

Thermography monitoring and diagnostic tool in predictive maintenance

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Abstract

Thermal transfer phenomena are ubiquitous in many industrial applications. A good knowledge of these processes makes it possible to ensure the conformity of the thermal equipments, to keep them in good working order, in order to increase the service life of these equipments and to improve their availability and their performances. Thermography among the best monitoring and diagnostic tools used in predictive maintenance.

The principle of this technique is to monitor through temperature sensors the thermal profile of structures and industrial systems. These sensors allow detecting abnormal temperature changes, indicating a potential malfunction: hotspot, leaks.... It measures the intensity of infrared (i.e. heat) emissions to determine the operating conditions of the equipment. By detecting thermal anomalies, some areas are warmer or colder than they should be, we can locate and identify incidents since their births.

The use of thermography in a predictive maintenance program makes it possible, in particular, to control the thermal efficiency of processes based on transfers or heat preservation, the operation of electrical equipment and various parameters involved in both reliability and reliability system performance. Infrared techniques can therefore be applied to many types of industrial equipment.

The study of the thermal signature of a system or its components makes it possible to determine the heating zones which are often characteristic of the degradation of the system.

The present work consists of giving the principle, advantages, disadvantages and application of thermography in industries.

Keywords

Thermal transfer; thermal equipment; predictive maintenance; thermography; thermal efficiency

Biographies

Amal Boukili is an engineer in Industrial Engineering from the Faculty of Sciences and Technologies of Fez, Currently PhD status in engineering sciences, physical sciences, mathematics and computing in Industrial techniques laboratory (LTI) of the Faculty of Sciences and Technologies of Fez, Sidi Mohammed Ben Abdellah University, Morocco. Her research interests in the development and improvement of measurement techniques in industrial maintenance.

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