

Improving Accuracy in Assessing Conveyor Belt Condition: Introducing an Innovative Diagnostic Solution

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The assessment of conveyor belt condition is crucial for efficient maintenance and replacement strategies in mining operations. Traditional wear indicators based on calendar age and working time have proven to be inaccurate in assessing the true condition of the belts, leading to inefficiencies and unnecessary energy and time loss. We introduce an innovative diagnostic solution called DiagBelt, which utilizes magnetic field analysis and detection of damage in the steel cord core to provide a more accurate assessment of belt condition. The system scans the belt to detect and measure failures, providing two key parameters: damage density and surface damage density. Damage density represents the average number of failures per meter of belt section, while surface damage density quantifies the average surface area of failures per meter of belt section. These parameters offer a more accurate assessment of the belt's condition compared to traditional indicators. By calculating parameters such as damage density and surface damage density, DiagBelt enables reliable evaluation and monitoring of the belt's technical state. Color-coded maps are used to visually represent the belt's condition, facilitating quick and intuitive assessments. The incorporation of these new metrics improves the accuracy of assessing the belt's technical state and enables more informed decisions regarding maintenance. The proposed solution represents a significant advancement in accurately assessing conveyor belt condition and optimizing maintenance strategies in mining operations.