

Diagnosis of electrical equipment

When and why ?

- Malfunctioning equipment
- Servicing a motor
- Network problem
- Energy savings
- Condition-based maintenance



The results

- Analysing the motor's current
- Recommendations and inspections at standstill
- Diagnosis and capturing transients
- Identifying possible losses and gains
- Electrical monitoring of the fleet of motors

■ Unique expertise

- Knowledge of rotating machines
- Knowledge of speed controls
- Advanced processing of electrical signals
- Using complementary techniques

■ Dedicated tools

- Measuring with CTMO® Elec and analyses with Dyalim
- DynamX software
- Networks analysers

■ Multi-technical analysis

- Analysis of electrical signals
- Usual inspections when at a standstill
- Thermography for detecting hot spots
- Vibratory signature of rotating machines

■ Clear and concrete recommendations

- Identifying the sources of malfunction
- Scale of the seriousness of defects
- Close monitoring of the critical equipment
- Targeted diagnosis and adapted remedies

■ Energy savings

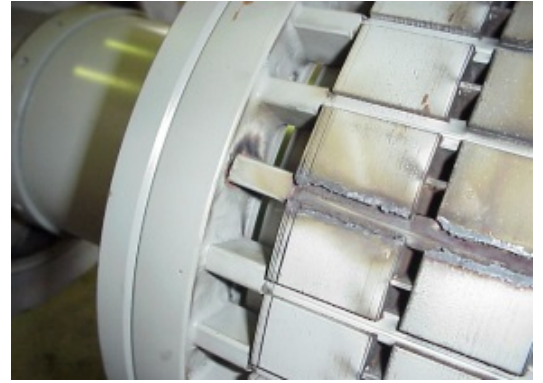
- Proposals to reduce energy consumptions
- Improving control

■ Subject and applications

The diagnosis performed on electrical equipment concerns various types of equipment and various issues :

- Rotating machines: AC, DC motors and generators, for which it is a matter of carrying out a diagnosis of the electromagnetic or mechanic defects.
- Variable speed drives for DC or AC motors, or starter systems, checked to see they operate properly.
- The site's electrical network which can present permanent defects (cos phi, harmonics) or transients.
- The transformers and other components of the network.

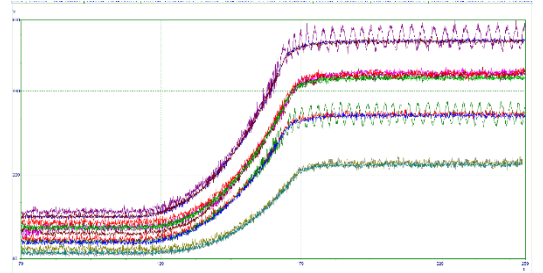
The aim of the analyses is to perform a check-up or put right operating problems (process) or energy consumption issues.



■ Principle and interest of the technique

Analysing electrical equipment requires comprehensive know-how due to the multitude of components interacting: HV network, LV network, control and regulation, electromagnetism of rotating machines. In addition to usual or regulatory inspections, it is necessary to implement complementary investigative techniques to analyse complex cases.

In order to do so, EES - Dynae has added the signal processing techniques used in vibratory analysis to electricians' usual investigation techniques, making it possible to carry out more reliable diagnoses.



■ Implementation

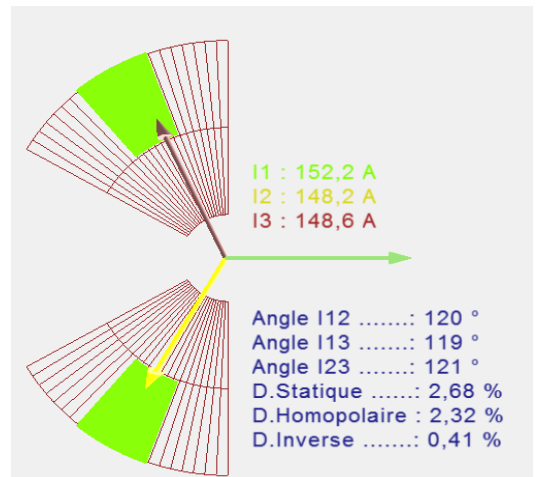
There are three types of electrical measurements :

- The balance of power which will detect performance anomalies.
- Insulation and polarisation index checks, as well as checks relating specifically to DC motors at a standstill.
- The electrical signature, i. e. the analysis of the waveforms of electrical signals: current signal, voltage, armature current, tripping of the thyristors etc...

The measurements are carried out in normal regime, and according to the requirements for various loads as well as in the speed increases phases.

For rotating machines, a vibratory analysis is performed at the same time as the electrical analyses.

As a complement, thermography makes it possible to detect the hotspots of the connections and main components.



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