A PHOTOVOLTAIC TRAINING FACILITY ON THE MURDOCH UNIVERSITY ENGINEERING & ENERGY BUILDING’S NORTH EAST ROOF

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Except where I have indicated, the work I am submitting in this report is my own and has not been submitted for assessment in another course.

Signed:

Date:
I am satisfied with the progress of this thesis project and that the attached report is an accurate reflection of the work undertaken.

Signed:

Date:
Abstract

Murdoch University’s School of Engineering and Energy is expanding its facilities to include a total of 8.2kWp, Photovoltaic (PV) Training Facility. This facility has incorporated four types of PV modules and equipment, including mono-crystalline, poly-crystalline, amorphous, and copper indium gallium selenide thin film modules; isolated, high frequency isolated, and transformerless inverters; AC and DC test points; emergency stop button system and other safety devices; a battery bank, and power meters.

These facilities will provide a versatile educational resource for students to analyse the behaviours of a wide variety of PV technologies.

This project has examined the process of writing an Invitation To Offer (ITO), reviewing the ITO with recommendations for future engineering projects, and detailing changes in the design of the systems as the project developed.

A recommendation has been detailed in this project for the inclusion of a PV monitoring station, which should monitor environmental parameters at the PV site.

A manual and simulated performance ratio (PR) of all PV systems has been examined in this project. The manual estimate calculated a PR of 0.739 over the period of a year. For the simulated PR, PVSYST software was programmed and calculated a yearly PR of 0.745. This modelling indicates that the system performance would be comparable to similar systems in Perth.
Acknowledgements

I would like to thank my supervisors, Martina Calais, Trevor Pryor and Simon Glenister, for their guidance and support throughout this project. I would also like to thank the Office of Commercial Services, Julie Yewers, for demonstrating her professionalism in managing the project.

Throughout this project I have relied on the assistance of the following individuals, whose skills and willingness to help have proven that they are all experts of their fields and a great asset to the industry:

- John Boulton, for his support in providing useful contacts in sourcing components, and demonstrating skill in providing unique solutions in the constructing the battery enclosure.
- Wayne Clarke, for his advice on the safety requirements for the power analyser and sharing his knowledge of the University’s resources.
- Will Stirling, for providing advice on the University’s requirement to install data loggers.
- Sun Brilliance and TPE Services, for installing the photovoltaic systems.
- Hinco, for designing a product and providing recommendations on products to suit our requirements.
- Jayson Kok, for designing the National Instruments data logger for recording the environmental parameters.
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