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Generic Test Bench for Condition Monitoring of Electrical Systems

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Abstract

There is a technical trend for electrical systems towards ever increasing performance and efficiency. This holds true for industrial loads (e.g. alternating current/induction motors or industrial pumps) as well as domestic loads (e.g. household appliances – electrical kettle etc.).

Test Bench are virtual environment that uniquely addresses the validation of all database effects and the creation of cut down, representative test data to reduce test times and data footprints. Hence, uniquely reduces environment downtime, improving testing productivity and accuracy.

This paper deals with the development of a generic test bench for condition monitoring of electrical systems. The test bench uses LABVIEW® software to integrate with other testing instruments in a way which is accessible to both users and testers to ensure 'total application accuracy'. Hence, six test parameters (sensors) placed on various test points are used to measure the physical characteristics of different Load or Device Under Test (DUTs). Signal acquired from the sensors are transmitted to a computer (LABVIEW®) via a Data Acquisition card (DAQ) where they are been calibrated, analyze and display the real – time results of the DUTs.

The sensors have covered three physical characteristics such as electrical (voltage, current and power), thermal (temperature), mechanical (speed and vibration) and the measurements have been considered factual during the evaluation of the results.

Keyword: Test Bench, Device Under Test (DUTs), and LABVIEW®