GDR Telecom Site Energy Systems

How to measure anchor bolts using fiber optic gratings

Overview

Two FBG strain gauges are installed on the annular elastic base to accurately measure the total amount of various load from bearing cables, anchors and bolts. Existing methods for measuring the axial forces in anchors and determining the extent of loosening in the surrounding rock typically remain at the inspection level, lacking long-term and real-time monitoring capabilities. This paper presents a new self-sensing anchor with embedded optical fibers. Optical fiber sensors are widely used in long-term monitoring in complex environments due to their advantages of anti-electromagnetic interference, high temperature resistance and corrosion resistance. This continuous strain monitoring technique provides comprehensive and unique insight into load transfer.

How to measure anchor bolts using fiber optic gratings

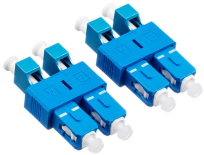
The FBG Anchor (Bolt) Dynamometer AD-01 is made of constant elastic, high-strength, and corrosion-resistant materials. Two FBG strain gauges are installed on the annular elastic base to accurately ...

Employing fiber optic sensors for torque control offers an advanced technical solution, leveraging the unique properties of optical transmission to ensure precise measurement of stresses ...

In this paper, a mine-used fiber Bragg grating anchor sensor technology is proposed.

The FBG Anchor (Bolt) Dynamometer AD-01 is made of constant elastic, high-strength, and corrosion-resistant materials. Two FBG strain gauges are installed ...

Through the use of a fiber optic sensor technology that has been developed by the authors, axial strain along the fully grouted rock bolt can be determined at a spatial resolution of 0.65 mm.

	This article proposes a new self-sensing optical fiber anchor, made by improving the stirrer, to monitor the axial force on the bolt and the loose zone of surrounding rock.
	This article deals with anchor tests instrumented with FBG deformation gauges of the root and the tendon of the pre-stressed strand anchor in a test field in the Central Bohemian Region.
	In this short communication, we propose a smart anchor plate, a simple but effective device that uses fiber Bragg gratings (FBG) type optic sensor, to monitor the load level of the rock bolt.
	A novel fiber Bragg grating (FBG) sensor technology is proposed for use in mines, specifically designed to enhance the monitoring of anchor rods.
	This paper presents a new self-sensing anchor with embedded optical fibers (made using an improved stirrer) and proposes an intelligent tunnel rock monitoring system.

Contact Us

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

Website: https://www.gdroofing.co.za
Email: sales@gdroofing.co.za
Phone: +27 72 418 9365
Address: 22 Electron Avenue, Isando, Johannesburg, 1600, South Africa

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