OPTIZ-Monitoring Ltd.

SAFETY MONITORING COMPLEXES OF ENGINEER BUILDINGS, MECHANISMS AND OBJECTS OF HIGH IMPORTANCE

Yuri Nikitaev, CEO

Company

Innovative company OPTIZ-Monitoring Ltd. develops and produces fiber optic, tensometric and other types of and systems sensors to measure:

- deformation
- temperature
- pressure
- liquid level
- inclination
- acceleration
- other applications

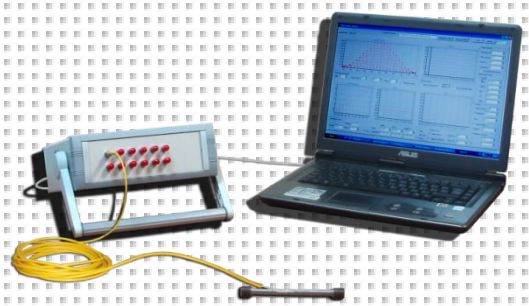
It was founded in 2012 and located in the Science Park of Lomonosov Moscow State University (MGU).

The company team: graduates from the top Russian universities (MGU, MEPhI, Bauman MSTU).

Project products

- **Aim – fundament and construction monitoring for providing technical security for dwelling and industry buildings**

- **Optic fiber systems: modern technologies, antijamming devices, easy for using in variable conditions, long life, sensitive and accurate.**



Project products

Deformation sensor DP-1

Purpose: deformation measurement in metallic constructions

Basic specification:

Sensor cavity	100 -130 mm
Range of relative deformations	up to 0,5%
Measurement accuracy	5% of full scale

Deformation sensor DP-2

Purpose: deformation measurement in concrete and brick constructions.

Basic specification:

Sensor cavity	100 -130 mm
Range of relative deformations	up to 0,5%
Measurement accuracy	1% of full scale

Temperature sensor, industrial

Purpose: industrial processes control

Basic specification:

Sensor dimensions	350 mm x 140 mm
Operation range	-40 ÷ + 85° C (up to 200° C)
Measurement accuracy	0.1° C

