

RECOVIB

recovib.io

RECOVIB.IO CLOUD PLATFORM

THE ONE-STOP SOLUTION FOR STRUCTURAL MONITORING

The recovib.io platform is ideal for both simple, small applications and large deployments of monitoring devices in the field. The recovib.io platform can be connected to the RECOVIB® monitoring systems and sensors, a complete chain of remote data acquisition and analysis units.

In addition to the acquisition and processing of vibrational data, which is our core competence, the versatility of our monitoring devices and the recovib.io platform allow us to integrate other data from other types of sensors or data sources.

INSTALL YOUR
MONITORING
DEVICES
ANYWHERE



BE AWARE OF
EVENTS THROUGH
GLOBAL
NOTIFICATIONS

MANAGE YOUR
DEVICES FROM
ANYWHERE



RECOVIB.IO



ACCESS YOUR
DATA FROM
ANYWHERE



PLOTS



DATA
PROCESSING



STORAGE



ALERTS



NOTIFICATIONS



REPORTING



ANALYTICS



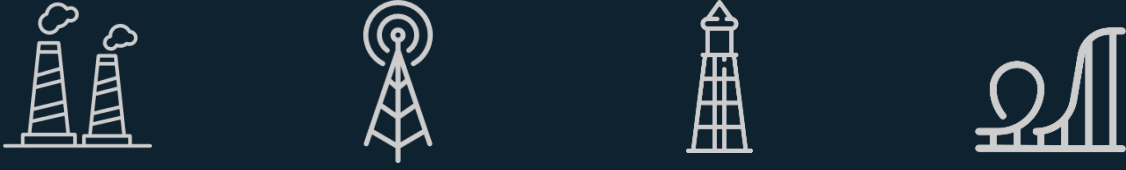
REMOTE
DEVICES SETTINGS



CUSTOMER
APPLICATION SETTINGS

FIELD OF APPLICATIONS

Slender structures monitoring



Slender structures, such as telecommunication towers, chimneys and elevated water reservoirs can be very sensitive to dynamic wind loading. Indeed, wind-induced forces can cause significant dynamic response which may lead to structural damages. In the case of telecommunication towers, it can also lead to signal transmission distortion. Therefore, design criteria for slender structures must include dynamic stiffness which depends on the main resonance frequencies and inherent structural damping. These characteristics must be measured when the structure is first erected and compared with the design data. It is also recommended that they are measured during maintenance activities.

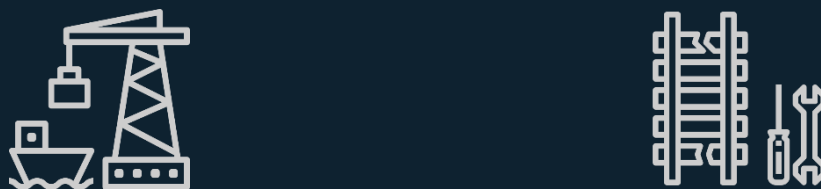
In addition, in harsh/windy environments, the permanent monitoring of the structural vibrations is recommended. Indeed, the natural frequencies of a structure can be obtained from acceleration measurements and the shifts of these natural frequencies' values can be a good criterion for the evaluation of the structure's integrity, allowing for preventive action.

Construction sites monitoring



On a construction site, activities such as pile driving, heavy vehicle movements, soil compaction and excavation generate vibrations, which can lead to discomfort for the inhabitants of nearby homes. These vibrations can be felt far-away from the site. In addition to ensuring compliance with regulations, monitoring these nuisances is essential to maintain good relationships with the site neighbors and improve acceptance.

Crane rails monitoring



Improper installation, misaligned or worn rails can lead to excessive vibration during the crane travel, resulting in load concentrations and the resultant fatigue stresses. The complete health monitoring of the cranes can be complex and expensive, however vibration measurement at key positions can provide an early warning and trigger preemptive measures to be taken.

Traffic monitoring



Traffic induced vibrations have become an important topic over recent years in the field of serviceability of civil engineering structures, due to the increasing traffic in urban areas. Although recently constructed buildings do not represent a risk for the safety of the exposed structure, only a comfort problem for human beings, in older buildings, low-level vibrations may represent a risk due to the accumulation of micro damages over a long period of time.

Vibration sensitive assets monitoring



People that own vibration sensitive assets have ongoing concerns about the potential detrimental impact of surrounding construction work, road or railway traffic.

Vibration and/or dust sensitive assets typically include museums, works of art or facilities equipped with very accurate manufacturing, measurement or inspection systems.

