BESTECH

Sensors & Teaching Equipment

■ Melbourne ■ Sydney ■ Brisbane **Global Technology, Local Support**

Bestech

- Bestech – Overview
- Product Range, Inc “Civil sensors”
- Applications

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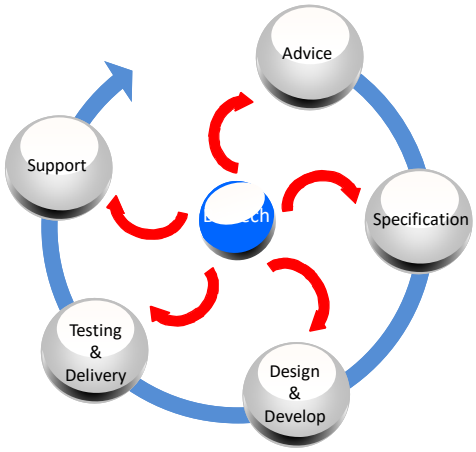
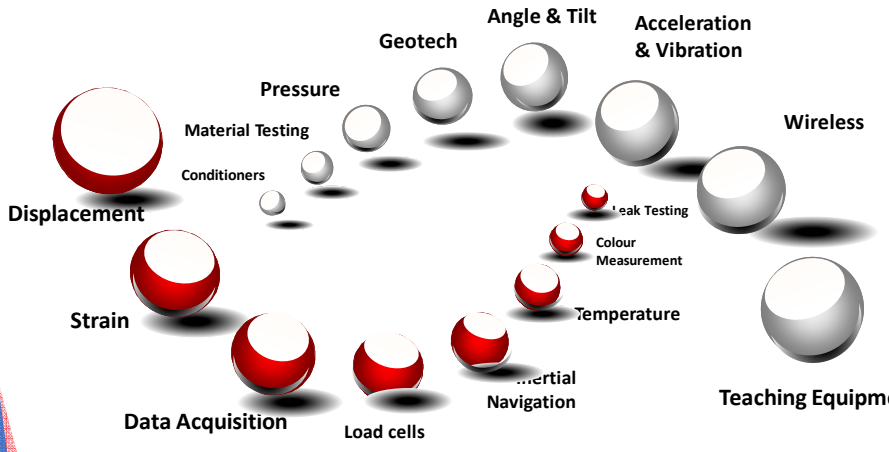
Bestech

- Established 2002
- 3 Branches and Over 15 engineers
- Wide product range and Suppliers
- Product specialists – DAQ, Vibration, Displacement, Strain

Solution Partner



Technologies



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Strain

- Foil – Metals, Concrete, Composites
- Fibre optic
- Vibrating wire
- Embedded
- Weldable
- Strain sensors
- Product Specialist
- Strain Gauge Course

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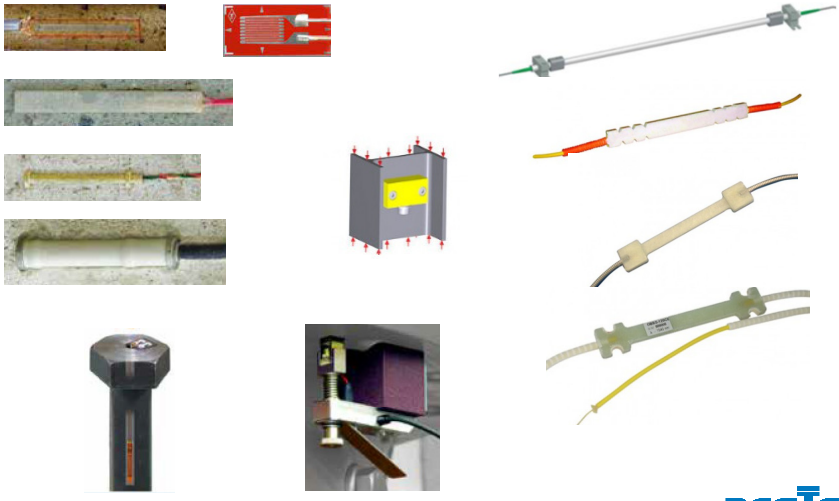
Strain



