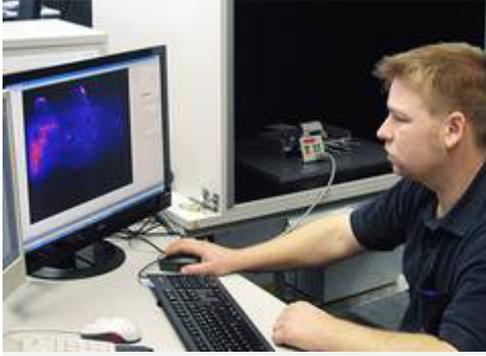


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Heat Detective Finds Defects in Converters

Siemens experts are using a special thermal imaging camera to improve servicing operations for frequency converters.



The new analysis system reduces the costs and time involved in diagnosing and repairing converters, and also increases their availability. The converters play a key role in intelligent drive systems by dramatically reducing the electricity consumption of the motors they re installed in as compared to motors with fixed rotation speeds. The new system compares pictures taken by a thermal imaging camera with database images and then informs service technicians of any discrepancies. This reduces repair times by nearly 30 percent to around one hour, while also increasing troubleshooting accuracy from 80 percent to approximately 90 percent, compared to conventional methods.

Thermography involves measuring the surface temperature of an object on the basis of the infrared radiation it emits. The technique has been used for quite some time now as a means of localizing overheated spots in components, and it s also ideal for electronic devices. Local temperature increases generally indicate the existence of heat stresses that can lead to component failure. Up until now, only electric tests were conducted on

such devices that failed, after which they were repaired. However, customers are now demanding ever-greater repair speed and reliability.

The new automated testing system allows thermal images to be taken even as a device is starting up or additional functional tests are under way. In this manner, the devices can be checked for the presence of thermal risks and damaged components or weak points within just a few minutes. The infrared measurements are compared with reference images from an extensive database, after which the system generates a report containing a repair proposal and a list of the required replacement parts. The diagnostic system allows service technicians to precisely identify defective components and even detect subsequent malfunctions due to thermal stresses before a component or a device fails. Parts can therefore be replaced before a malfunction occurs, preventing shutdowns.

This same system could also be used to examine other types of electronic devices besides converters. In addition to repairs, it can therefore be employed to check the quality of entire production batches, after which the information gained can be utilized to improve devices and components.