

Development of Fault Diagnosis Technology for Power System Based on Smart Meter

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Abstract : In power system, how to improve the fault diagnosis technology of transmission line has always been the primary goal of power grid operators. In recent years, due to the rise of green energy, the addition of all kinds of distributed power also has an impact on the stability of the power system. Because the smart meters are with the function of data recording and bidirectional transmission, the adaptive Fuzzy Neural inference system, ANFIS, as well as the artificial intelligence that has the characteristics of learning and estimation in artificial intelligence. For transmission network, in order to avoid misjudgment of the fault type and location due to the input of these unstable power sources, combined with the above advantages of smart meter and ANFIS, a method for identifying fault types and location of faults is proposed in this study. In ANFIS training, the bus voltage and current information collected by smart meters can be trained through the ANFIS tool in MATLAB to generate fault codes to identify different types of faults and the location of faults. In addition, due to the uncertainty of distributed generation, a wind power system is added to the transmission network to verify the diagnosis correctness of the study. Simulation results show that the method proposed in this study can correctly identify the fault type and location of fault with more efficiency, and can deal with the interference caused by the addition of unstable power sources.

Keywords : ANFIS, fault diagnosis, power system, smart meter

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