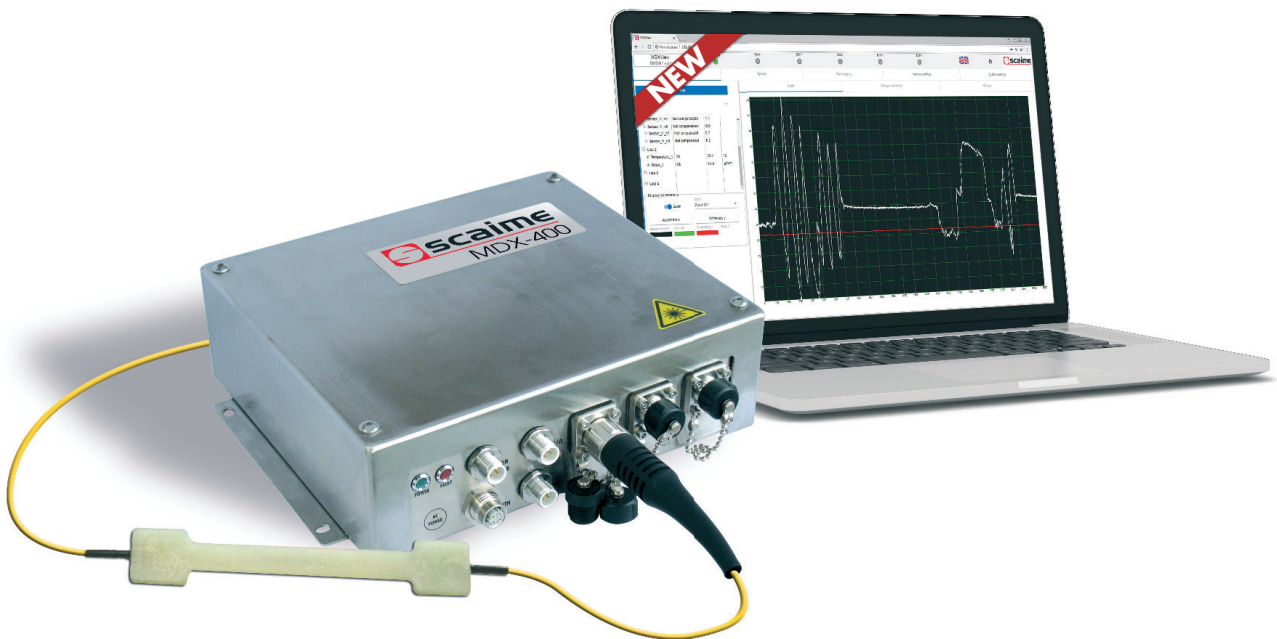




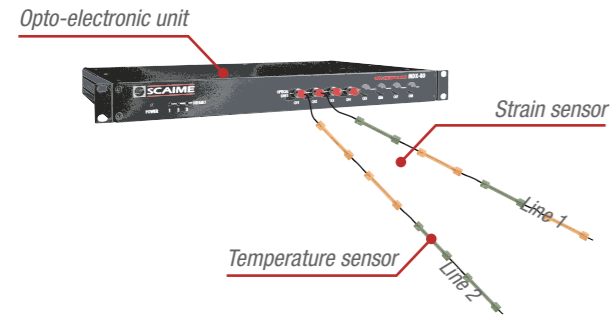
# Fiber Optics Measurement

Sensors, Electronics



# Overcome the sensing frontiers...

SCAIME has developed a measurement system based on Optical Fiber Bragg Grating. We offer technologically advanced technological solutions while ensuring innovation, quality and reliability.



