



# GEOTECHNICAL MONITORING OF STRUCTURES AND OBJECTS

## Ensure safety and optimize design measures

### PROTECTION AGAINST

structural deformation  
environmental effects  
material aging and fatigue  
natural disaster hazards  
unnecessary project costs

SAFIBRA's Geotechnical monitoring system based on Fiber Bragg Grating (FBG) technology, allows the **evaluation of geotechnical structures, sites, and environments** against the geotechnical design assumptions. It provides useful **data about the performance of the ground and necessary changes to construction or engineering measures** in order to reach the required stability. Thanks to this, it allows **early identification of the risk of harmful processes** which may occur during construction, assembly works, or while maintaining the buildings and facilities.

### INTENDED FOR

cities  
construction companies  
project designers  
architects

- ▶ prevention of catastrophic failures
- ▶ early warning of events
- ▶ management of risk costs

# ANALYZING TECHNIQUES



strain to  
monitor  
changes



real-time  
landslide  
monitoring



bending to  
measure the  
average internal  
stress



monitoring of  
temperature  
increase



monitoring  
of rainfall  
deformations

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## FEATURES & BENEFITS

### Prevention of catastrophic failures

Thanks to the geotechnical monitoring you'll be able to take appropriate action in advance and thus minimize potential damages and losses.

### Continuous real time monitoring

The system monitors any issues that may arise in real time, alerting you immediately if necessary. Furthermore, it enables you to work with collected data right away.

### Low operating costs

Our Manholes, Cabinets, Entrances, and Shaft Monitoring System is very durable and, if installed correctly and protected from the environment, can be operated with minimal maintenance and servicing.

### Leverage existing fiber optic network

The connection between unit and detectors is via standard telecommunication optical fibers (such as dark fibers), that is the most economical solution for monitoring many objects spread over a large area.

### Use of existing fiber optic network

Installation of an expensive sensor infrastructure or availability of electrical power aren't necessary, and this makes our system the most economical solution for monitoring many sensors spread over a large area.

### Early warning of events

The monitoring system is equipped with direct alarm relays for immediate notifications via email, SMS, or other communication interfaces, in case of significant and unusual events.

### Web interface

You will be able to manage our system via a user friendly web interface, which also provides all necessary information about the structure, reporting, and data analysis features according to your SLA.

### Service and maintenance planning

We will help you optimize your service and maintenance planning based on your specific needs, in order to ensure efficient operation.

### Long term monitoring

The monitoring system is highly durable and reliable even in demanding environments. This makes it especially suitable for a long term monitoring including the tamping of the rail.

### Multifunctional measuring platform

Several sensors with different functions can be connected in series on a single fiber without signals being confused and with the necessary cable length being considerably smaller.

### Measuring over long distances

The distance between the unit and sensors can be several tens of kilometers. Therefore, you can cover a large area with one unit and a multitude of sensors.

### Event notification and data exchange

The system has three direct alarm relays for immediate notifications via email. Supplementary communication interfaces are available for data exchange.

### Reporting and data analysis

Our system provides all necessary reporting and data analysis features. The available level of service is according to SLA.

### Customized solutions and adjustments

The system can be modified in order to meet your project's needs, such as the desired functionality, interoperability, etc.



# PRODUCTS USED



## FBGuard 1550

Highly accurate monitoring system for industrial measurements



## Data processing

Universal solution for your data analysis and processing needs



## Graflux

Data visualization, storage and analysis service



## Anchor sensor

Strain sensor for structure behavior monitoring



## Bendline

Sensory profile for deflection monitoring of objects

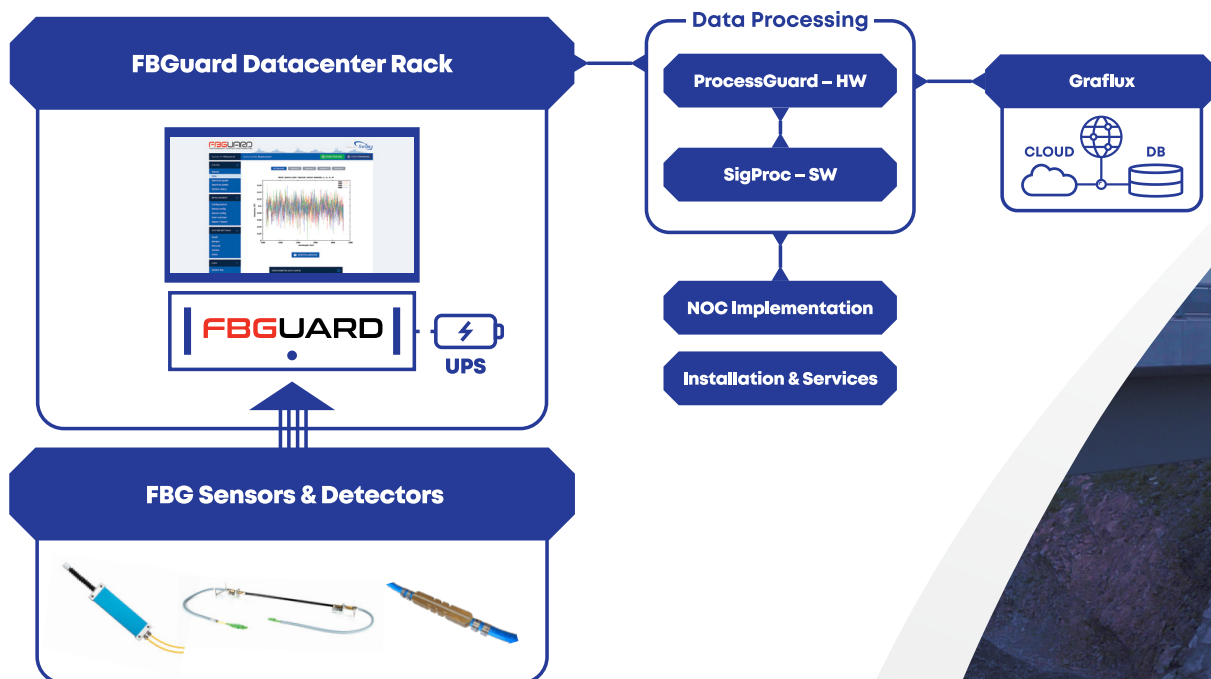


## L-Bracket sensor

Strain sensor for constant structure behavior monitoring

# APPLICATION SCHEME

Example of a typical setup. Choose the project scale that you prefer.



**GET IN TOUCH WITH US**  
and we will recommend the most suitable solution for your project.

SAFIBRA, s.r.o., U Sanitasu 1621, 251 01 Říčany, Czech Republic  
☎ +420 323 601 615 ✉ safibra@safibra.cz 🌐 www.safibra.cz