

PROTECTION SCHEME FOR RENEWABLE ENERGY SOURCES BASED SMARTGRID USING STOCKWELL TRANSFORM AND RULE-BASED DECISION TREE

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ABSTRACT

The security of smart grid is under threat due to sophisticated intrusion and imperceptible faults. To make the smart grid more secure, accurate location of power system faults in the smart grid is significantly important. This accurate location of faults is a very challenging task to provide effective protection. This paper presents an effective technique for detection and classification of faults in the smart grid. The proposed technique is based on the medians of current signals calculated from the S-matrix obtained by the decomposition of current signals using Stockwell Transform. The investigated faults involve the line to ground (LG) fault, double line (LL) fault, double line to ground (LLG) fault and three phase fault involving ground (LLL). The classification of faults has been carried out with the help of rule based decision tree. The proposed technique has been tested with 100 data sets of each fault. The proposed study is carried out using IEEE-13 bus test system as a smart grid.

KEYWORDS: Power System Faults, Rule Based Decision Tree, Smart Grid, Stockwell Transform