

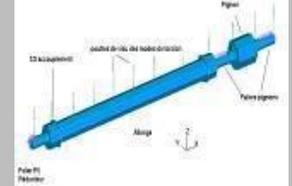
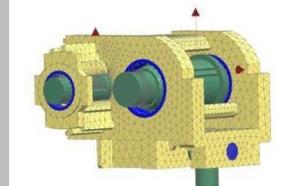
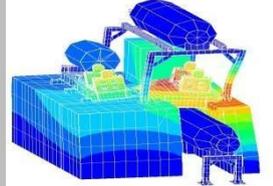
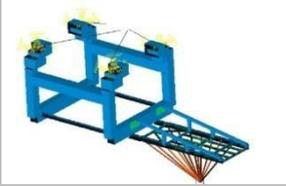
> Dynamic structure analysis

> Your requirements

- Anticipating the vibratory behaviour of equipment
- Sizing the frame or the foundations of a machine
- Validating piping supports
- Correcting a resonance problem
- Assistance in designing mechanical devices

> The solutions

- Simulation by means of finite element
- Taking into account the sources of excitations
- Mechanical and pulsatory excitations
- Experimental modal analysis
- Calculating the bending and twisting of shafts



> An approach based on experience in the field

- Knowledge of the pitfalls to be avoided
- An experimental database to refer to
- Comparing the measurements/calculations results

> A pragmatic and efficient methodology

- A personalised procedure for the problem involved
- A survey sized to the context
- Validation with the customer step by step
- Control of deadlines

> High-performance means for measurements and surveys

- Engineers specialising in structure analysis
- Specific measuring tools
- Command of experimental modal analysis
- Calculation software using Finite Element Method
- Knowledge of norms and standards

> Concrete results

- Clear and realistic recommendations
- Proposal of several possible solutions
- Calculation of the expected gains
- Acceptance test on site for final validation

DYNAE

- > Vibratory analysis
- > Electrical analysis
- > Infrared thermography
- > Instrumentation and sensors
- > Software
- > Training



Head office

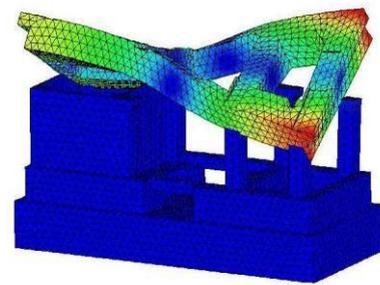
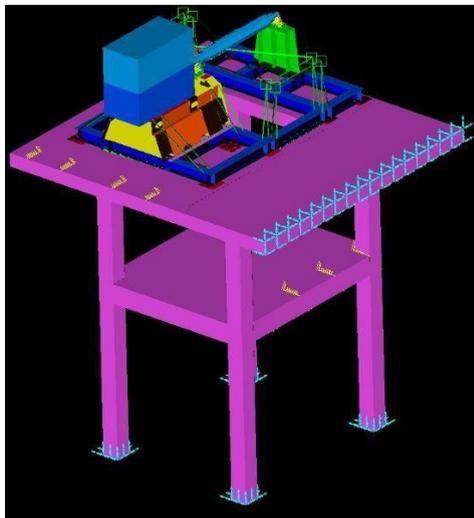
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> What is a dynamic structure analysis?

A dynamic survey consists in characterising the way in which a structure reacts dynamic stress: alternating, transitory or random forces, or indeed vibrations.

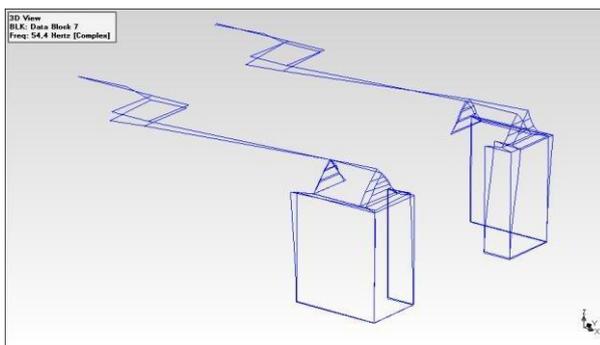
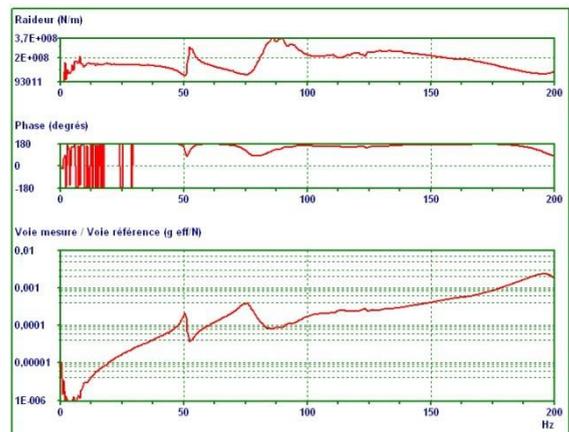


> How are the measurements performed?

- The transfer functions are measured by exciting the structure using an impact hammer equipped with a force sensor, and by measuring the vibratory response with a triaxial accelerometer.
- This makes it possible to characterise the associated natural and deformed frequencies; the modal damping is also deduced from these measurements.
- In the case of coupled modes, the aim of the modal analysis is to recalculate the characteristic of each of the modes to decouple them.
- The comparison between the natural mode and operational deformed shape makes it possible to determine between a resonance and a forced response and to adapt the corrective solutions.

> Why perform a dynamic structure analysis?

- To avoid vibratory problems when starting up a new installation: resonance of the chassis, the civil works or the piping for example.
- To anticipate the dynamic behaviour of a machine in terms of vibrations and alternating stress.
- To correct a problem of vibrations or breakage on an existing installation.
- To predict and anticipate the vibratory consequences of an increase in production capacity.
- To anticipate the vibratory impact on the neighbourhood, or calculate adapted insulation studs.



> What are the calculations performed?

- Modelling using finite elements makes it possible, using the drawings of the installation:
- to calculate the natural modes of the initial installation (with repositioning on the measurements).
 - to simulate the impact on the natural modes of the various modifications to the structure.
 - to calculate the expected vibrations and dynamic stress by calculating response to an excitation.