Monitoring tired tyres

MINE site tyres are a major expense, so how can operators make them last longer?

Andrew Snelling | 01 May 2015 | 2:28 | News |

The Dispatch TireAlert module technology evaluates the maximum workload and speed impact on tyres.

Getting the best results out of tyres on a mine site is a tricky business. With multiple factors contributing to wear and tear on tyres and the large capital cost they represent for a project, innovations aimed at mitigating these factors are of particular importance to producers.

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Arizona-based Modular Mining Systems has been contributing to the tyre management sphere for some time now, delivering technologies to help monitor tyre condition and mitigate wear and tear.

The company brought its Dispatch TireAlert module technology to the party in 2009, providing companies with a way to evaluate the maximum workload and speed, or tonne kilometre per hour (TKPH) impact on tyres, over a particular haulage path.

The technology measures this impact by collecting and maintaining a model of a vehicle's typical travel speeds along the haul road network and combines this information with nominal payload and best path information.

Using this information, mine operators are able to better manage and plan their haul truck tyre duty cycles and operating environments, identifying high impact scenarios before they happen.

Modular's more recent contribution to tyre management has come in the form of its active tyre management system (ATMS), with a fleet management system geared to interface with the original equipment manufacturer's (OEM) own systems.

The ATMS is able to actively manage tyre temperature and pressure in real time by interfacing with the original manufacturer's safeguards, such as Michelin's earthmover maintenance system.

"Most tyre manufacturers provide sensors to detect abnormal temperature or pressure and software to monitor any alarms generated by these sensors," Modular fleet management product manager Neil Ferreira said.

"This capability goes a long way to preventing premature tyre failures. However, where high temperatures are concerned, simply relying on the on-board sensors usually results in equipment down time to allow tyres to cool down to a safe operating temperature before resuming operation."

Modular has interfaces with over 175 OEM systems, with its systems interpreting raw data from the OEM sensors, such as temperature, and generating warnings and preventative measures such as placing a truck on a shorter cycle so it can continue working rather than stopping to cool down.

As the fleet management system obtains data, an optimisation algorithm takes into account corresponding tyre control actions in real-time.

These actions can include allocating a truck to tyre shops, assignments to shorter haulage paths and emergency tyre exceptions.

Vehicle operators are also able to use the system to report issues via onboard mobile devices to a system database where mine site supervisors can access the information in a GPS-stamped visual form.

These issues may include excessive dust and material spillage, while rough road surfaces can be automatically detected by sensor systems onboard the mobile equipment and transmitted to the database.

According to Modular, its ATMS was recently used by a Brazilian iron ore mine to significantly reduce the number of tyre-related events.

Over a four-week period, an average of 48% fewer tyre-related incidents were recorded per shift.

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