



# TRAINING

## Vibration analysis of turbo machines

### OBJECTIVE

Rotating machines are continuously subjected to forces that are likely to initiate vibrations. A correct follow-up and analysis of the vibration behaviour is an important element of mechanical condition monitoring of the units. Excessive vibrations may however lead to serious damage and should be avoided as much as possible.

This training gives an introduction to the theory and practice of lateral vibration analysis of large rotating machinery. All theoretical aspects can be demonstrated and explained by means of relevant case studies based on our extensive experience of vibration monitoring with Laborelec's vibration monitoring system (LVMS), such as it is used on more than 100 shaft lines around the world.

### TARGET GROUP

Operation and maintenance personnel in the power plant

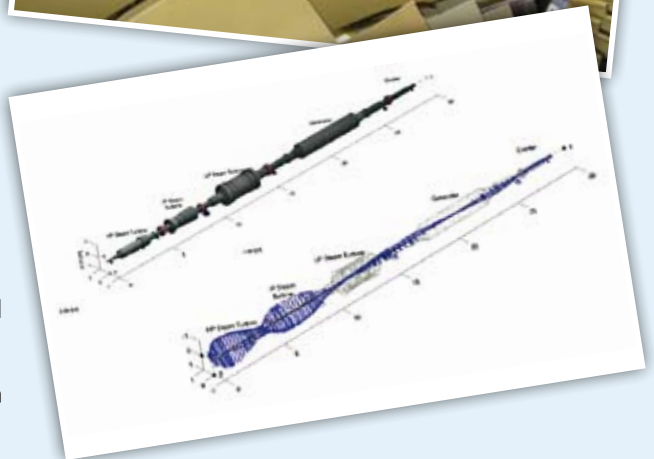
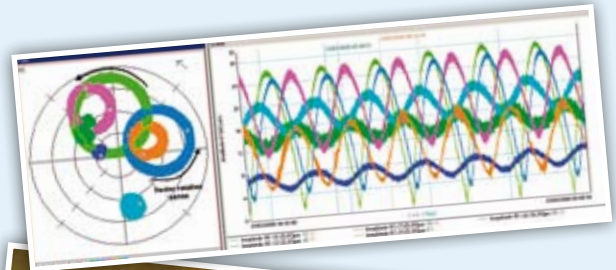
Technically skilled people that want to acquire a background on the goal and benefits of vibration analysis on large turbo machines.

### DURATION

2 days

### CONTENT OF THE TRAINING

- Basic elements of vibration analysis theory (harmonic vibrations, spectral analysis, resonance, stiffness, damping)
- Introduction to the major elements in the rotor dynamic behaviour of a shaft line (rotor, fluid film bearings, foundation,...)
- Typical measurement techniques for vibration monitoring
- Relevant ISO standards for evaluation of vibration amplitudes (ISO 7919 and ISO 10816)
- Basics of rotor balancing
- Typical signature of vibration problems associated with turbo machines (mechanical and thermal unbalance, blade loss, rub, (mis)alignment, fluid instabilities,...)
- A number of case studies and the use of a rotor model will be used to illustrate important signatures



## PARTICULAR ASPECTS

This course will provide technical and practical training in the area of rotating machinery vibrations. No specific foreknowledge is necessary to follow this course, besides a basic knowledge of the construction and working principles of turbo machinery.

## PRICE

Complete course (2 days): 1250€ (excl. VAT) includes meals (2 lunches, 1 evening dinner) and course notes. If it would be necessary to cancel the course after the registration, a cancellation fee of 250€ will be invoiced if this is done before the 17<sup>th</sup> of May. No refund will be possible if the cancellation is after this date.

## ORGANISATIONAL INFORMATION

The course will be given in English as well as the course notes. A least 10 persons have to register in order to organize this course. The scheduled dates for this 2-day seminar are 16-17<sup>th</sup> of June.

The course will take place at the LABORELEC offices in Linkebeek (near Brussels). Hotel reservations can be done to Hotel Gravenhof at Dworp which is near our offices. Please contact the hotel directly for reservation with reference of our company to receive a special room prize.

### Hotel Gravenhof

Alsebergsesteenweg 676  
B-1653 Dworp (Brussels)  
Tel : +32 (0)2 380 44 99  
Fax : +32 (0)2 380 40 60

The course participants are invited to join an evening dinner on the first day.

## REGISTRATION

Please fill in the registration form and forward it to [cindy.walschot@laborelec.com](mailto:cindy.walschot@laborelec.com). The deadline of the registration of this course is 1<sup>st</sup> of May. Laborelec reserves the right to cancel the course in case too few people sign up.

Last name:

First name:

Title / department:

Invoice address:

Phone:

Fax:

E-mail:

VAT number:

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