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Acceleration/Vibration

- DC response – Variable Capacitance, Piezo resistive, Servo
- Dynamic – Piezo Electric, IEPE,
- Tilt sensors
- Wireless
- Seismic
- Shakers
- Modal Hammers
- Product Specialist

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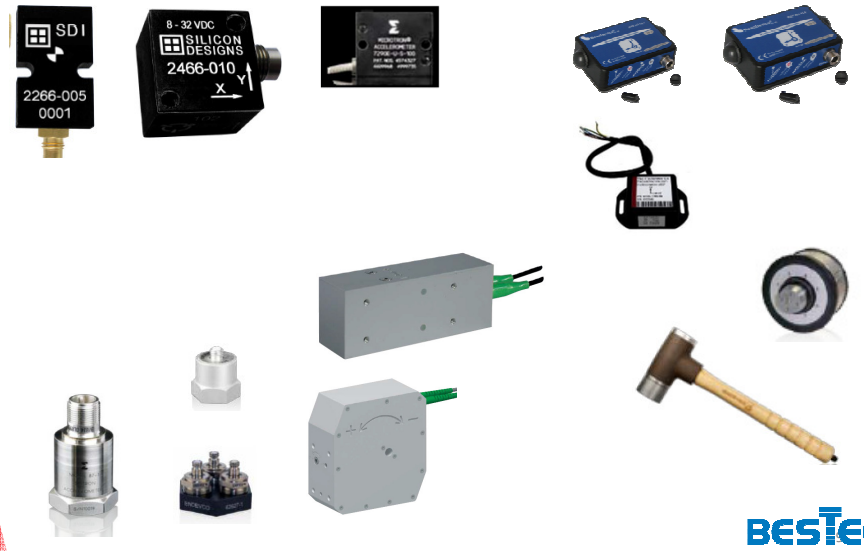
Acceleration/Vibration



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Displacement

NON-CONTACT	CONTACT
• Laser triangulation	• LVDT
• Laser long-range	• Strain gauge based
• Eddy current, Capacitive	• Draw wire
• Video	• Linear potentiometer
• Magneto Inductive	• Capacitive

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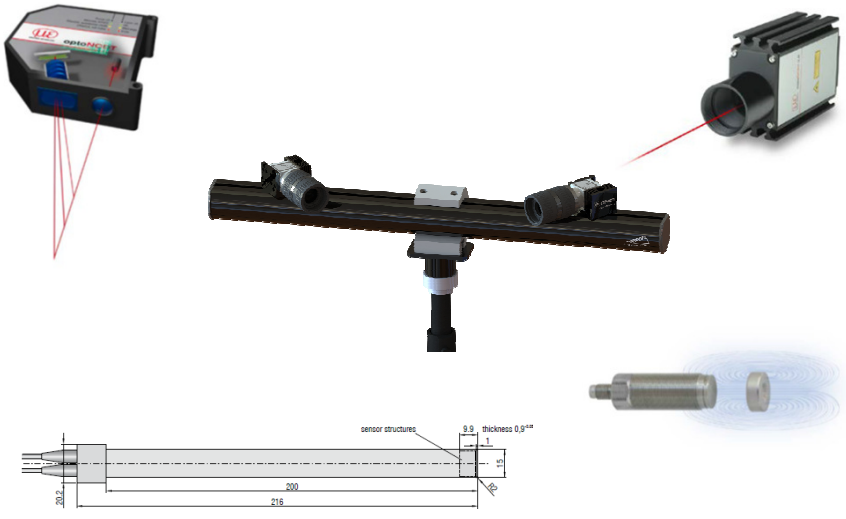
Displacement – Non Contact



