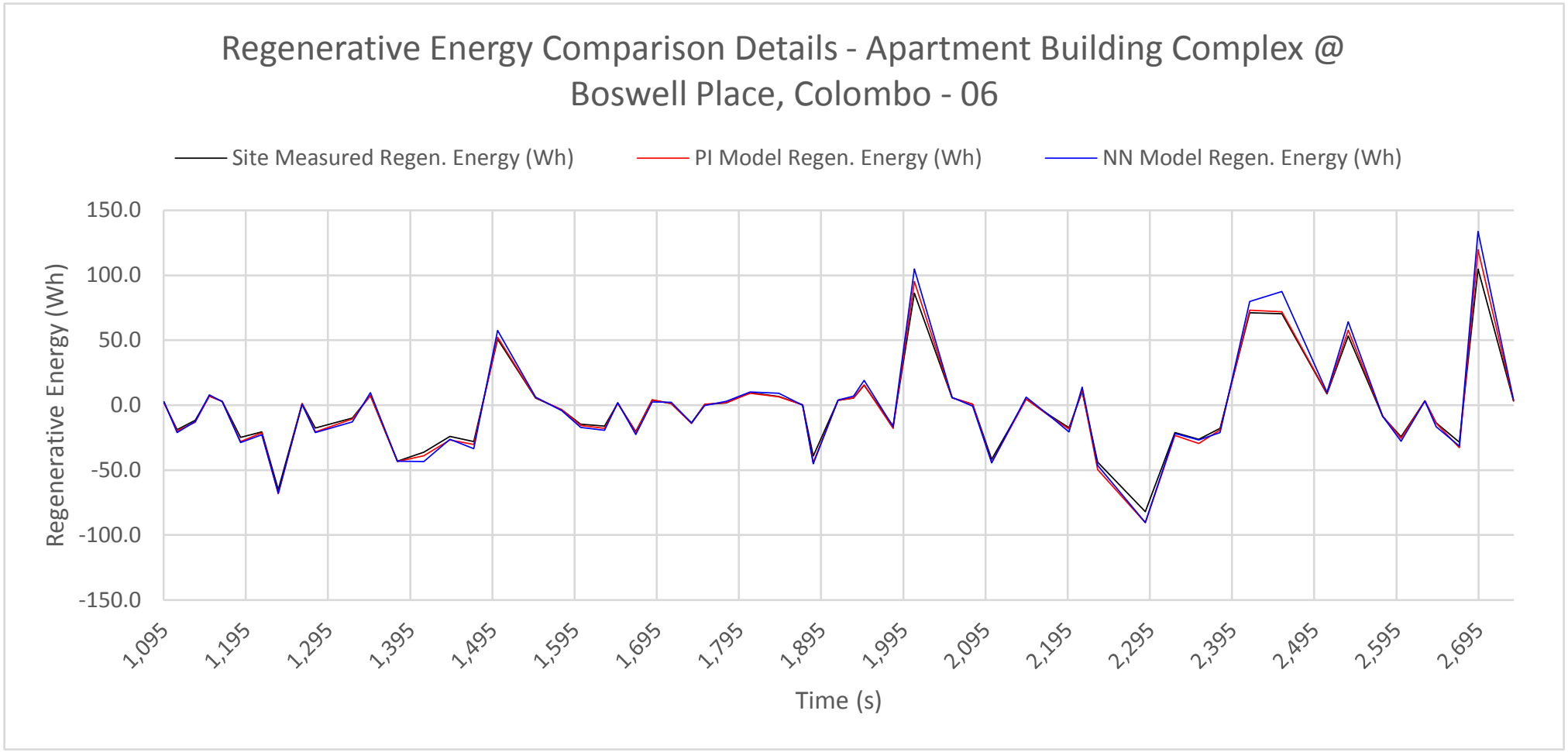
Regenerative Energy Comparison Details - Apartment Building Complex @ Boswell Place, Colombo - 06

Enlargement 1 of 10 | Enlargement 2 of 10 | Enlargement 3 of 10 | Enlargement 4 of 10 | Enlargement 5 of 10 | Enlargement 6 of 10 | Enlargement 7 of 10 | Enlargement 8 of 10 | Enlargement 9 of 10 | Enlargement 10 of 10

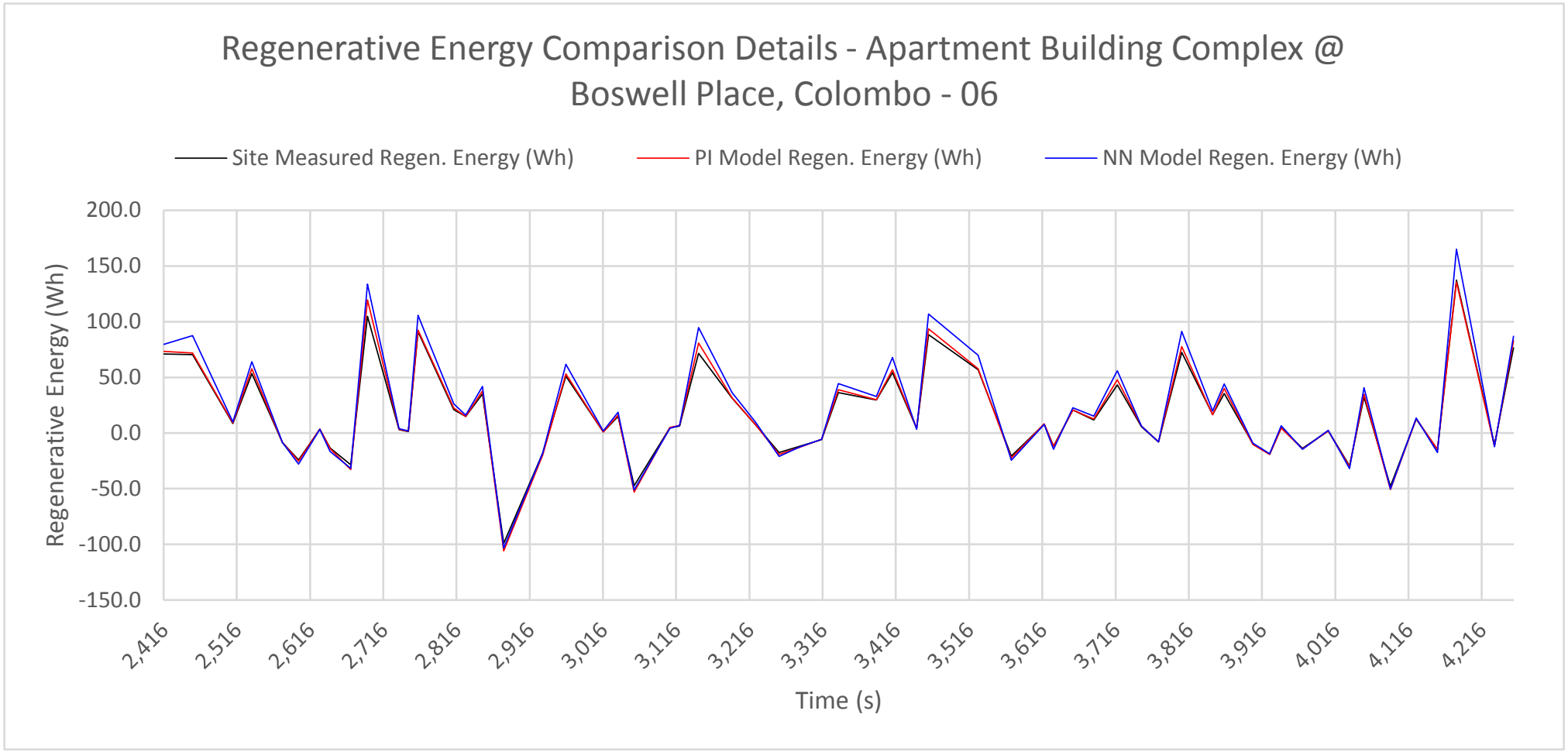
Note: Enlargement Views from 1 ~ 10 are attached in following pages.



