FEASIBILITY OF SCHEDULED RUNNING OF EXISTING MINI HYDRO POWER PLANTS

Yasan Srikula Kulathunga Hettiarachchi

(128867U)

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Department of Electrical Engineering

University of Moratuwa

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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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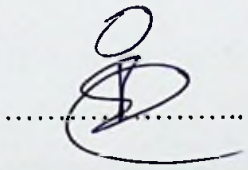

Y.S.K.Hetiarachchi Date: 16/03/2017

The above candidate has carried out research for the Masters under my supervision.

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Dr. W.D.A.S. Rodrigo Date: 16/03/2017

ABSTRACT

The Electricity system load profile of Sri Lanka has a high evening peak demand and as a result has a low load factor.

The load curve has a close relationship with the human behavior and other economic activities of the country, having a morning peak, Day peak and a night peak. Even though it is desirable to have a flat load curve, due to this behavioral impact, the curve is having rather large variations. The extent of variation is so substantial that the maximum demand is having a greater value, which is about 2.24 times of the minimum demand.

During the dry season water level of the large hydro reservoirs is getting decrease rapidly and system demand fulfill by thermal generation of CEB and Private Power Plants. Therefore most of the high cost small thermal generators should be operated in the evening peak hours. Hence, CEB has to pay additional cost for power generation than income earns from electricity selling to the customer.

That reason is happened to fulfill the peak demand using high cost thermal generation. The objective of this feasibility study is prepared the system of scheduled running for existing mini hydro power plants to reduce high cost thermal generation at evening peak hours. The study has contained the energy mix of Sri Lanka, behavior of thermal generation in future, present mini hydro running pattern, possibility of schedule running of existing mini hydro plants and prepare the generalized system to operate mini hydro plant for schedule running.

According to the results, some of mini hydro plants in the existing system can operate under the scheduled running and the results of scheduled mini hydro plants have affect to reduce high cost thermal generation by small thermal generators.

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