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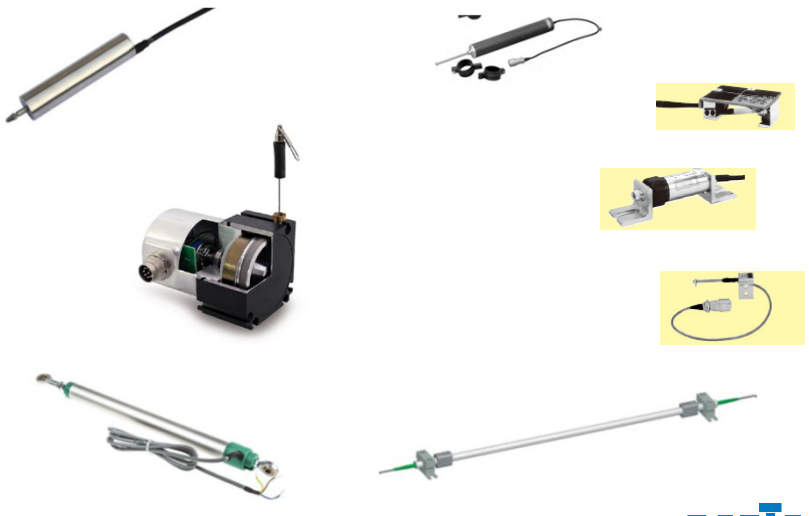
Displacement – Contact



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Data Acquisition

- Wireless
- Remote
- Standalone
- Handheld
- Flexible
- Fibre Optic
- High speed
- Software

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Data Acquisition

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Applications

Bridge under construction in Norway

BeanDevice® HI-INC version
Wireless tiltmeter ±15° + BeanDevice® AX-3D are used to monitor bridge health during bridge construction

The BeanDevice® is power supplied from an external battery

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Applications

Tilt monitoring on metallic bridge in Russia

Low Duty Cycle	***15 minutes***
Battery Life	***5 months***
Wiring cost	***$ 0 – the Beandevice® operates on its integrated battery***

BeanDevice® HI-INC version
Wireless tiltmeter ±15°

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Applications

BeanAir
Rethinking Sensing Technology

Large-scale deployment of WSN in a highway bridge in Canada

More than 300 wireless sensors deployed on a highway bridge infrastructure

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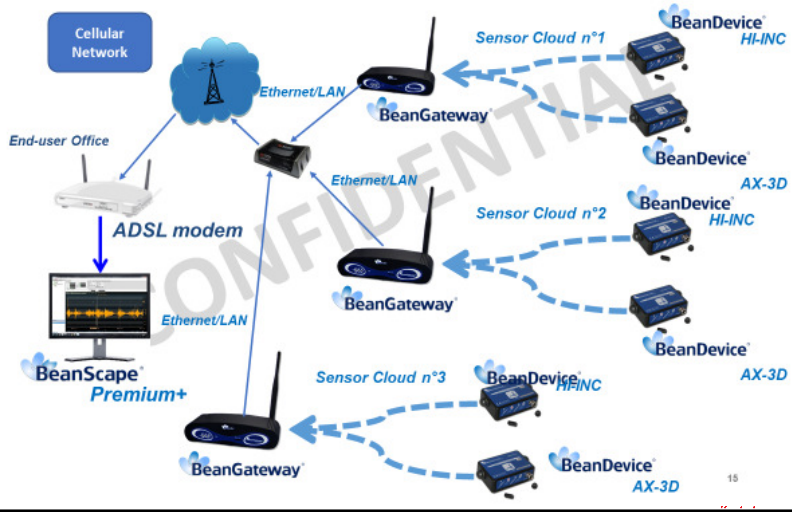
Applications

BeanAir
Rethinking Sensing Technology

Large-scale deployment of WSN in a highway bridge monitoring in Canada



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Applications

BeanAir
Rethinking Sensing Technology

Large-scale deployment of WSN in a highway bridge monitoring in Canada

Cracks are monitored with a displacement sensor (4-20mA output)

Displacement sensor is directly connected to the BeanDevice®AN-420

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Applications

BeanAir
Rethinking Sensing Technology

Large-scale deployment of WSN in a highway bridge monitoring in Canada

BeanGateway® + 4G Modem are power supplied by 50W solar Panel + 12Ah Lead-acid battery

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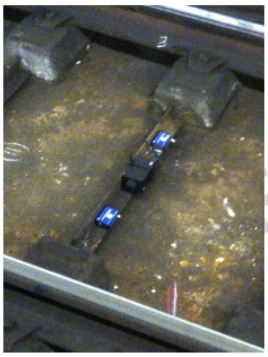
Applications

BeanAir
Rethinking Sensing Technology

Tilt monitoring on rails sleepers – several sites in Europe (2/4)



Beandevice® HI-INC Xtend version is provided with an external Primary cell with a capacity of 6500 mAh (battery life more than 4 years)

This monitoring application is working since 2010 More than 25 train stations are monitored with our wireless solution in Paris and Berlin.

