

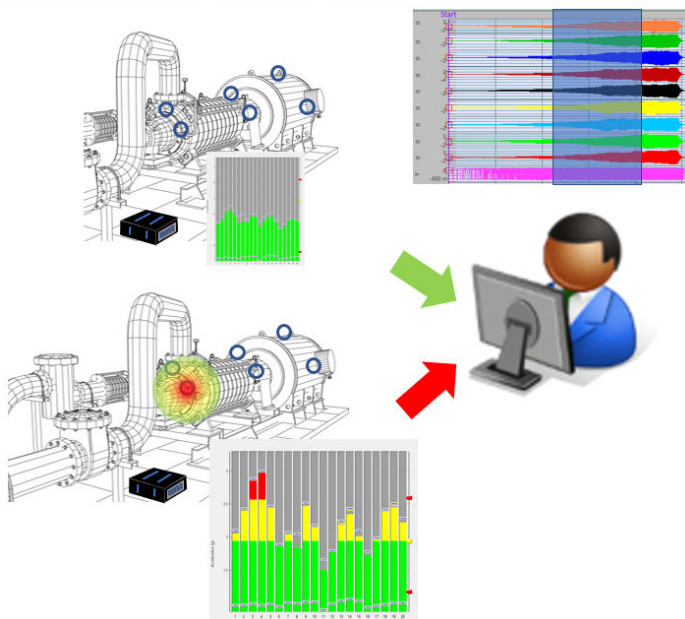
OROS Monitoring Solution

Monitor, Trend, Trigger, Alarm, Record, Analyze

Introduction

On the field, noise and vibration levels can often increase rapidly and unexpectedly. In particular, this may happen after a recent installation or a maintenance operation on a machine. At that stage the machine needs to be carefully monitored for a few weeks or months. In addition, performing long-term monitoring of the asset's health allows early detection of abnormal machine behavior, enabling cost-effective maintenance planning and lowering the risk and cost of unexpected outages.

OROS Monitoring Solution is a rugged and portable multichannel system which is able to **operate stand-alone** and **trigger advanced actions** based on defined **alarm conditions** looking at all the channels connected to **accelerometers, proximity probes, microphones or other sensors**. No need for the vibration specialist to stay on site waiting for noise and vibration levels to exceed unacceptable limits: the system sends **alert notifications autonomously**, and the **measurements and time signals** can be **accessed remotely for further analysis and diagnostics**.



Industries

- > Energy and process
- > Marine
- > Precision machining and processes
- > Airports and railways



Machines

- > Turbomachinery
- > Motors and generators
- > Engines
- > Fans and blowers
- > Construction machinery
- > Microelectronic workshops



Applications

- > Condition monitoring
- > Unpredictable event capturing
- > Remote areas
- > Construction sites
- > Predictive maintenance & diagnostics



Main features

Autonomous monitoring based on **OROS portable and rugged Teamwork instruments.**

- > Benefit of all NVGate (noise and vibration software platform) processing capabilities for triggering, display, post-analysis and data management
- > **Operate standalone:** power cut and restart management
- > **From basic to advanced event triggering conditions**
- > **Pre-trigger time domain signal recording** remotely downloadable for further analysis
- > Advanced and flexible **actions on events** (notifications, save data and time signal, external applications, etc.)
- > Automatic alert notifications for rapid countermeasures
- > **Database and remote access** to event log, trend, and measurement data for initial diagnostics at any time
- > Flexible storage capabilities, suitable for site **with or without a network connection**
- > Benefit of all OROS software suite for machinery analysis and diagnostics (FFT, FFTDiag, order, ORBIGate, the turbomachinery vibration software module, Torsion ...)



Description

Monitoring Solution

For machinery health control, power generation control, building construction etc., OROS Monitoring Solution continuously supervises the vibration and noise levels, detects abnormal machine behavior and faults at an early stage, relieving the vibration experts from long and expensive trips.

When monitoring is started, the solution controls the instrument and the defined scalar indicators are calculated in real-time and monitored continuously. Alert notification is sent autonomously when the predefined levels are exceeded. Multiple triggering conditions can be defined and advanced actions can be performed once events are triggered. The traceability is secured through the event log, allowing you to keep a close look on each event.

