

**FAULT STUDIES IN A POWER SYSTEM NETWORK SOLAR
SYSTEM INCORPORATED**

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ABSTRACT

The project of fault studies in power system network solar system incorporated is conducted at 11kV bus bar to determine the effect of fault by finding out the characteristic of voltage versus time waveform of the grid-connected PV system, 11 kV bus bar and three phase load during fault condition by using Matlab/Simulink. Furthermore, to determine which type of fault that cause most severe damage to this system. Other than that, since the main supply of this system is from PV, one of the objectives is to obtain the behavior of PV module by generating the I-V and P-V characteristics curve based on BPSX510 parameter. Besides that, the grid-connected PV system model with 415Vrms output voltage was model. PV system is interfaced to the distribution network through boost converter, two level three phase inverter and the output voltage is step-up using 0.415/11 kV D11yn transformer. Then, this distribution network is used to supply 415Vrms load through 11k/0.415 kV YNd1 step-down transformer. The type of fault that is being conducted to the 11kV bus bar such as single-line to ground fault, double line to ground fault and line-line fault. The output voltage at grid-connected, 11kV distribution network and load was measured and analyzed. The fault that cause severe damage to system is the double line to ground fault.

Keywords- single line to ground fault, line to line fault, double line to ground fault, PV (Photovoltaic) module, simulation

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CHAPTER 1

INTRODUCTION

1.1: OVERVIEW

This section mainly consists of five sub-chapters. The first part is the background of the study which briefly explains about the solar system and fault condition. The other parts are the problems and significances of study that had led for this project is being conducted. Third part is the desired goals and objectives of study are specified. The scopes of study are also presented which specify the boundaries of this project and the thesis organization where briefly introduction for all the five chapters in this thesis project about.

1.2: BACKGROUND OF THE STUDY

Most scientists and researchers believe that the main cause of higher carbon dioxide concentration is from the emission of fossil fuel [1]. This clearly shows that renewable energy has important role in order to stabilize or to decrease the carbon dioxide