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Applications

BeanAir
Rethinking Sensing Technology

Tilt and vibration monitoring on Great Mosque of Mecca (1/)

Customer concern:

- *Crowd movement increased structures fragility (6 millions of visitors every year)*
- *Saudi authorities wanted to prevent any kind of soil collapsing*
- *A wired monitoring solution is too much intrusive*

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Applications

BeanAir
Rethinking Sensing Technology

Tilt and vibration monitoring on Great Mosque of Mecca (2/X)

Target: Tracking Low resonance frequencies on the Rooftop (0.1Hz to 10Hz)

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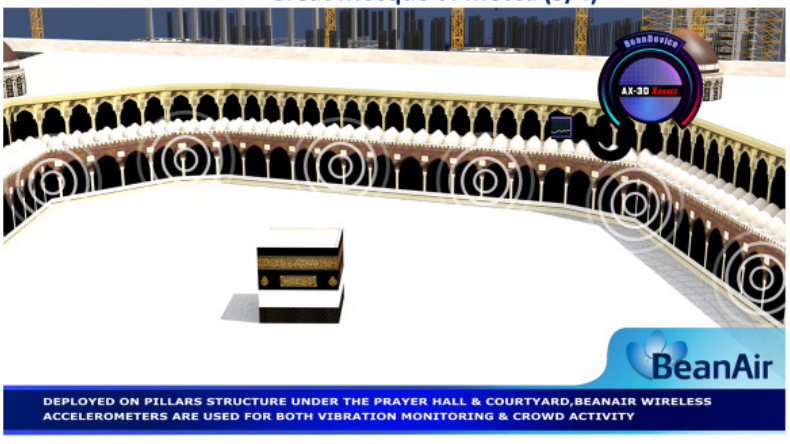
Applications

BeanAir
Rethinking Sensing Technology

Tilt and vibration monitoring on Great Mosque of Mecca (5/4)



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Applications

BeanAir
Rethinking Sensing Technology

Tilt and vibration monitoring on Great Mosque of Mecca (2/2)

Beanair provided:

- *105 wireless accelerometers*
- *45 wireless tiltmeters*
- *25 wireless shock sensors*
- *20 BeanGateway®*
- *3 BeanScape® Premium+ directly connected to the customer VPN*

This system is running since 2012

CONFI

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Applications

SOBRIETY

www.sobriety.cz

Products

MONET 3D

- Flagship of the measuring system family
- The most universal measuring device
- The most complex system
- The most flexible
- The most robust system

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Applications

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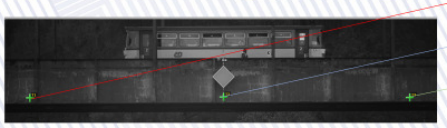
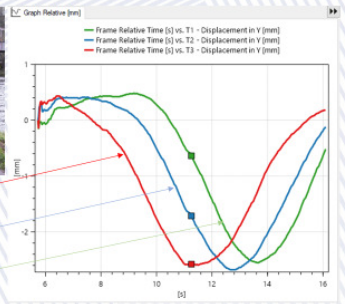
Measurement

www.sobriety.cz

Outdoor setup





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Applications

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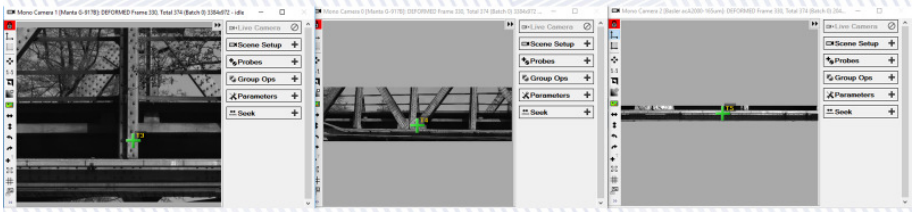
BRIDGE NR. 1

www.sobriety.cz

TRAIN BRIDGE TISNOV

- train bridge in city Tisnov
- three cameras used for measurement = three or more independent measuring points
- possibility to have more measuring points in one camera



