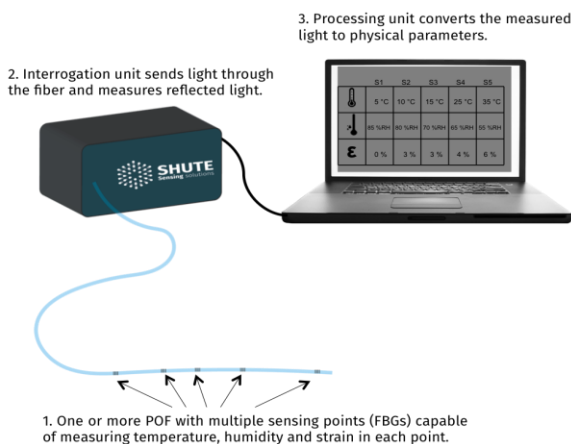


SHUTE Sensing Solutions A/S has developed a monitoring system that is based on a novel single-mode optical fiber, called a micro-structured Polymer Optical Fiber (mPOF). In order to make the sensing points, a Fiber Bragg Grating (FBG) is inscribed into the mPOF at pre-determined positions. The mPOF sensors have the elasticity and flexibility of polymers while offering the optical properties of glass optical fibers. The mPOF sensor is capable of measuring **strain/stress**, **humidity** and **temperature**.

The mPOF sensor system

An mPOF sensor system will consist of three major components: mPOF sensors, interrogator and software. The mPOF is attached to the interrogator. In order to get the required information from the sensing point an Interrogator is needed.

An Interrogator is consisting of a light source, an optical spectrum analyzer and data transmission unit. All components are assembled inside a rugged case in order to protect the components from potentially harsh working environments.

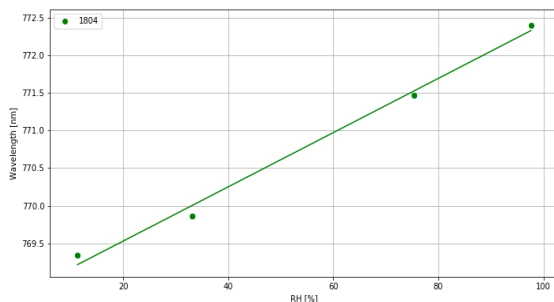


The data from the Interrogator will be transmitted to a simple cloud software solution, which also logs the data. In this way the operator can document the strain, and/or the RH and temperature on the equipment or in the structure. Thereby determining e.g. when maintenance is required or limits are reached.

The sensing principle is that of Fiber Bragg Grating. The interrogator tracks the changes to the signal from the FBG, the change in signal correlates to the physical change at the sensing point.

As an example, the response of the FBG to change in humidity is shown in the graph to the left.

The sensing system is entirely optical and nonmetallic. The signal is recorded by the interrogator and transmitted to cloud.



SHUTE sensors:

- Are light weight, hairthin, noncorrosive, nonelectrical conducting, flexible and durable
- Can be placed in the core of the element without weakening the structure, but also on the outside or in hard to reach places
- Are made of polymer and will work in highly magnetic or radioactive environments
- Are multi point, multi sensing and biocompatible.

For more information visit www.shute.dk or feel free to call us on +45 2338 6728 to discuss how SHUTE technology can assist You in optimizing Your sensing requirements.