

DISTRIBUTED TEMPERATURE AND STRAIN MEASUREMENT

OVERVIEW

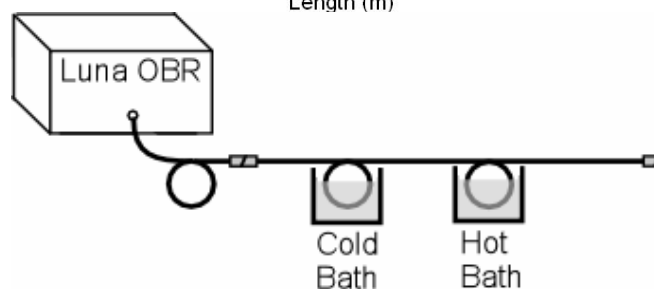
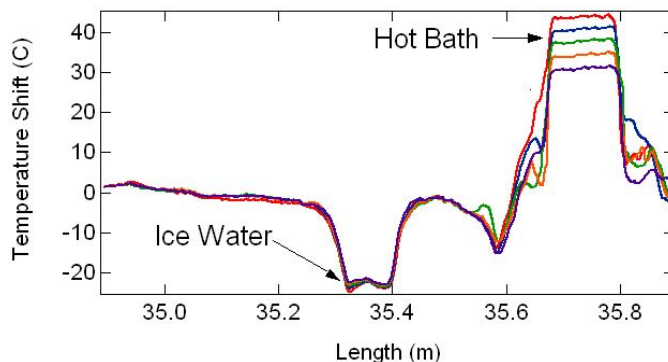
Luna Technologies' Distributed Temperature and Strain Sensing Software, when combined with the Optical Backscatter Reflectometer (OBR), transforms your *standard telecom-grade fiber* into a high spatial-resolution strain and temperature sensor.

The OBR uses swept wavelength interferometry (SWI) to measure the Rayleigh backscatter as a function of length in optical fiber with high spatial resolution. An external stimulus (like a strain or temperature change) causes temporal and spectral shifts in the local Rayleigh backscatter pattern. The OBR measures these shifts and scales them to give a distributed temperature or strain measurement. The SWI approach enables robust and practical distributed temperature and strain measurements in standard fiber with centimeter-scale spatial resolution up to 70 meters of fiber with strain and temperature resolution as fine as 1 μ strain and 0.1 $^{\circ}$ C.

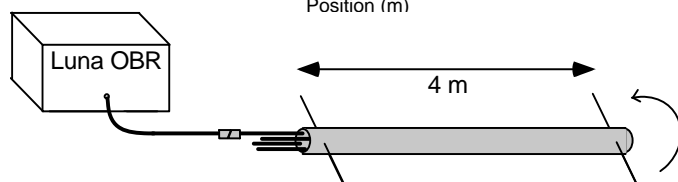
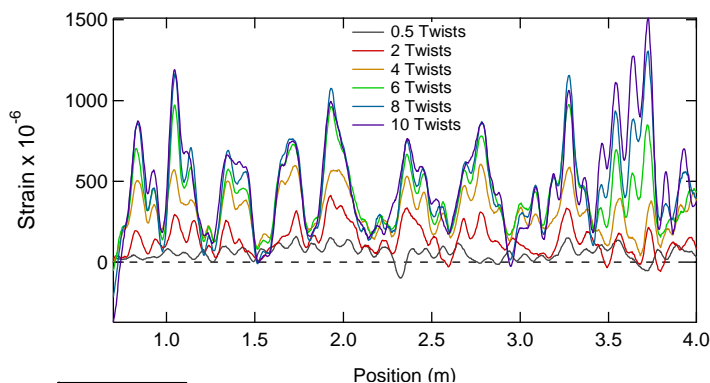
KEY FEATURES AND PRODUCT HIGHLIGHTS

- Uses standard telecom-grade fiber. Does not require specialty fiber or gratings.
- Highly distributed fiber sensing for strain and temperature
- Very high spatial resolution: down to 2 mm
- Centimeter resolution up to 70 meters
- +/- 0.1 $^{\circ}$ C , +/- 1 μ strain resolution at 1 cm
- High speed – Five second acquisition times at high resolution

TEMPERATURE MEASUREMENTS



STRAIN MEASUREMENTS



Using standard telecom-grade fiber, Luna's OBR monitors changes in the amplitude and phase of the light that is naturally back-reflected from standard optical fiber. Thus, fiber Bragg gratings are not required in the sensing fiber – *the fiber itself is the sensor.*