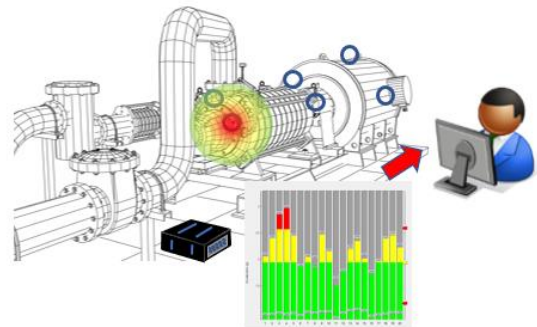


Periodic data save for trending and benchmarking

The solution allows continuous recording of monitored parameters with a user-defined periodicity. These scalar indicators (Overall, 1X, and many others ...) are saved as a trend, which can be displayed with different time ranges to assess the machine health. Trends of different indicators of the same or different machines can be easily compared, based on which experts can make the link between the operation status (speed, flow rate, power, load ...) and machine response, in order to determine the root causes. Selected spectra and time signal can also be saved periodically at user-defined rates, for the purpose of trending and benchmarking.

From basic to advanced event triggering conditions

OROS Monitoring Solution is based on the NVGate platform. This means that it benefits from the calculation power and flexibility of all potential indicators available through the various plug-ins: Time Domain Analysis (TDA), FFT, Order analysis (SOA), 1/n Octave... An event can be triggered by a combination of multiple conditions.

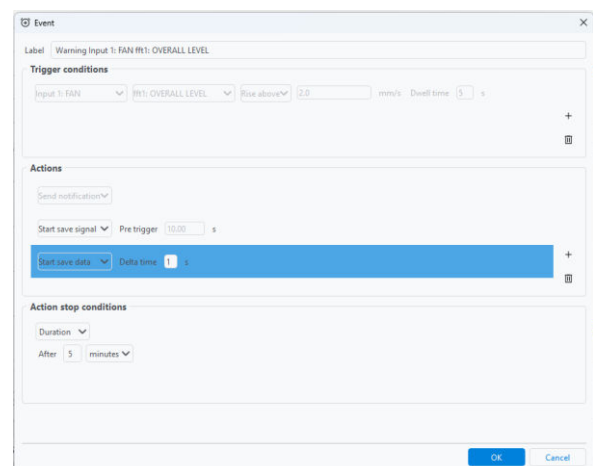


The software works on any available scalar parameter. The ones available from the front-end may be sufficient. Consequently, no plug-in is compulsory. Nevertheless, the following ones are recommended:

- TDA (Time Domain Analysis), as it provides various kinds of scalars well suited for monitoring applications. The scalars can be averaged in this case which provides higher accuracy in the triggering.
- REC (recorder), as it can trigger time signal recording whenever a threshold is exceeded.

Advanced and flexible actions on events

Multiple actions can be configured for each event. In addition to the email notification for rapid countermeasures, user can also be alerted by sound or alarming light. All the defined scalar indicators and spectra can be recorded at high data collection rate when an event is triggered, making a detailed analysis of the vibration behavior possible with the monitoring solution itself. If the saved data are not sufficient for diagnostics, user can always choose to save pre-trigger time signal as an event action, and perform post-analysis for a complete analysis. Furthermore, advanced or customized actions can also take place by launching external applications.



Database and remote access

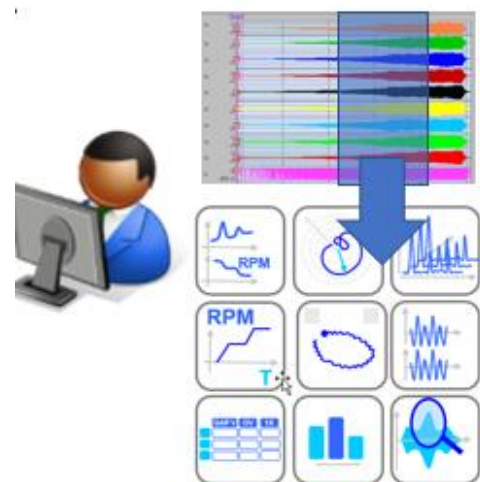
All the data and the recorded time signals are stored by the monitoring system in any database selected by the user. The database is usually installed on a server or on Cloud, and the remote access to the event log and measurement data is guaranteed at any time for surveillance and initial diagnostics. Data are saved locally during network interruption, and pushed to database when network is back. The database can also be installed locally if no network connection is available on site.



Data collected from multiple machines at different sites can be saved in the same database, enabling a global assets surveillance, and multiple users can access the database simultaneously without any license.

Advanced post-analysis for diagnostics

The time signals saved in the database can be downloaded via remote access, and the complete and advanced post-processing can be performed for determining the root causes of asset health issues. The comprehensive OROS software suite provides all the tools used for machinery analysis and diagnostics, for example, the turbomachinery vibration solution ORBIGate.



