
Field Trials of a Shaft Conveyance Monitoring System

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A Shaft Conveyance Monitoring System (SCMS) has been developed by the US National Institute of Occupational Safety and Health (NIOSH). The system consists of conveyance position and guide displacement sensors, a battery power supply and charging system, and a new sensor to measure hoist rope tension. This provides a warning of the occurrence of "slack rope", a particularly dangerous condition. A reduced scale hoisting test facility has been constructed to test the components prior to field installations. A 2.4GHz radio data link transmits sensor data (and voice) output to the hoistroom. Field tests are underway in full-size shafts to refine the concept and evaluate long-term reliability and maintenance requirements. The safety, production, and maintenance advantages of monitoring wire rope tension and conveyance position and load directly from a skip or cage top will be discussed. Application of this technology may result in decreased maintenance costs as well as safer, more productive hoisting operations.

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