AHEAD OF THE CURVE: KAL TIRE TO LAUNCH TYRE RECYCLING PLANT

KAL TIRE IS CONTINUING ITS PIONEERING WAYS BY DEVELOPING A TYRE RECYCLING PLANT IN THE MINING-RICH COUNTRY OF CHILE IN SOUTH AMERICA. THE PLANT IS SET BE FULLY OPERATIONAL IN THE COMING MONTHS.

KAL TIRE'S TYRE RECYCLING PLANT IS THE FIRST TO OPERATE IN CHILE.

Kal Tire has stepped ahead of national legislations in Chile that will require the recycling of mining tyres starting 2023.

The company is on the verge of reaching full production capacity at its off-the-road (OTR) tyre recycling facility in Chile after five years of planning, engineering and construction.

The facility is set to convert 20,000 kilograms of scrap tyres – the equivalent of five 63-inch ultra-class tyres – to 6500 litres of alternative fuel, 4000 kilograms of recycled steel and 8000 kilograms of carbon black each day. The plant is designed to operate at the highest safety, environmental and quality standards.

Kal Tire Australia managing director Miles Rigney says it is the company's aim to get as far up the tyre recycling chain as it can.

"We're very pleased with the quality of the steel and oil that we're recovering from the recycling plant, the synthetic gas we're using to help operate the plant and the other component being the recovered carbon black," Rigney tells *Australian Mining*.

"It's where the focus and effort of our innovation team and global partners lie: to find the best ways to purify and recover carbon black at the highest level to allow the best circular use of it."

Carbon black is a key ingredient in the manufacture of tyres and now a major resource targeted during the recycling process at the Chilean plant.

The carbon black recovered by the process is forecasted to be able to be used in new rubber moulded and plastic products such as tyres, conveyor belts or plastic pipe.

Such recycling capacity by Kal Tire trumps the common practice of exporting rubber crumbs to countries such as India and China, which according to Rigney constitutes more of a tyre disposal than a true recycling model.

"We hope to take our Chile plant concept beyond the country so we can recycle tyres into components that can be re-used by the same mining operation," Rigney says.

"What we're trying to do now is work higher up in the recycling chain so we can get to a point where users of mining and earthmover tyres can recycle them and use the resultant products in other parts of their mine sites."

Embodying the true definition of recycling, the modularised and

therefore scalable plant will use the energy produced from the tyres being recycled to maintain the process for seven hours.

Using thermal conversion technology, the process stops using external fuel and runs solely on the synthetic gas produced from the recycled tyres.

Kal Tire recycling project manager Scott Farnham says the plant operates at a very low external energy input to start off, then none at all as the synthetic gas is then used.

"It's a really innovative process. It's something that utilises the energy already inside the tyres to recycle more," he says.

Farnham leads a team that has adopted the use of thermal conversion technology instead of tyre shredding due to its environmental friendliness.

It will mark Kal Tire as the first user of the technology in the tyre recycling space in Chile.

"The technology is based on an established process where you heat tyres in a vacuum with no oxygen," Farnham explains.

"The tyre will gassify inside the sealed chamber, and when you open the doors at the end of the process, there'll be no more volatile elements, only steel and carbon remain. The vapours have been evacuated from the chamber and condensed into oil, which is held in storage tanks."

THE PLANT WILL USE THERMAL CONVERSION TECHNOLOGY TO ACHIEVE THE HIGHEST RECYCLING STANDARDS.

Every second of the large undertaking is monitored by Kal Tire's own process control software. It automates the tyre recycling process starting from the loading of tyres to the reactors.

To keep team members and the environment safe, the Kal Tire plant features a large water reservoir and water cannons, along with pressure relief valves and a nitrogen system that will flood the reactor in case of a fire.

"Since the plant is located in a desert area, we have large tanks of water should the safety features fail," Farnham explains.

"I've applied my 25 years of experience in the tyre recycling industry to keep it as safe as possible."

Kal Tire's recycling plant is being established in the heart of the Chilean mining industry, Antofagasta, well-positioned amid the world's largest copper mines, including Codelco's Chuquicamata mine and the BHP-operated Escondida mine.

This strategic location is where Kal Tire has secured a large stockpile of scrap tyres from Antofagasta Minerals for recycling, with the resultant steel, carbon and oil to be acquired by Kal Tire's local partners.

"We saw the need from our mining customers who all have a similar problem of having mountains of scrap tyres on their sites. Now we have something real that is starting to operate," Farnham says.

"We see many proposals and announcements about recycling plants being built. Kal Tire's plant is the first to operate in Chile and demonstrates our innovative culture and desire to solve this large problem for our customers."

In establishing the plant, Kal Tire has moved ahead of Chilean legislation requiring the recycling of OTR mining tyres starting 2023.

Tyre importers and mining companies in Chile will be required to recycle 25 per cent of its tyres from 2023 to 2026, before the number jumps to 75 per cent in 2027 and reaches 100 per cent by 2030.

"There was a risk to establishing this plant before legislation was set, but listening to the Chilean Government's sustainability and circular economy plans, we felt the time was right to make the investment," Farnham says.

"Whether the legislation exists or not, we are now seeing circular economy and sustainability interests grow month by month.

"We believe that mining companies and tyre importers can both see the environmental benefits from the process and products."