

Monitoring Engineering

Structural integrity thanks to
OSMOS technology

Monitoring ▪ Analysis ▪ Diagnosis ▪ Prevention ▪ Engineering



osmos **Canada**



Millau Viaduct – France

The continuous monitoring of civil engineering structures is essential, according to OSMOS Canada.

With the focus today on sustainable development, the responsible management of civil engineering structures necessarily involves surveillance, whether in the construction of new structures or maintenance of existing ones.

Every responsible and safety-oriented owner must be capable of instant assessments, in real time, of the performance of an existing structure.

For OSMOS Canada, this information is crucial and ensures adequate and prompt response, in an emergency or failure, for a reconditioning program, to prolong the safe use of the structure, to justify reconditioning costs, or to completely rebuild the element.

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Hôtel-Dieu de Saint-Hyacinthe Hospital



Proven technology in Europe and North America

OSMOS TECHNOLOGY

- Helps control structural risks
- Offers quality control through construction and repairs
- Helps detect damage early
- Reduces maintenance costs



Bridge over the Reuss - Switzerland / Austria



Leominster Bridge - Massachusetts

Ever-growing maintenance requirements

Whether for safety or cost optimization, there is no longer any doubt that construction and structural monitoring are essential.

Aging materials, new utilizations, and changing pressures are all factors leading to increased maintenance costs. Monitoring engineering allows for the optimum maintenance of a structure.

Work can be programmed at the right time and budgeted. The early detection of risks also reduces maintenance costs while guaranteeing maximum safety.

Permanent monitoring, not periodic analysis

How can a structure's response to environmental pressures, such as wind, rain, landslides or support work, be understood? Up until now, responses were evaluated according to element criteria or calculations, with the implicit margin for error. Periodic measurements and statistics were all that was available, from which the structure's degree of aging was extrapolated. Prior to the OSMOS technology, no monitoring system existed to pre-screen for eventual damage and therefore to implement preventive measures.

Optical extensometer installed across a joint



Optical cord on the Champlain Bridge, Montreal



3rd Avenue Bridge - Manhattan, OSMOS technology during transportation of the bridge



Structural status = Informed decisions

A FEW OF OUR PROJECTS IN QUEBEC

- Champlain Bridge, Montreal
- Girouard Bridge, Henri Bourassa Overpass, Montreal
- Stukely Overpass, Coaticook Bridge, Quebec Ministry of Transport
- Première Chute Dam, Hydro-Québec
- Graymont Bridge, Joliette
- QIT Travelling Crane
- Amphitheatre Floor, Hôtel-Dieu Hospital, Saint-Hyacinthe
- Williams Sewer, Montreal



Champlain Bridge - Montreal



Eiffel Tower - France

OSMOS technology revolutionizes structural safety

Based on optical cord technology, OSMOS puts a structure under permanent surveillance. The integrated device provides a real-time reading of the structure's status, recording load-bearing data on the effect of landslides, ground settling, cracks, compression, alignment and movements. It measures precisely and provides exact values on the deformation of buildings, bridges, tunnels and dams. Information is transmitted as digital data through fibre optics, stored in a black box serving as the structure's memory, and then analyzed.

From 1993 to today

In 1993, OSMOS established its first uninterrupted commercial device on the Eiffel Tower. Since then, hundreds of structures have been put under surveillance – a testimony to OSMOS's unparalleled expertise.

OSMOS Canada has carried out numerous monitoring projects across Canada to solve many structural problems, such as the real-time behaviour of works.

With its monitoring system for buildings, civil engineering structures and industrial equipment, OSMOS technology offers long-term control that records real-time responses through components installed directly on the structure.

OSMOS technology is the only one to indifferently follow static and dynamic effects with the same equipment. Changes in form and position can be monitored with maximum precision. The behaviour of the monitored structure therefore becomes predictable. All data are recorded and presented in real time.

High-tech devices

HIGH-TECH DEVICES

Easy installation and over 20 years of useful life

- Optical cord
- Optical extensometer
- EX-Large extensometer
- X-Trigger extensometer
- Optical track
- Data-processing system



Latent-mechanism X-Trigger extensometer



Optical extensometer

Real-time structural status

OSMOS Canada offers remote monitoring of civil engineering structures.

Users can determine the status of a structure at any time, in real time. To do so, they consult the information analysis presented as a clear and simple dashboard on their computer, portable digital device or portable telephone. Rough data is also available for more in-depth analysis.

Analyses can be carried out by OSMOS Canada or the user via Internet. Upon client requests, OSMOS Canada can provide regular reports and analyses on a structure's behaviour.

Turnkey solutions

The OSMOS security concept is a complete, affordable and profitable solution. Technical support, installation, set-up and advice are all elements that are integrated and adapted to our clients' needs.

OSMOS Canada thus offers more than an innovative device: we provide unique and personalized service. A monitoring plan is established individually for each client, with the goals, measurement methods, technical equipment and desired services carefully determined at the outset.

The OSMOS technology is then fully configured and installed. Clients need not invest separately in the equipment, which is supplied by OSMOS Canada. Clients pay only for the follow-up services.

Upon request, OSMOS Canada can also analyze and interpret data. In this case, clients outsource the surveillance of their structure or equipment to OSMOS Canada. The clients' staff then need not be trained and taken away from other priorities.

By guaranteeing continuity in surveillance and by establishing regular reports that are summarized and clear, OSMOS Canada ensures that an ideal foundation is in place for decision making.



OSMOS technology in real time



Areas of intervention



Civil engineering road works

- Dynamic loads and frequencies
- Loads due to temperature variations, foundation effects and other pressures
- Monitoring of components: prestressing elements, support devices, pillars, spans
- Analysis of specific site damage due to known and unknown causes
- Estimation of remaining life

Historical monuments

- Non-destructive monitoring of the structure
- Evolution of cracks in damaged structures
- Impact of sanitation work



Civil engineering rail works

- Ballast stability
- Load increases in merchandise traffic and vibratory measures
- Monitoring of covered structures in stations
- Load spectrum for structures subject to fatigue

Hydraulic structures

- Sluice stability
- Monitoring of dams and embankments
- Stability of deteriorated elements, such as sluice gates



Industry

- Load spectrums for useful-life estimates
- Load measurements for operations applications
- Expansion limits on pipelines, silos, cranes
- Monitoring of vibrations

Towers, wind turbines

- Monitoring of foundation stability
- Load variations in the tower and joints
- Prompting of rotating elements (rotors, bearings, reduction gears)
- Monitoring of vibrations



Geotechnical structures

- Shaft stability
- Fill and slope stability
- Convergence of tunnel formwork
- Surface settlement



Contact

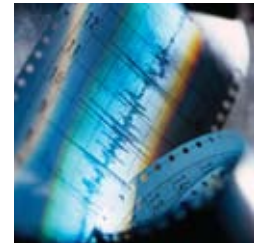


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