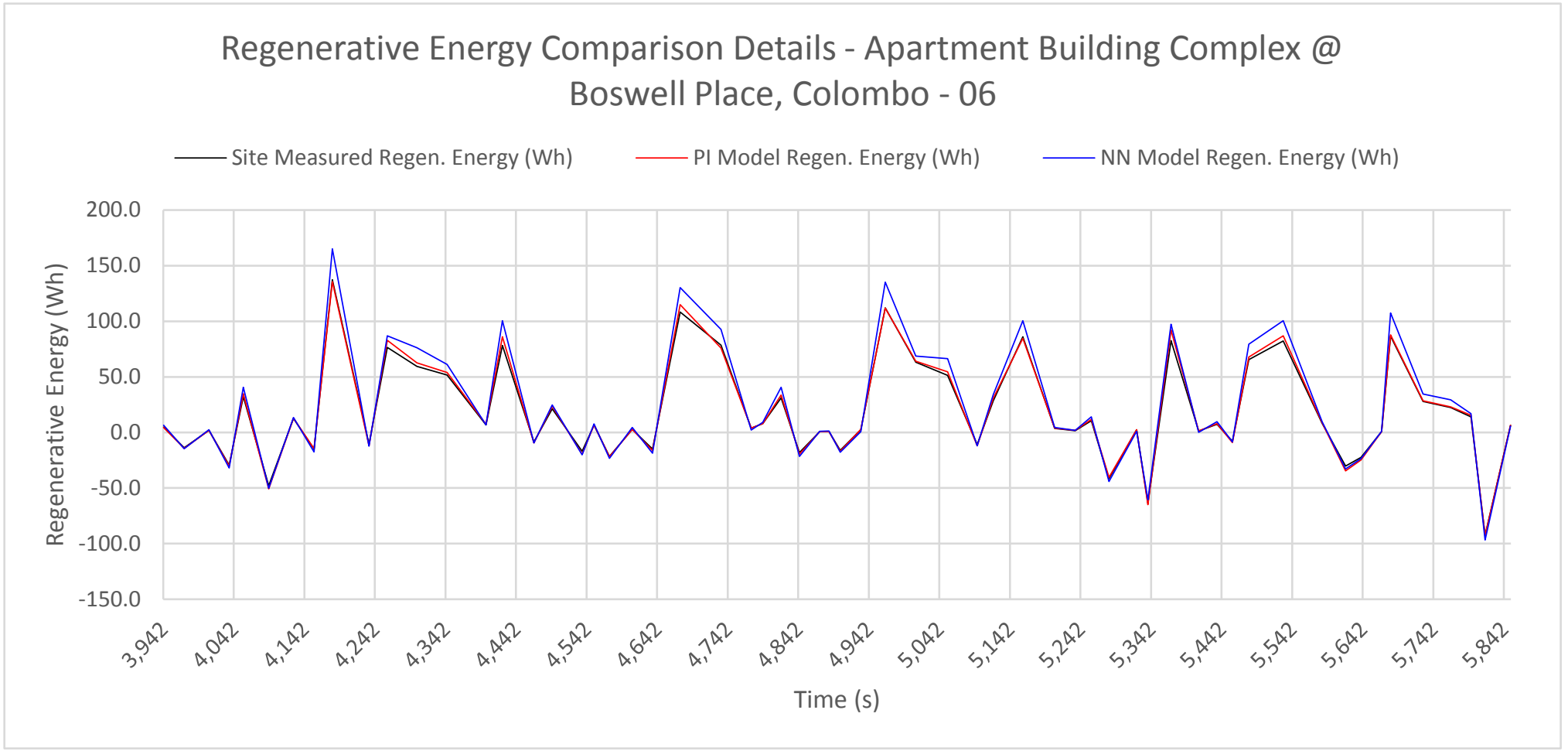
Enlargement 1 of 10



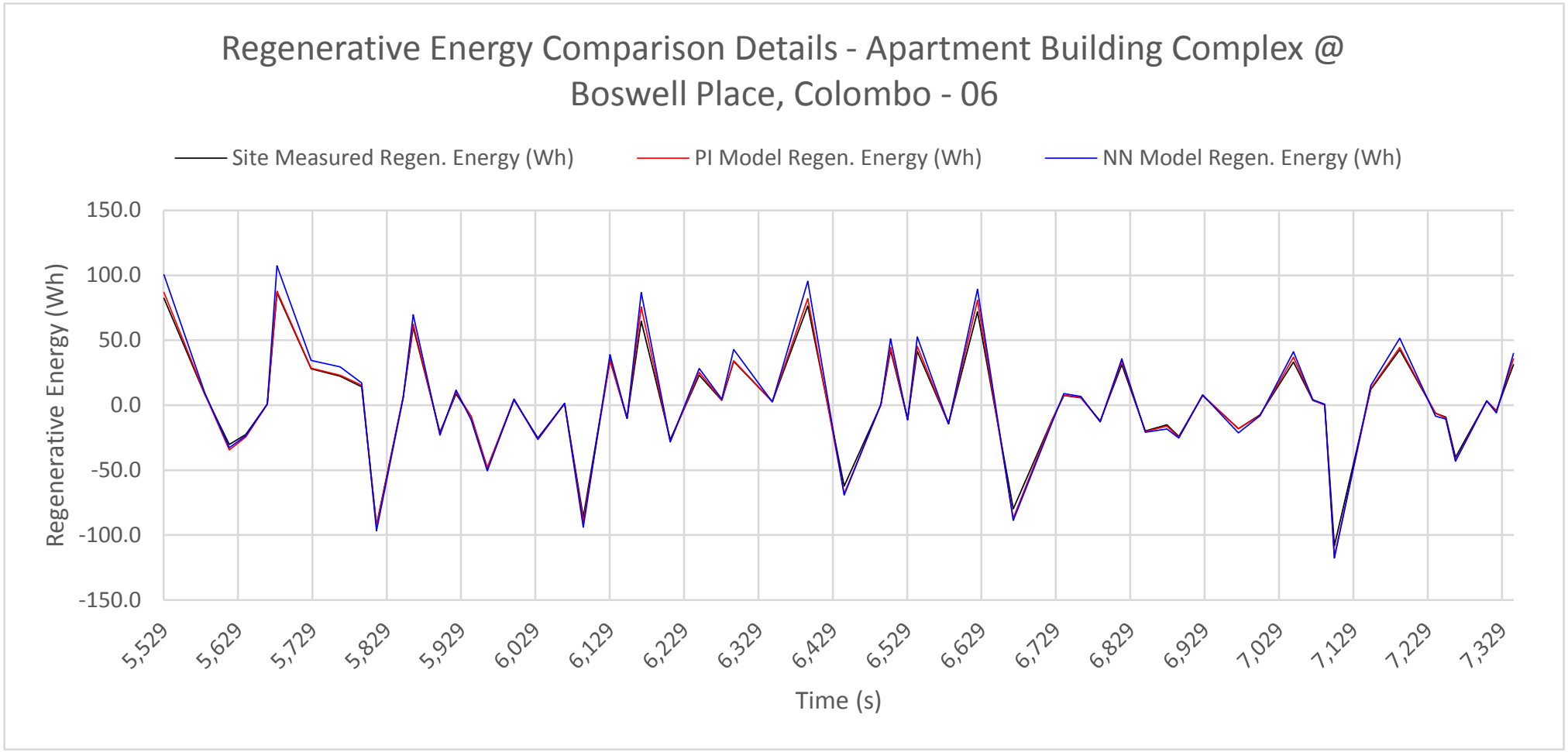
Enlargement 2 of 10



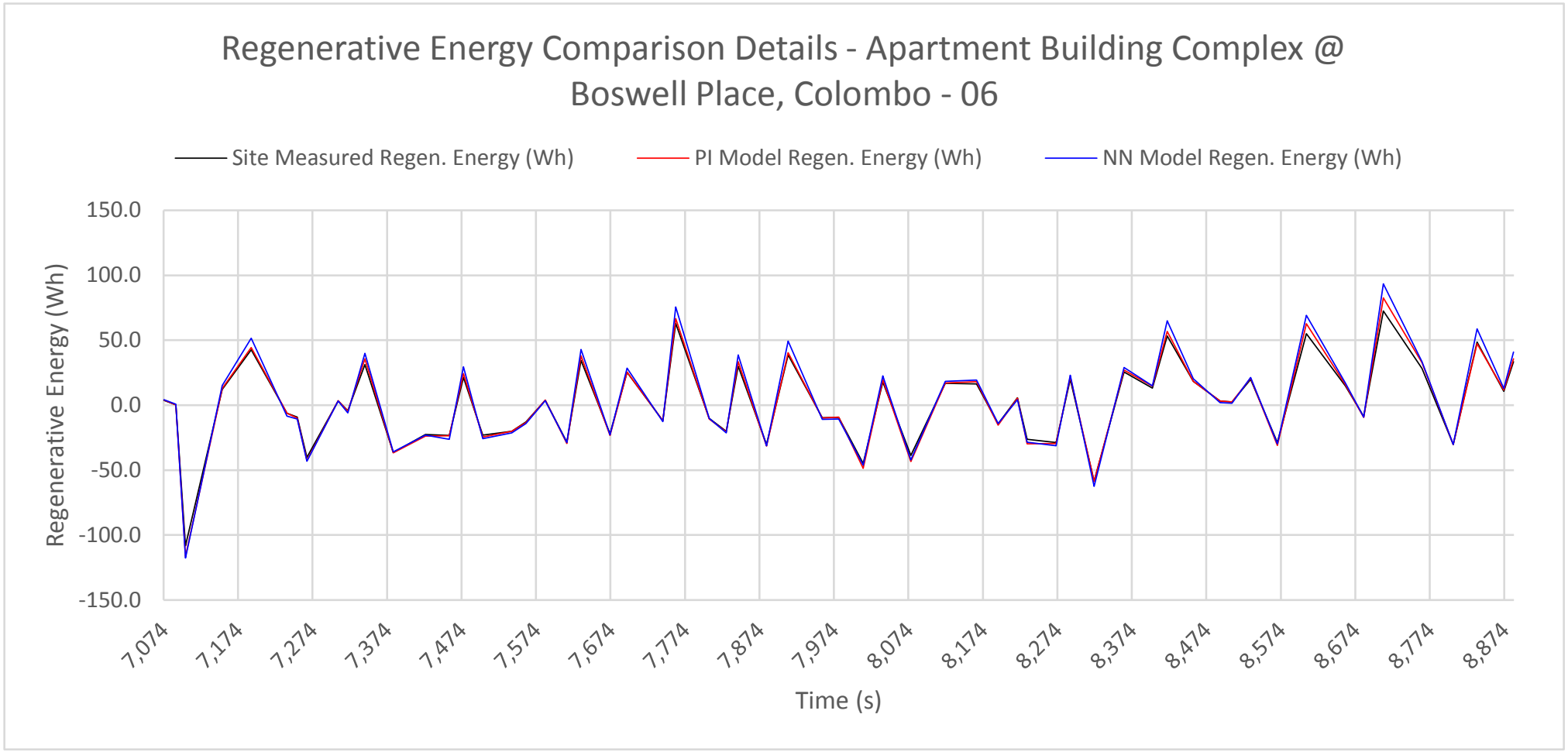
Enlargement 3 of 10

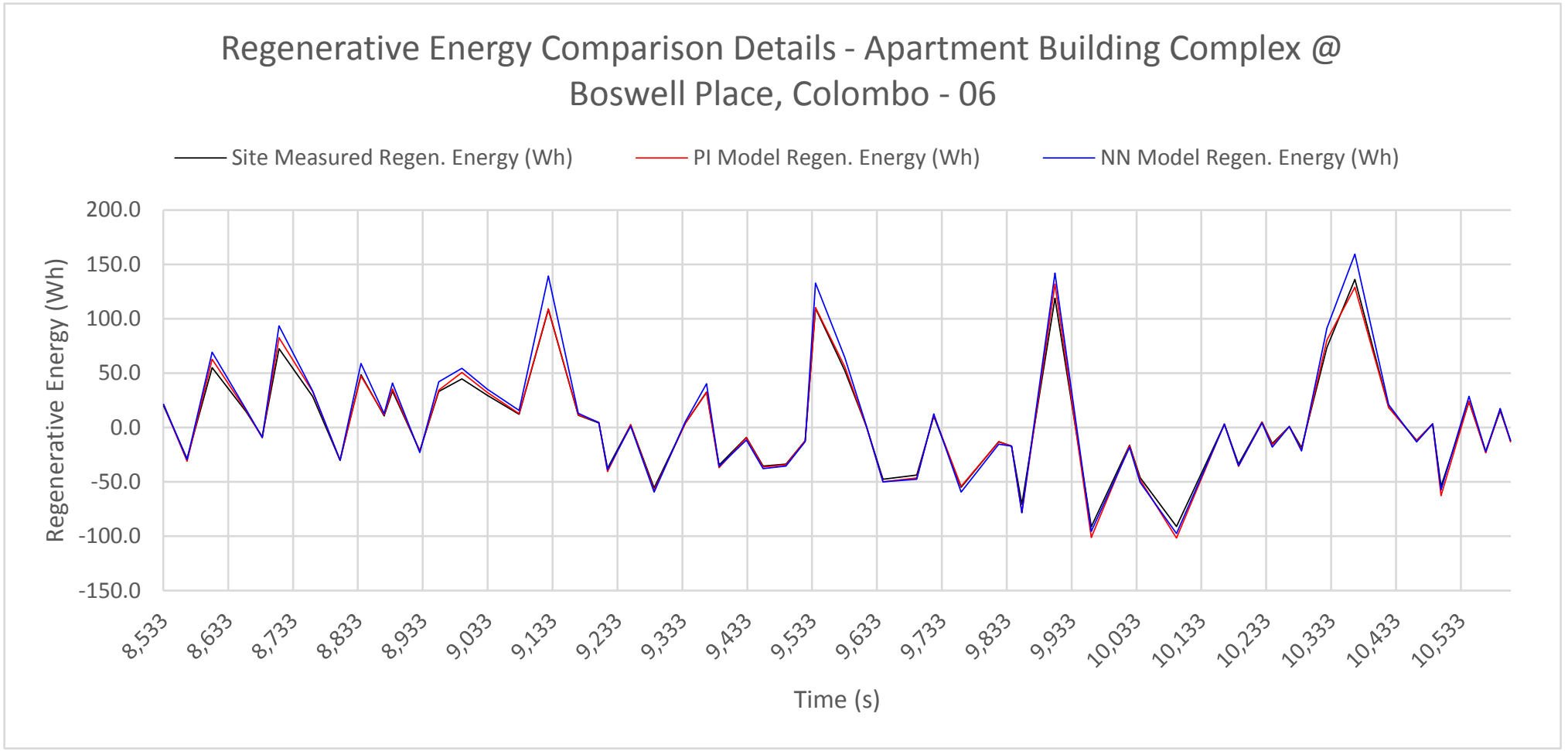


Enlargement 4 of 10



Enlargement 5 of 10


Regenerative Energy Comparison Details - Apartment Building Complex @ Boswell Place, Colombo - 06
Site Measured Regen. Energy (Wh)
PI Model Regen. Energy (Wh)
NN Model Regen. Energy (Wh)
Regenerative Energy (Wh)
150.0
100.0
50.0
0.0
-50.0
-100.0
-150.0
7,074
7,174
7,274
7,374
7,474
7,574
7,674
7,774
7,874
7,974
8,074
8,174
8,274
8,374
8,474
8,574
8,674
8,774
8,874
Time (s)


