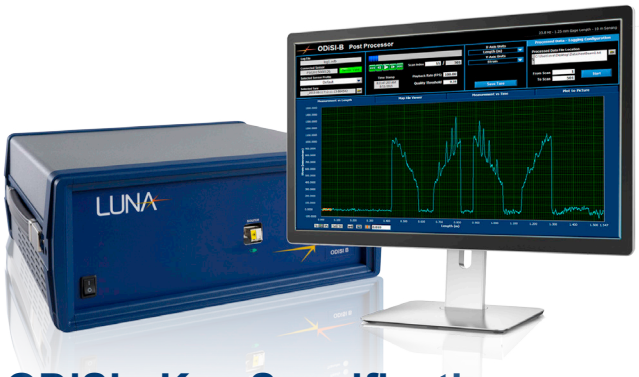
ODiSI - High Definition Strain Sensing for Composites with HD-FOS



ODiSI - Key Specifications

- Strain and temperature
- +/- 10,000 uStrain/-268 C^0 to 900 C^0
- Sub-mm spatial resolution. 1000 measurements per meter of fiber
- Single channel system with sensors available in lengths up to 50 meters
- User interface and data visualization tools help simplify analysis

Extraordinary Spatial Resolution

A strain measurement along every millimeter of fiber is perfect for detecting high strain gradients and studies of crack propagation.

Low Profile Sensor for Embedded Applications

A fiber sensor can be unobtrusively embedded within composite structures.

Environmentally Robust Sensor

A fiber sensor is corrosion proof, immune to EMI/EMC, and introduces no source of ignition.

Mapping of Strain Contours

The fiber is flexible and can be routed in a serpentine pattern, providing a full field view of strain.

If You Can't See It, You Can't Fix It

Locate defects with Luna's revolutionary strain measuring technology

Understanding Damage Tolerance and Crack Propagation

Finding micro cracks in advanced composite materials needs high definition measurement tools.

Finding Defects Early in the Design Cycle

Design problems detected early in the design cycle have less impact on schedule and program cost.

Joining & Bonding - The Weakest Link in the Chain

Verify the integrity of bonding and joining methods using low profile high definition sensors.

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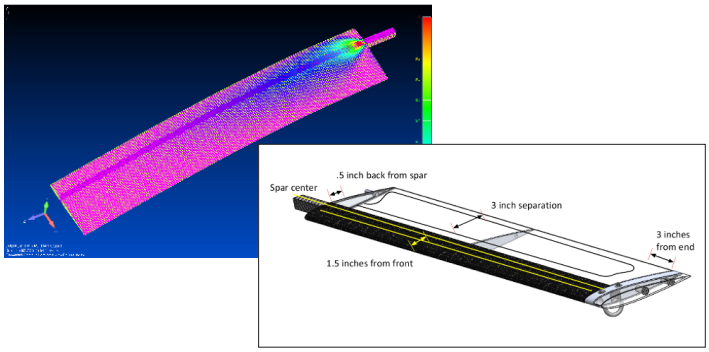
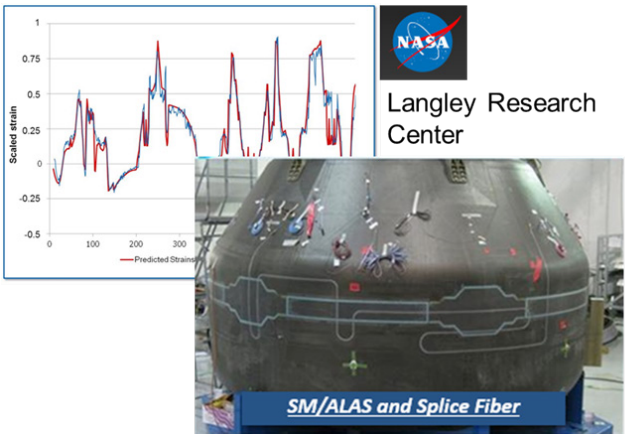
Finite Element Model Validation

The high density of data is ideal for validating finite element models, particularly models with fine mesh for analysis of critical stress points or hot spots. The image to the right shows an airfoil instrumented with fiber sensors along the skin of the foil and embedded within the internal structure.



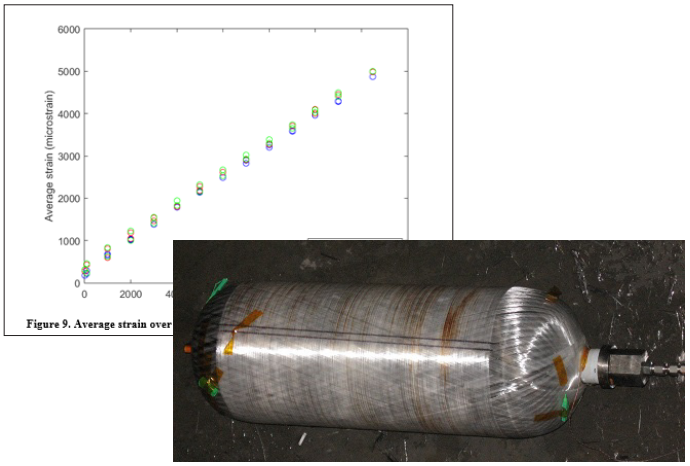
Measure High Strain Gradients at Stress Concentration Points

Design and manufacturing with composites requires new processes and methods for fastening and splicing. These areas can exhibit high strain gradients and represent potential failure points. The image to the right shows fiber sensors routed across a splice connecting two structures of a composite spacecraft. The high density data collected shows high strain gradients. This data can be used to refine methods or improve process control.



Embedded Fiber for Structural Health Monitoring

Sensors can be embedded within structures during the manufacturing process and used to monitor structural health. The image to the right shows a filament wound COPV with two fiber sensors embedded during fabrication. The data shows a linear relationship between strain and pressure. This data can be correlated to volumetric expansion and used as a measure of structural integrity.



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