Buildings monitoring



Vibration monitoring is important to protect surrounding buildings from structural damage that could be caused during construction or demolition and to mitigate the risk of claims against contractors.

Wind Turbines monitoring



Wind turbines are designed for a service life of 20 years. The implementation of permanent monitoring for structural parts like rotor blades, towers and foundations can help achieve or even extend this design service life. The corresponding sensors and acquisition systems must also meet the criteria of durability and resistance to the harsh environment.

Quarry activities monitoring



Quarry operations, mainly blasts, generate vibration and sound waves (air blast) that propagate to the neighboring infrastructures both above ground such as houses, industrial buildings or below ground such as pipes and foundations. Depending on the blast type, nuisances can be felt far away from the quarry. These nuisances can be light leading to discomfort or heavy leading to damages to nearby structures. Monitoring these air overpressure and vibration nuisances is essential for quarry managers in order to improve operations, limit any resulting negative effects, and therefore maintain good relationships with the site neighbors.

Bridges monitoring



With an aging infrastructure and major bridges that are more than 50 years old, ever-increasing demands are placed on civil engineers to inspect transportation systems. The regular inspection of every bridge over a given span is often required by law. In our current technological world, bridge monitoring does not have to rely exclusively on periodic human inspections, but can rely instead on the electronic monitoring of a bridge's health, which is capable of exposing a structural integrity problem well before it would be detected by a visual bridge inspection.

Machinery monitoring



Adopting modern technology for machine health monitoring can help your maintenance team unlock days of production, shift to a more efficient sparing strategy, and push out scheduled preventative maintenance.

Piping monitoring



Vibration-induced fatigue is one of the most common causes of failure in process piping systems. Excessive vibration can lead to some practical problems. Flanges may start leaking. Pipes can be knocked off their supports or result in pipe fatigue failure.

KEY FEATURES

- One-stop solution (increased consistency, no need to coordinate several suppliers, etc.)
- Short-term or permanent long-term monitoring
- Monitoring of remote areas
- From simple small applications to complex deployments
- 4G wireless global coverage

KEY BENEFITS

- Remote monitoring gives users access to important data for better informed decision making.
- Employees no longer need to be constantly present on the plant floor or travel to remote sites to record or collect tedious data points. More time can be dedicated to analyzing the data for increased efficiencies.
- If problems arise, the remote monitoring system can send alerts and notifications via email and SMS so users can quickly address the issue and minimize downtime.

QUALITY OF SERVICE

Security

Each RECOVIB® monitoring device is factory-configured with a connection key that allows for secured device identification on the recovib.io platform and communication encryption with the latest algorithms.

