

MICHELIN® MEMS® EVOLUTION 4

IMPROVING YOUR EFFICIENCY IS EASIER THAN EVER BEFORE.



**STRENGTHENED SAFETY
REDUCED MAINTENANCE COSTS
REDUCED TIRE BUDGET
INCREASED TRUCK AVAILABILITY**

www.michelinearthmover.com



MICHELIN

IMPROVING YOUR EFFICIENCY

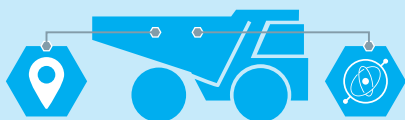
MEMS[®] 4 IS A COMPLETE TIRE AND MINE CONDITION MONITORING PLATFORM.



The sensor is placed inside the tire, capturing **temperatures** and **pressures** in real-time



GPS



Accelerometer

MAIN OUTPUT



- Dispatch & maintenance recommendation in real-time
- Tire/Truck anomalies reporting
- Tire performance reporting (hours, mileage, work rates)

NEW EQUIPMENT

New receiver & active antenna

- Easier integration
- Vehicle cycle analysis



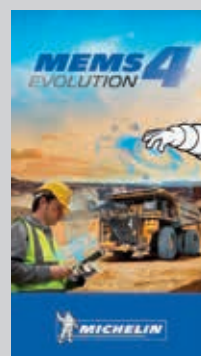
Data capture tool & mobile device

- Open to mobile
- Android mobile device
- RFID Reader wand saves time and prevents mistakes made by manual entry



New software platform

- Web-based
- Better network integration





IS EASIER THAN EVER BEFORE

MAIN BENEFITS

■ INCREASED TRUCK AVAILABILITY, THANKS TO:



- No unplanned stops, keeping your machine on the go: minor incidents are faster to fix than major ones
- Cycle optimization: Prevent excessive heat damage to tires through assisting dispatch route changes
- Business continuity and less unplanned maintenance

■ REDUCED MAINTENANCE COSTS:



- Reduce unscheduled truck downtime
- No more need for on-site intervention to check tire pressures, which can be verified from the control room
- Reduce fuel consumption by optimizing air pressure
- Reduce maintenance costs through mine condition mapping

■ REDUCED TIRE BUDGET:



- Increase tire life by continuous survey of health risk factors: pressure, temperature, speed in corners, slopes

DID YOU KNOW?

*Tire life is reduced by **20%** for every **14.5 psi (1 Bar)** of underinflation*

NEW FEATURES

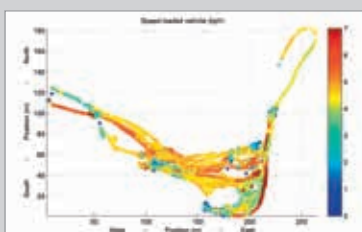
TPMS

- Focus on alarms
- More user friendly
- Up-to-date technology



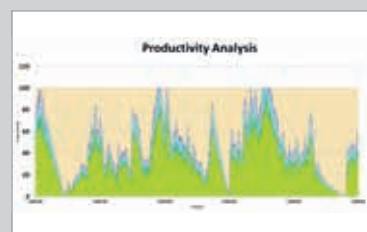
Mapping

- Position of trucks
- Lateral acceleration
- Geofencing



TKPH Monitoring Ready

- Real-time tire thermic monitoring
- Improve productivity



Option launched in 2018

MEMS® 4 ADVANTAGES AND BENEFITS



**HIGHLY
RELIABLE
SENSORS
FOR HARSH
ENVIRONMENTS**



**CONNECTIVITY:
BOTH 3G
OR ETHERNET
INSTALLATION**



**EASY TO
INSTALL AND
TO MAINTAIN**



**POWERFUL
SUPPORT
INCLUDED**



**IMPROVED
BUSINESS
EFFICIENCY**

MEMS® 4 REAL WORLD RESULTS



"I AM A TIRE MANAGER at a mine in Canada and I manage a fleet of 50 trucks. One day, we received a low pressure alarm from MEMS®. After a visual inspection, we saw that the tire had a slow leaking valve. The valve was repaired and the truck was returned to work quickly. We avoided downtime in the pit due to tire breakdown and saved both production and capital resources."

⊗ **WITHOUT MEMS®: NO ALERT**

Downtime	24 hrs
Cost	\$29,000.00 (tire destroyed)
Production Lost	10,000 tons / \$500,000.00 ⁽¹⁾
Total	\$529,000.00

⊙ **WITH MEMS®: THANKS TO ALERTS**



**SECURED
PRODUCTION:
7,800 TONS⁽²⁾**

**\$418K
SAVED**

⁽¹⁾ Based on data communicated by customer.

⁽²⁾ Just 8 hours downtime required to repair the valve, meaning just 2.200 tons of production lost.