Regenerative Energy Comparison Details - Apartment Building Complex @ Boswell Place, Colombo - 06
Site Measured Regen. Energy (Wh)
PI Model Regen. Energy (Wh)
NN Model Regen. Energy (Wh)
Regenerative Energy (Wh)
200.0
150.0
100.0
50.0
0.0
-50.0
-100.0
-150.0
8,533
8,633
8,733
8,833
8,933
9,033
9,133
9,233
9,333
9,433
9,533
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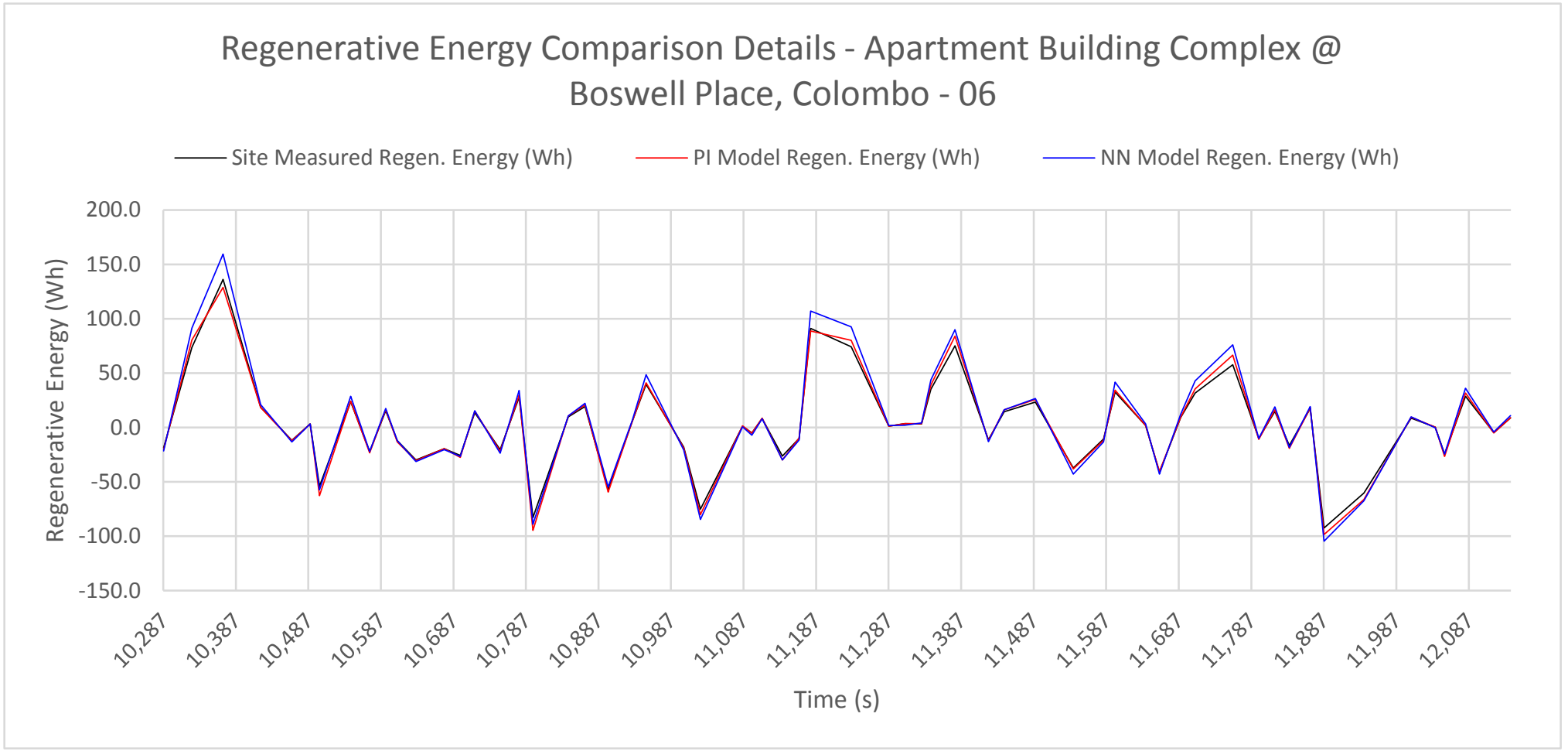
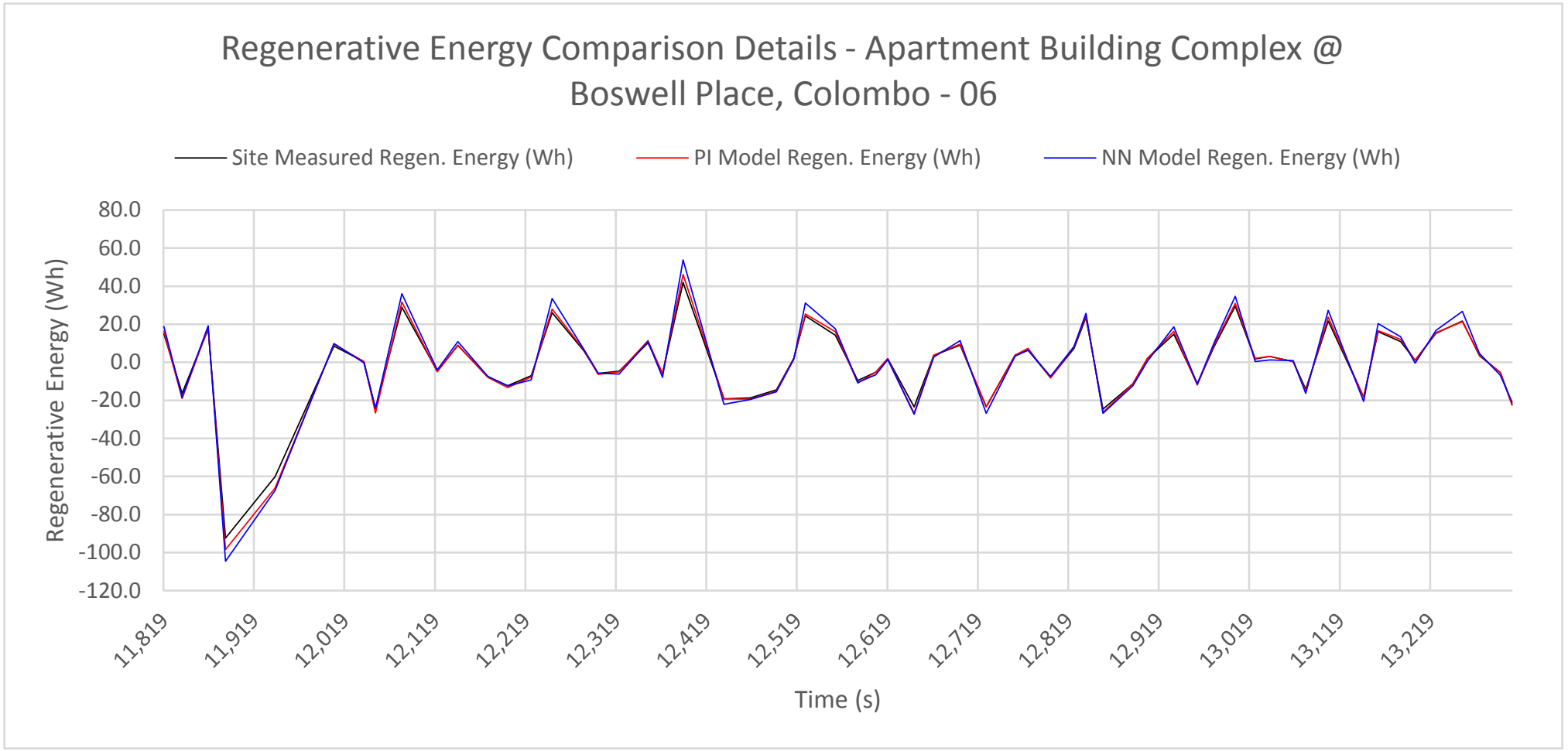
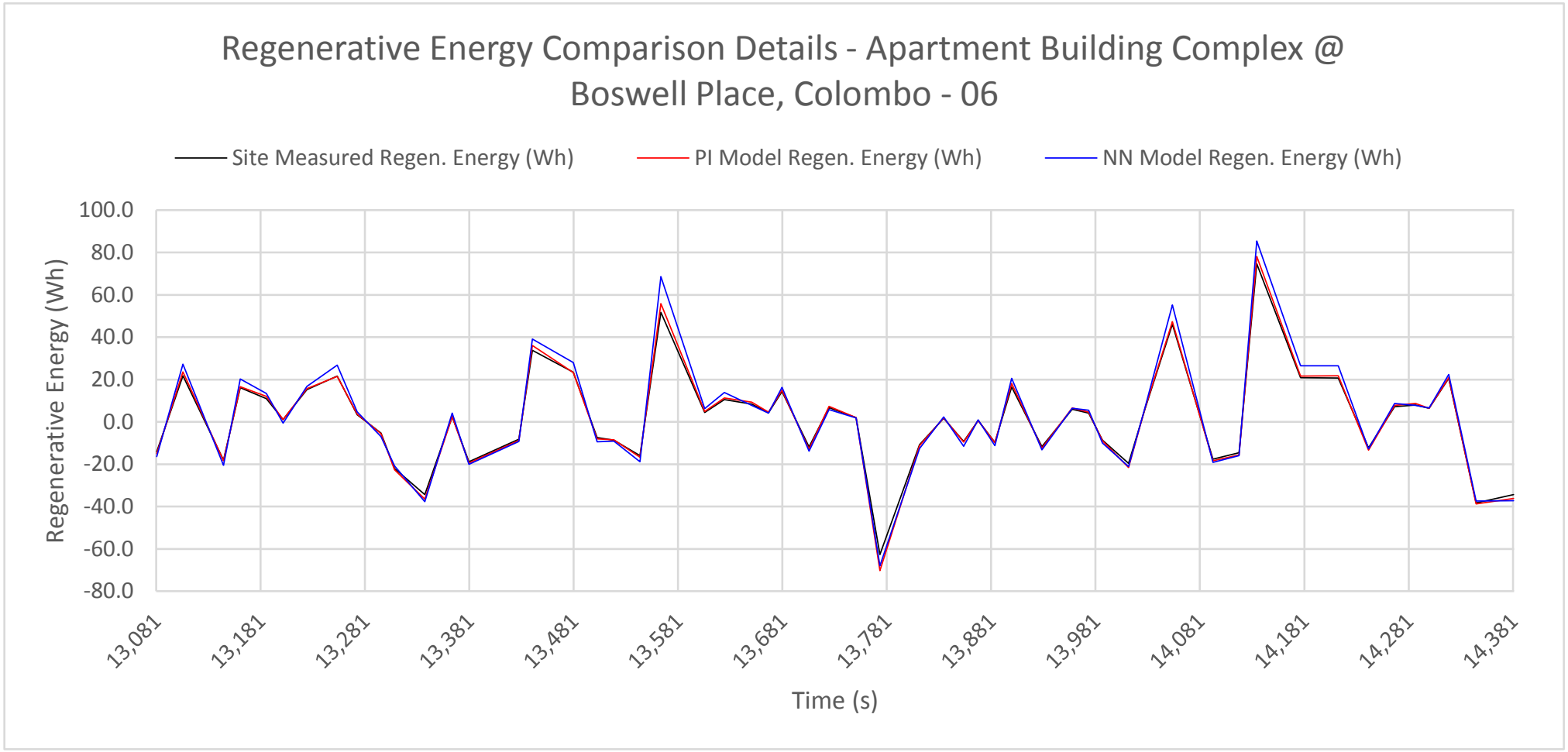
10,233
10,333
10,433
10,533
Time (s)



Enlargement 8 of 10


Regenerative Energy Comparison Details - Apartment Building Complex @ Boswell Place, Colombo - 06
Site Measured Regen. Energy (Wh)
PI Model Regen. Energy (Wh)
NN Model Regen. Energy (Wh)
Regenerative Energy (Wh)
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
-100.0
-120.0
11,819
11,919
12,019
12,119
12,219
12,319
12,419
12,519
12,619
12,719
12,819
12,919
13,019
13,119
13,219
Time (s)

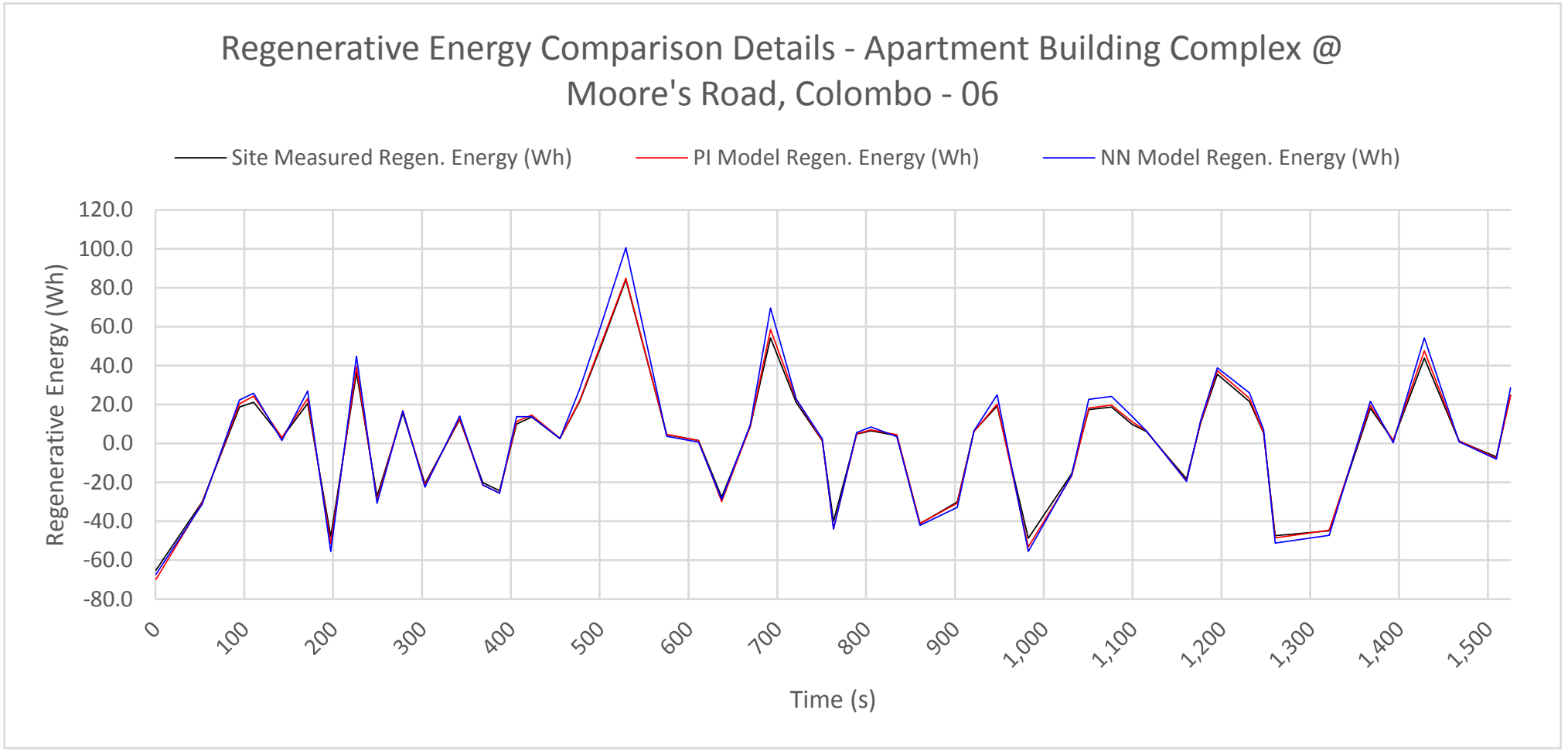


Enlargement 10 of 10

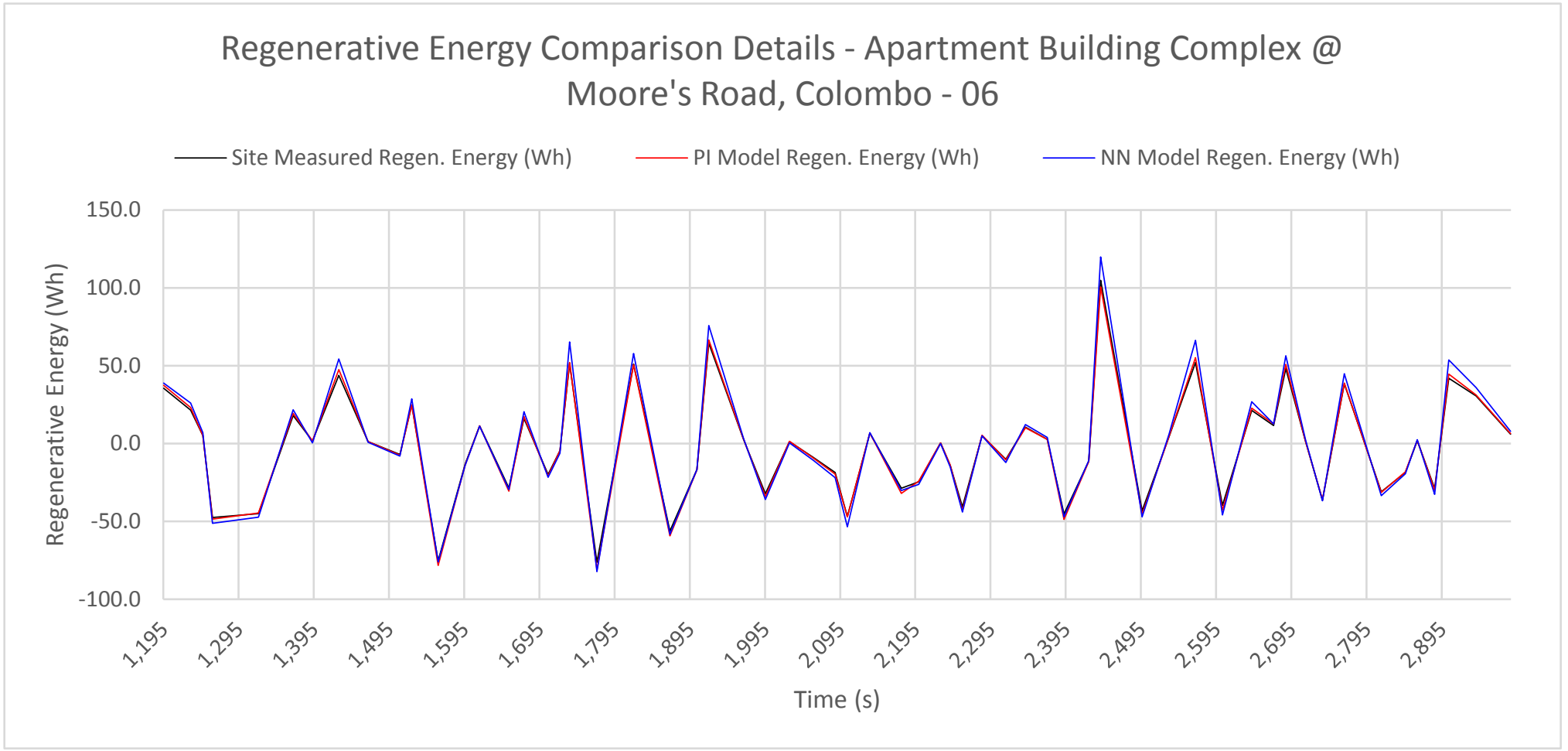
Regenerative Energy Comparison Details - Apartment Building Complex @ Moore's Road, Colombo - 06

