

Article Abstract

Title:	Transmission line fault distance and direction estimation using artificial neural network
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Abstract:	An accurate fault distance and direction estimation based on application of artificial neural networks for protection of doubly fed transmission lines is presented in this paper. The proposed method uses the voltage and current available at only the local end of line. This method is adaptive to the variation of fault location, fault inception angle and fault resistance. The Simulation results show that single phase-to-ground faults (both forward and reverse) can be correctly detected and located after one cycle after the inception of fault. Large number of fault simulations using MATLAB® has proved the accuracy and effectiveness of the proposed algorithm. The proposed scheme has significant advantage over more traditional direction relaying algorithms viz. it is suitable for high resistance fault. It has the operating time of less than 1.5 cycles. The proposed scheme allows the protection engineers to increase the reach setting upto 90% of the line length i.e. greater portion of line length can be protected as compared to earlier techniques in which the reach setting is 80-85% only.
Keywords:	Artificial neural network, transmission line protection, fault detection, fault direction estimation and distance location.