

Michelin unveils innovative new generation of Earthmover Management Systems

Michelin announces the latest generation of connected tire management systems for the mining industry - MEMS[®]4. Communicating tires are not new, but MEMS[®]4 adds real-time GPS and accelerometer data to transform its current TPMS offer into a complete monitoring and reporting platform for tires, trucks, mine haulage and vehicle cycle analysis.

The new system is the only TPMS system on the market which has the ability to record data uniquely to each tire serial number, and also uses an improved data capture tool (readable by Android mobile devices) that interfaces with a new web-based software platform. Available to buy or rent, MEMS[®]4 has a new transceiver and active antenna to work with the highly reliable sensors – these send data in real-time direct to the machine cab and the mine's control room.

The breakthrough is the upgraded system using GPS and accelerometer data, allowing users to manage not only the tires, but key aspects of the mine's transport system. The new functionality gives exact truck position and status, geo-fencing and vehicle cycle analysis. These help increase safety, productivity, reliability and truck availability, whilst reducing maintenance and tire costs.

Truck position – each machine is geo-localised in real-time on a map. This not only allows close monitoring of all production and transportation, but shows truck status and any levels of alarm.

Geo-fencing – this facility permits zones to be defined within the mine and rules assigned (e.g. speed, safety zone alerts, corners, etc.) according to the local conditions. Safety is the first priority in all mines and having real-time management of the fleet and operations will contribute to the safest possible working environment.

Vehicle Cycle analysis – the accelerometers give precise data about machine and tire usage which can be used for haul road design and optimisation. Similarly if tires are seen to be heating up, the dumper can be moved to a less harsh cycle, or truck and cycles alternated to minimise incidents and maintenance¹. Operators are always looking to maximise productivity and MEMS[®]4 will be indispensable in TKPH sensitive mines looking to reduce breakdowns and downtime.

Tire management – every individual tire, whether ballasted or not, is monitored from the moment it is fitted until removal. This is done by a reliable sensor (that never needs recalibration, and an average life of 14000h) which constantly measures the temperature and pressure, and even makes allowances for seasonal temperatures with its smart pressure algorithm. With tires costing up to \$30,000, pressure maintenance is vital as tire life is reduced by 20% for every 1 Bar (14.5 PSI) of under inflation². With MEMS[®]4, if there are any problems with tire temperature or pressure the

¹ Thermal monitoring fully available in 2018.

² Estimation calculated by Michelin and based on customer data.

driver and control room are alerted with real-time alarms – and as replacing a tire can take up to 8 hours and cost up to \$200k³ in lost production and tire costs – minimising tire incidents and downtime is critical. Additionally on-site tire pressure checks, which are time consuming, costly and necessitate human intervention, are eliminated with tire pressures being monitored from the control room.

Bruce Brackett, VP Michelin Earthmover Product Line commented: “We have a real breakthrough solution with the MEMS[®]4; because it’s not only a basic TPMS but a complete monitoring platform of tires and site conditions”.

Understanding that mining managers need information and data that is accessible and user friendly, MEMS[®]4 produces tailored reports and graphs for each department of the mine, with a customised dashboard and ‘easy to export’ data for further analysis.

And moving to MEMS[®]4 could not be easier; the new system is available to buy or rent, has easy migration from MEMS[®]3, simple software and hardware installation, complete on-site training and is backed-up by a dedicated Michelin support network for remote or on-site assistance.

The MEMS[®]4 system is easy to install and to use and Michelin tires (XDR2, XDR3 and XDR250) are all MEMS-ready, for quick and safe sensor installation. All that is then required is customisation of cycle optimisation, pressures, thermal alarms, etc. and the on-site training and coaching to ensure the team is fully autonomous with the day to day usage, monitoring and reporting. Continuous support is then available from the MEMS[®] Support Engineer either on-site, by phone or internet around the globe.

Michelin, the leading tire company, is dedicated to enhancing its clients’ mobility, sustainably; designing and distributing the most suitable tires, services and solutions for its clients’ needs; providing digital services, maps and guides to help enrich trips and travels and make them unique experiences; and developing high-technology materials that serve the mobility industry. Headquartered in Clermont-Ferrand, France, Michelin is present in 170 countries, has 111,700 employees and operates 68 production facilities in 17 countries which together produced 187 million tires in 2016 (www.michelin.com)

³ 24 hours production ~\$500k; Tire Cost \$30k → 8hours ~\$200k.