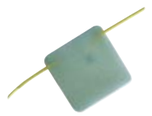
FIBER OPTIC SENSORS







Model	OBSG-60	OBSG-120	OBSG-120-CE	OBSGW-100	OBTS-100
Type	*Strain gauge for integration into composite*	*Strain gauge to be bonded*	*Strain gauge for concrete*	*Strain gauge to be welded*	*Temperature sensor*
Range	-5 000 … 5 000 µm/m	-5 000 … 5 000 µm/m	-5 000 … 5 000 µm/m	-2 000 … 2 000 µm/m	-30 … +80 °C
Sensitivity	1.2 pm/µm/m	1.2 pm/µm/m	1.2 pm/µm/m	1.2 pm/µm/m	10 pm/°C
Combined error	0.25 %	0.25 %	0.25 %	1 %	0.5 %
Resolution	< 1 µm/m	< 1 µm/m	< 1 µm/m	< 1 µm/m	0.1°C
Dimensions	60x10x1.1 mm	120x20x2.8 mm	120x20x6 mm	150x19x10 mm	60x60x2.8 mm

ACQUISITION UNITS


Model	MDX-400	MDX-8000
Number of optical lines	3 or 4	4 or 8
Frequency	100 Hz	1 ou 2 kHz
Resolution	0.4 µm/m (0.02°C)	2 µm/m (0.02°C)
Repeatability	1 µm/m (0.05°C)	3 µm/m (0.1°C)
Digital I/O	1 I / 4 O	1 I / 4 O
GPS antenna connectivity	✓	✓
Communication	Ethernet - CANopen	Ethernet
Storage capacity	32 Go	32 Go
Housing	Stainless steel IP 66	Rack 19'' IP30
Operating temperature	-30 / +50°C	-30 / +50°C
Vibrations	IEC 60721-3-5 cat. 5M2	N/A
Damp heat	IEC 60068-2-30	N/A

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Find all the technical documentation on our website.

Wind Energy

Condition Monitoring Solutions

Optimizing Assets with Optical Technology

SCAIME designs solutions offering accuracy, robustness and reliability for the structural monitoring of wind turbines. The sensors and acquisition units offered by Scaime measure the stresses on the blades as well as on the mast and the foundations.

Key benefits

- Maintenance optimization
- Downtime reduction
- Cost of Energy decrease
- Security improvement

