

Thesis Title	PV System Design Using Numerical Method Technique
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ABSTRACT

In this research project, the performance of PV modules has been investigated in order to develop a mathematical model, which will be used to estimate the real power generated by the PV modules in different times and seasons. Using the curve fitting technique, the mathematical model based on polynomial functions is approximated from the PV module's voltage and current characteristics under a natural light and sun simulator. The developed model can be used to predict the maximum power produced by the PV modules, to estimate the size of PV modules and battery, and to find the configuration of the PV modules for maximum power production. Developed using MATLAB, the proposed PV system design program gives accurate results as more than 98% of real data can be represented. When used in predicting the current dispatched from a battery, it yields a small error of 8% as compared with the experimental results.

The developed software can be used to analyse system stability and other parameters such as tilte angle and connection patterns that affect the power generation of the modules. The output data from the software will be used in designing a stand-alone PV system. Also, the program has been applied for a cathodic protection system which can provide the good results.