Services
Training, Renting, Coaching

Introduction

Experts from OROS can provide assistance in your measurements. We are also able to recommend optimization in your test processes depending upon your application and field requirements.

We offer theoretical and applied training sessions on noise and vibration. We may come on-site for applied trainings. We will help you using your OROS equipment.

Industries

- **Energy & Process**
- **Marine**
- **Aerospace & Defense**
- **Ground Transportation**
- **Manufacturing & Automation**

Machines

- Engines
- Turbines
- Motors
- Pumps
- Compressors
- Generators
- Aircraft components
- Building & bridge
- Ship hull
- Vehicles
- Transmission
- Machine tools
- Components
- Gearbox

Applications

- Field Services Department: on-site commissioning or troubleshooting requiring ready-to-go systems at any time
- Test bench installations overhaul facilities, production testing
- R&D labs: testing requiring the latest algorithm and technology

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"Our services philosophy: OROS customers should not have to wait for an answer. Our expertise is at their disposal - anywhere, anytime."

Yannick Balter, Head of Customer Care Department
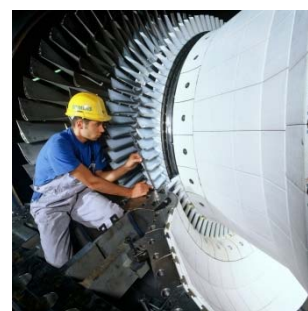
Training

Experts from OROS offer theoretical and applied training sessions on noise and vibration. Our trainings are defined with you according to your needs. Our objective is to be beside you all along the use of your system to maximize your profitability and efficiency.

We may come on-site for applied trainings. We will help you using your OROS equipment.
We also propose remote internet training sessions delivered from OROS offices.

To go beyond the regular uses, we are able to answer specific requirements and adapt to your specifications. We propose customization, either on the instrument or in the software. We imagine and find the best solution with you.

Our trainings catalog is detailed here after. Please do not hesitate to contact us to define the best program according to your needs.

Renting

Because your measurements require the best, OROS proposes rentals of instruments and/or software modules.
We propose a complete program of renting services including priority and special price for customers holding premium contracts.
Examples:
> Emergency replacement system -
> 3-Series analyzers rental - Software and hardware configuration on request
> Stay On Site: 3-Series analyzers replacement hardware located on your site (available 24/7), with automatic activation software keys.

Coaching

To go one step further, we propose measurement assistance. We go on-site and fully integrate your team. We may recommend optimization in your measurement process depending on your application and field requirements.
We can even perform the measurement for you: on-site diagnostics or prototype characterization.

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Assistance in your Measurements

Objective

Whatever is your typical measurement, test benches, onsite acceptance test, advanced diagnostic… the goal is to optimize the use of the OROS Solution.
Our experts can provide audit and recommendation for data analysis and management (setup configuration, measurement management, data handling and reporting).

Program to be defined with quotation

> Optimization of measurement sequence
> Data management sharing information
> Get accurate results in the shorter time as possible
> Improve test scheme to secure data acquisition

Duration on quotation

Expertise in Diagnostics

Objective

Our experts can perform noise & vibration measurement's analysis and diagnostics. Do you suspect a faulty component and need to get a characterization of your engine? Or do you need an EMA for validating your prototyping? Or a sound power measurement for one of your customer? Any of this intervention can be achieved by us or by our qualified partner, worldwide.

Program to be defined with quotation

> System mechanical behavior and characteristics
> Rotating machinery diagnostic
> Experimental Modal Analysis (hammer test)
> Operating Deflective Shape (ODS)
> Prototype evaluation

Duration on quotation

Please contact us for quotation.

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Applied Trainings

∿ Noise & Vibration

Noise and Vibration Theoretical - The Basics of Signal Processing

This theoretical training may be combined to any other training as a first step of noise and vibration.

Objective

Noise and Vibration analysis is at the heart of OROS' skill set. This theoretical training aims to give you a good knowledge about all the physical and mechanical principles implemented in the instrument.
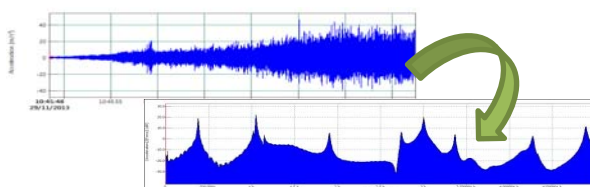
What are the basic mechanical phenomena and their main behavior?