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Applications

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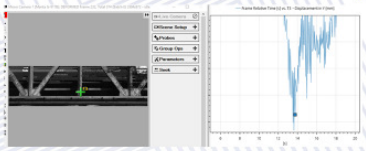
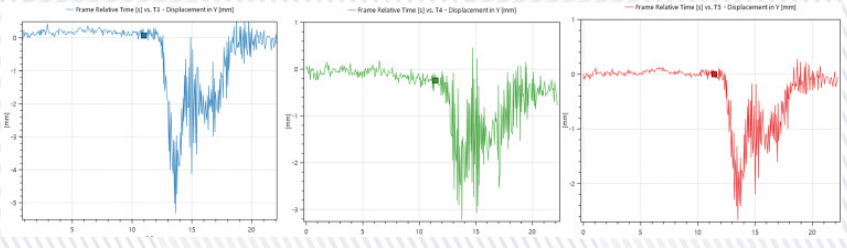
BRIDGE NR. 1

TRAIN BRIDGE TISNOV

- three single graphs with displacement of each point
- biggest displacement with the locomotive





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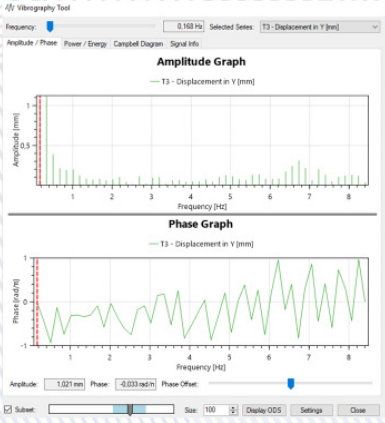
BRIDGE NR. 1

TRAIN BRIDGE TISNOV

- Vibrography measurement for each measured point



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Applications

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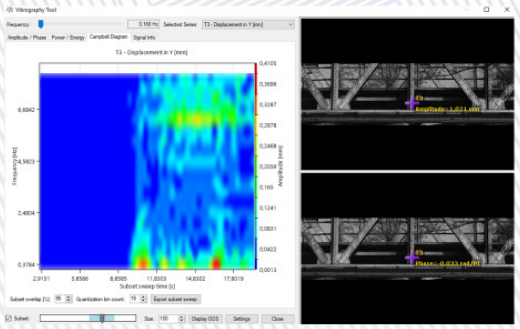
TRAIN BRIDGE TISNOV

- Campbell diagram
- for choosed time window (checkbox left down)



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BRIDGE NR. 1

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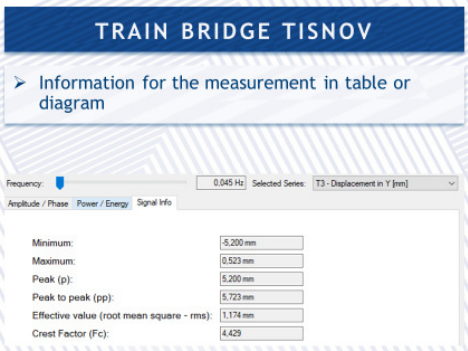
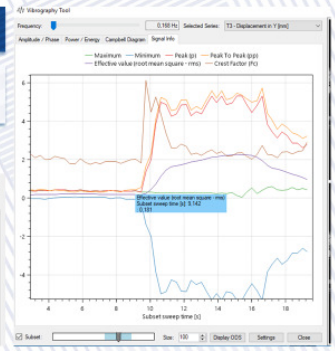
TRAIN BRIDGE TISNOV

- Information for the measurement in table or diagram





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Applications

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BRIDGE NR. 3

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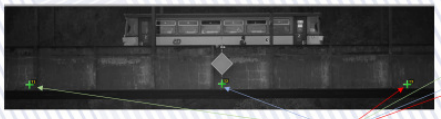
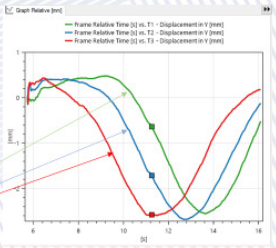
TRAIN BRIDGE KRALUPY

- other measured points for the same train
- possibility to make post-processing evaluation
- the measuring system doesn´t need markers - pattern with enough contrast is needed only





Filtered data from each point.

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Mercury RT Footage

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The End

Thank you

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