Identification of Faults and Its Location in Transmission Line by Using Wavelet Transform

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Abstract — **In order to reduce damage of transmission line due to fault and reliability, high-speed, sensitive and dependable protection system is a primary requirement of today's interconnected power system. Accurate pin-pointing of fault location and diagnosis is also required to expedite service reinstallation and thus, to reduce outage time, operating costs, and customer complaints. In the power system, stability and reliability must be ensured to provide continuity of service. Transmission lines run over several kilo meters will have the chance for occurrence of fault. In order to maintain stability and reliability, faults clearance should be at short span of time with recent advancements in signal processing. In this paper, a novel technique for the protection of transmission lines is proposed. The projected system uses Discrete Wavelet Transform (DWT) which is widely used in recent times for power scheme protection. DWT is used here to take out the hidden factors from the fault signals by performing decomposition at different levels. Daubechies wavelet "dB5" is used with single level decomposition and adaptive threshold is calculated to discriminate and detect the faulty phase. The locality of faults is carried out by obtaining the local fault information and remote location fault information along with the transmission line length. The system is independent of any statistical system data and has negligible fault resistance. Test system is modelled in EMTP and fault signals are generated to test the reliability of the algorithm. The proposed system promises the result by detecting, classifying and locating all the ten faults possible in the transmission line of the power system.**

Index Terms— *Fault detection, Fault classification, Fault location, Discrete wavelet transform, Transmission line.*