Stand-alone operation

The analyzer watchdog management is possible via the optional monitoring autonomy kit. It controls the power-up and shutdown of the system through the analyzer on/off/reset control line. In case of a power failure, the measurement system remains operational until the battery reaches the predefined level. When the main power is back, the whole data acquisition system is automatically restarted and the monitoring restarts.

A portable and rugged instrument

OROS Monitoring solution is based on the range of Teamwork instruments ranging from 4 to 32 channels, and different types of hardware can be used for monitoring depending on the situation. High sampling rates, phase accuracy of less than 0.02° and 40 V measuring range cover all possible areas of applications. The high-quality electronics, which are standard at OROS, ensure precision in the measurements, maximum mobility with handy dimensions and weight at the same time.



Ordering Information

Reference	Description
ORNVS-MONI	Monitoring software modules (M-Logger & M-View) – Instrument & Dongle locked licenses- Includes Monitoring Autonomy kit (ORNVS-MONI-AUTO)
ORNVS-MONI-AUTO	Monitoring autonomy kit
ORAC-MONI-REMO	Monitoring remote access controller

Recommended packs for monitoring application

Reference	Description
PK-OR35-MONI	OR35 8+2 ch. Teamwork instrument Monitoring Pack - FFT, ORD, TDA, OCT, OVA, FFTDiag, ORDiag, MONI - Instrument locked license
PK-OR38-MONI	OR38 32 ch. Teamwork instrument Monitoring Pack - FFT, ORD, TDA, OCT, OVA, FFTDiag, ORDiag, MONI - Instrument locked license
PK-PA-32	32 ch NVGate complete license for post-analysis - Office mode

Typical software modules to be added for more triggering possibilities

Reference	Description
ORNV-TDA-I	Time domain analysis instrument locked license
ORNV-FFT-I	Narrow band FFT analysis instrument locked license
ORNV-ORD-I	Synchronous narrow band order analysis instrument locked license

Typical software modules to be added for more post analysis possibilities

Reference	Description
ORNV-TDA-D	Time domain analysis dongle locked license
ORNV-FFT-D	Narrow band FFT analysis dongle locked license
ORNV-ORD-D	Synchronous narrow band order analysis dongle locked license
ORNVS-ORBI-PA-D	Turbomachinery vibration solution - Post Analysis dongle locked license

Typical instruments to be combined for data acquisition

Reference	Description
OR35-INST-10	OR35 8+2 ch. Teamwork instrument pack
OR38-INST-32	OR38 32 ch. Teamwork instrument pack

A Powerful and Flexible Range for Your Needs

Monitoring solution belongs to the comprehensive OROS solution suite that covers a wide range of applications:



General Noise and Vibration

FFT, Recording, Time Domain Analysis



Structural Dynamics

Operating Deflection Shape, Modal Analysis, Bump Test, FRF & Cross-



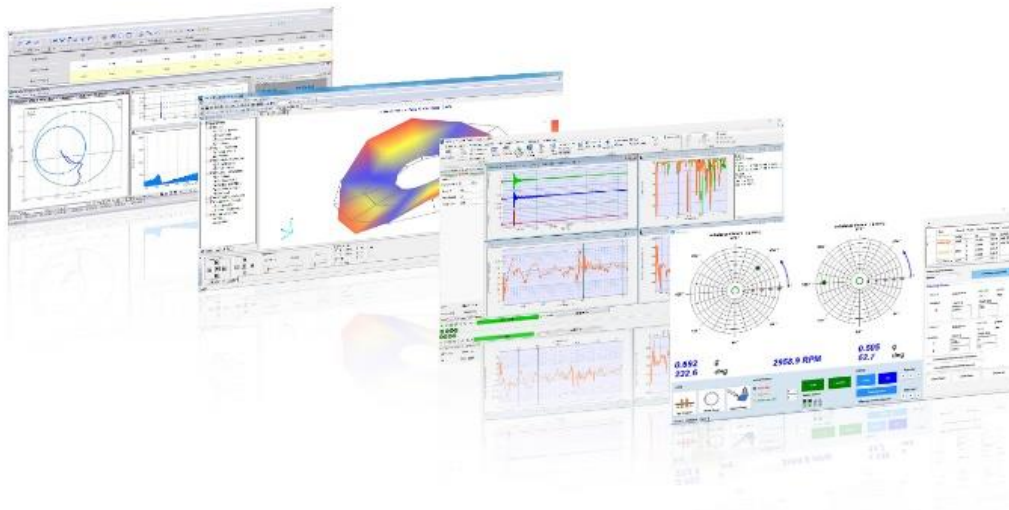
Rotating

Order Tracking, Torsion and Twist, Rotordynamics, Turbomachinery Vibration, Reciprocating Machines Diagnostics, Single, Dual and Multiplane Balancing,



