

First On-Orbit Application of Fiber Optic Sensing



Overview

These fiber-optic sensors have now become commonplace on NASA projects such as the LOFTID experiment, which marked the first use of a space-rated fiber optic sensor system. The applications have been diverse covering both launcher and satellite applications and encompassing. Allen Parker, Fiber Optic Sensing System (FOSS) senior research engineer at NASA's Armstrong Flight Research Center in California, explains how FOSS in aeronautics is used on a wing to determine its shape and stress on its structure. In addition, Jonathan Lopez explains how a new FOSS unit variant. While screaming toward Earth's surface at 17,000 mph, the inflatable heat shield on NASA's Low-Earth Orbit Flight Test of an Inflatable Decelerator (LOFTID) experiment needed to record as much data as possible. Rather than having individual sensors all along its surface, optical fibers were woven. This is the power of fiber optic sensing, a technology that transforms ordinary optical fibers into the digital world's sensory network. In 2023, researchers turned submarine cables into earthquake warning systems and gave electric vehicles "optical nerves" to prevent battery failures.



Article Content

Mar 28, 2026

Fiber Optic Sensing in Spacecraft Engineering: An ...

The aim of this review is to capture the history and status of fiber optic sensors for space applications demonstrating

Nov 03, 2025

Optical fiber sensors in biomedical: trends and emerging research – A ...

A key focus is on six distinct fiber sensing technologies such as fiber grating-based sensors, plasmonic-based sensors,

Sep 28, 2025

Topic Editorial on Fiber-Optic Sensors

Over the past few years, Micromachines MDPI has published a wealth of innovative and groundbreaking research on

Mar 06, 2026

Special Issue “Fiber Optic Sensors and Applications”: An Overview

We present here the recent advance in exploring new detection mechanisms, materials, processes, and applications of fiber optic

Aug 06, 2025

Review Advancements in fiber optic tactile sensors: A comprehensive ...

Recent technological advancements have significantly expanded their applications in areas such as robotics, medical

Sep 15, 2025

(PDF) FIBER SENSING FOR SPACE APPLICATIONS

Fiber optic sensing uses the same proven technology used in fiber optic telecommunication for both space and non

Jul 02, 2026

Fiber Optic Sensors for Harsh and High Radiation Environments in

In particular, fiber optic sensors, with their small footprint and electromagnetic immunity, represent a great opportunity

Oct 16, 2025

Optical Fiber Sensing

Abstract Nowadays, optical fiber sensing is an emerging and versatile technology thanks to continuous advances in

Oct 18, 2025

(PDF) Optical Fiber Sensors: Working Principle, Applications, and ...

Brief theory of sensing principle, fabrication method, applications, advantages and disadvantages of the different

Oct 08, 2025

A review of previous studies on the applications of fiber optic sensing ...

This paper reviews the application status of fiber optic sensing technologies in geotechnical health monitoring with an

Aug 18, 2025

Fiber Bragg Grating Sensors: Design, Applications, and ...

Fiber Bragg grating (FBG) sensors have emerged as advanced tools for monitoring a wide range of physical

Nov 05, 2025

Fiber optic sensing in space structures: the experience of the

ABSTRACT The applications of fiber optic sensors on board spacecraft and launchers are discussed based on the experience

May 28, 2026

Fiber Optic Shape Sensors: A comprehensive review

Abstract Fiber Optic Shape Sensing is an innovative Optical Fiber Sensing Technology that uses a fiber optic cable to

Oct 11, 2025

Fiber Optic Sensing System

A Fiber Optic Sensing System (FOSS) developed for aeronautics research at NASA's Armstrong Flight Research Center in California

May 20, 2026

Performance of the first operable fiber optic systems in prolonged ...

Abstract The tendency toward smaller satellites that is imparted by growing budget constraints suggests an intrinsic

Dec 02, 2025

Nanosecond-latency all-optical fiber sensing with in-sensor computing

Here, we propose an all-optical fiber sensing architecture with in-sensor computing (AOFS-IC) that achieves light

Oct 01, 2025

Fiber Optic Sensor : Types, Working, Interfacing & Its Applications

The fiber optic sensor working principle is that transducer changes some optical fiber system parameters like

May 25, 2026

Status and future development of distributed optical fiber sensors for ...

The versatility of the fiber sensors to obtain reliable and precise measurements while maintaining compact size and

Jun 19, 2026

FOSS (Fiber Optics Sensing System) at NASA AFRC -Overview

How do FBG sensors works? So why use OFDR for sensing instead? A narrowband wavelength tunable laser source is used to

Apr 06, 2026

Fiber Optic Sensing: A Beginner's Guide

In this guide, Hifi breaks down the basics of Fiber Optic Sensing (FOS), its benefits, limitations and applications as well

Mar 10, 2026

Optical Fiber Sensors and Sensing Networks: Overview of the Main

Optical fibers provide sensing solutions for many types of applications and environments with high performance. The

Sep 15, 2025

Composite structures with embedded fiber optic sensors: A smart ...

In this paper, the Fiber Bragg Grating (FBG) type of fiber optic sensors (FOS) will be addressed as an embedded

Dec 14, 2025

fphy-2021-719441 1.

Fiber optic sensing systems are considered for space applications due to many advantages that can lead to solutions with the

Jan 11, 2026

Fiber Optic Sensing System Readied for Space Use

NASA will soon test an enhanced system that can take thousands of measurements along a fiber optic wire about the

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://khanimamboguesthouse.co.za>

Email: sales@khanimamboguesthouse.co.za

Phone: +27 64 852 1973

Address: Unit 7, Greenway Business Park, 8 Innovation Drive, Centurion, 0157, South Africa

This document is for informational purposes only. Specifications subject to change without notice.

