

Power Grid Failure Detection Based On Voltage And Frequency Variations

Y. Neelima¹, K. Sri Gayathri², M. Chaitanya³, S. Saishiva⁴, A. Dileep Kumar⁵

¹Assistant Professor in Dept. of Electrical & Electronics Engineering

^{2,3,4,5} UG Student, Dept. of Electrical & Electronics Engineerin

Christu Jyothi Institute of Technology & Science, Jangaon, Telangana, India

Abstract: Millions of people are impacted by the essential problem of power grid failure, which has serious economic and social repercussions. There are several power generation units connected to the grid such as hydel, thermal, solar etc. to supply power to the load. These generating units need to supply power according to the rules of the grid. These rules involve maintaining a voltage and the frequency variations within limits. In this project we are going to implement the use of up-to-date technology in sensing the very low variations in frequency or voltage magnitude of a generator in a Power grid in which there may be many generators working in synchronism with the grid in terms of phase sequence, voltage magnitude and frequency.

In today's practical Power grid as we all know many generators or power source are working together and to maintain stability between all, the detection and isolation of the sources falling out of synchronism, is of crucial significance as otherwise it would have caused the entire system to fail. Hence various techniques have been developed in industries and power plants (especially solar power plants) to keep all the generators and sources in synchronism with the Power Grid and in case of and failure detect and isolate the failed generator out of the grid and hence maintain a stable operation of the Power System. This Project presents an approach for detecting power grid failures using Peacefair Energy Monitor (PZEM) modules. By monitoring real-time voltage and frequency variations, the system identifies anomalies and predicts potential grid instability..

Keywords: PZEM- 004T, Voltage, Frequency, Power Grid