Enlargement 1 of 10 | Enlargement 2 of 10 | Enlargement 3 of 10 | Enlargement 4 of 10 | Enlargement 5 of 10 | Enlargement 6 of 10 | Enlargement 7 of 10 | Enlargement 8 of 10 | Enlargement 9 of 10 | Enlargement 10 of 10

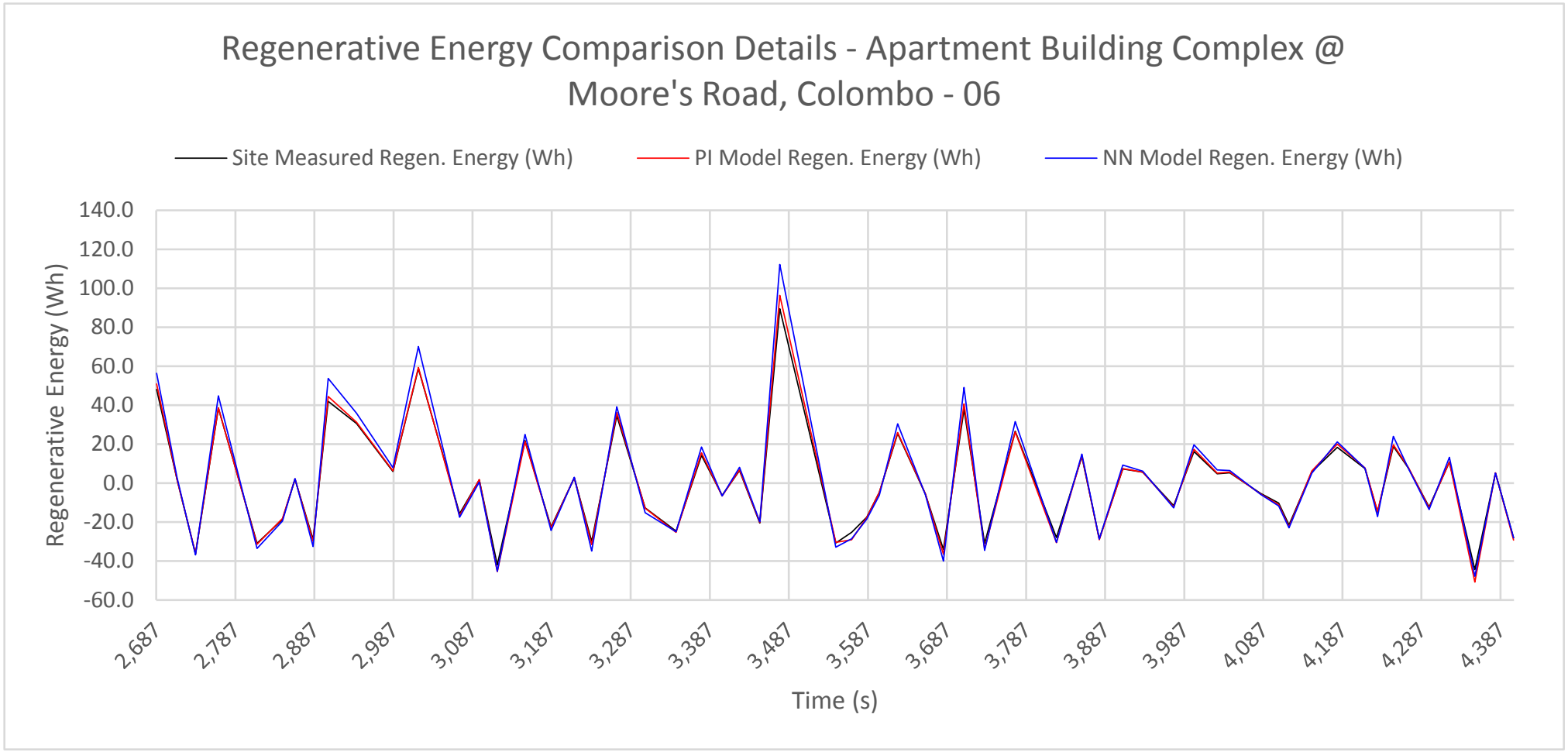
Note: Enlargement Views from 1 ~ 10 are attached in following pages.



