



Kal Tire's **Innovation Centre** unveils two new tools that significantly reduce risk and wheel failure, and improve performance

On many earthmover trucks, more than 50 lug nuts secure the tire and wheel assembly in place, and when it's time to remove that assembly for a changeover or repairs, all of those lug nuts are removed by the technician—except four.

A tire manipulator then approaches the assembly and prepares to dismount the tire and wheel assembly from the truck. There's just one last step: The tire technician must enter the area between the tire/wheel assembly and the tire manipulator in order to manually loosen the remaining four lug nuts at three o'clock and nine o'clock so the manipulator can remove the assembly from the vehicle. If the assembly tips, up to 18,000 pounds could fall on the technician.

"So much of mining tire management involves hands-on work around the wheel that inherently carries a risk, but this is a step that's led to fatalities and we were determined to find a way to take the technician out of harm's way in that last critical step," says Peter Nilsson, innovation, research and development manager for Kal Tire's Mining Tire Group.

Nilsson and his team applied methods they've used on other tools developed at Kal Tire's Innovation Centre in western Canada to allow

team members to perform tire and wheel work from a safe distance. The solution? A Magnet Clamp.

Instead of removing nearly all the lug nuts, the technician will start by removing the four lug nuts at three and nine o'clock. Now he will mount a Magnet Clamp on both three and nine o'clock studs to secure the wheel and lock it in place. When the Magnet Clamp has 'locked' the studs, he can now remove all the other lug nuts. The technician steps far back and the tire manipulator approaches and establishes a secured grip on the tire/wheel assembly. The technician presses a switch on the remote control, the clamps' jaw loosens and the tire/wheel assembly is dismounted with no risk to the technician.

"We went down the path of pursuing tire management innovation because we want to make our work safer in every way possible so team members are returning home safely every night," says Dan Allan, senior vice president, Kal Tire's Mining Tire Group. "The Magnet Clamp is a tool that will go such a long way toward that goal of protecting tire technicians on-site."

The Wheel Inspection is another new tool Kal Tire's Innovation Centre is unveiling that will eliminate unexpected, costly breakdowns and help protect technicians from risk—in this case, the force of a catastrophic wheel failure.

As earthmover equipment is subjected to ever-increasing payload and speeds, wheels can develop fractures in sensitive areas such as welds, ring grooves and holes. Left unchecked, the severity of cracks can increase, leading to leaks, wheel failure and the potential to endanger lives and equipment.

Having wheel/rim integrity inspected, however, can be costly and time-consuming: Wheels have to be shipped great distances to major centres for inspection by a wheel/rim manufacturer where it's determined they're either safe for use, need repairs or should be scrapped. The alternative is taking wheels/rims out of use after a set number of hours, even though the rim may have months of safe performance left.

With such an integral role in safe, reliable equipment operation, the Innovation Centre developed the Wheel Inspection, a portable solution that follows the circumference of a wheel/rim to scan for signs of cracking using an electromagnetic NDT system for rapid crack and corrosion assessment.

The scope is designed to hug complex shapes, including welding points and ring grooves. When the solution detects a crack, a red indicator illuminates, and a mounted computer retains high-resolution scans of each weld for reporting.

“Having that data means more rims in use that are safe for the pressures of the job,” says Nilsson. “For customers to be able to perform rim inspections at the mine site will save costs and also provide quicker responses about which wheels can safely return to operation.”

SIMPLE, EFFECTIVE, ROBUST TIRE MANAGEMENT TOOLS DEVELOPED BY KAL TIRE

AIR VALVE PROTECTOR

Our Air Valve Protector helps open pit mines avoid tire leaks and vehicle downtime by preventing rocks from displacing loader and haul truck air valve stems. The protector is mounted and installed over the air valve stem, and its magnetic backing provides stability and flexibility.

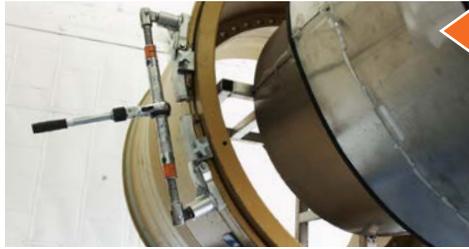


GRAVITY ASSIST SYSTEM

With our award-winning Gravity Assist System (GAS), any tire technician can perform heavy hand tool tasks with less fatigue, better workmanship and fewer workplace injuries. The GAS eases the physical burden and supports the weight of heavy tools, such as 36-kilogram torque guns, to reduce pinched fingers, fatigue and strain common when mounting OTR tires, especially ultra-class tires.

LOCK RING LIFTER & SPREADER

Technicians can now safely install and remove lock rings from the wheel without risk of pinched fingers or accidental energy release. The Lock Ring Lifter supports the full weight of the lock ring and raises or lowers it. The Lock Ring Spreader allows technicians to spread the lock ring—mechanically controlling spring action for safe lock ring installation or removal.



RAM MOUNT TOOL

Our patented Ram Mount Tool securely holds the bead in place so technicians can break the bead in a way that's efficient and eliminates risk. Exclusive to and patented by Kal Tire, Kal Tire has ram mounts in use for various truck models.

POWER CART

With the Power Cart, technicians can stand at a safe distance to operate multiple hydraulic rams and bead breakers using high energy to separate the tire from the rim—making an otherwise high-risk tire management task significantly safer for technicians. Using a remote control, the operation of the ram and bead breaker is still visible to the technician, but the energy use and release is contained at a safe distance.