## New horizons for your measurements...

- > Easy and reliable handling of the optical fiber cable
- > High resistance to cyclic fatigue
- > Perfect load transfert
- > No sensitivity to EMI
- > Sensors in series
- > Measurement on long distances
- > Integrators and Sensors ATEX/IECEX certified



## For all your applications...

SCAIME offers integrated fiber optics monitoring systems for the control of complex structures exposed to mechanical and thermal stresses. We provide:

- Optical fiber sensors for strain and temperature measurement
- Modular Opto-electronic acquisition units suited to their working environment
- Expertise in monitoring system design
- On-site installation and training, data acquisition as well as analysis with dedicated softwares

## Civil engineering

Monitoring of civil engineering installations with temperature sensors, strain sensors and extensometers ready to be embedded or implemented directly on the structure.

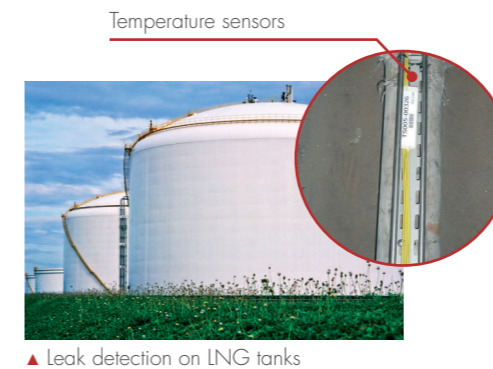


## SENSORS

| Model                   | OBSG  | OBSGW                                   | OBEG                                    | OBLG                                     | OBDI                               | OBTI  | OBAC  | OBTS  |
|-------------------------|---|---|---|--|------------------------------------|---|---|---|
| Type                    | Strain gauges for bonding or integration into composite | Strain gauges to be bolted/welded       | Strain gauges for concrete or tar       | Long base extensometers (0.5; 1 ; 1.5 m) | Displacement sensors               | Tilt-meters                                     | Accelerometers                                  | Temperature sensors                             |
| Capacity                | -5 000 ... 5 000 $\mu\text{m}/\text{m}$                 | -2 000 ... 2 000 $\mu\text{m}/\text{m}$ | -5 000 ... 5 000 $\mu\text{m}/\text{m}$ | -2 000 ... 2 000 $\mu\text{m}/\text{m}$  | 25/50/100 mm                       | -3 ... 3°                                       | -2 ... +2 g                                     | -30 ... +180 °C                                 |
| Sensitivity             | 1.2 $\mu\text{m}/\mu\text{m}/\text{m}$                  | 1.25 $\mu\text{m}/\mu\text{m}/\text{m}$ | 1.2 $\mu\text{m}/\mu\text{m}/\text{m}$  | 1.25 $\mu\text{m}/\mu\text{m}/\text{m}$  | 9/17/33 $\mu\text{m}/\rho\text{m}$ | $2 \times 10^{-3} \text{ } ^\circ/\rho\text{m}$ | $\pm 3.3 \times 10^{-3} \text{ g}/\rho\text{m}$ | 10 ... 25 $\mu\text{m}/\text{ } ^\circ\text{C}$ |
| Resolution              | 1 $\mu\text{m}/\text{m}$                                | 1 $\mu\text{m}/\text{m}$                | 1 $\mu\text{m}/\text{m}$                | 1 $\mu\text{m}/\text{m}$                 | 10/25/50 $\mu\text{m}$             | 0.002°  | 0.10 %  | 0.05 ... 0.1 °C                                 |
| Combined Error (% N.R.) | 0.25 %  | 1 %                                     | 0.25 %                                  | 1 %                                      | 0.5 %                              | 0.5 %   | 0.5 %   | 0.3 ... 1 %                                     |

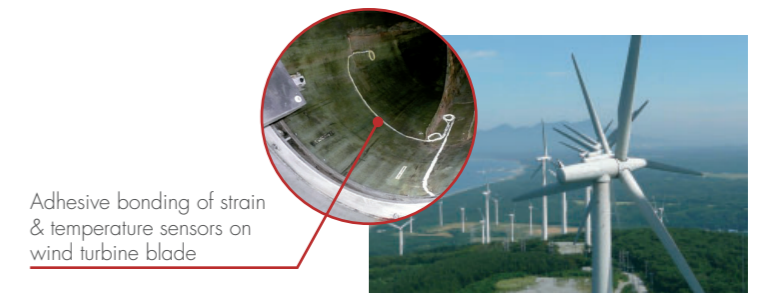
## Petrochemical industry

Thanks to its intrinsically none explosive specification, optical measurement system is the best choice for gas leak detection and temperature or strain monitoring in explosive areas.