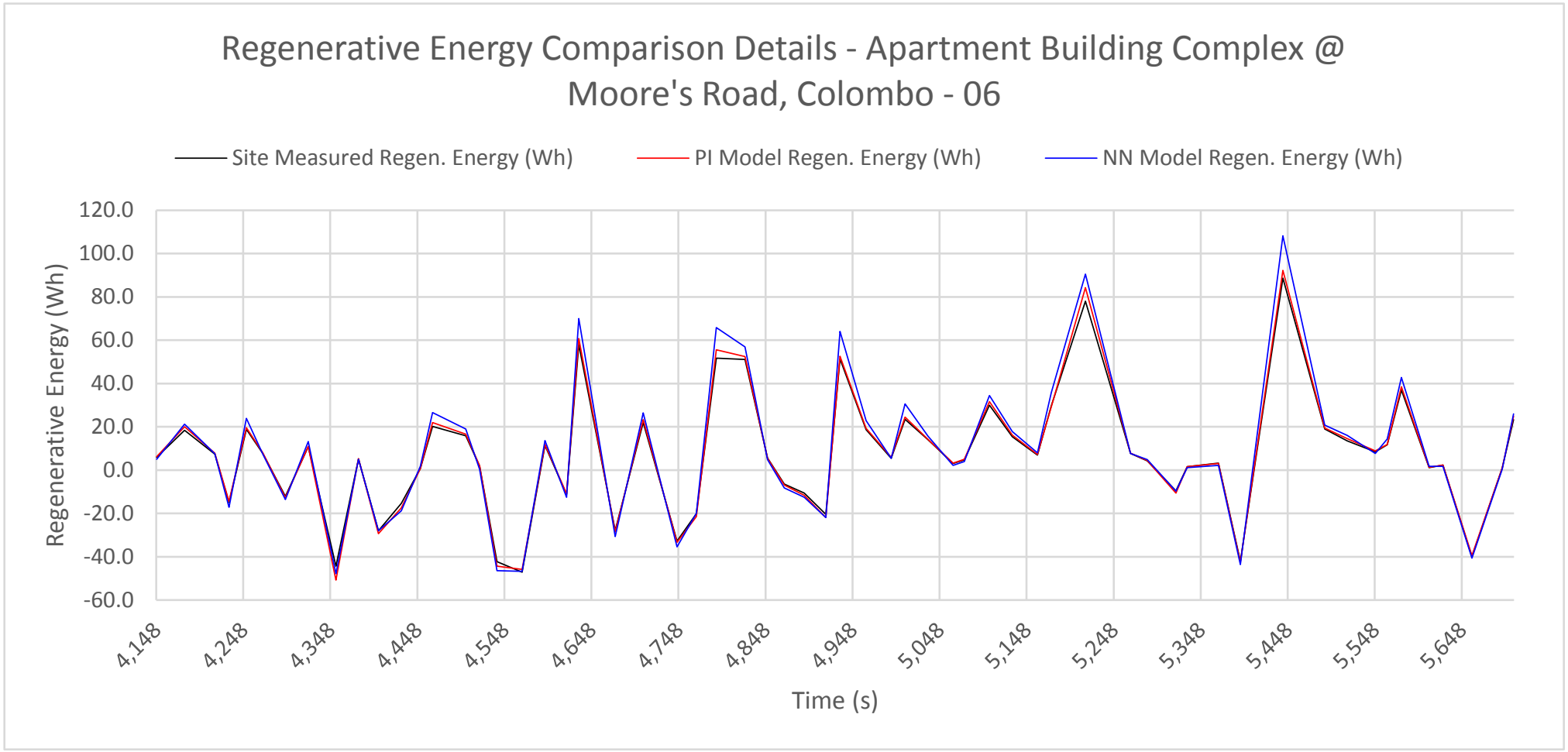
Enlargement 1 of 10



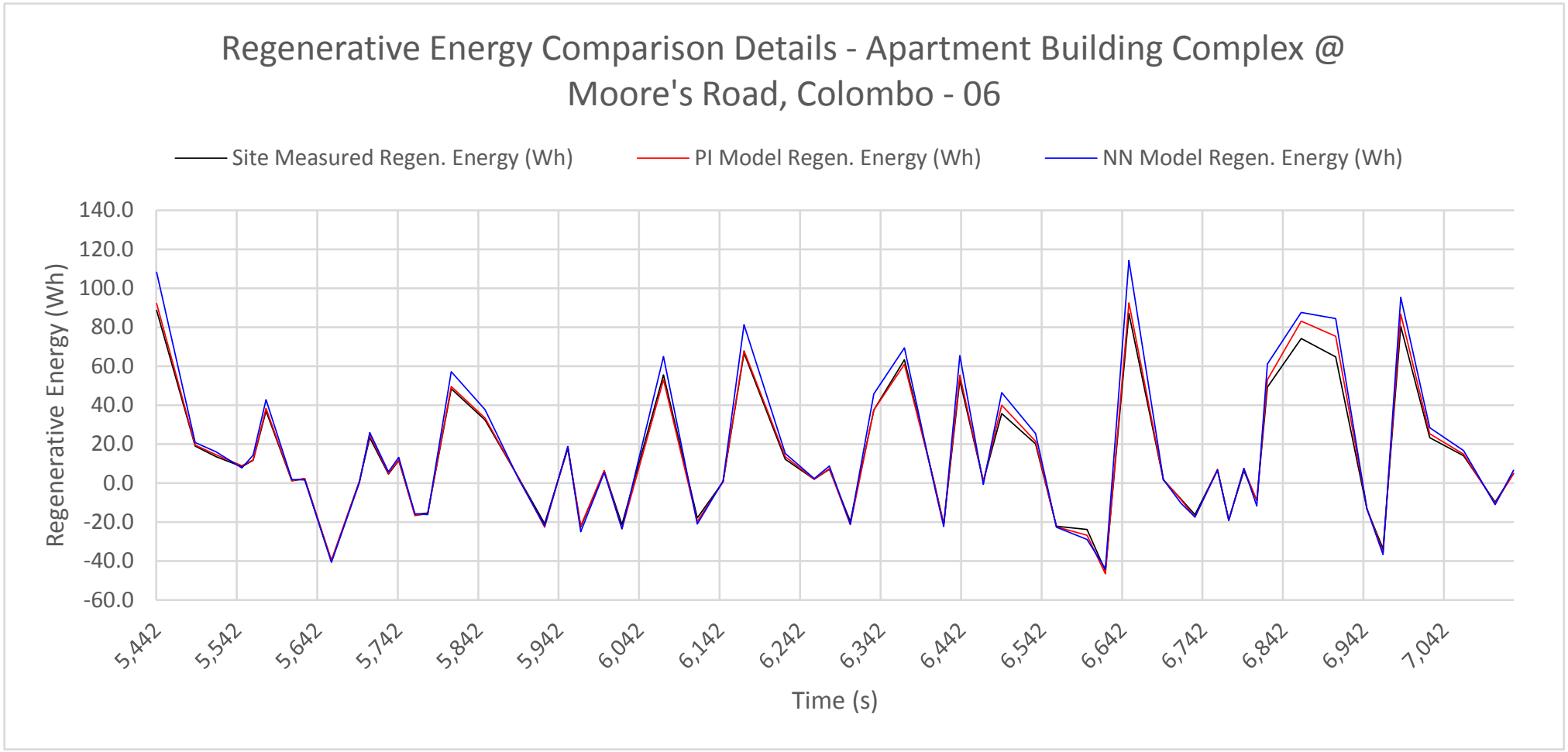
Enlargement 2 of 10



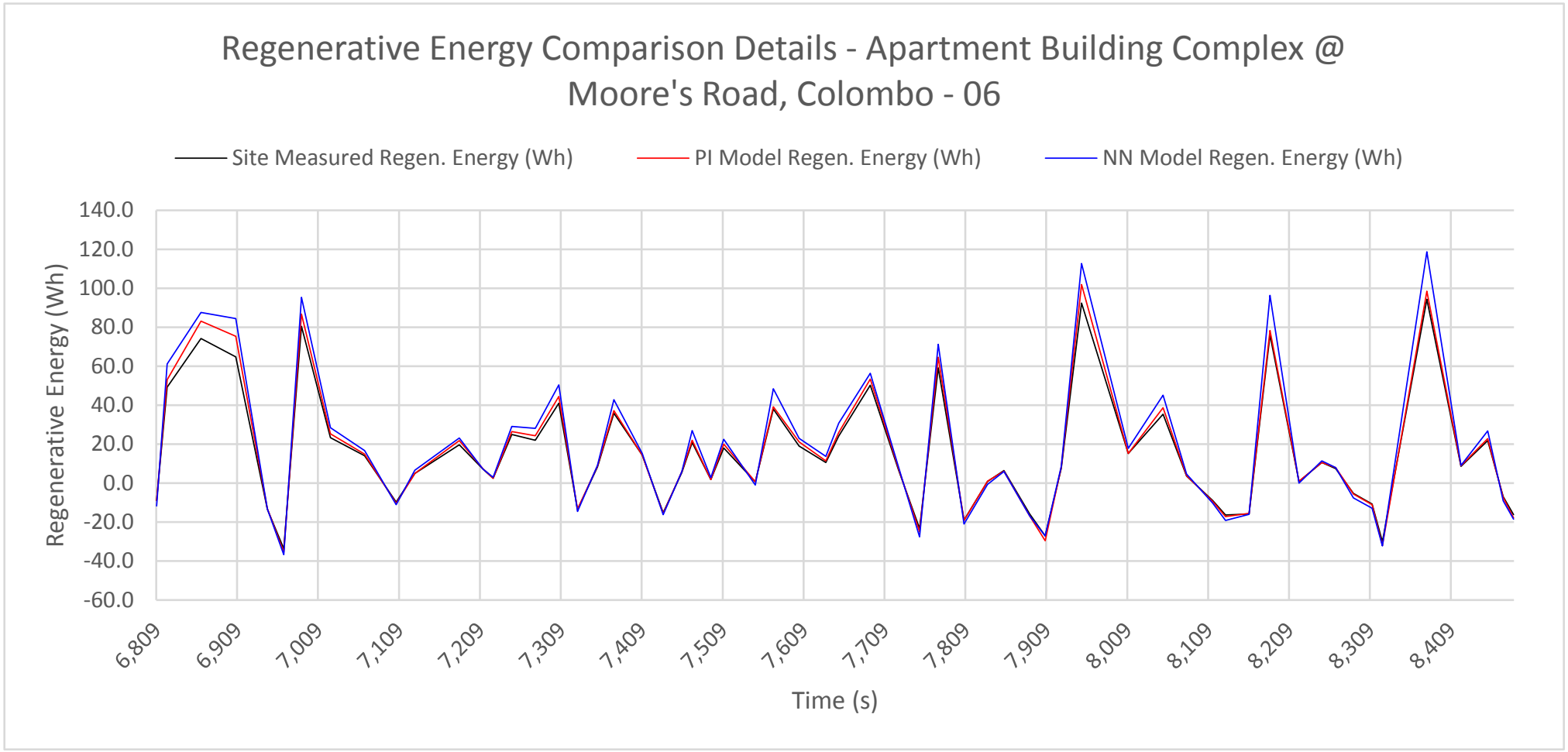
Enlargement 3 of 10

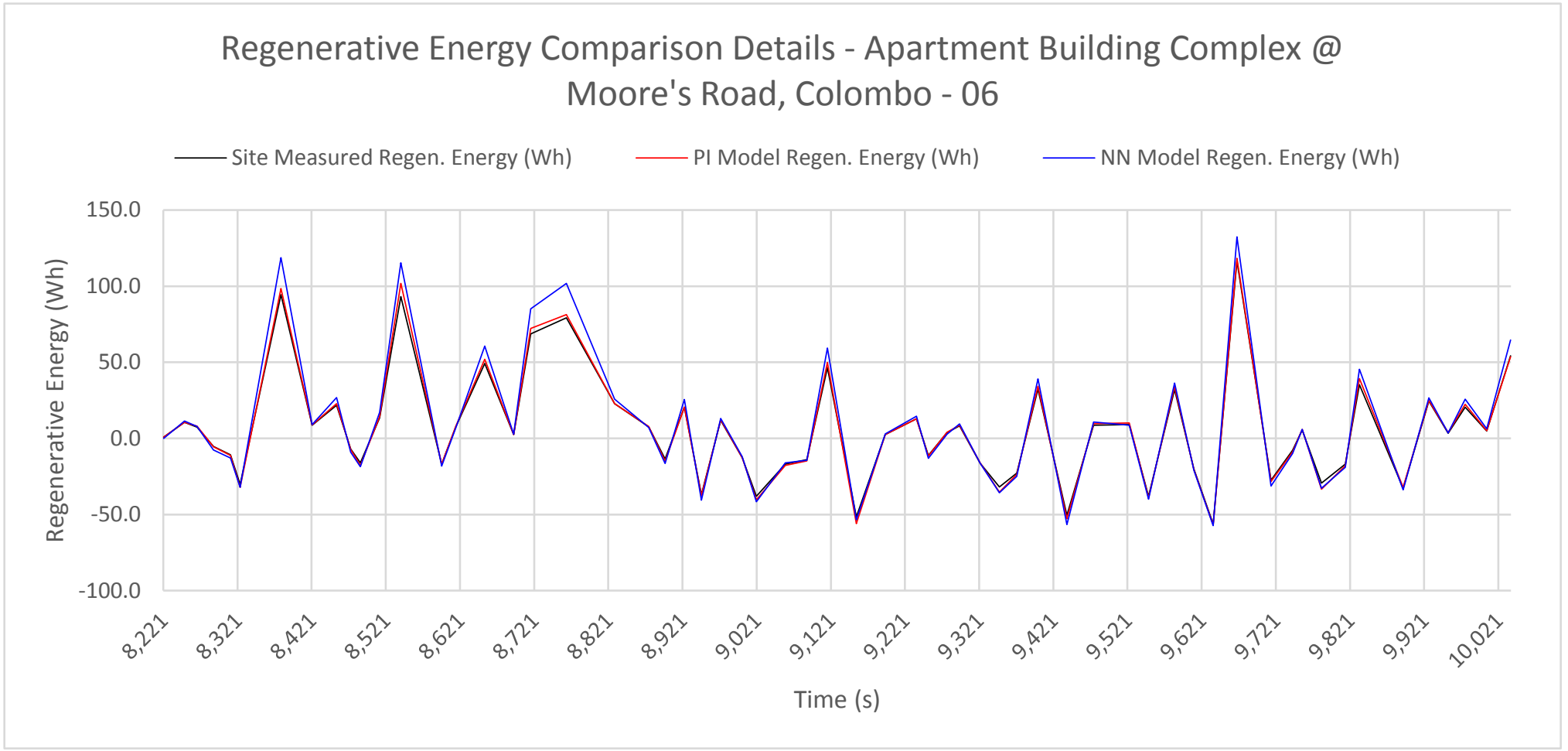


Enlargement 4 of 10

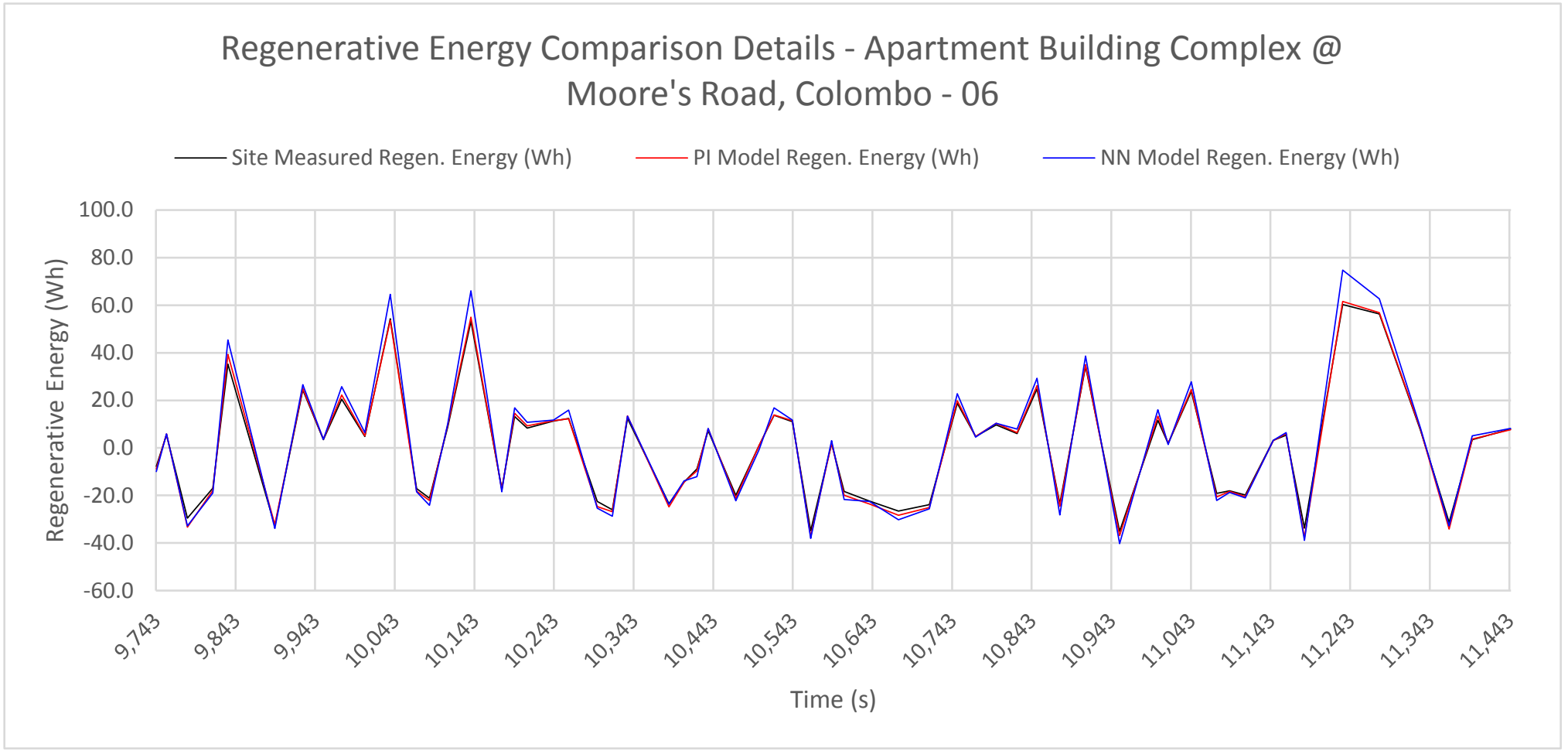


Enlargement 5 of 10

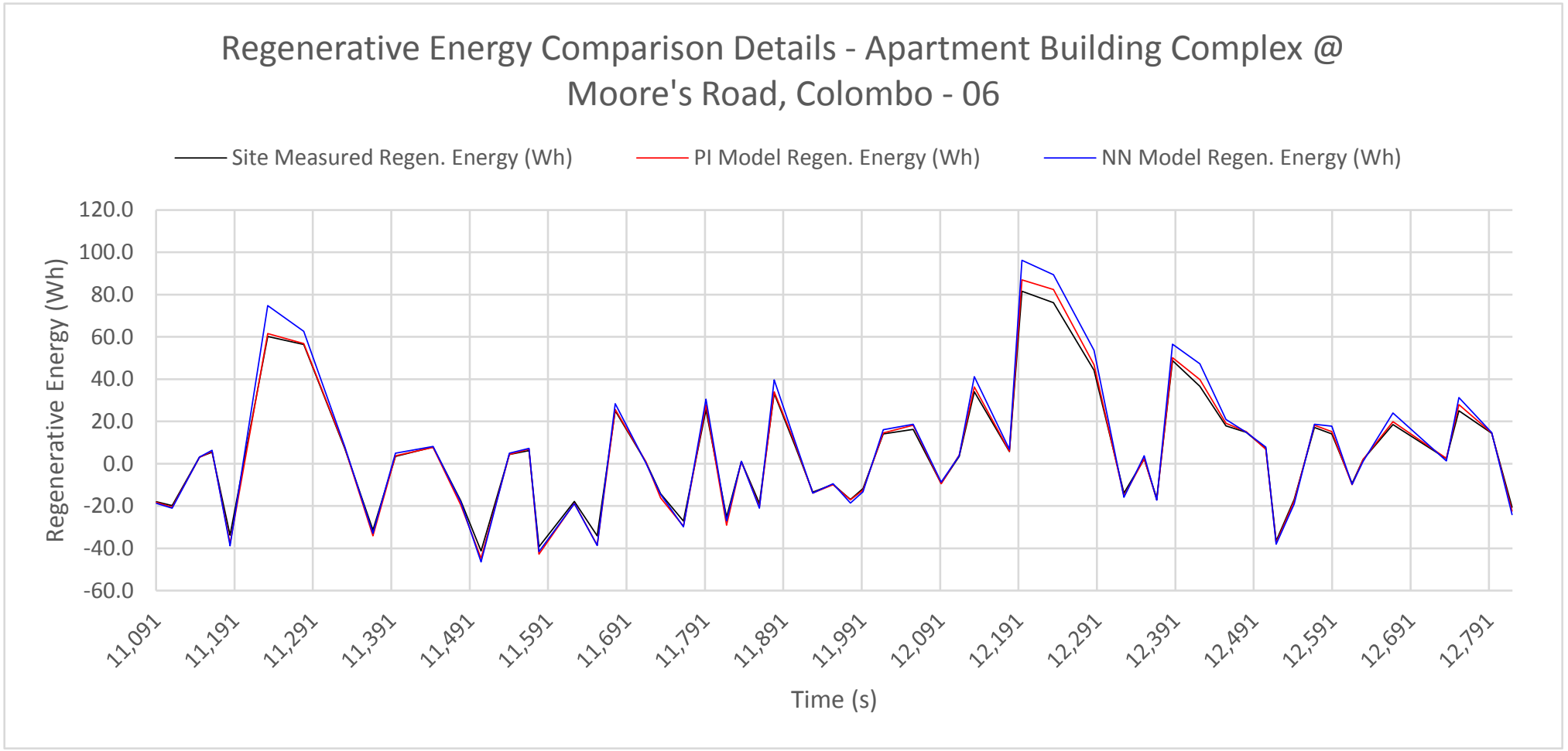

Regenerative Energy Comparison Details - Apartment Building Complex @ Moore's Road, Colombo - 06
Site Measured Regen. Energy (Wh)
PI Model Regen. Energy (Wh)
NN Model Regen. Energy (Wh)
Regenerative Energy (Wh)
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
6,809
6,909
7,009
7,109
7,209
7,309
7,409
7,509
7,609
7,709
7,809
7,909
8,009
8,109
8,209
8,309
8,409
Time (s)



