# New High-Definition, Fiber-Optic Distributed Temperature Sensing

November 17, 2020

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# About: Luna Innovations

lunainc.com

**History**
Incorporated 1990
IPO 2006

**Reporting Segments**
Lightwave
Luna Labs

- Headquarters in Roanoke, VA USA
- Specializing in advanced fiber optics measurement and sensing solutions
- 280+ Employees

# Luna Innovations – Products Overview

## Fiber Optic Sensing & NDT

- **Fiber optic sensing**
- Terahertz gauging and imaging

## Communications Test & Photonic Control



- Fiber optic test
- Optical component test
- Polarization mgt.
- Optical modules

## High-Definition Distributed FOS

ODiSI

- Rayleigh backscatter, OFDR
- Sub-millimeter spatial resolution
- Sensor lengths up to 50 m
- Strain and temperature

## High-Speed Multipoint (FBG) FOS

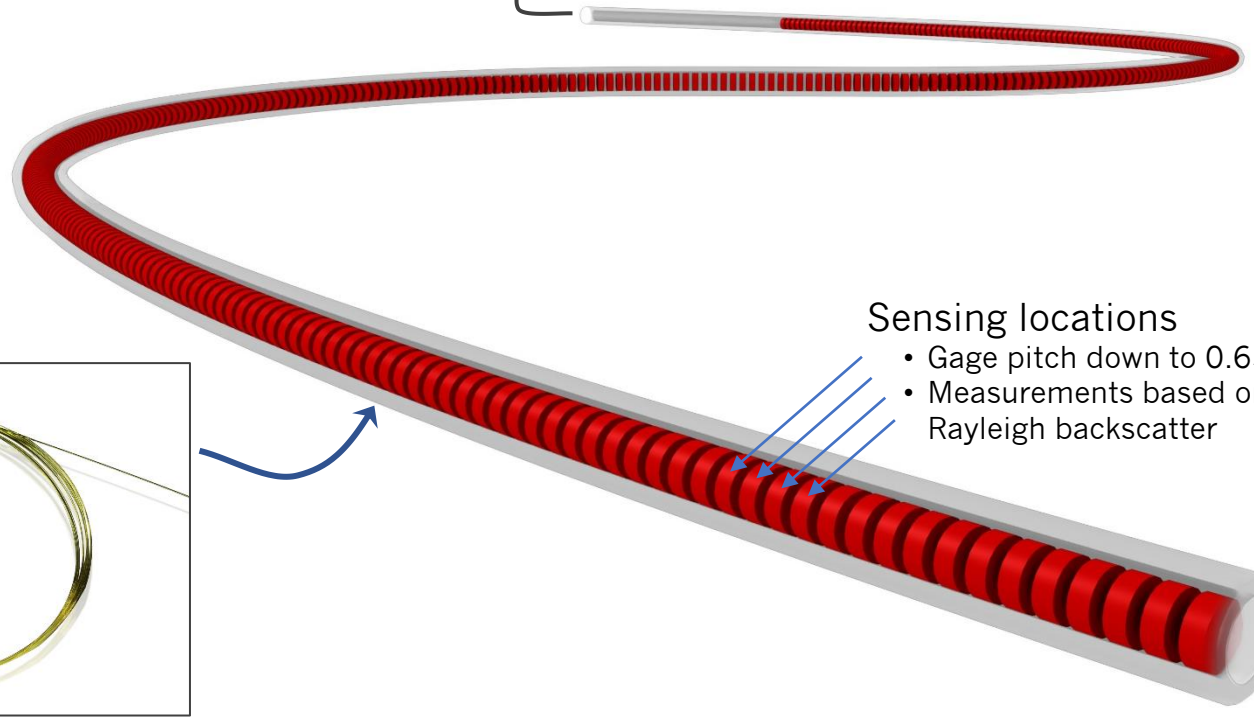

HYPERION

- FBGs and Fabry-Perot sensors
- Up to 5 kHz acquisition rates
- Strain, temperature, acceleration, displacement

