PREDICTION OF ENERGY YIELD IN MALAYSIA BUILDING INTEGRATED PHOTOVOLTAIC (PV) PROJECT

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UNIVERSITI TEKNOLOGI MARA

MALAYSIA

NADIA FARADILA BINTI JALAWI

FACULTY OF ELECTRICAL ENGINEERING

UNIVERSITI TEKNOLOGI MARA

40450 SHAH ALAM,SELANGOR

MALAYSIA

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ABSTRACT

The development of building integrated photovoltaic's in the urban environment represents an opportunity for energy production and use as source. It also has a positive impact on expanding the market for photovoltaic's resulting in reduction in cell and system costs. The optimal utilization of solar modules technologies in different climates is of major economical important. In this paper will review and analyze the photovoltaic system performance method in Malaysia Building Integrated Photovoltaic Project. The prediction is being predicted from the aspect of Energy Yield, Specific Yield and Performance Ratio. This grid connected system are accessing by three photovoltaic technologies. The technologies are polycrystalline for System A1 and System A2, amorphous silicon (thin film) for System B and monocrystalline for System C1, System C2 and System D. The study of many references indicates that higher module efficiency used less collector area of the PV modules (arrays) and hence less support structure to build for the system. From the prediction, System A1 and A2 perform well with an energy production according to the expected values. The energy performance for System B is excellent than others. For System C1 and System C2 the performances of energy are much lower then expected. Finally for System D the energy performance can be consider as good even it is quite lower than System A1, System A2 and System B.

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CHAPTER 1

INTRODUCTION

1.1 PROJECT BACKGROUND

Building Integrated Photovoltaic refers to the integration of the PV system with the building structure and the electrical operation of the building. Broadly considered, building integration refer to either the PV modules and the associated electrical components or a portion of the PV system[1]. Malaysia Green Technology Corporation (GreenTech Malaysia) or formerly known as Pusat Tenaga Malaysia Green Energy Office is a showcasing sustainable and green building design in Malaysia. This site is located at Bangi, Selangor and fully owned by GreenTech Malaysia. There are six on-grid inverters installed in this building namely Pack A1, Pack A2, Pack B, Pack C and Pack D. The total array power of the system is 92kWp. Four types of Fronius IG inverter such as IG15, IG60, IG300 and IG 500 are installed. The four BIPV systems were fully installed and commissioned in June 2007. For system monitoring, the raw data are downloaded manually to personal computer using Fronius IG access software. Three different PV systems using three different technologies are installed in this building [2].