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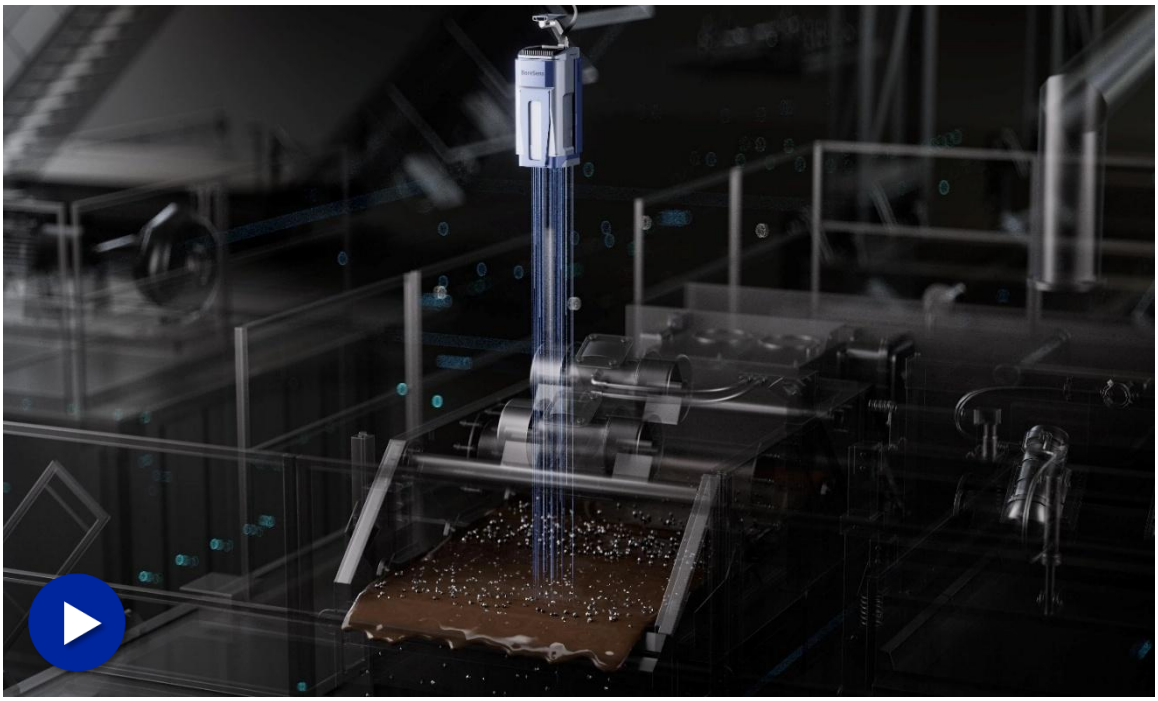
BoreSens

BoreSens Real-Time Wellbore Monitoring System

In drilling operations, the first signs of wellbore instability often appear in the returned cuttings. Traditional monitoring methods, limited by data delays and manual interpretation, may miss these early indicators, leading to wellbore collapse and increased non-productive time. Real-time cuttings analysis allows operators to detect issues earlier and make informed operational decisions.

Vertechs BoreSens Real-Time Wellbore Monitoring System is a real-time wellbore monitoring and early warning system that integrates Light Detection and Ranging (LiDAR) capture, deep learning, cloud-based data fusion, and real-time parameter analysis. BoreSens captures the shape, size, and morphology of backflow cuttings using high-resolution cameras and AI-based image analysis. Combined with wellbore formation and drilling parameters, the system provides real-time early warnings of potential instability, evaluates hole cleaning efficiency, and supports operational decision-making. By turning traditionally discarded cuttings into actionable data, BoreSens enables safer, faster, and more efficient drilling.



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FEATURES

- 24/7 Automated Cuttings Analysis

  High-resolution cameras on the shale shaker capture dynamic images of cuttings. A convolutional neural network (CNN) performs pixel-level segmentation to classify cuttings by size (fines, medium, large).

- Real-Time Data Integration

  Cuttings data are fused with drilling parameters via a cloud platform, allowing accurate identification of wellbore instability caused by geological or mechanical factors.

- Operational Decision Support

  Particle distribution trends combined with drilling parameters are used to assess hole cleaning efficiency and wall stability, providing actionable recommendations for tripping and other operations.

- Adaptability to Complex Conditions

  Adaptive image enhancement and noise suppression ensure accurate cuttings recognition in backlit or low-light scenarios. The system continuously updates to handle varying lithologies.

- Safe and Integrable

  Supports fully private deployment for secure data handling and integrates seamlessly with various drilling software through the WITS protocol.

BENEFITS

- Evaluate hole-cleaning efficiency based on cuttings volume
- Identify cuttings size distribution, detect wall caving, and assess wellbore stability
- Monitor bit wear and end-of-life performance using drilling parameters and cuttings data
- Estimate drilling fluid carrying capacity by integrating real-time fluid performance with cuttings volume changes

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