

Recycling and reusing tyres

An undervalued ESG contribution

The evolution story of **Kal Tire** – a Canada-based, family-owned international tyre service and supply organisation – is the perfect example of a business that has tapped into market demand and used its service offering as the foundation upon which to grow and expand its business in multiple areas. Most impressive is its off-the-road (OTR) large tyre recycling facility in Chile, commissioned late in 2021, as well as a programme designed to certify the reduction in CO₂ emissions when repairing and retreading tyres, as opposed to buying new. Both developed in the name of ESG, they are contributing to the industry's growing requirement to improve its environmental sustainability, **LAURA CORNISH** writes.

Mining vehicle tyres should not be underestimated for the impact they have on the environment. Ultra-large tyres are taller than grown men and weigh thousands of kilograms. They are difficult to discard, making them hazardous for decades beyond their lifespans.

The production of new tyres has a further negative impact on the environment – in terms of emissions released and energy used to produce them. In mining intensive jurisdictions such as South Africa or South America, the mining tyre business is an industry in itself – the scale of which can deliver

massive environmental benefits if brought under control.

Kal Tire is leading the way in achieving this – having commissioned its world-first OTR recycling facility in Antofagasta, Chile in December 2021. "This is a large, significant investment and the only one in the world that is currently operating which caters for very large mining tyres," says John Martin, Kal Tire's Mining Tyre Group Southern Africa VP.

The thermal conversion/pyrolysis plant is capable of processing five ultra-large tyres at a time in cylindrical reactors that rotate slowly. By applying intense heat, without oxygen, the reactors convert the tyres to 6 500 litres

of light and heavy oil as well as synthetic gas, 4 000 kg of steel and 8 000 kg of carbon black. At this rate, Kal Tire can help bring an end to the growing mountainous stockpiles of used tyres in Chile.

"Each of the products produced has commercial market opportunities, and the synthetic gas produced is used to heat the plant's reactors. This effectively demonstrates the circular economy concept – reducing a waste product back to its original components and then reintroducing those components back into the economy. Naturally, in doing so, mines can add another element in building their ESG strategies," Martin highlights.



Discarded mining tyres have become a major environmental hazard

South Africa finds itself in a similar situation, with some individual clients piling up 60 000 t or even 70 000 t of used tyres – “an environmental disaster in the making.” Kal Tire is eager to bring its OTR recycling technology to the country but government-imposed levies to recycle all tyres are already in place and this needs to be taken into consideration when evaluating the tyre recycling funding model. “We also need to ensure the mines are fully committed to reducing this specific environmental footprint,” Martin continues.

Nonetheless, the Chile plant is proving its worth; so much so that Kal Tire is ready to take this technology to other global regions. In September, the company announced the formation of a joint venture with innovation and sustainability focused international firm Mitsui & Co. The partnership is aimed at advancing mining tyre recycling solutions for mining regions around the world.

The collaboration will support burgeoning demand for solutions to



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handle end-of-life mining tyres in ways that lead to the best and highest use of recycled rubber products, and again, promote a circular economy.

“Mines are challenging themselves to demonstrate environmental stewardship, and yet in many regions, sustainable OTR tyre recycling solutions aren’t yet available,” says Dan Allan, senior VP,

Kal Tire’s Mining Tire Group. “Mitsui’s global reach, mining experience and commitment to affecting positive change gives us a path to scale solutions so we can reach many more mines much more quickly and help solve this enormous environmental challenge.

“We’re seeing far greater uptake from customers when they explore

DEEP INSIGHTS | ESG



The Maple Program uses the carbon calculator data to recognise customers' carbon savings

ESG, including recycling, and we're also seeing more interest in carbon black solutions from manufacturers," says Allan. "We've invested significantly in a solution at the top of the recycling hierarchy because we're committed to solving our customers' challenges, and Mitsui is the ideal partner to scale, evolve and invest in mining tyre recycling so it can become a standalone industry that meets demand and inspires a greener future."

Carbon calculator for tyres – massive ESG contribution, as well

After two years of research and development, which included analysing more than 125 000 Kal Tire retreading production records spanning the past

20 years, the company launched its tyre carbon calculator in October 2019. Validated by SCS Global Services, an international leader in third-party environmental certification, the verification applies to all Kal Tire retreading and repair facilities in all regions it operates, including Australia, Canada, West Africa, Latin America and the UK. In southern Africa this includes Mozambique, Zambia, Botswana and South Africa, which are all certified to deliver the program.

What is the carbon calculator? It is designed to determine fuel and carbon emissions saved by retreading and repairing ultra-large earthmoving tyres compared to buying new. Under the banner of Kal Tire's *Maple Program*, it quantifies a customer's environmental

impact as they grow their fleet with retreads or repaired tyres measuring size 49" and above.

The *Maple Program* uses the carbon calculator data to recognise customers' carbon savings. Annually or monthly, customers receive an accredited certificate with one to five maple leaves depending on carbon savings achieved. This information can be used in customers' sustainability reporting and count towards Scope 3 carbon emission reductions.

"Not only do our sustainable solutions reduce the total cost of ownership of tyres and ultimately bottom-line savings, but now also carry environmental benefits for customers choosing to retread or repair over buying new thanks to the CO₂ savings quantified by our *Maple Program*," says Darren Flint, vice president, tyre lifetime services, and vice president, European and West African operations, Kal Tire's Mining Tyre Group.

"Giving your tyres a second life reduces your carbon footprint compared to buying new because we use fewer raw materials and energy in our sustainable tyre solutions. Putting tyres back into production also saves tyres from being sent prematurely to scrap piles, and lowers dependence on new tyres – meaning fewer tyres are going to scrap piles overall," he further adds.

The carbon calculator has now been on the market for sufficient time for Kal Tire to gather data, records and evidence of its findings and the CO₂ savings are significant. **MRA**

RETREADS	ULTRA TREAD™	CONVENTIONAL REPAIR	ULTRA REPAIR™
10 x 40-TON WHEEL LOADERS	10 x 200-TON HAULTRUCKS	10 x 100-TON HAULTRUCKS	10 x 400-TON HAUL TRUCKS
FITTED WITH 20 x 29.5R25 KAL TIRE REMOULDS	FITTED WITH 20 x 3700R57 ULTRA TREADS	FITTED WITH 20 x 2700R49 REPAIRED TYRES	USING 20 x 59/80R63 ULTRA REPAIRED TYRES
TYPICAL CARBON SAVINGS VS. NEW: 102 TONS CO₂ (66%)	TYPICAL CARBON SAVINGS VS. NEW: 136 TONS CO₂ (62%)	TYPICAL CARBON SAVINGS VS. NEW: 155 TONS CO₂ (92%)	TYPICAL CARBON SAVINGS VS. NEW: 373 TONS CO₂ (87%)
OIL SAVINGS VS. NEW: 1677 LITRES (10 BARRELS)	OIL SAVINGS VS. NEW: 5216 LITRES (32 BARRELS)	OIL SAVINGS VS. NEW: 2731 LITRES (17 BARRELS)	OIL SAVINGS VS. NEW: 8050 LITRES (50 BARRELS)