

A Fuzzy Logic Based Approach for the monitoring of Open Switch Fault in a SVM Voltage Source Inverter fed Induction Motor Drive

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Abstract: The reliability of power electronics system such as three phase inverter is important in many industrial processes. The monitoring in industrial systems represents an important economic objective. To guarantee the safety and the continuity in production, exploitation and to record the useful events with the feedback experience for the curative maintenance. One of the possible faults that occur in inverter is the open switch fault. The cost of this schedule can be high, and this justifies the development of fault diagnostic methods. In this work we present a reliable strategy for monitoring and detection of open switch in Space Vector Modulation of voltage source inverter (SVM-VSI) faults using the fuzzy logic approach. The principle of the suggested approach strategy is based on the acquisition of stator currents, to calculate the average absolute values of currents (AAVC), which allows the real-time detection and localization of inverter IGBT open-circuit faults using just the motor phase currents. A model of the system is built using MATLAB/SIMULINK. Simulation results are presented showing the monitoring approach performance under distinct operating conditions.

Keywords : Monitoring, Detection, fault inverter, SVM, VSI, AAVC