Project products

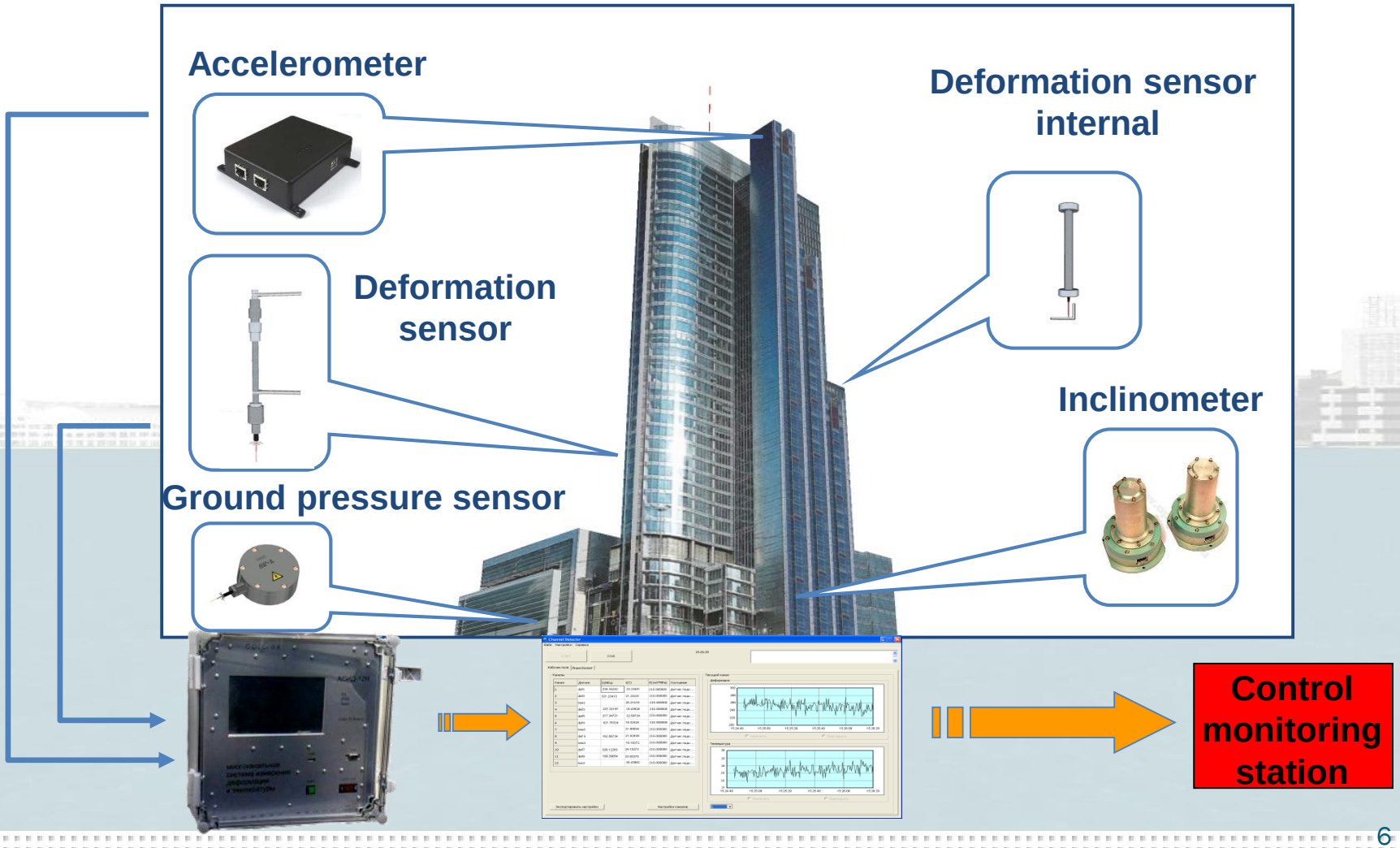
One-axis inclinometr IN120

Purpose: high-stable measurement and control of small tilt angles (a deviation from a vertical axis) of various elements of engineering and construction designs – overlappings, columns, wells, support columns, walls, the bearing beams, etc.

Basic specification:

Measurement range:	±7 200 angular seconds
Measurement accuracy:	2.0 % (at range of ±7 200 angular seconds), 1.0 % (at range of ±360 angular seconds)
Standard value of the main error:	1.0 % (at range of ±7 200 angular seconds), 0.2 % (at range of ±360 angular seconds)
Drift of zero level:	1,5 angular seconds (at range of ±360 angular seconds)
Additional temperature error:	1,5 angular seconds/°C (at range of ±360 angular seconds)
Temperature drift of zero:	
at range of ±360 angular seconds:	2,0 angular seconds/°C
at range of +5…+30°C:	2,0 angular seconds/°C
Temperature measurement error:	1,5% (-25…+50 °C) 2,0% (-40…+50 °C)