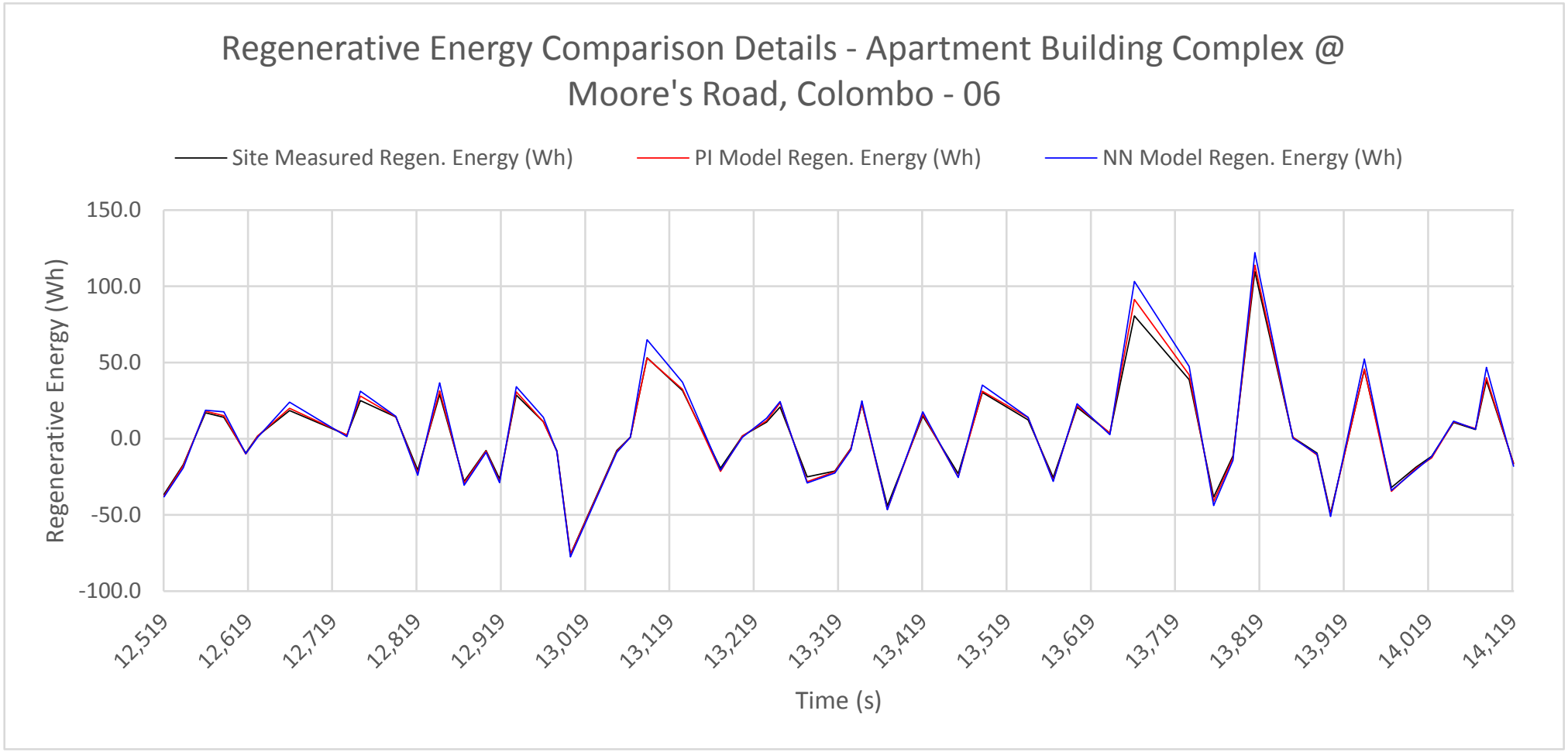
Enlargement 7 of 10



Enlargement 8 of 10



Enlargement 9 of 10

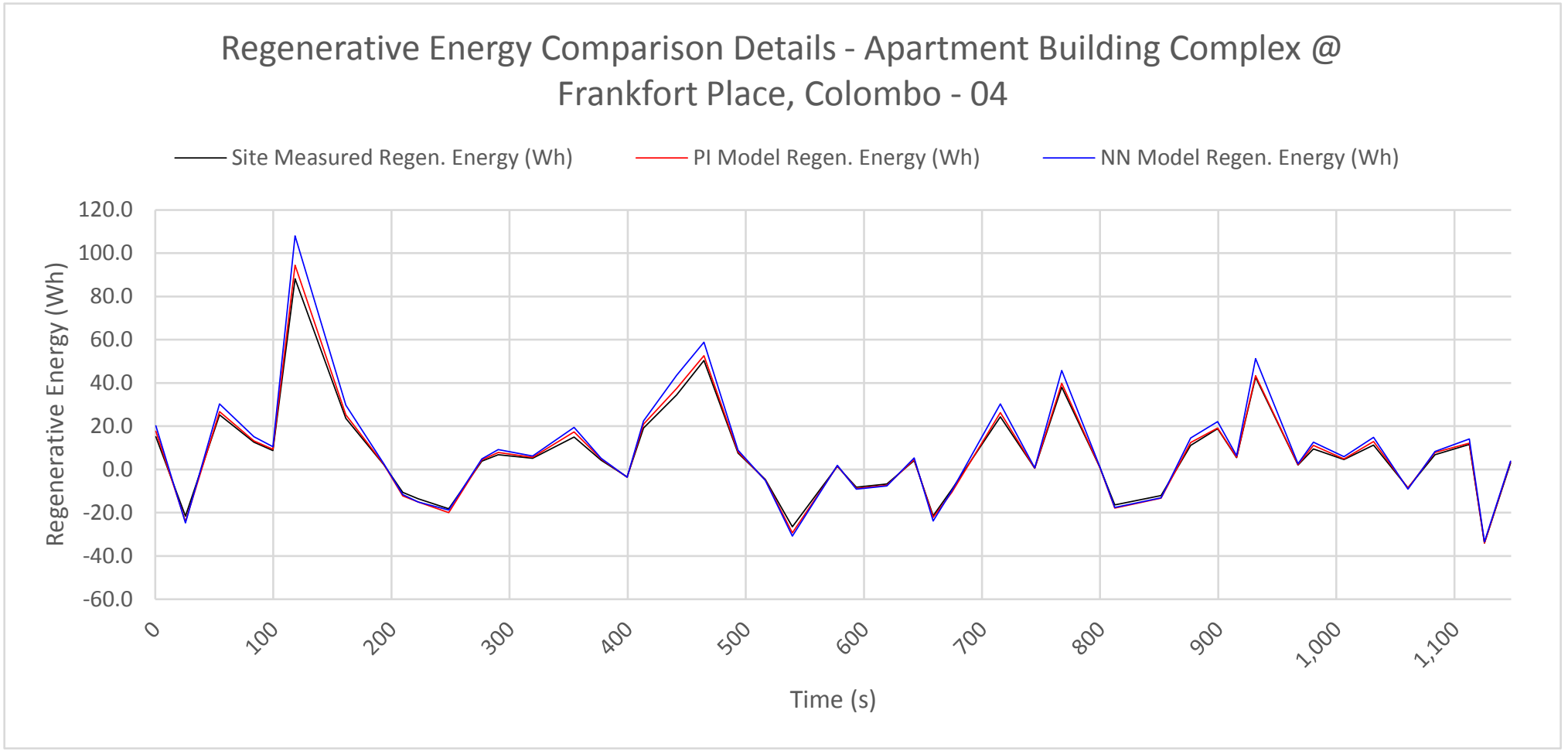


Enlargement 10 of 10

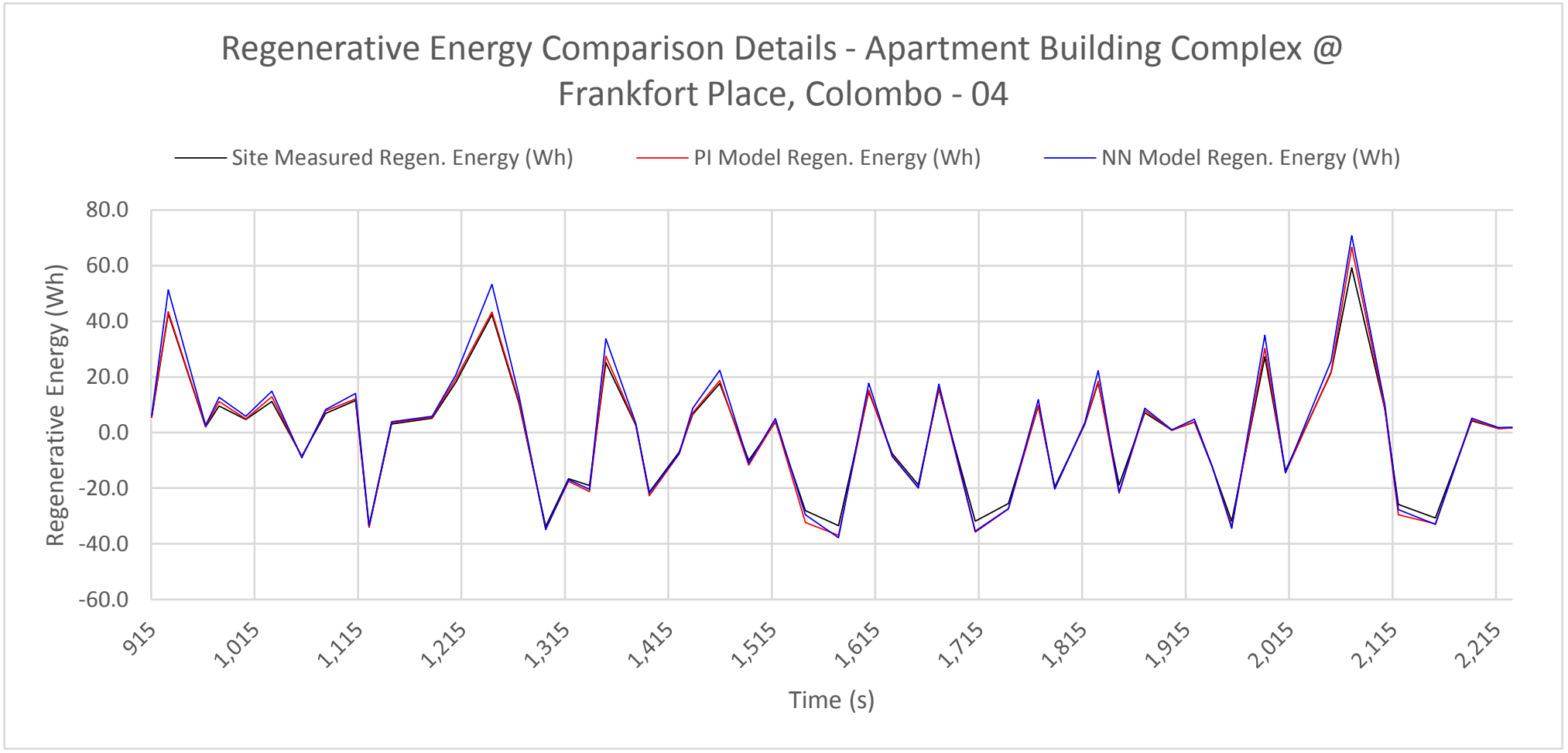
Regenerative Energy Comparison Details - Apartment Building Complex @ Frankfort Place, Colombo - 04

Enlargement 1 of 10 | Enlargement 2 of 10 | Enlargement 3 of 10 | Enlargement 4 of 10 | Enlargement 5 of 10 | Enlargement 6 of 10 | Enlargement 7 of 10 | Enlargement 8 of 10 | Enlargement 9 of 10 | Enlargement 10 of 10

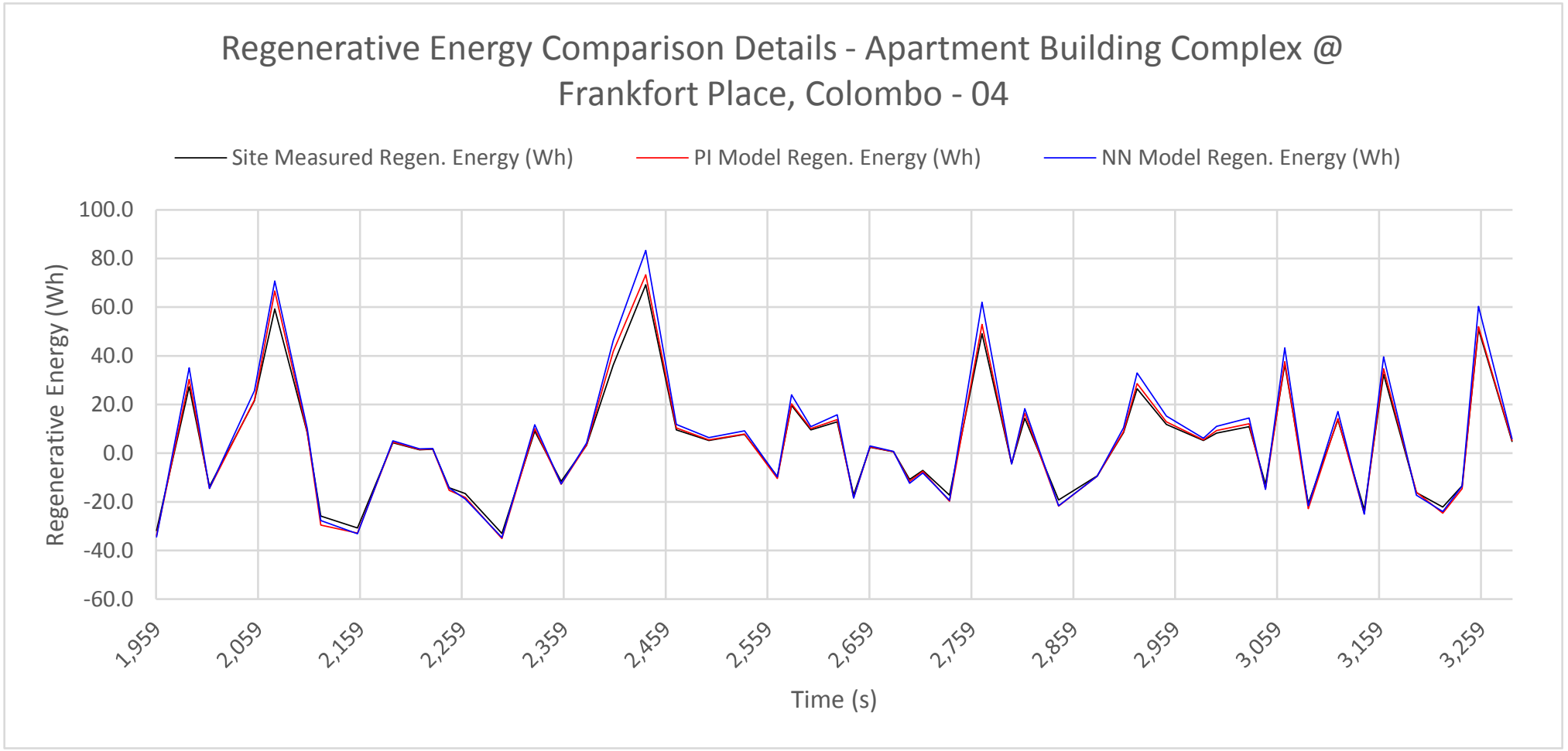
Note: Enlargement Views from 1 ~ 10 are attached in following pages.



