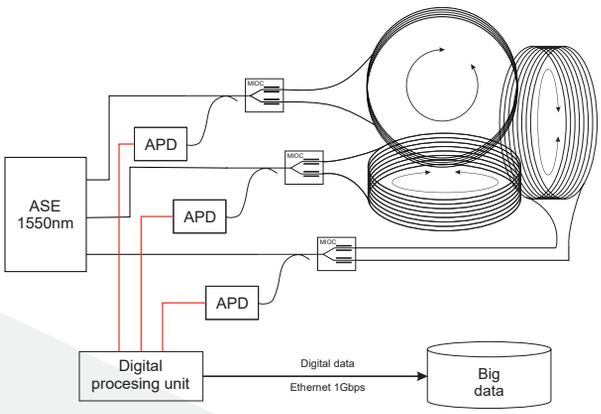
ELPROMA

MILITARY CIVIL

FOSREM

The wideband frequency FOG-based sensor and the network of synchronised Ultra Sensitive Seismographs

Multipurpose Earth & Space Photonic Sensor with Big Data output.
A new approach to the nano measurement of angular velocity and angles.



The sensor operates as a result of the measurement of a difference between two interfering light beams propagating around a closed (very long) optical path, in opposite directions,

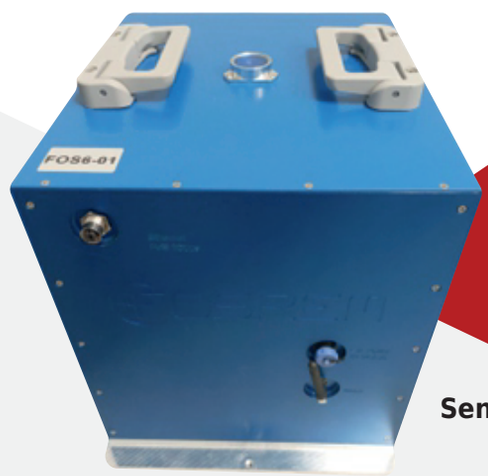
- Unique high-accuracy technology, so far available from 2 countries only;
- Sagnac effect, independent of Earth Gravity, for which the only frame of reference is Einstein's space-time;

The Sensor produces high-resolution Big Data output for the next step of profile computing. When synchronized in the time domain, the sensors provide unique new 3D information not available from a single sensor. In addition, Rubidium's high-frequency option improves the resolution of frequency domain operations, providing so far undiscovered data. The main business profiles are Microseismic sensing (gas & oil, thermal water, mining industry), military, autonomous vehicles (autonomous cargoships/drones/plains/robots), industry asset management.

FOSREM is based on a Highly Accurate Fibre Optic Sagnac Interferometer.
FOS-6 is a 3-axial Fiber Optic Seismograph for Rotational Seismology.

Technical parameters*

Rotational rate	**10 rad/s**
Dynamic range	**min. $50*10^{-9}$ rad/s, max. 10 rad/s**
Frequency band	**from 0.01 to 100 Hz**
Sensitivity	**$2,5*10^{-8}$ rad/s/√Hz**
Management	**Local and remote**
Data storage	**< 512 GB SSD (inside PCU)** **Stored max. 30 days**
Interfaces	**1Gbps Ethernet RJ-45 w/ PoE (inside PCU)**
Synchronization	**GNSS (PCU), PTP IEEE 1588 (PCU to sensor)**
Communication	**TCP/IP, UDP (incl. WiFi, 4G options) wired and wireless**
Power Supply	**230 VAC and two additional 13.5 V power supply inputs** **Power consumption: 22 W (sensor)**
Dimensions	**Sensor: {D x W x H} 341 x 329 x 314 mm** **PCU: {D x W x H} 576 x 361 x 334 mm**
Ingress protection	**IP65**
Weight	**Sensor: 18 kg, PCU: 20 kg**