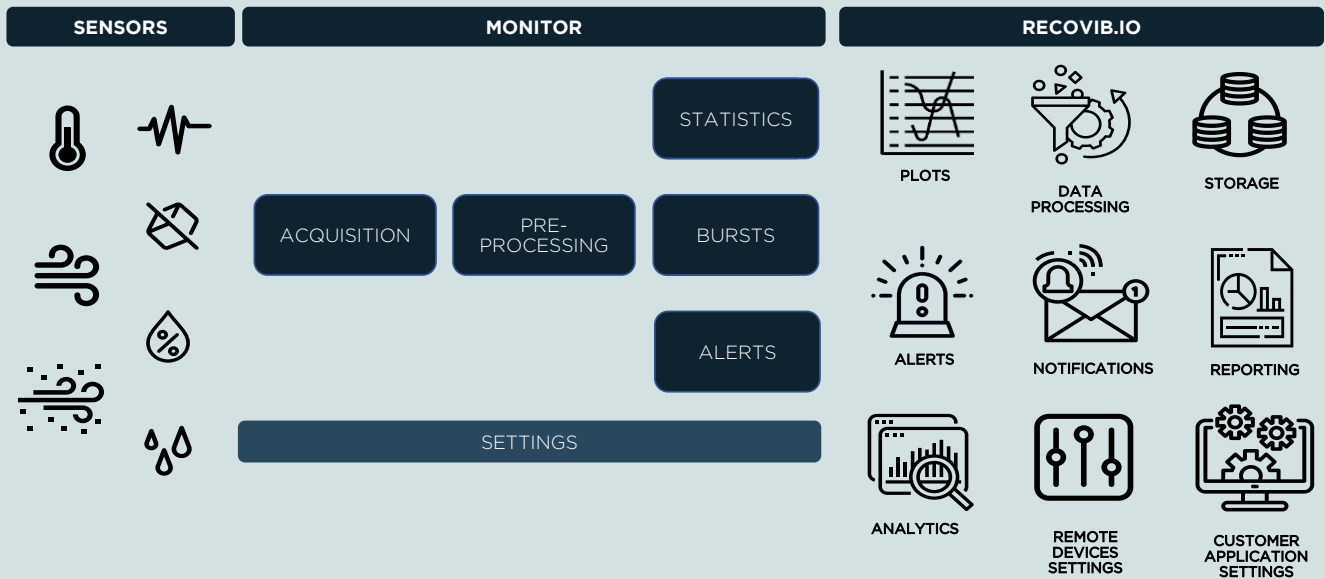
Reliability

The RECOVIB® monitoring device embedded software automatically takes care of re-transmissions and device re-connections in the event of a poor-quality communication link or connection loss to the recovib.io platform - allowing for a high quality of service even from remote and unattended locations.

Devices continuous supervision

The status of each monitoring device is automatically checked, reported and logged in the database. If an anomaly is detected (e.g. if a device is disconnected), a notification can be sent to the user.

BLOCK DIAGRAM



Preprocessing

Sensor data can be filtered (e.g. to focus on a given frequency band, to implement signal processing as required by standards, etc.). This occurs within remote acquisition devices (refer to the product compatibility list below), but they can be configured remotely from recovib.io.

Statistics

High sampling rate measurements from sensors are scaled, combined, and pre-processed locally. Statistics (peak, RMS value, average, min, max, peak-peak, skewness, kurtosis, standard deviation) are generated within monitoring devices such that only useful information is transmitted - keeping mobile network transmission costs at a reasonable level.

Bursts

Should access to high sampling rate measurements be required for further or more complex processing, conditions can be set for bursts to be transmitted directly to the recovib.io platform where such analysis will occur.

Data processing

Custom processing can be implemented on incoming bursts in order to retrieve useful information from high sampling rate measurements with no delay.

Alerts and Notifications

Various warning and alarm conditions can be defined (i.e. upper and lower limit transitions, out of reference range, etc.). Whether by email, SMS or the switching of an alarm relay, recovib.io offers clear alarm functions and records all events such as error messages, warnings or system messages in the database.

Visualization

Recovib.io provides a fast, flexible and secure dashboard for multiple users. Measurements can be displayed in either standard or specialized forms in both time and frequency domains.

Reporting

Useful data can be automatically collected periodically, compiled and formatted to be sent to registered users.

Storage

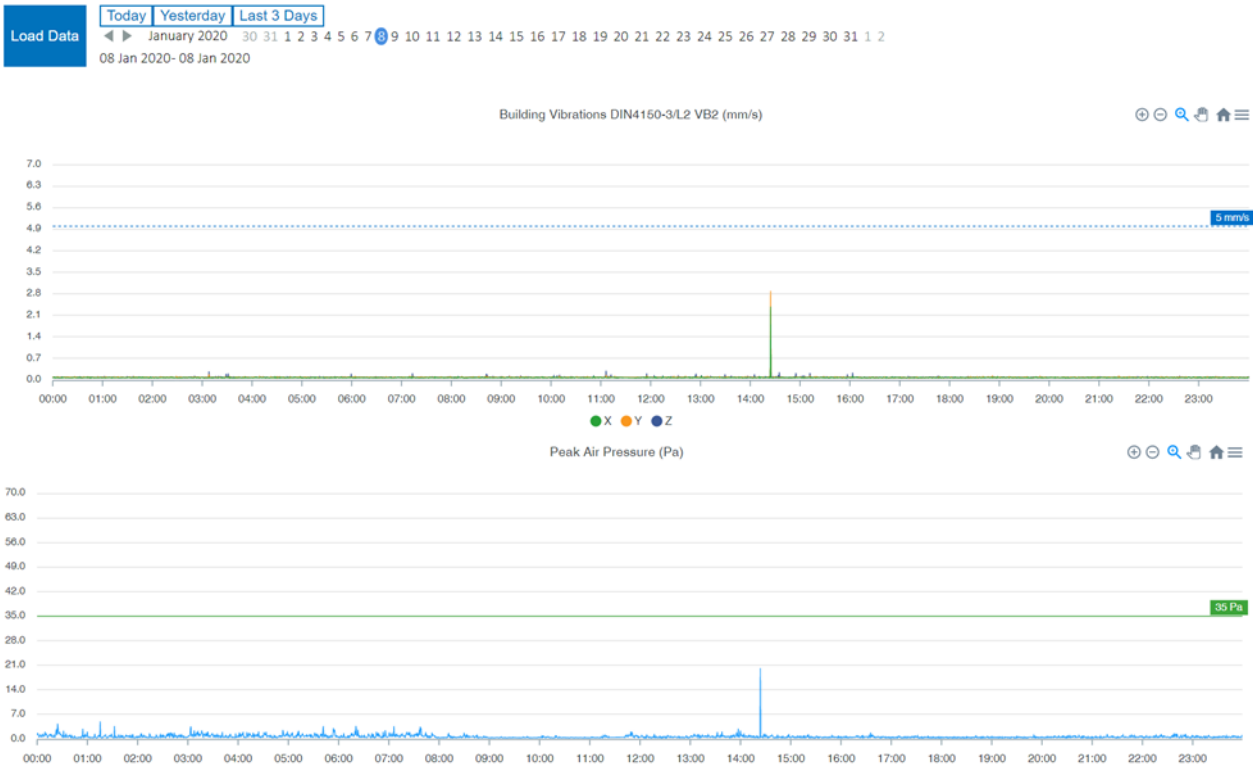
The database allows access to all historical data at any time.