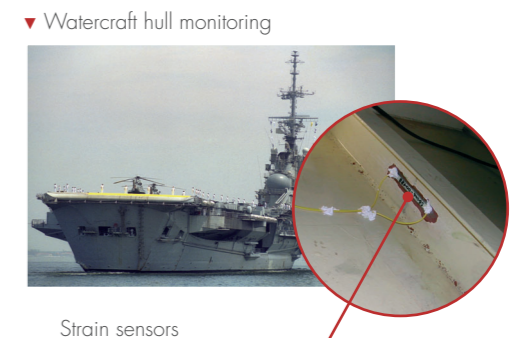
## Wind energy

- > Real time monitoring of loads in the blades
- > Ice detection
- > Condition based maintenance
- > Optimization of energy production
- > Estimation of remaining lifetime



## Marine applications

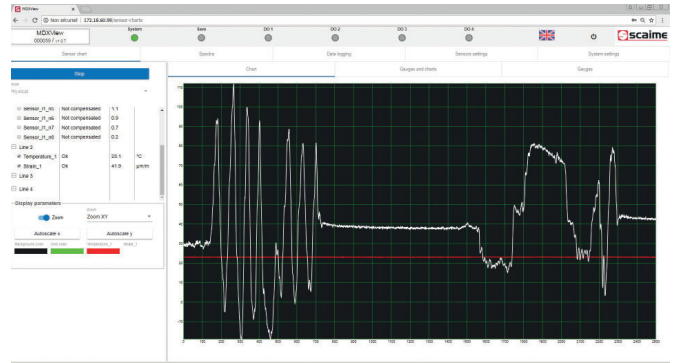
With hull monitoring, strain measurement allows to select the best route preventing the risk of mechanical failure in operation.



**Software**

Our new MDXView web interface has been developed specifically for our MDX100, 400 and 8000 series. User-friendly and intuitive, it is integrated into our acquisition units and allows you to configure the entire system and sensors directly from your PC:

- Adjustment of acquisition gains,
- Automatic detection and set up of connected sensors
- Detection of sensors defects,
- Sensors zero,
- Possibility to connect a GPS antenna or a NTP server for ultra-precise data dating,
- Data recording on internal memory, continuous or on event, with automatic system standby,
- Data transfer via TCP-IP or CANopen.



..... **ACQUISITION UNITS** .....



| Model                    | MDX-100T                               | MDX-400T                               | MDX-8000      |
|--------------------------|--|--|---------------|
| Number of optical lines  | 1, 3 or 4                              | 3 or 4                                 | 4 or 8        |
| Frequency                | 1 Hz                                   | 100 Hz                                 | 1 or 2 kHz    |
| Resolution               | < 1 pm                                 | < 1 pm                                 | 2 pm          |
| Repeatability            | 2 pm                                   | 2 pm                                   | 3 pm          |
| Digital I/O              | 1 I / 4 O                              | 1 I / 4 O                              | 1 I / 4 O     |
| GPS antenna connectivity | ✓                                      | ✓                                      | ✓             |
| Communication            | Ethernet / CANopen®                    | Ethernet / CANopen®                    | Ethernet      |
| Storage capacity         | 32 GB                                  | 32 GB                                  | 32 GB         |
| Housing                  | Stainless steel IP 66 or Rack 19" IP30 | Stainless steel IP 66 or Rack 19" IP30 | Rack 19" IP30 |
| Vibrations               | IEC 60721-3-5 cat. 5M2*                | IEC 60721-3-5 cat. 5M2*                | N/A           |
| Damp heat                | IEC 60068-2-30*                        | IEC 60068-2-30*                        | N/A           |

\* IP66 version

**Bragg grating technology...**