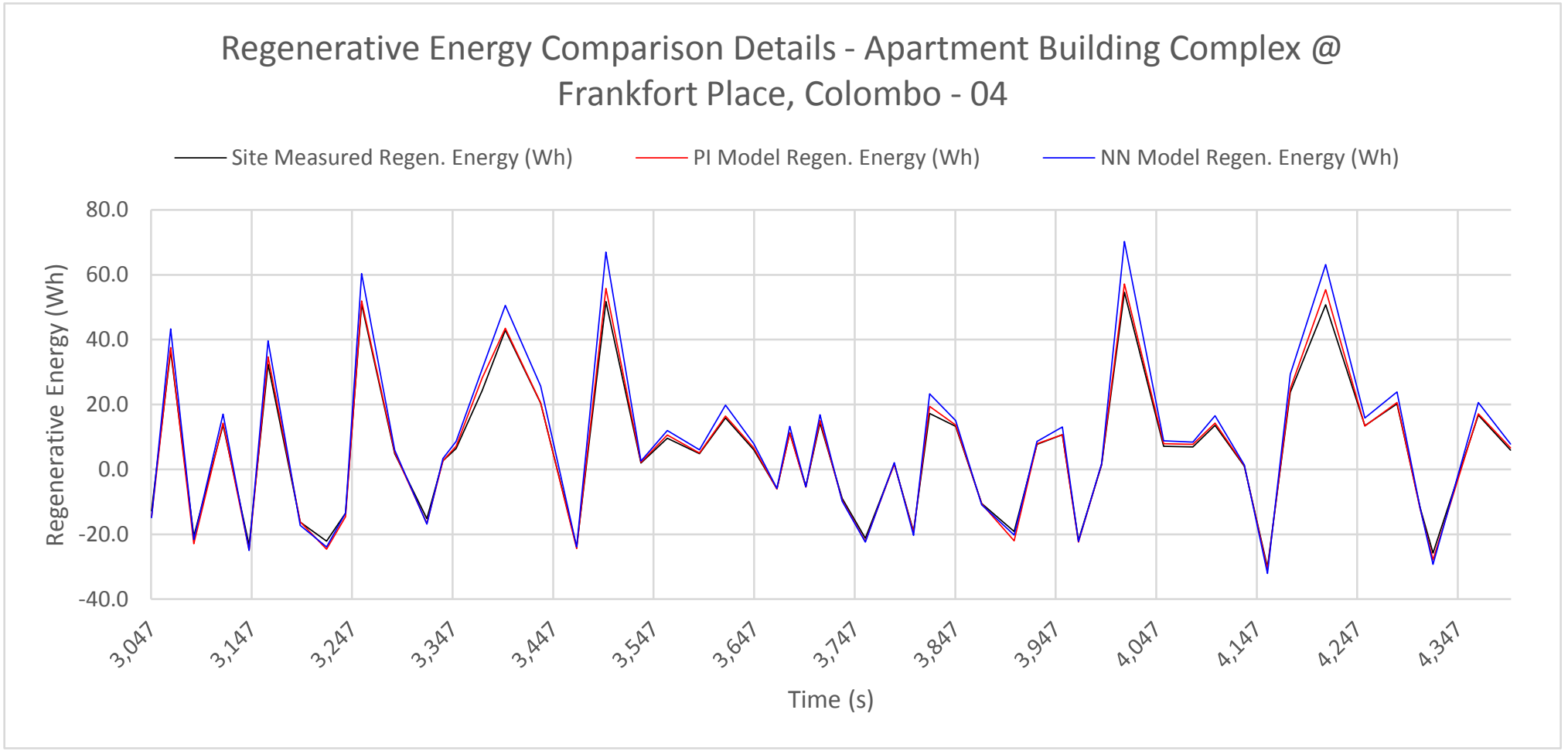
Enlargement 1 of 10



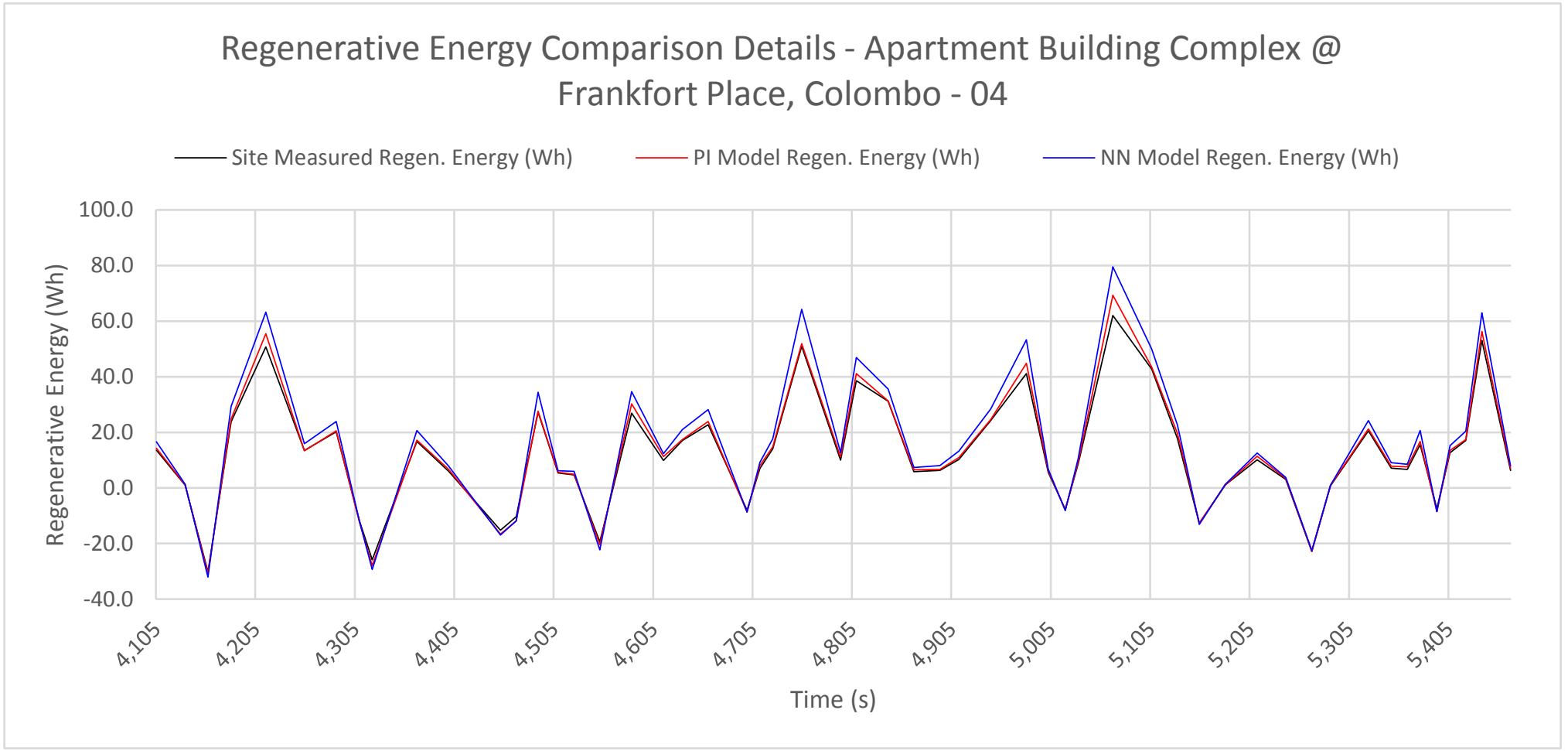
Enlargement 2 of 10



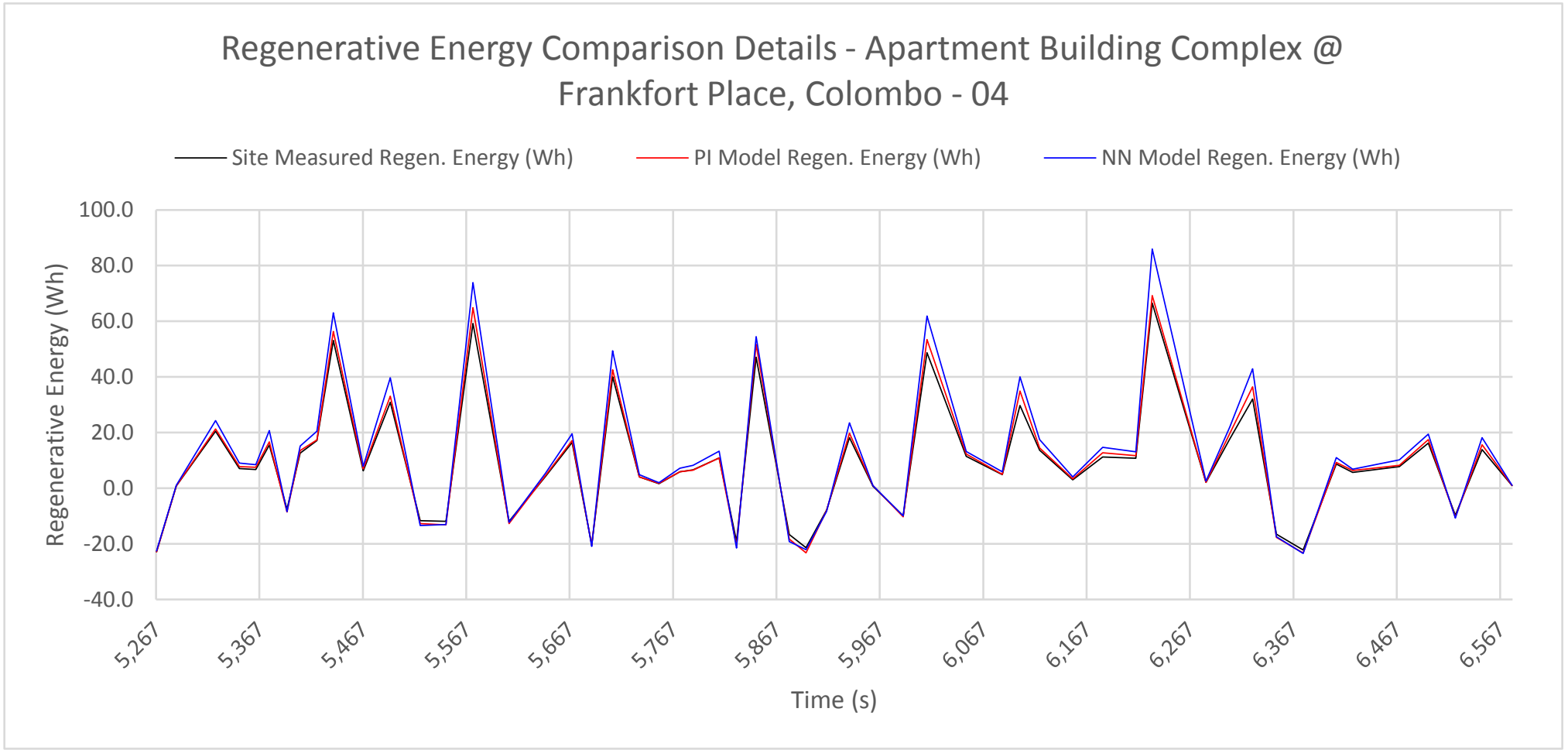
Enlargement 3 of 10

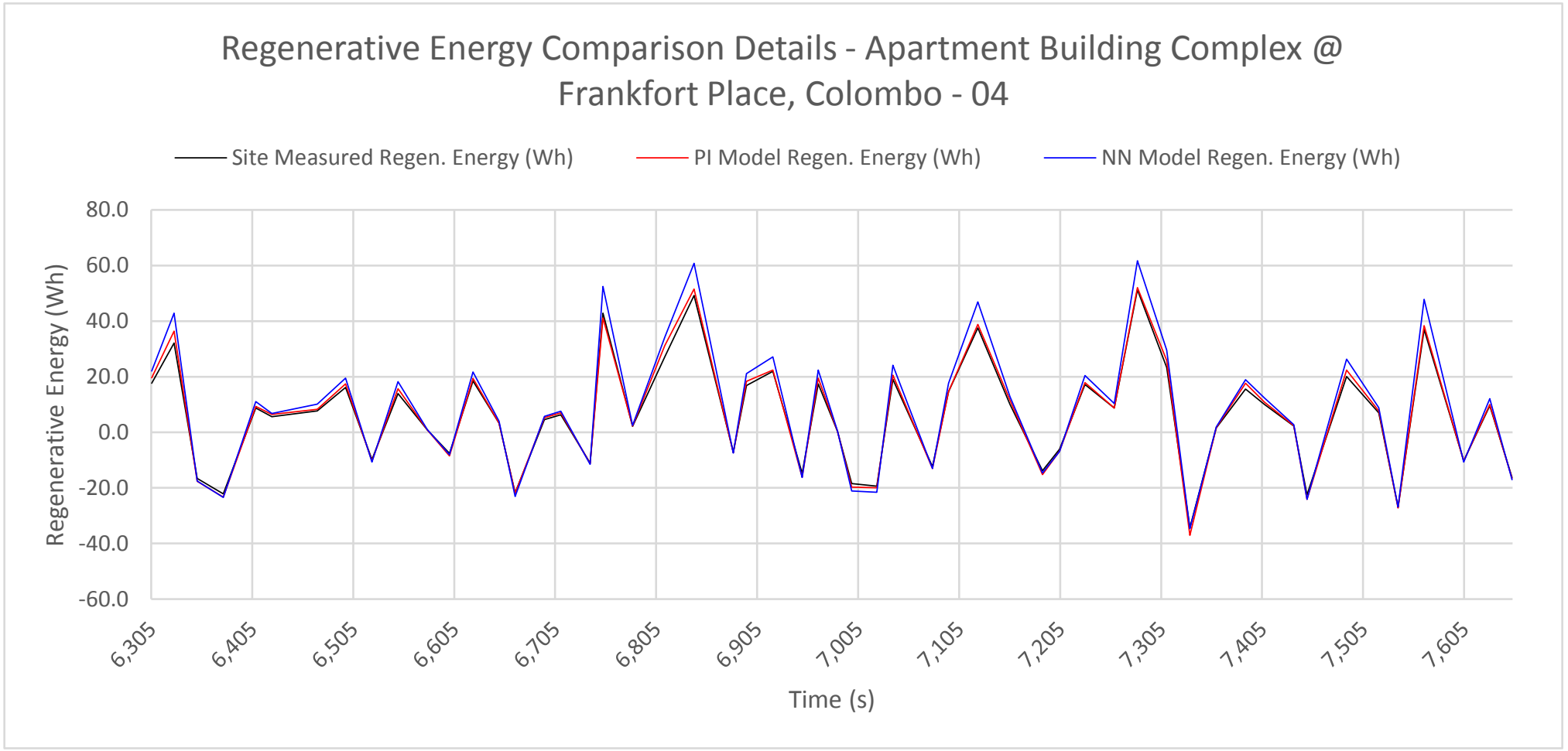


Enlargement 4 of 10

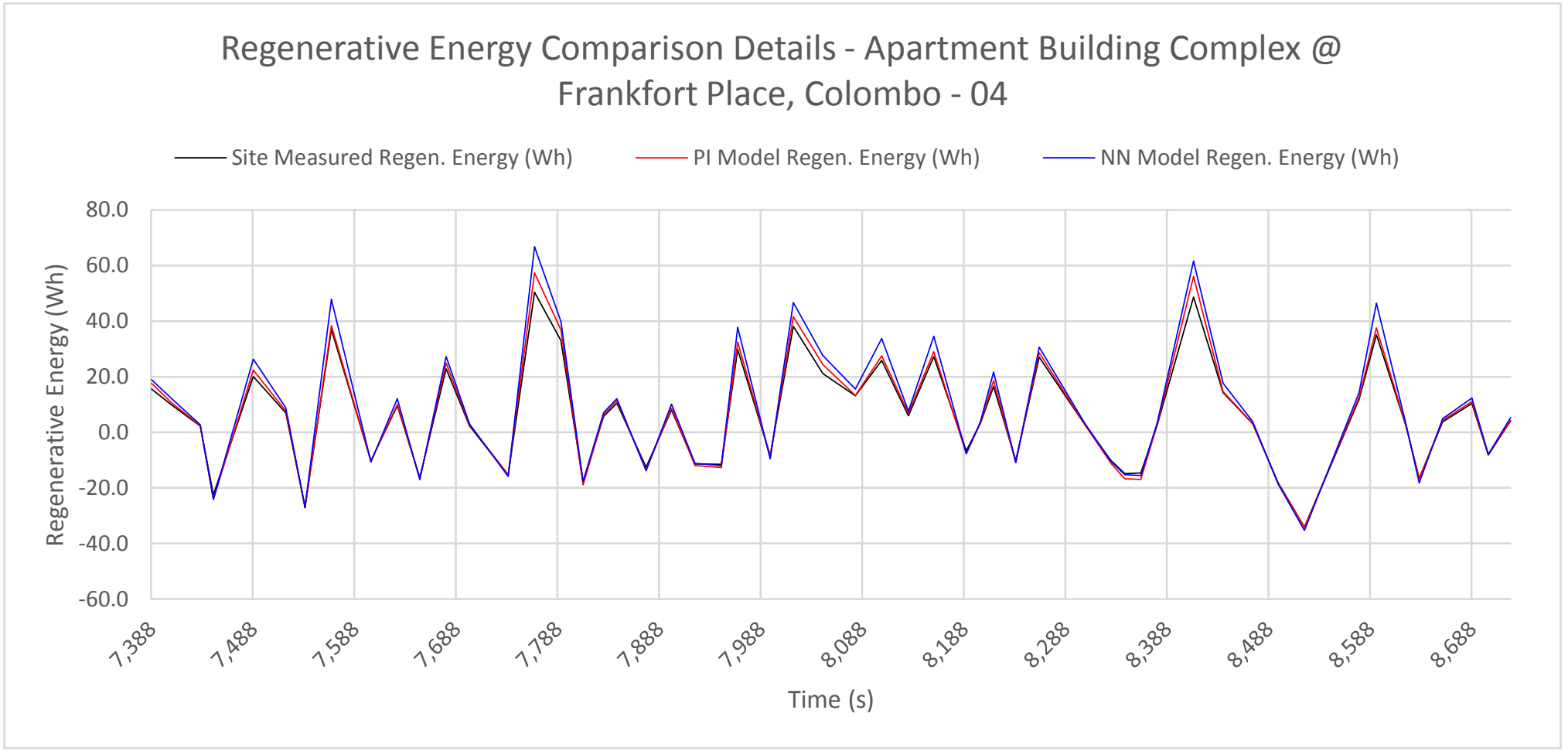


Enlargement 5 of 10

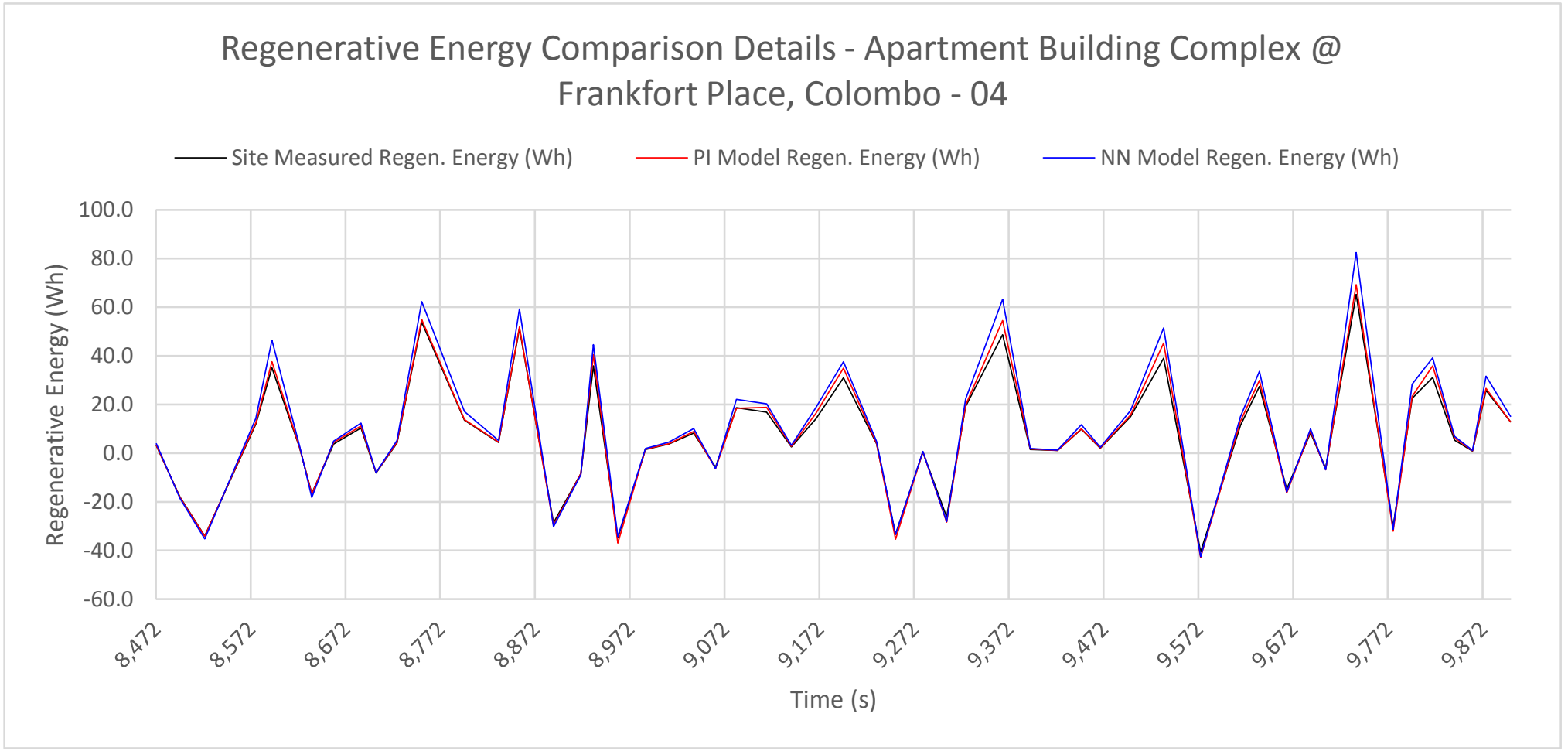

Regenerative Energy Comparison Details - Apartment Building Complex @ Frankfort Place, Colombo - 04
