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## APPENDIX A - MEASURING INSTRUMENTS

Instrument	Make and model	Photo	Technical specifications
Power logger	Dent Elite Pro		Range: 0-600V at 50,60 and 400Hz Resolution: 0.01 A, 1V, 1 VAR, 1 kW, 1 kVA, 0.01p.f
Power logger	 Kyoritsu 6300		Range 0-600V at 50,60 and 400Hz Resolution: 0.01 A, 1V, 1 VAR, 1 kW, 1 kVA, 0.01p.f
Temperature and humidity logger	Testo 635		Range: 0-80 °C Resolution: 0.1 °C

Instrument	Make and model	Photo	Technical specifications
Scale	Mettler PM4600		Range: 0-10 kg Resolution: 0.01 g
Vane type anemometer	Testo 435 		Range: 0-20 m/s Resolution: 0.01 m/s Operating temperature: -20 °C to 50 °C
Velometer	Alnor		Range: Pressure 0 to 10 inches H <sub>2</sub> O Resolution: 0.01 inches H <sub>2</sub> O Range: Flow rate 0-10000 ft/min Resolution: 20 ft/min

## APPENDIX B – TEST RESULT SUMMARY

Test no	Fan data	Test location	Trough data	Operational data
1	Fan type 1 Motor –Wonder Model-WY 132 M1-6 960 rpm,4 kW 6 blades 28 cm hub diameter	Talawakele Barewell estate	Size:100 ft×6 ft	Loading: 1740 kg Final weight: 958 kg Drying time: From 12:15 p.m. to 5:15 a.m. (17 hrs) Turning: 6:45 p.m. Average $\Delta T$ : 2.7 °C Average temperature: 22.1 °C Pressure: 75-125 Pa Energy: 83.5 kWh
2	Fan type 2 Motor-Browns Model-QU-160- L60 960 rpm,11 kW 6 blades 38 cm hub diameter	Talawakele Barewell estate	Size:100 ft×6 ft	Loading: 1800 kg Final weight: 986 kg Drying time: From 2:45 p.m. to 4:15 a.m. (13.5 hrs) Turning: 7:50 p.m. Average $\Delta T$ : 3.0 °C Average temperature: 22.2 °C Pressure: 125-175 Pa Energy: 109 kWh

Test no	Fan data	Test location	Trough data	Operational data
3	Fan type 2 Motor-Browns Model-QU-160- L60 960 rpm,11 kW 6 blades 38 cm hub diameter	Talawakele Barewell estate	Size:100 ft×6 ft	Loading:1500 kg Final weight: 825 kg Drying time: From 1:45 p.m. to 1:45 a.m. (12 hrs) Turning: 9:30 p.m. Average $\Delta T$ : 3.4 °C Average temperature: 22.8 °C Pressure: 150-250 Pa Energy: 105 kWh Flow rate: 14.6 m <sup>3</sup> /s
4	Fan type 2 Motor-Browns Model-QU-160- L60 960 rpm,11 kW 6 blades 38 cm hub diameter	Talawakele Barewell estate	Size:100 ft×6 ft	Loading: 1350 kg Final weight: 743 kg Drying time: From 12:30 p.m. to 0:30 a.m. (12 hrs) Turning: 8:40 p.m. Average $\Delta T$ =3.5 °C Average temperature: 23.2 °C Pressure: 100-200 Pa; Energy: 80.6 kWh VSD operation: From:3:40 p.m. to end (3:40 to 5:00 p.m. at 40 Hz and after 5:00 p.m. to end at 45 Hz)

Test no	Fan data	Test location	Trough data	Operational data
5	Fan type 3 Motor-MITE Model: n/a 960 rpm, 15 hp 6 blades 23 cm hub diameter	Karawita tea factory	Size: 110 ft×6 ft	Loading: 1340 kg Final weight: 737 kg Drying time: From 8:00 p.m. to 10 a.m. (14 hrs) Turning: 2:00 a.m.; Loosening 5:35 a.m. Average $\Delta T$ : 4.6 °C Average Temperature: 30.9 °C Pressure: 25-75 Pa Energy: 62 kWh (4.8 kW at 960 rpm) Flow rate: 14.4 m <sup>3</sup> /s
6	Fan type 3 Motor-MITE Model: n/a 960 rpm, 15 hp 6 blades 23 cm hub diameter	Karawita tea factory	Size: 110 ft×6 ft	Loading: 1340 kg Final weight: 737 kg Drying time from 8:00 p.m. to 10 a.m. (14 hrs) Turning: 2:00 a.m.; Loosening: 5:45 a.m. $\Delta T=4.8$ °C; Average temperature: 31.2 °C Pressure: 25-75 Pa; Flow rate: 15.1 m <sup>3</sup> /s Energy: 65.4 kWh (5.6 kW @ 960 rpm) VSD operation: From 1:00 a.m. to 4:15 a.m.- gradual reduction from 960 to 700 rpm