Buildings monitoring

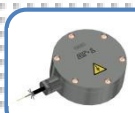


Infrastructure monitoring

Accelerometer

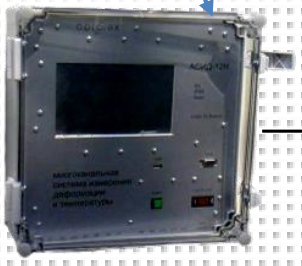
Deformation sensor

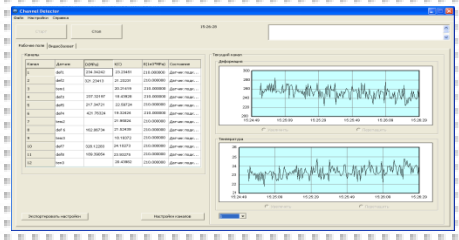
Ground pressure sensor



Inclinometer

Deformation sensor internal

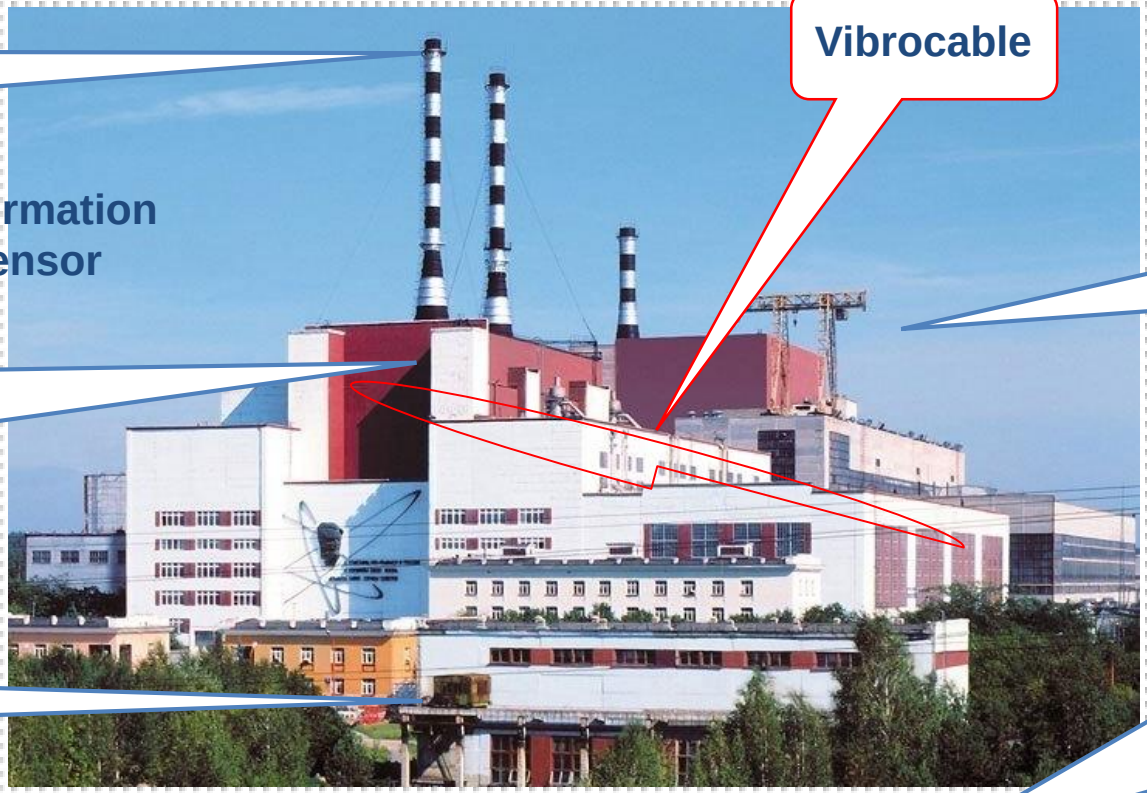




Control monitoring station

Industrial monitoring

Accelerometer



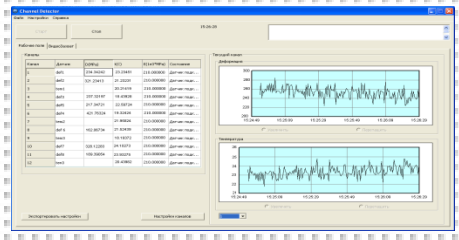
Vibrocable

Inclinometer

Deformation sensor

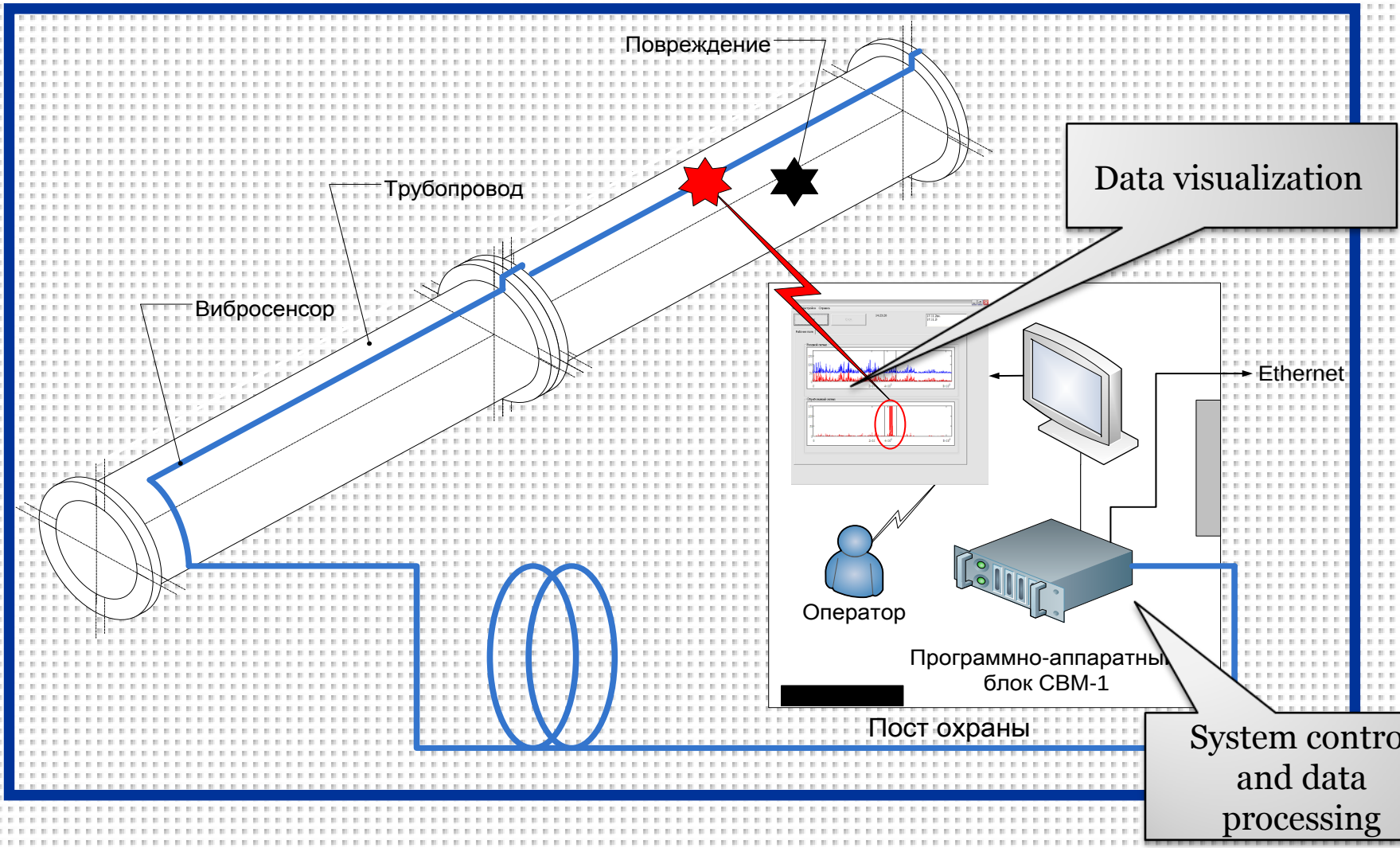
Deformation sensor internal