Site Measured Regen. Energy (Wh)
PI Model Regen. Energy (Wh)
NN Model Regen. Energy (Wh)
Regenerative Energy (Wh)
100.0
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
5,267
5,367
5,467
5,567
5,667
5,767
5,867
5,967
6,067
6,167
6,267
6,367
6,467
6,567
Time (s)



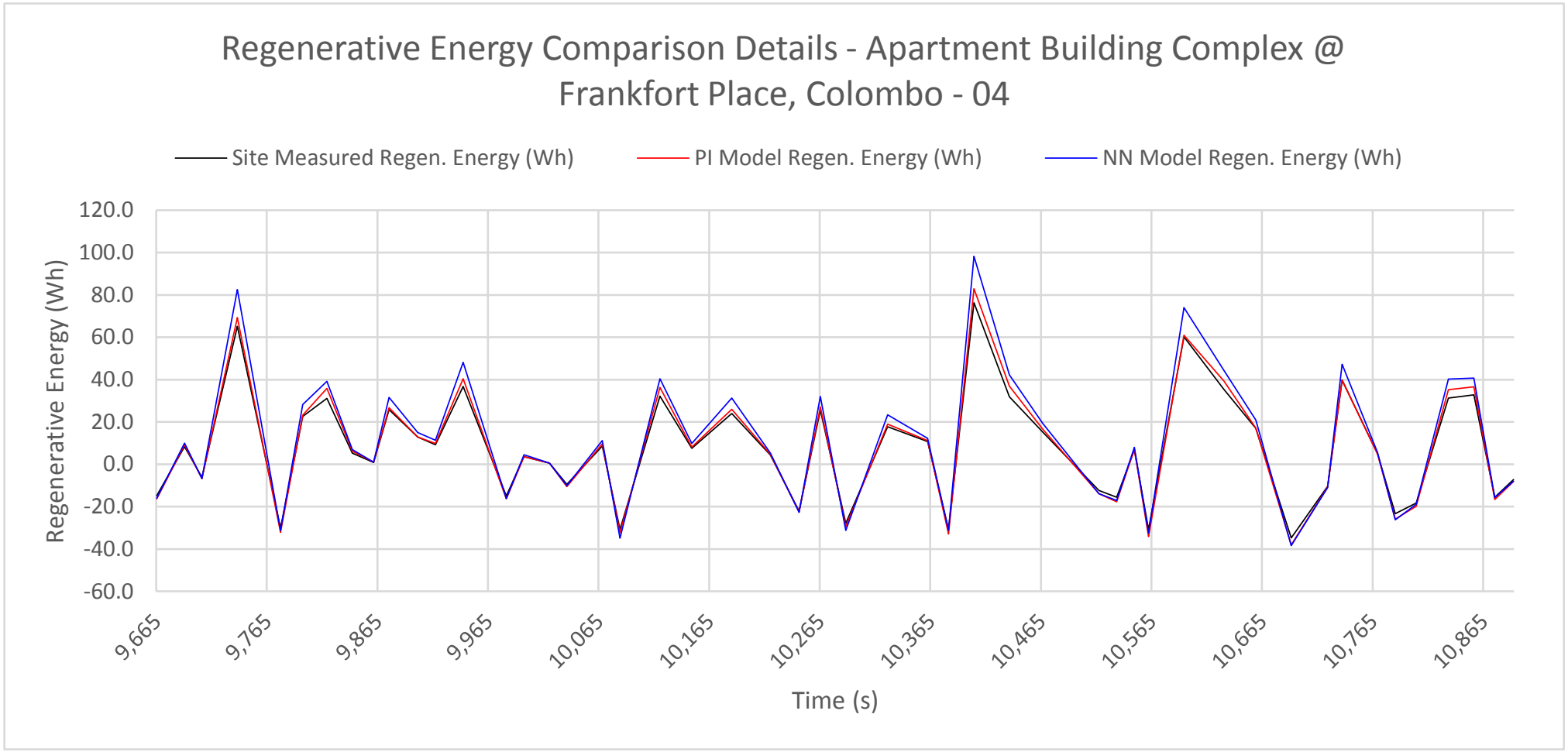
Enlargement 7 of 10



Enlargement 8 of 10



Enlargement 9 of 10



Enlargement 10 of 10