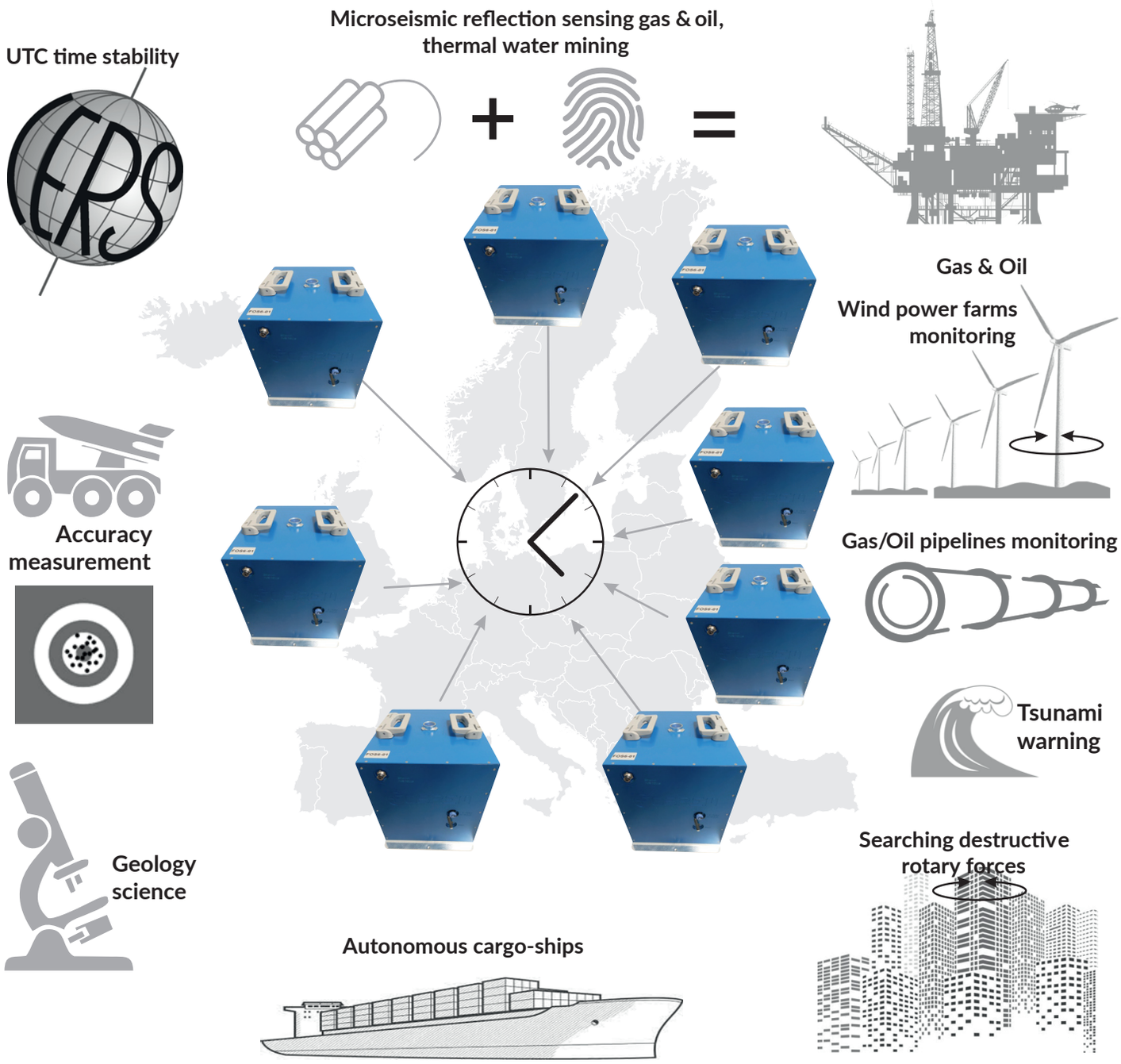


Sensor

PCU

***Technical specifications to be confirmed during the ordering process.**

Synchronized FOG-6 seismographs provide qualitatively new big dat.
Ultra-high sensitivity combined with AI helps identify industrial events.
Time domain operation enables Doppler measurement for event localization.



The FOSREM technology implemented as the FOS-6 seismograph is mature. The FOS-6 sensor is commercially available here and now. A network of synchronized FOS-6 sensors providing the new Doppler measurement localizing coordinates of industrial events is finalized now.
This makes the solution helpful in the non-invasive search for natural deposits, detection of geological threats to the geological terrain, and building structures. The technology is dual-use. Elproma is ready now for a new challenge of designing a world-leading FOG-6 Fiber Optic Gyroscope.

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