Ground pressure sensor

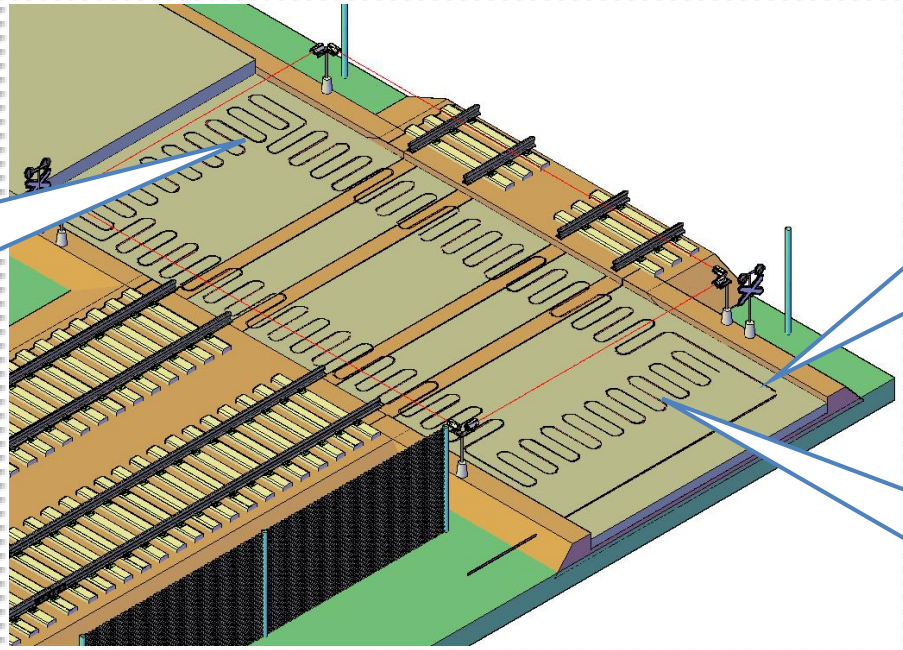


Control monitoring station

Distributed monitoring



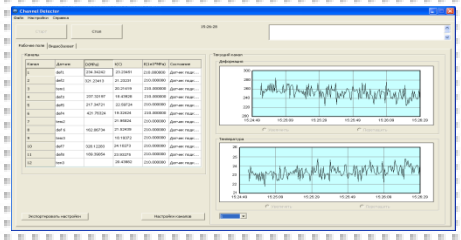
Distributed monitoring



Vibrocable – entrance control

Vibrocable – railway security control

Vibrocable – road temperature control



Control monitoring station

Security monitoring

System of vibromonitoring and perimeter protection

Security systems for perimeters and extended objects, system of monitoring of conditions of buildings.

Mission: Monitoring of vibration effects on a fiber-optical cable.

Main characteristics:

Total length is up to 100 km.

Localization of a place with an accuracy of 5-10 m.

Sensitivity interferential

Processing neuroanalysis

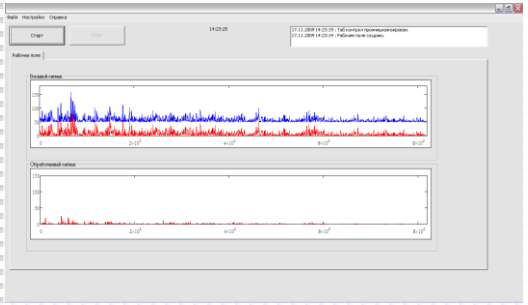
Temperature monitoring

System of temperature monitoring

Systems of monitoring of conditions of buildings, railroads, highways

Mission: monitoring temperature on a fiber-optical cable.

Main characteristics:



Total length is up to 100 km.

Localization of a place with an accuracy of 1 m.

