

Vibratory acceptance test on industrial installations

Your requirements

- Guaranteed good working order
- A zero point when commissioning
- Validation of the works carried out
- Qualification of the host structure



The solutions

- Detection of latent defects
- « Genetic map » of the installation
- Immediate correction of defects
- Avoid resonance problems

■ A key stage in the life of a machine

- Comparison with the specifications
- Conformity with standards
- Validation of the calculations
- Zero point
- Initialisation of vibratory monitoring

■ The validation of each stage of the project

- Dynamic qualification of the civil engineering
- Qualification of the chassis and the related structures
- Qualification of the whole structure: structural appearance
- Vibratory signature of the whole structure

■ Extensive testing

- Measuring the equipment's natural frequencies
- Recording the start/stop phases
- Analysing the whole operating range
- Vibratory mapping of the whole installation
- Additional electrical analysis

■ Concrete results

- Early correction of structural or assembly defects
- Identification of the « teething problems »
- Monitoring latent defects likely to evolve
- Defining the follow-up indicators and thresholds

■ **What is a vibratory acceptance test ?**

The aim of the functional acceptance test of a new facility is to check the performance of the production tool. The vibratory acceptance test makes it possible to guarantee its smooth mechanical operation or on the contrary identify defects.

■ **What are the points examined ?**

- **High vibrations** : diagnosis of the defects generating high vibrations.
- Criterion : vibratory amplitude
- **Latent defects** : detecting defects which do not yet generate high vibratory levels, but which reflect an anomaly like to evolve unfavourably over time.
- Criterion: typology of the vibratory signal
- **Dynamic behaviour of the rotor** : critical shaft frequencies, amplification when changing critical gears, behaviour in the slide bearings.
- **Electrical signature** of induction machines to decide on electromagnetic defects or defects generating torque fluctuations.

■ **And what about the structure ?**

Here it is a matter of the dynamic qualification of the host structure, i.e. the machine's supporting structure: chassis, studs, fixings, civil engineering. This makes it possible to evaluate the contribution of the « stiffness » of the assembly in the vibratory behaviour of the installation.
 Criterion : frequency distance between exciting frequencies and natural frequencies

■ **How to proceed ?**

- Perform a second-level vibratory signature comprising :
- Machines at a standstill, measuring the structure's natural frequencies using an impact hammer.
 - Recording the starting and ramping up of the machine
 - The vibratory and electrical signature for various operating conditions

The results are then compared to known criteria (specification, standard...) or our data base

