

764 – Smart Sensor for Advanced Electric Motors Condition Monitoring

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Abstract: This paper exposes the recent advances of the author's research group related to the development of intelligent sensors that combine the analysis of different electrical quantities. More specifically, the sensor relies on the analysis of currents and stray fluxes, which can be measured in a non-invasive way and with simple sub-sensors. The smart sensor combines the application of traditional tools based on stationary analysis (e.g. MCSA) with modern powerful methods relying on the analysis of transient currents and fluxes, which have proven to provide a high reliability for the diagnosis. Moreover, the sensor enables not only to analyse such quantities but also to provide a direct conclusion of the motor health thanks to the artificial intelligence tools that enable an automatic diagnosis. The paper explains the results obtained when diagnosing different faults in real machines, proving the powerfulness of the developed methodologies.