

Fault diagnosis for conveyor systems in mines



Overview

This paper provides a comprehensive review of current diagnostic solutions, including machine vision systems, infrared thermography, ultrasonic and acoustic techniques, magnetic inspection methods, vibration sensors, and modern approaches based on radar and hyperspectral imaging. Therefore, it is urgent to improve the efficiency of fault identification, and this paper combines the internet of things (IoT) platform and the Light Gradient Boosting Machine (LGBM) model to establish a fault diagnosis system for the belt conveyor. Firstly, selecting and installing sensors for. Emerson's online condition monitoring system uses a unique fault detection approach that is perfectly matched to the operating parameters of conveyors. It was the logical choice to preserve the integrity of our critical assets.



Article Content

Interpretable fault diagnosis of coal-mine conveyor-belt idler bearings ...

The fault diagnosis of conveyor belt idler bearings plays a crucial role in coal mine safety. In practical, inevitable challenges such as high-noise interference and small-sample conditions.

Procedures of Detecting Damage to a Conveyor Belt with Use of an

Conveying systems are responsible for a large part of continuous horizontal transportation in underground mines. The total length of a conveyor network can reach hundreds of

(PDF) Current Status of Belt Conveyor Fault Monitoring

The belt conveyor is an important part of the coal mine transportation system, and the state detection system is the core to ensure its safety and reliability. Traditional condition monitoring ...

(PDF) Current Status of Belt Conveyor Fault Monitoring

The results and findings from the field monitoring were presented together with automated fault detection framework for condition monitoring of mining conveyor.

Non-Destructive Testing for Conveyor Belt Monitoring

Conveyor belts are among the most critical components of material transport systems across various industrial sectors, including mining, energy,

Belt Tear Detection for Coal Mining Conveyors

The belt conveyor is the most commonly used conveying equipment in the coal mining industry. As the core part of the conveyor, the belt is vulnerable to various failures, such as

Sensor-Based Diagnostics for Conveyor Belt Condition

Rising raw material costs and complex global supply chains have reduced the durability and availability of conveyor belts. In response, condition

Summary of fault diagnosis methods for belt conveyor systems

The conveyor belt and driving device are the main components of the belt conveyor and are the high-risk areas for faults. Taking conveyor belt faults and driving device faults as the starting point, this paper

(PDF) Audio fault diagnosis of belt conveyors based on improved ...

Fault diagnosis of belt conveyors is crucial for coal mine production, but audio-based fault diagnosis in underground coal mines remains challenging due to the strong noise environment.

Research on fault diagnosis system for belt conveyor based on

This application shows that the fault diagnosis system of belt conveyors can accurately diagnose and identify belt conveyor failure in the coal production process and improve the intelligent ...

AI-Driven Predictive Maintenance in Mining: A

The mining industry faces increasing challenges in maintaining high production levels while minimizing unplanned failures and operational costs.

Research on a system for the diagnosis and localization

Therefore, research on fast conveyor belt deviation fault diagnosis methods and accurate fault localization methods can improve the intelligence

Fault Diagnosis of Belt Conveyor Based on Support Vector Machine

This study aims at providing an effective means for the fault diagnosis of belt conveyors in coal mining enterprises and strengthening the intelligent technology level of mining enterprises.

Automatic fault detection system for mining conveyor using distributed ...

In this paper, the application of distributed optical fibre sensing system of effective fault detection of mining conveyor is explored. An advanced optical signal processing technique is

Fault Diagnosis of Belt Conveyor Based on Support Vector Machine

The diagnostic model is applied to an underground mine belt conveyor transportation system fault diagnosis on the basis of monitoring data collected by sensors of mine internet of things.

COMPARISON OF MACHINE LEARNING TECHNIQUES FOR FAULT DIAGNOSIS

Moreover, the objective of this study is to develop a fault diagnosis system for conveyor belt idlers utilizing artificial intelligence techniques, while also conducting a comparative analysis of ...

Non-Destructive Testing for Conveyor Belt Monitoring and

The review aims to present recent trends in non-invasive diagnostics of conveyor belts using remote and non-destructive testing techniques, and to identify research directions that can

Research on fault diagnosis method of fiber optic sensing ...

In response to the monitoring needs of conveyor roller faults in open-pit mines, this paper proposes a fiber optic sensing roller fault diagnosis method based on dynamic model driving.

A Review of Fault Detecting Devices for Belt Conveyor Idlers

This paper proposes a fault diagnosis method for belt conveyor idlers based on Transformer's dynamic self-attention (DSA). Firstly, the A-weighted time-frequency spectrum of the

Monitoring Critical Mining Conveyors

Overland conveying or “truckless” mining systems are especially critical as they represent a single point of failure. Mines simply don't have spare conveyors. With daily wear and tear, equipment is going to

Fault Diagnosis of Permanent Magnet Synchronous

Permanent magnet synchronous motors (PMSMs) have been gradually used as the driving equipment of coal mine belt conveyors. To ensure

Automatic fault detection system for mining conveyor using distributed ...

The results and findings from the field monitoring were presented together with automated fault detection framework for condition monitoring of mining conveyor.

A Review of Fault Detecting Devices for Belt Conveyor Idlers

Ravikumar, H. Kanagasabapathy, and V. Muralidharan, "Fault diagnosis of self-aligning troughing rollers in belt conveyor system using k-star algorithm", Measurement, vol. 133, pp. 341-349, 2019.

Belt conveyor idler fault detection algorithm based on ...

To meet the demand for fault detection of idlers in conveyor belts at open-pit coal mines in Xinjiang, China, this paper proposes an abnormal detection method based on an improved

Research on a system for the diagnosis and localization of conveyor ...

To address the demand for the intelligent development of underground coal mines, intelligent detection and fault localization methods for conveyor belt deviation faults were proposed,

Intelligent fault diagnosis of belt conveyor rollers using a polar KNN ...

These findings indicate that the PKNN model offers a reliable, non-invasive, and cost-effective solution for real-time monitoring and fault diagnosis of belt conveyor rollers. Its high

A Review of Fault Detecting Devices for Belt Conveyor Idlers

These systems consist of key components such as the drive unit, pulleys, conveyor belts, and idler rollers.

Contact Us

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