



# Case Study - Buildings

Halifax Metro Centre

Halifax, Canada, 2006





Aim	The main aim of the project is to measure and monitor long-term in quasi real-time the deflection of the roof's structure caused by extraordinary events such as heavy snowfalls or punctual events happening inside the arena (e.g. concerts) and requiring heavy equipment to be hanged on the roof's trusses.
Location	Halifax, Canada
System Integrator	SMARTEC SA
End Customer	McDonnell
Date	2006
Instrumentation	<ul style="list-style-type: none"><li>• 3DeMon, MuST System</li><li>• Micron Optics, sm125 Optical Sensing Interrogator</li><li>• Micron Optics, sm041 Channel Multiplexer</li></ul>
Sensors	(36) Sensors
Software	SMARTEC SDB Pro+View
FBG Technology Benefit	Long-gage sensors, immunity from EM interference from other equipment



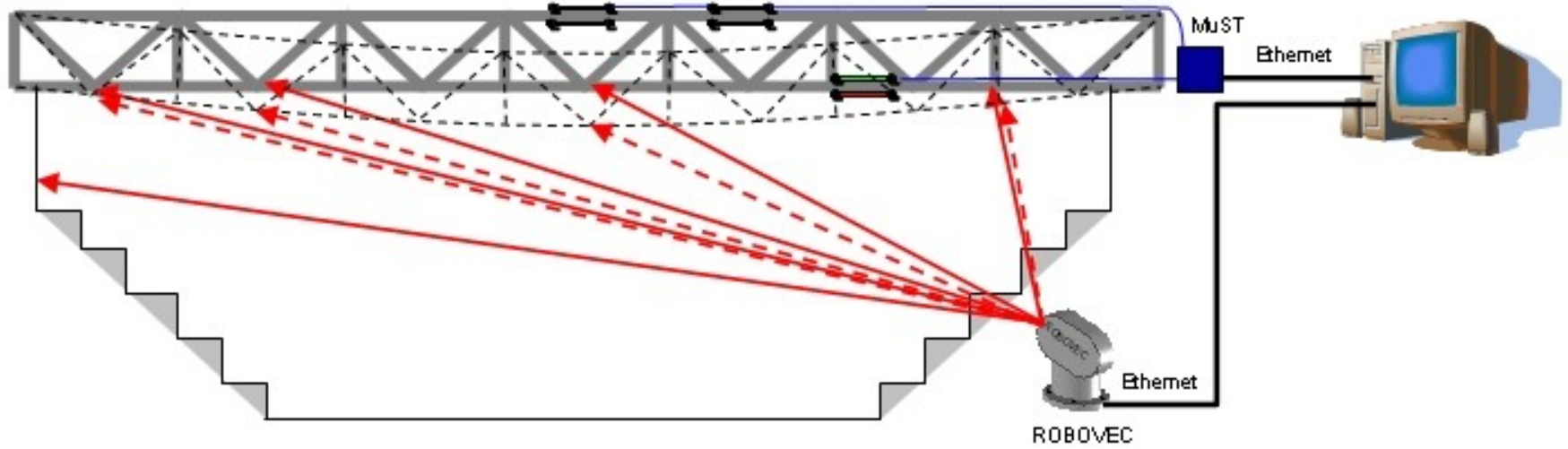
- Summary: Roof structure deflection monitoring combining MuST fiber optic strain and temperature sensors with 3DeMoN ROBOVEC optical distance measurements.
  - § Roof Monitoring
  - § Snow Load Evaluation
  - § Strain & Deflection



- Halifax Metro Centre has become a first class multi-entertainment, sports facility and exhibition centre connected to the World Trade and Convention Centre, in a strategic downtown location at the centre of metro business activity. It is the largest arena in Halifax and is host to a range of entertainment and sporting events in the city. It currently has a seating capacity of 10,595 for ice hockey. Since the arena's construction in the late 1970s.



Schematic view of the system components.





ROBOVEC instrument installed on a column.





## Central Measurement Point



Micron Optics,  
sm125 Optical  
Sensing  
Interrogator and  
sm041 Channel  
Multiplexer

(MuST-Dynamic  
Fiber Bragg  
Gratings Reading  
Unit and Switch)



- Results

- § The main technical requirements for this project was that it was easy to install, and it is an easy software to use.
- § An FBG system was chosen for EM immunity and long-gauge + multiplexing.
- § The customer will continually study the real strain produced by snow load and hanging loads for special events.
- § They are also pleased that the installation was easy and fast.

- Acknowledgements

- § McDonnel (End customer)
- § SMARTEC/ Roctest (System integrator)  
Tel: +41-91-610-18-00, email: [smartec@smartec.ch](mailto:smartec@smartec.ch) , web: [www.smartec.ch](http://www.smartec.ch)  
Links: [http://www.smartec.ch/HTMLFiles/Halifax\\_Metro\\_Centre.htm](http://www.smartec.ch/HTMLFiles/Halifax_Metro_Centre.htm)
- § Micron Optics, Inc.  
Tel: 404-325-0005, email: [info@micronoptics.com](mailto:info@micronoptics.com), web: [www.micronoptics.com](http://www.micronoptics.com)