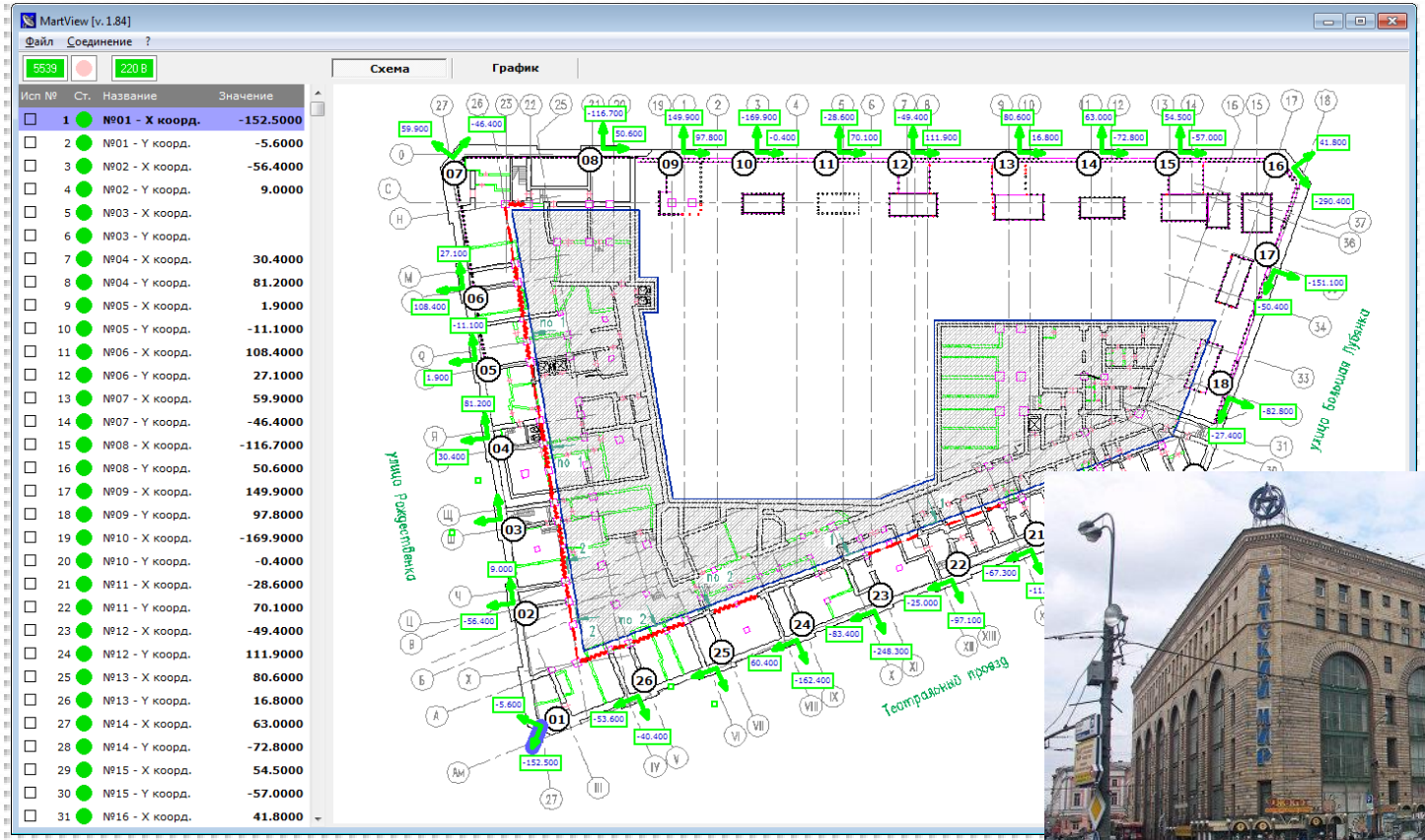
Sensitivity interferential

Processing neuroanalysis

Realized projects

Detskiy Mir (Russia, Moscow)

Moscow



Realized projects

W.H. Highway (Saint-Petersburg, Russia)

Saint-Petersburg

Areas of application

Basic industry, plants, factories.

- Tensions and deformations of different buildings
- Ground pressure
- Inclinometry of engineer buildings
- Tensions in reactor reinforced concrete decks and composite concrete decks
- Parasite vibrations in building constructions
- Construction integrity
- Radiation
- Contruction temperature

Areas of application

Power generation facilities, hydropower, nuclear power

- Intense and deformation control of integrity of buildings, dams, nuclear reactors, electric bearing parts and towers
- Inclinometric control of vertical position of basic elements
- Vibration control dangerous vibration effects
- Temperature control power units
- Control of integrity of reactors
- Monitoring of pressure upon a soil
- The distributed vibration control of territory perimeters

Areas of application

Oil processing, machine-production, chemical companies

- Intense and deformation condition of buildings
- Inclinometric control of bearing walls and blankings
- Accelerometric and vibration control of workshops with the increased vibration influences
- The intense and deformation control, the pointed and quasidistributed vibration control of separate units and gears of machines
- The distributed protection control perimeter of buildings and territory enterprises
- Temperature control