How vibration and sound are generated and propagated?

How to measure this phenomena and which instrument could be used?

This course also includes the basics for signal acquisition and analysis.

Program

> Mechanical behavior of systems
> Single or multiple degree-of-freedom systems
> Acoustic pressure; relationship between acceleration, velocity and displacement
> The measurement chain: transducer's principles and considerations (mounting, etc.)
> Introduction to noise and vibration measurement
> Signal characterization
> From continuous and physical domain to a digital data, sampling and signal processing
> Fourier Transformation: main parameters of FFT analysis
> Other analysis modes: octave, time signal analysis

Who Should Attend

Technician or engineer willing to acquire knowledge, or a refresher, in noise and vibration

Duration 0.5 day

Get Ready for Measurement with NVGate

Objective

Because for each of your measurements you need to face different constraints from the test environment, NVGate is your best tool to be efficient and pragmatic. During this session you will learn the best practices in order to optimize your measurement operation; get ready to start, achieve results very quickly and get functioning on site without any compromise; get your data safe and secure.

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Program

The program is adapted according to the user's level

> Analyzer and software main features
> The different modes for online and post processing
> How to prepare a measurement, settings and parameters
> Optimize the user interface for a better reactivity during measurement
> Organize, save and share data
> Get result and report from on-site measurement of post processing

Who Should Attend

OROS analyzer's user (different levels: beginner / intermediate / expert)

Duration (recommended) 1 day for intermediate and expert levels; 2 days for beginners' level.

Reporting with NVGate - Setup and Design your Own Test or Measurement Report

Objective

A dedicated report is usually necessary after a measurement. Our tool offers a way to get a direct printing of data right after the measurement. Earn time by printing results as soon as the measurement is finished, no extra time necessary. Learn how to use our advanced features for automated reporting and customize this for your needs.
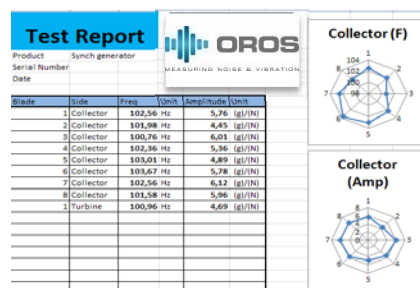
Program

> Reporting using Word and Excel
> Data copy, drag'n drop, automatic export, different tools to enable reporting
> Reporting graph, data, settings, how to combine all these results in one report file
> One-click print report
> Report customization, how to manage Word and Excel model including NVGate tag

Who Should Attend

Technician or engineer with initial skills in OROS products

Duration 0.5 day

Machinery Diagnostics with NVGate

This training may be combined to "Torsion analysis with NVGate" training (see details below)

Objective

Machinery diagnostic needs specific tools for advanced analysis. OROS solution offers many options to deal with advanced machinery diagnostics.
Be able to operate the following software modules: Time Domain Analysis, tachometer, FFTDiag (the vibration toolset) and IVC (Integrated Frequency to Voltage Converter)

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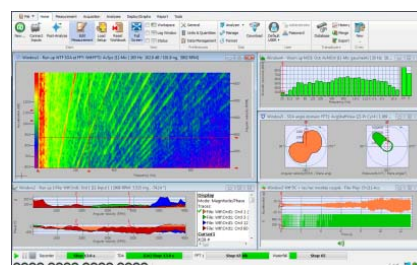
Program

> Time Domain Analysis, typical results and how to setup and parameter the module
> Advanced FFT option for Cepstrum, Correlation, Envelope
> Use makers to identify troubles according to mechanical and kinematic design
> Integrated Voltage to Velocity Converter
> Acyclic and torsional analysis

Who Should Attend

OROS analyzer's user who has already followed the "Get Ready for Measurement with NVGate"

Duration 1 day

Rotating Analysis

Introduction on Turbomachinery Vibration with ORBIGate

Objective

What are the main characteristics and behavior of Turbomachinery? Understand the main phenomena from a theoretical to a practical point of view. What could be the main issues and how to measure and identify them?

