



Optical Fiber Sensors

Optical fiber sensors provide cost-efficient sensing in a wide range of applications with unique technical performance.

A fiber can act as a sensor over its entire length to enable distributed sensing, or it can be a single-point sensor. One of the most common functions is temperature and strain/stress sensing, but a range of other parameters – such as pressure, magnetic field, voltage, chemical species and others – can also be measured. Application areas for fiber optic sensors include structural sensing, smart structures and civil engineering, aerospace and security, sensing in oil and gas production, environmental monitoring and life science.

Key advantages of optical fiber sensors are:

Non-galvanic sensors

The optical fiber sensors are made from quartz and are immune to interference from electromagnetic fields. They are intrinsically safe – no electricity at the sensor.

Can withstand harsh environments

When packaged properly, a fiber can withstand extreme and hostile environments. A wide range of specific coatings have been developed at RISE Acreo to expand the field of application of optical fiber sensors.

Distributed sensing

Distributed sensing can be achieved over several kilometers with single-ended detection. With such systems, it is possible to map one, two, and even three dimensions of large structures such as bridges, pipelines and conveyor belts.

Multiple functionality

Multiple-parameter sensing can be performed using a single fiber. Sensing can also be combined with other functionalities, such as fluid transport through channels in the fiber or laser drilling.

Minimally invasive detection/treatment

The diameter of an optical fiber can be as small as 50µm. A fiber probe can thus be made smaller than a human hair. With the use of biocompatible coatings, optical fiber sensors are also well-suited for medical treatments and measurements inside the human body.

Contact us to discuss customized fiber optic solutions

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