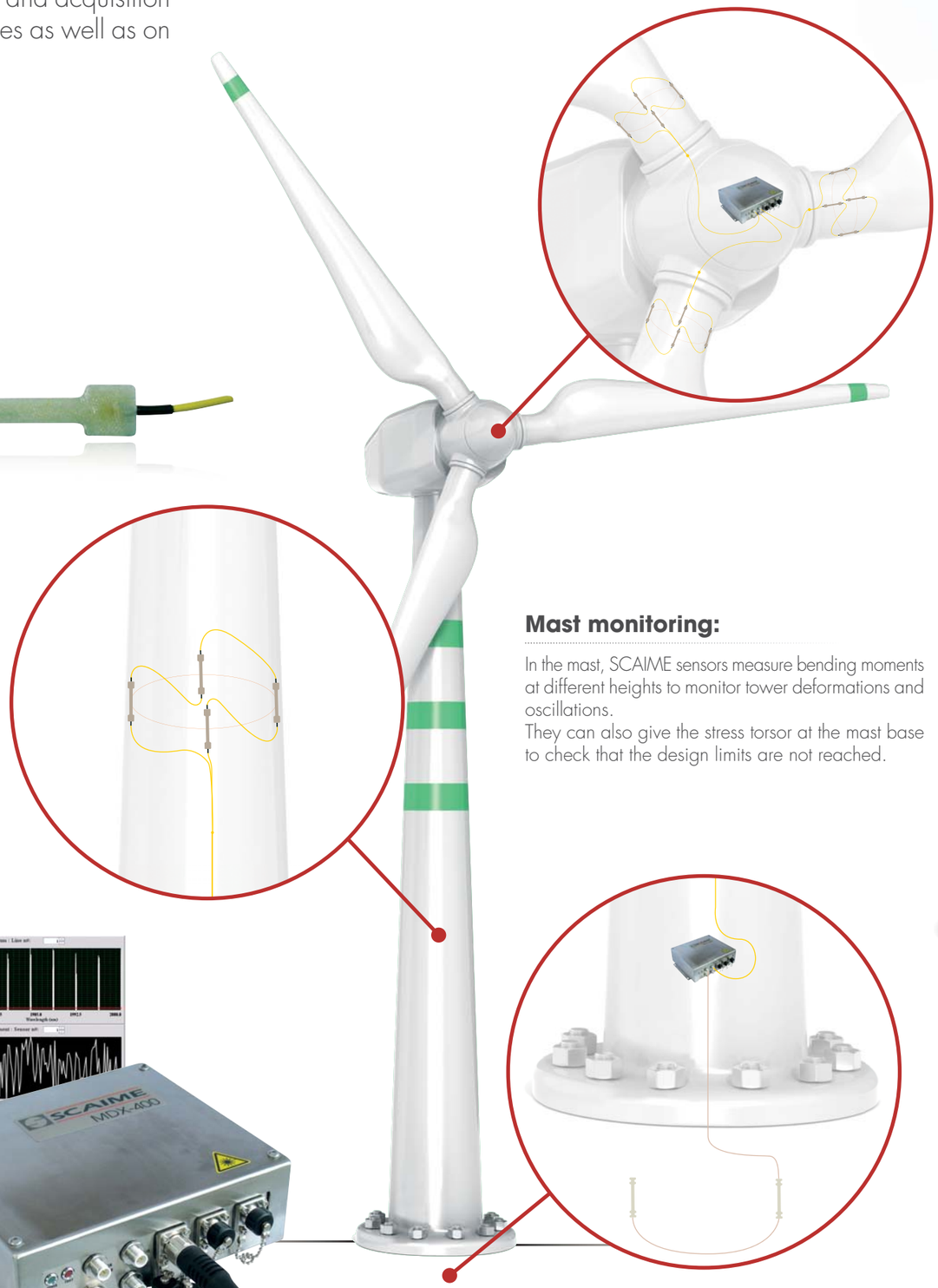
SENSORS:

SCAIME sensors are either made of glass fiber reinforced plastic or aluminum alloys making them extremely easy to handle with an outstanding reliability.

- Easy and reliable handling of optical fiber
- High resistance to cyclic fatigue
- No EMI sensitivity
- No corrosion
- No drift

A comprehensive range

- Strain and temperature sensors to be bonded, welded or embedded into laminates or concrete
- Long base extensometers
- Displacement sensors
- Tilt-meters
- Accelerometers



Blades loads monitoring:

Sensors are either embedded into the laminate during blade manufacturing or adhesively bonded to the inner surface of the blade. MDX-400 acquisition unit is fixed in the rotating hub. The connection to the sensors is made through rugged optical cables and connectors.

- Design validation and blade certification
- Emergency alarms when loads become too high
- Blade loads data input for pitch controller

With further data processing:

- Remaining lifetime estimation
- Defects (cracks, delamination…) detection
- Ice detection on the blades. Heating can be activated in due time and turbine restarted safely without visual inspection.

Mast monitoring:

In the mast, SCAIME sensors measure bending moments at different heights to monitor tower deformations and oscillations.
They can also give the stress torsor at the mast base to check that the design limits are not reached.

ACQUISITION:

MDX400

Performance, reliability, connectivity robustness and ease of use were the main focuses when designing the MDX-400.

It is housed in a rugged stainless steel IP66 enclosure particularly well suited for harsh and salty environments.

MDX-400 successfully passed IEC-60721-3-5 class 5M2 high levels of vibrations tests, certifying long term reliability in wind turbine hub.

Beyond the robustness, the MDX-400 features advanced connectivity with an integrated web server for remote system and sensors setup and a CANopen link for simplified connection to a PLC.

Foundations monitoring:

SCAIME optical sensors can monitor aging due to load accumulation, soil pressure, grouting, … of any kind of foundations : concrete with sensors directly embedded inside, or metallic jackets with sensors bonded that can be immerged under sea water.