For diagnostics, for validation or for acceptance tests, our dedicated solution ORBIGate will let you get all the measurements for Turbomachinery.

Program

> Roller and journal bearing behavior
> Gap, orbit, polar, full spectrum
> Major faults and typical measurement results
> Analysis on a real fluid film bearing machine (demo kit or real machine of your choice): ORBIGate setup
> Measurement with ORBIGate
> Data and result management
> Report generation

Who Should Attend

Technician or engineer dealing with turbomachinery for acceptance tests or vibration measurement diagnostics

Duration 1 day

Balancing – Basic Principles and Procedures, Practical Case on Training Kit

Objective

Unbalance is the most common issue on a rotating system. From high speed small rotating system to heavy industries machinery, balancing a rotor system is a sensible task. OROS leads you to understand the method and principle for balancing: from the theory to a practical test.

Program

> Balancing phenomena, cause and possible damage
> Order analysis, how to setup an analysis for balancing
> Rigid or dynamic balancing?
> Our solution, a dedicated and easy to use interface
> Number of planes and measurement points
> How to start a good procedure?
> Sequence for balancing, test run, correction and trim balancing

Who Should Attend

Technician or engineer who wants to get theoretical and practical basis for balancing

Duration 0.5 day

Advanced Rotating with NVGate

Objective

OROS proposes several features dedicated to rotating analysis. From tachometer setup to order analysis, this training lets you discover all the tools and functions dedicated to rotating analysis

Be able to operate the Order Tracking (Synchronous Order Analysis - SOA, Constant Band Tracking - CBT), tachometer and torsion options.

Program

> How to get a good and reliable tachometer measurement
> Synchronous Order Analysis, the principle and features
> Constant Band Tracking method for diagnostics
> Waterfall and order extraction
> Order tracking, phase tracking

Who Should Attend

OROS analyzer's user who has already followed the "Get Ready for Measurement with NVGate"

Duration 1 day

Torsion analysis with NVGate

Objective

OROS proposes features dedicated to torsion or acyclic analysis. This training lets you discover the transducer setup, the definition for multi-pulse per revolution data acquisition and dynamic or static torsion analysis.

You will learn all the capabilities for this advanced rotating diagnostic combined with mechanical vibration analysis.

Program

> How to get a good and reliable tachometer measurement
> Synchronous Order Analysis, the principle and features
> How to get a good and reliable torsion measurement : transducer setup and parameters
> IVC (Integrated Frequency to Voltage Converter) for Torsional Analysis
> Signal filtering from torsion velocity to angle position
> Static "twist" and dynamic analysis
> Acyclic analysis for reciprocating machinery

Who Should Attend

OROS analyzer's user who has already followed the "Get Ready for Measurement with NVGate"

Duration 1 day

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Structural Analysis

These 2 trainings may be combined in 2 days

Modal Basics

Objective

Understand the basics of modal analysis.
What the different types of measurements, Operating Deflection Shape (ODS), Experimental Modal Analysis (EMA), Operational Modal Analysis (OMA) and their specific features.
Be able to process a complete modal analysis with the OROS system.

Program

> Modal analysis basic concepts (natural frequency, damping, mode shape)
> Procedure for ODS, EMA, OMA
> Use of the available tools: FRF, MIF
> Practice on a test structure (impact hammer, shaker, …)

Results comparison Who Should Attend

Technician or engineer with knowledge in vibration analysis

Duration 1 day

EMA (Experimental Modal Analysis) with Modal

Objective

Through a real case (test structure or your own machine) you will learn to use Modal, the structural dynamics software module to perform a complete Experimental Modal Analysis

Who Should Attend

Technician or engineer with knowledge in vibration analysis

Program

> Presentation of the software interface
> Geometry modeling
> Sequencer to define the different measurement sets
> FRF measurement with impact hammer
> Modal identification
> Results validation and comparison

Duration 1 day

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Acoustics Analysis

Sound Intensity - Theoretical and Practical Measurement on Training Kit

Objective

Understand and be able to perform a sound intensity measurement with the OROS system.