# High-Definition Distributed Fiber Optic Sensing

**ODiSI Interrogator**

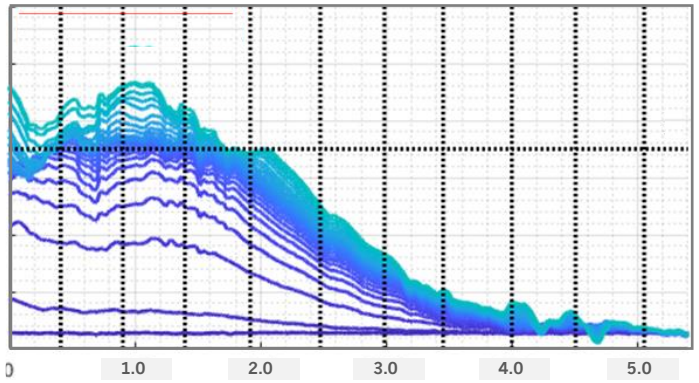
- 1 to 8 channels/sensors
- Real-time data display, logging, streaming
- Strain sensor length up to 50 m each



Sensing locations

- Gage pitch down to 0.65 mm
- Measurements based on Rayleigh backscatter

**Strain or Temperature Profile**

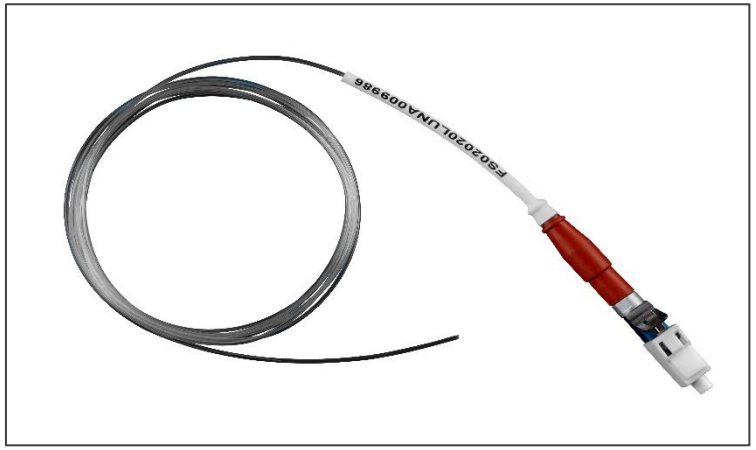



**HD Fiber Optic Sensor**

*New Product:*

# High-Definition Temperature Sensing with Strain Compensation

- High-definition distributed temperature measurements (1 cm spatial resolution)
- More accurate and reliable temperature measurements
  - Removes impact of mechanical strain on temperature measurement
  - Ideal for curved applications, embedded sensing, etc.



**HD-SC Temperature Sensor with Strain Compensation**

- Available lengths up to 5 m*
- Measurement range: -40 to 200 °C*

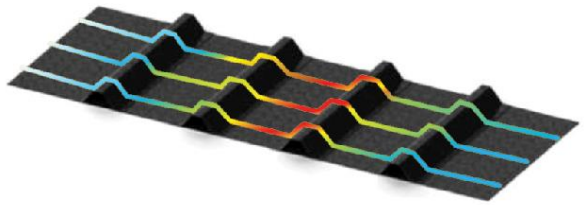
**ODiSI 6000 Family of Interrogators**

- Optimized for temperature measurements
- Acquisition, visualization, logging, real-time data

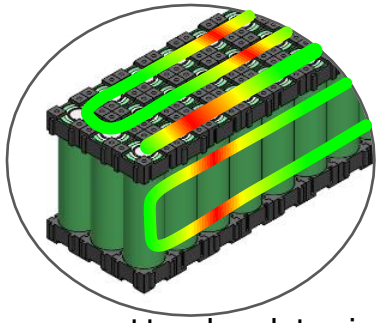
*New Product:*

# High-Definition Temperature Sensing with Strain Compensation

- **Problem:** High-def distributed FO sensors are sensitive to *both* temperature and strain; many temperature applications subject sensor to mechanical strain
- **Solution:** HD-SC temperature sensors compensate for strain-induced errors, enabling installations that benefit from low-profile flexible FO sensors



Surface-mounted or embedded sensors monitor curing temperatures



Sensors attached to interior structures of battery pack

Any thermal profiling on curved/geometric surfaces

# Thank you!

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- Questions?

**High-Definition Temperature Sensing with Strain Compensation**