Instrumented Rock Bolts

STRATA CONTROL TECHNOLOGY

Measure the field performance of rock bolt systems

The Instrumented Rock Bolt is an advanced solution designed to measure the performance of rock bolt systems in underground excavations. By embedding strain gauges at regular intervals along the bolt, it accurately captures load distribution and bending movements, providing essential data for mining and tunnelling operations.



- **High Accuracy:** Precisely quantifies load profile along the bolt.
- **Bending Resolution:** Detects and resolves bending forces.
- **Ease of Installation:** Compatible with standard rock bolt installation equipment.
- **Post-Yield Capability:** Analyses bolt performance in both pre and post-yield states.
- **Intrinsically Safe Data Logging:** Modern logging developments allow for quick data retrieval with a handheld logger, enhancing efficiency and reducing downtime.

- **Enhanced Safety:** Provides critical data to ensure structural integrity and safety in underground operations.
- **Efficiency:** Simplifies installation and data collection processes.
- **Reliability:** Offers robust performance monitoring even in post-yield conditions.
- **Performance:** Designed to meet rigorous mining and tunnelling demands.
- **Accuracy:** Ensures optimal performance and safety through precise monitoring.

Secure your mining operations with the SCT Instrumented Rock Bolt - the benchmark for reliable underground support monitoring.

How It Works

Load Generation: Rock bolts respond to strata movement and generate load, providing clamping force to confine the rockmass.

Direct Management: Strain gauges bonded to the bolt measure axial loading and bending movements.

Load Distribution: Critical for determining the actual performance of the support system.

Reactive Forces: The bolt generates reactive forces across dilating strata sections to resist rock failure.

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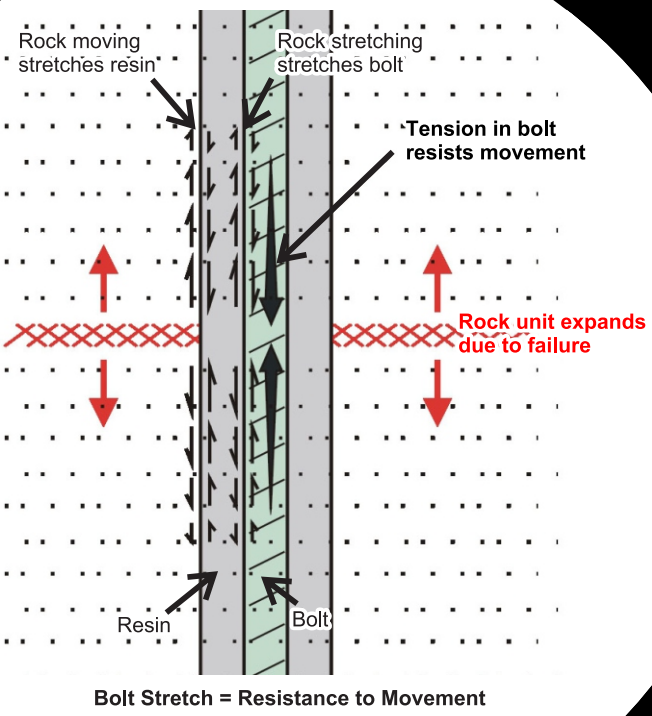
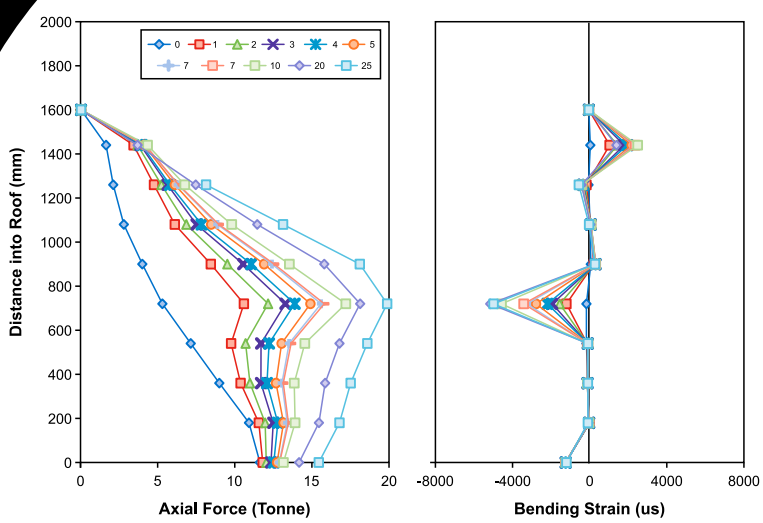


Figure: Generating load in a rock bolt.



a) The loading profile in axial force of instrumented bolt.

b) The bending strain profile.

Installation & Analysis

Instrumented bolts are installed as part of the normal mining or tunnelling support cycle.

Simple installation using the same equipment and consumables as standard rock bolt installation.

The system uses nine pairs of foil wire resistance strain gauges, diametrically opposed for accurate measurement.

The software distinguishes between axial loading and bending strains, offering realistic post-yield analysis.

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