Program

Theoretical

> What is sound power - sound pressure - sound intensity?
> Theoretical in computation of sound intensity spectrum
> Equipment: intensity probe, spacer, pressure calibrator, phase calibrator, analyzer
> Active/reactive field, PRI, calibration
> Standard ISO 9614 part 1 and part 2
> Acceptance criteria

Practical

> Use the equipment and the OROS Sound Intensity software module on your industrial machine: install, geometry building, software setup, measurement, results analysis
> Customer practical

Who Should Attend

Technician or engineer with basic knowledge in measurement and acoustics

Duration 1 day

Sound Power - Theoretical and Practical Measurement on a Real Machine or on a Training Kit

Objective

Setup and perform a Sound Power characterization according to ISO standard.
Understand and be able to perform a sound power measurement with the OROS system.
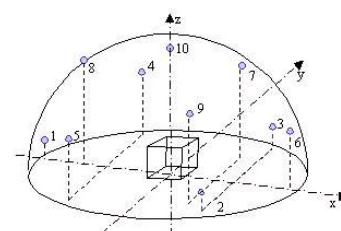
Program

Theoretical

> Sound Power determination through sound pressure measurement
> Sound Power computation
> ISO Standards 3744 – 3745 – 3746

Practical

> Use the material and the OROS Sound Power software module on your industrial machine: install, geometry building, software setup, measurement, results analysis
> Customer practical

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Who Should Attend

Technician or engineer with basic knowledge in measurement and acoustics

Duration 1 day

Acoustics with NVGate

Objective

Acoustic analysis may be achieved using several methods. This training leads you to get all the knowledge using the octave and overall acoustic analysis software modules.

Program

> Octave and Overall Acoustic theoretical
> Octave filters setting
> Type of averaging
> Save and compare data
> Report generation
> Exported and shared data

Who Should Attend

Technician or engineer with knowledge in vibration analysis and needs advanced skills for acoustic analysis, very common for NVH analysis

Duration 1 day

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Customization

NVGate Advanced - Automation Tools

Objective

Embedded measurements, end production tests, test benches, or just because you want to increase your efficiency when performing measurements, take a course to use the OROS automation tools. Discover the large panel of tools for automation that make your test go faster. Macros and sequences are very powerful tools: be able to use them.
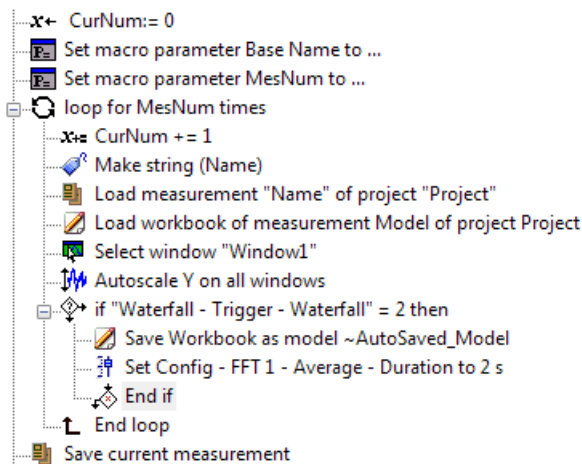
Program

> Macros
> How to record a macro
> Automated test with macro
> Design advanced macro with user interface
> Sequence
> Definition and setup through Excel
> Using a sequence to drive a predefined test plan
> Navigate in sequence, customization

Who Should Attend

Technician or engineer with initial skills in OROS product.

Duration 0.5 day

NVGate Advanced for NVDrive - How to Design your Own NVDrive Application

Objective

NVDrive allows you to implement you own solution. From a simple add-on to complete test benches, build your program that drives and gets results from OROS NVGate solution. This training will let you know in details how to implement NVDrive mechanism in your development code to get a reliable and accurate solution.

Program

> TCP connection with NVGate
> Dll interface use
> Main functions for command, setup, getting results
> Data architecture
> Practical example using C, C++ or VB
> Code optimization for high performances application

Who Should Attend

Technician or engineer with software development skills who need to implement a special application with NVDrive integration.

