QUAKELOGIC

3DSensor

the world's first shape DFOS sensor for geotechnical and civil engineering applications, measuring displacements of a structure in 3D space along its entire length

3DSensor measures **displacements over its entire length** in three-dimensional space. It is designed to be **directly embedded into the monitored structure**, for example in **soil** or **concrete**, or to be installed **on the surface of an existing structure**. It has adjustable dimensions to fulfill the requirements of the specific project. **3DSensor** is most applicable in monitoring **pipelines, landslide areas, roads, bridges**, embankments and other **linear structures**. It provides quantitative information on displacements or deflections, expressed directly in milimeters.

SENSOR ADVANTAGES

- **VERTICAL AND HORIZONTAL DISPLACEMENT** measurements along the entire length of the sensor
- **LABORATOTRY AND IN SITU** version
- **ADJUSTABLE GEOMETRY** to optimize the sensitivity for a specific project
- **NO SENSOR INFLUENCE** on the monitored structure (negligible stiffness)
- **RESISTANT TO ENVIRONMENTAL CONDITIONS**, including electromagnetic fields and lightning strikes
- **EASY INSTALLATION** — lightweight sensor, ready to use when unrolled from the storage coil

TECHNICAL SPECIFICATIONS

DISPLACEMENT MEASUREMENT RESOLUTION	1.0 mm
DISPLACEMENT MEASUREMENT RANGE	any, dependent on the structural deformations
OPERATING TEMPERATURE	-20 to +60°C
SENSOR DIMENSIONS	45 x 12 mm
SENSOR WEIGHT	252 kg/km (in situ version)
SENSOR MATERIAL	PLFRP + PE
SCATTERING USED	Rayleigh, Brillouin or Raman
METHOD OF DELIVERY	storage coils or straight sections
SENSOR LENGTH	any length made to order

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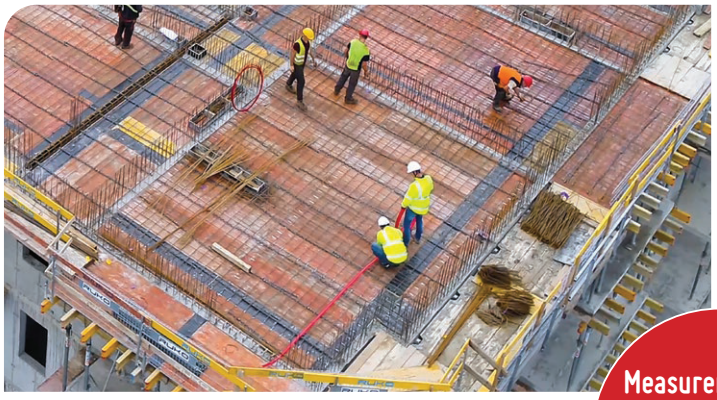
APPLICATIONS

- **STRUCTURAL HEALTH MONITORING** of engineering structures
- **GEO- AND HYDROTECHNICAL ENGINEERING** (e.g. slurry and retaining walls, piles, concrete columns, dams, embankments)
- **LINE STRUCTURES:** roads and bridges, tunnels, railway lines, pipelines and others
- **LANDSLIDE** and **MINING** areas



Installation of 3DSensor within reinforced concrete slab

Application of 3DSensor in a road embankment

Measurements of structural strains up to hundreds of kilometers!

Measurement of a ground vertical displacements — R&D field

Application of 3DSensor along a gas pipeline

BENEFITS OF APPLICATION

- **REDUCTION OF DAMAGE OR FAILURE RISK** by early detection of deflections
- **NON-INVASIVE DIAGNOSTICS**, enabling control of the technical condition of the structure
- **CHEAPER STRUCTURAL HEALTH MONITORING** – one 3DSensor replaces thousands of traditional spot sensors
- **QUALITY IMPROVEMENT** – verification of design assumptions and quality of subcontractors' works
- **FULL CONTROL OF THE STRUCTURE** during construction and further operation
- **OBJECTIVE DOCUMENTATION** for any disputes during the warranty period
- Process optimization – enabling for better **SELECTION OR MODIFICATION OF CONSTRUCTION TECHNOLOGY** based on measurement results
- Early **DIAGNOSTICS –THE LONGER THE TIME OF SAFE OPERATION**, the lower the total costs