Acoustics

1/n Octave, Multichannel Sound Level Meter, Sound Power, Sound Intensity, Sound Mapping & Source Localization, Sound Quality / Psychoacoustics, EV/HV NVH



OROS, Leadership through Innovation

About Us

OROS has been designing and manufacturing noise and vibration testing systems (instruments and software) for more than 35 years, meeting the requirements and expectations of automotive, aerospace, marine energy & process, manufacturing and automation industries.

Our Philosophy

Reliability and efficiency are our constant ambition. We know you have the same requirements for your measurement instruments: comprehensive solutions providing guaranteed performance, designed to meet the challenges of your demanding environments.

Our Emphasis

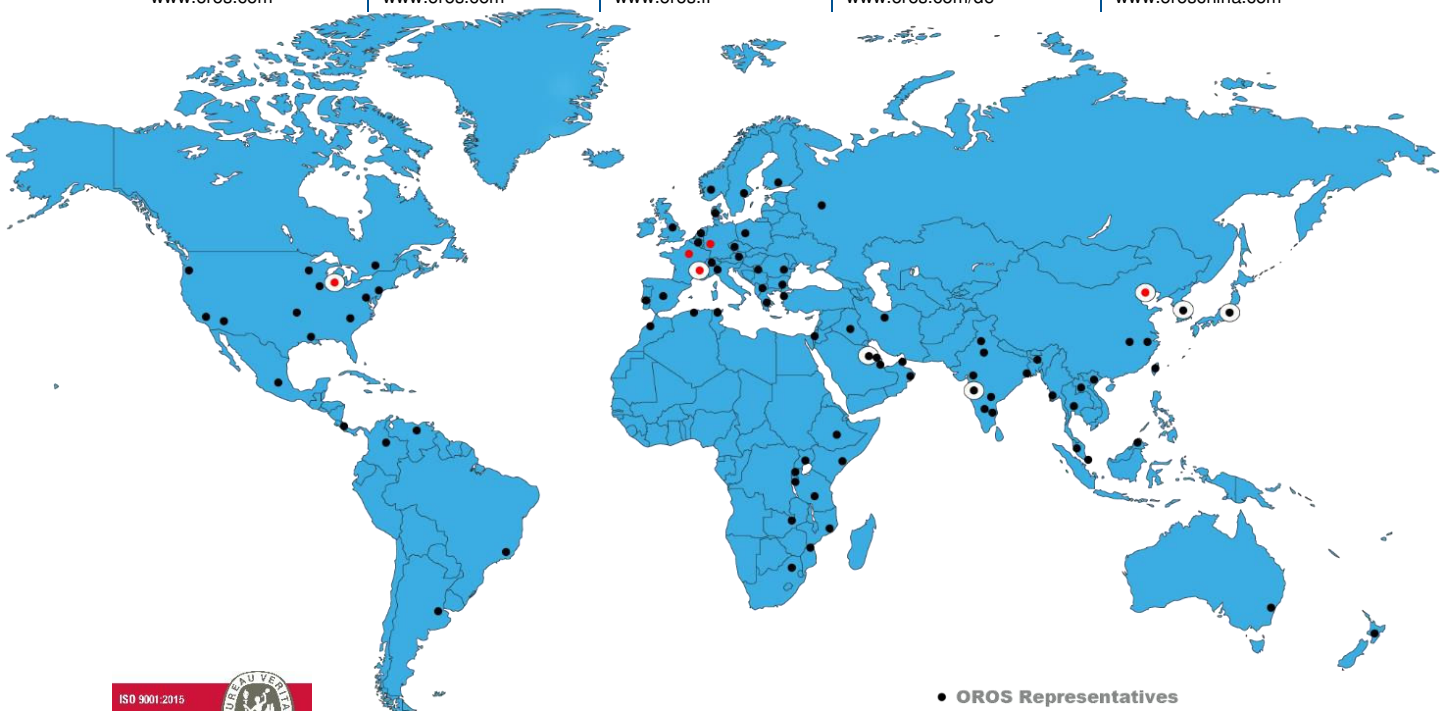
Constantly in tune with your needs, OROS collaborates with a network of proven scientific affiliates to offer the latest in technology in this field, always based on innovation.

Global 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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