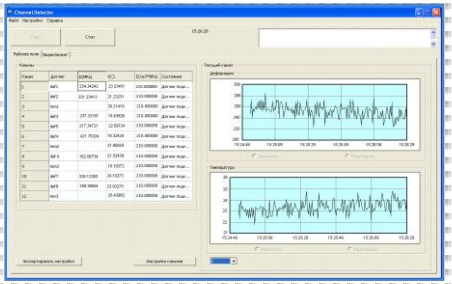
Areas of application

Oil storages, storages of dangerous wastes or chemicals

- Intense and deformation control of integrity of storage tanks.
- Inclinometric control of vertical position of basic elements and storage tanks
- Temperature control
- Control of liquid pressure in storage tanks
- Monitoring of pressure upon a soil
- The distributed vibration control of territory perimeters

Key parameters

• resolution	up to 10^{-6} (of full scale)
• number of channels	over 12
• length of optical fiber cable	up to 100 km (for distributed monitoring)
• dimensions	300 mm x 300 mm x 130 mm
• weight	max 3 kg (for mobile systems)
• power consumption	max 12 W
• battery life	max 1 month
• degree of protection	IP-65
• communication protocols	Ethernet (Wi-Fi)
• sensor types	deformation sensor, temperature sensor, pressure sensor, inclination sensor level sensor, acceleration sensor, so on!

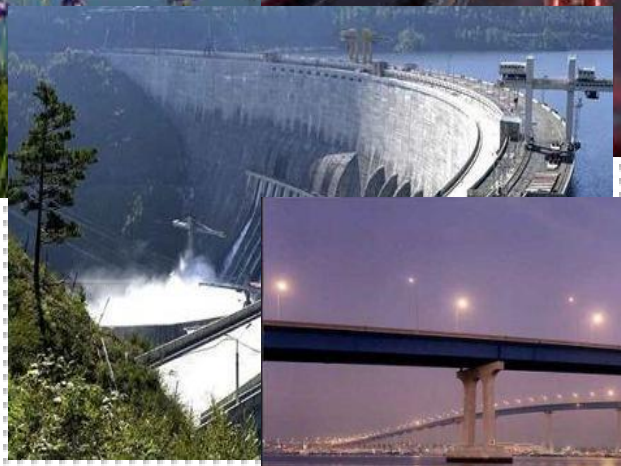


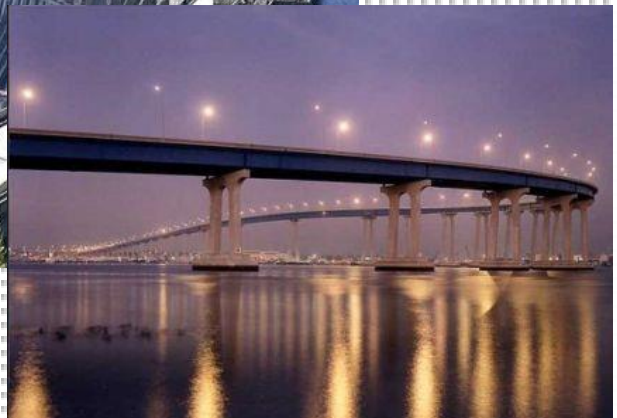
Software allows interrogating all channels simultaneously, processing data, storing it and sending via Internet including wireless LAN.

Key advantages

- All types of buildings safety technical monitoring
- All configuration types – from periodical to permanent 24 hours monitoring
- Multichannel system architecture
- Innovative conception of integration
- Unique accuracy and reliability according to innovative hardware and software
- The best correlation of price and quality versus world leaders
- Fire and explosion safety
- Immunity to electromagnetic interference
- Immunity to chemical damage and radiation
- Possibility of remote sensing

Main idea





DIFFERENT

TYPES

OF

MONITORING

ONE SYSTEM TO MONITORE EVERYTHING

Technical model

We produce both original hardware and software, sensors, monitoring systems and complexes.

We integrate our monitoring systems into buildings and make monitoring measurements and calculations.

We plan to integrate all our sensors and products in one monitoring complex with universal software interface.

Business model

We are eager to work together with project and exploitative companies. Also we are open to make partnership with integrators and industrial companies or funds.

We can cell licenses or can be distributers ourselves.

We plan to develop our company and to work at international security market. Therefore we are looking for some strategic investors.

OPTIZ-Monitoring

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THANK YOU!