

## ABSTRACT

The objective of this work is to know and understand the unforeseen in the supply of electricity, when there are short duration voltage variations (SDVV). The required database for the diagnosis of faults were obtained through simulations of a model of radial feeder through software PSCAD/EMTDC. This work uses a Phase-Locked Loop (PLL) in order to detect and perform the estimation SDVV automatic frequency, phase angle and amplitude of the voltage and current from the power grid. This research is developing two artificial neural networks: one to identify and another to locate the SDVV occurred in the distribution system of electricity. The technique proposed here applies to three-phase feeders with unbalanced loads, which can have side extensions triphasic, biphasic and monophasic. In developing the same, it is considered that there is availability of measurements of voltages and currents at the node of the initial feeder and also in some points scattered along the distribution feeder. The performances of the architectures of neural networks were satisfactory and demonstrate the feasibility of ANNs in obtaining the generalizations that enables the system for the classification of short circuits.

Keywords: artificial neural networks. short duration voltage variations. SDVV. phase-locked loop. PLL. distribution electric power system. PSCAD/EMTDC.