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Programming skills requirements: VB, C, C++, JAVA…

Duration 1 day

Customized Software

This training is recommended to be combined to NVGate Advanced for NVDrive - How to Design your Own NVDrive Application

Objective

Our experts can provide assistance to develop your own application. This can be done as a team work with your developer to achieve the solution. After this, your developer can continue improving the solution.
It is also possible, based on your specifications, that we develop your own customized solution.

Program to be defined with quotation

> To be adapted according to :
>> o Your specifications
>> o Environment constraints

Who Should Attend

Technician or engineer with software development skills who need to implement a special application with NVDrive integration.
Programming skills requirements: VB, C, C++, JAVA…

Duration quoted on demand

All the OROS trainings can be optimized according to your needs.
We build the best program with you.
Don't hesitate to contact us.

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Webinars

Objective

OROS webinars are online presentations provided by our vibration experts with **free registration**.
2 sessions are organized for each webinar; one is recommended to Asia and Europe and the second one to Americas and Europe (depending on time zone).
All the dates and times are available on http://www.oros.com/6109-webinars.htm

Duration

45 minutes (+ Questions and Answers at the end)

Tool

Teamviewer. A link, id and password will be sent to you as soon you will be registered.
Note: _Depending on the IT restrictions of your company, you may not be allowed to access TeamViewer. Sorry for the inconvenience._

Registration

Free; fill in the online form on the OROS webinars webpage: http://www.oros.com/6109-webinars.htm.

ODS on Rotating Machinery

Overview

Discover all the interests of Modal Analysis in design and diagnostics.

What's demonstrated in the Webinar?

> You will be trained about the main advantages of EMA, ODS and OMA depending on the applications you may deal with.
> You will also attend a live Operating Deflection Shape on a real rotating machine.

Turbomachinery Vibration Analysis

Imbalance, misalignment, rubs, rotor instability, and resonances on Turbomachinery: What tools to capture and solve them?

Overview

When you operate turbines, compressors, pumps, gear boxes and other large rotating machinery, there can be many different failures modes, each with its own distinct vibration signature.

What's demonstrated in the Webinar?

> An overview of typical measurement and machine configurations.

> Overview of required tools such as orbit analysis, shaft centerline, polar and Bode diagrams

> Live vibration testing will be performed to illustrate the webinar, using ORBIGate, the OROS turbomachinery vibration module on our rotor kit.

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Sound Power Measurement Based on the Sound Intensity Technique

Overview

Whatever the industrial machines you are working on, you need to measure sound power (motors, air conditioning systems, cooling systems, exhaust systems,...)

What's demonstrated in the Webinar?

> Sound intensity measurement with advantages and limits

> Sound power measurement compliant with 9614-I standard (step by step measurement) and 9614-II (scanning measurement)

> Source localization

> Case study on an industrial machine, using the OROS Sound Intensity software

Bump Test Techniques

Overview

Need to adjust blades? To check your end-winding resonances? To check manufacturing quality? Discover the most effective techniques in bump test applications.

What's demonstrated in the Webinar?

This webinar details the following aspects of multiple components resonance identification:

> Best practices in setting up the instrumentation

> Avoiding common mistakes or solving them

> Live vibration testing will be performed to illustrate the functions dedicated to resonance identification, from impact (bumping) to the report.

Check the full list of our webinars on our website: http://www.oros.com/6109-webinars.htm

OROS User's Days

OROS proposes training specially dedicated to customers every year for free (depending on countries).
This is an opportunity to take advantage of your analyzer system capabilities, to get premium information on OROS range evolution, to discuss with your peers, and for OROS, to listen to your product enhancement desires.

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OROS, Leadership through Innovation

About Us

Now approaching 30-years in business, OROS' designs and manufacturing have been renowned for providing the best in noise and vibration analyzers as well as in specific application solutions.

Our Philosophy

Reliability and efficiency are our ambition everyday. We know you require the same for your measurement instruments: comprehensive solutions providing performance and assurance, designed to fit the challenges of your demanding world.

Our Emphasis

Continuously paying attention to your needs, OROS collaborates with a network of proven scientific affiliates to offer the latest of the technology, always based on innovation.

Worldwide Presence

OROS products are marketed in more than 35 countries, through our authorized network of representatives, offices and accredited maintenance centers.

Want to know more?

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