

FIBER OPTIC SENSING SOLUTIONS  
TO MEET STRUCTURAL HEALTH  
MONITORING CHALLENGES



opSens Solutions

Enlightenment through smart measurements

# SMART SENSORS FOR SMARTER INFRASTRUCTURE

Monitoring aging buildings or integrating smart instrumentation in critical infrastructures is common practice. Especially for concrete structures, subject to cracking and various type of deterioration over time.

Miniature and highly reliable, Opsens Solutions fiber optic sensors can measure minute changes of deformation due to stress, dynamic loading, creep, temperature change, moisture change or chemical ingressions. Immune to the most severe environmental disturbances, these sensors are perfectly tailored to monitor strain and deformation in tough testing environments with extreme temperature, high pressure, liquid immersion, and corrosive chemicals.



## STRAIN SENSORS



In its bare version, the sensor is easy to fix on surface with epoxy or within composite structure just like standard strain gages



It can be embedded in a special composite carbon fiber laminate easy to install on steel or concrete surface



The spot weldable model is designed for permanent monitoring of immersed infrastructures where adhesive is not recommended



Multipurpose, the sensor can be packaged in load cell to measure deformation related to multi-axis force

## EXTENSOMETERS



Robust design specifically tailored to be anchored in concrete surface and in rock structure



Can be welded in place on steel structure requiring permanent and reliable deformation surveillance



The concrete embeddable version is designed to be installed in fresh concrete to provide internal deformation

## ●●● DESIGNED TO HANDLE HARSH CONDITIONS

- Insensitive to temperature variation, the spot weldable version will not be affected by high temperature generated by the soldering process
- Sensor can be sealed up to 300 bars pressure
- No drift over time
- High performances alloy used for support such as stainless steel 316, Inconel or Invar to meet the challenges of tough environment
- Not affected by transverse strain
- Up to 10,000 microstrain range



## EFFICIENCY AND VERSATILITY

- HIGH TEMPERATURE AND PRESSURE OPERATING RANGE
- NO DRIFTING
- INSENSITIVE TO TRANSVERSE STRAIN
- NOT AFFECTED BY EMI AND RFI
- NUCLEAR RADIATION RESISTANT
- INTRINSICALLY SAFE

### DISPLACEMENT SENSORS



Multi-purpose LVDT model with convenient wall-mount attachment and spring loaded operating shaft if needed



Ultra-robust deflectometer designed to sustain rough conditions in demanding environment

## TYPICAL APPLICATIONS

- » Permanent monitoring of bridge, dam, pipes and mining structures
- » Monitoring nuclear power plants and nuclear waste storage sites
- » Strong Electromagnetic interferences zone and High voltage area
- » Surveillance of underground structures in mining applications
- » Permanent immersed conditions up to 300 bars (subsea)
- » ATEX environment - explosive atmosphere conditions
- » Aviation and aerospace applications
- » Temperature: from cryogenic to 250 °C

## SIGNAL CONDITIONERS

Opsens Solutions readout units are compatible with all WLPI sensors. Through the same interface, the unit can provide temperature, pressure, strain, position, or displacement measurements to offer maximum versatility.



### OEM CARD

OEM-type signal conditioner that offers a product designed for specific needs. Its compact size and modular assembly give OEM's the best in design flexibility.



### HANDHELD UNIT

Ruggedized to provide good mechanical protection against intensive handling in tough environments, these devices are compact and offer maximum portability with battery powered function.



### MULTI-CHANNEL EQUIPMENT

Robust and stackable multi-channel signal conditioners offering a variety of interface and communication protocols such as serial, analog and even EtherCAT.



### MODULAR PLATFORM

Providing scalable sampling rate up to 1 KHz, these advanced data acquisition systems offer comprehensive graphical user-interface environment via the interactive front touch panel.

## OUTSTANDING FIBER OPTIC SENSING SOLUTIONS FOR STRUCTURAL HEALTH MONITORING

### KEY FEATURES

- Intrinsically safe
- No drift over time
- Immunity to microwaves, EMI, RFI
- Not affected by transverse strain
- Can be sealed up to 300 bars pressure
- Resistant to nuclear radiation

### TO KNOW MORE

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