Analytics

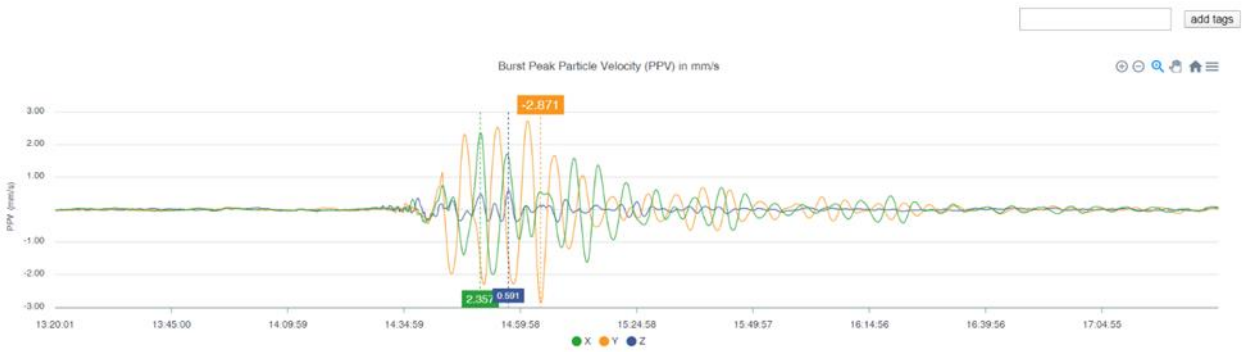
Recorded data can be analyzed over a longer term to extract useful information such as trends, anomalies or deviations from models.

SAMPLE GRAPHS

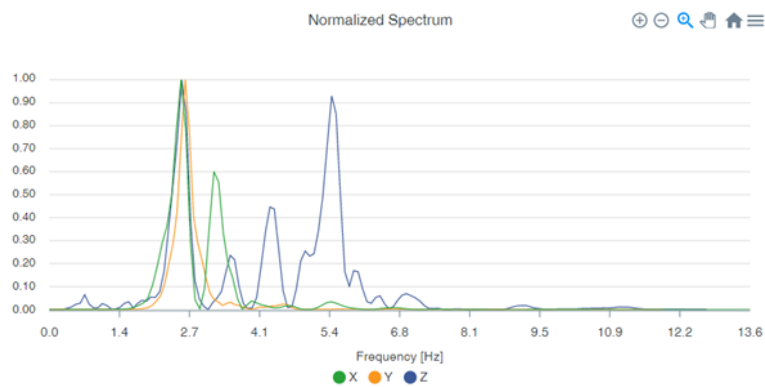
Quarry Blasting – Building vibration and air overpressure



Bursts of high-sampling rate shock event



Normalized frequency spectrum



PRODUCTS COMPATIBILITY LIST

Sensors

RECOVIB® range of accelerometers, Inclinometers and relative Humidity and temperature sensors.

Any commercially available sensor matching Monitor 4 or Monitor 8 inputs (i.e. 4-20mA current loops, unipolar or differential voltage, IEPE).

Monitoring Systems

Monitor 4, Monitor 8 (general purpose monitoring), Shiver (multi-agent site nuisance monitoring).

ENGINEERING SERVICES

- Custom dashboards
- Custom post-processing
- Custom web Interfaces