

THE TECHNOLOGY ROADMAP POWERING RIO TINTO'S FUTURE



WHERE:

Pilbara -
Western Australia

SUPPLY:

450 high-horsepower engines, with over 200 being upgraded to the latest QSK60 MCRS Advantage Plus engine

PURPOSE:

To deliver on the mine's technology roadmap, lowering life cycle costs, simplifying the product and improving maintainability and serviceability



TOTAL PACKAGE FUELED BY INNOVATION AND TECHNOLOGY 'TICKS ALL THE BOXES' FOR MINING GIANT



Rio Tinto last year celebrated its 50th year of exports from the Pilbara region in Western Australia and in 2017 shipped its five billionth tonne of iron ore. A relentless drive for improved productivity through innovation and technology allows the company to keep climbing ahead.

It has cost Rio Tinto \$40 billion to build its iron ore export machine – 16 mines, 370 haul trucks, 110 excavators and loaders, 200 locomotives, 1700 km of rail, 450 km of conveyors – the list goes on. Rio Tinto operates around 450 high-horsepower Cummins engines in Pilbara, the world's richest iron ore region. It's not surprising then that Rio Tinto is chasing powertrain technology that achieves the lowest possible fuel consumption. Hugh Carlisle, Specialist Engines for Rio Tinto's Asset Management & Engineering Services, is tasked with delivering an engine technology roadmap that reduces fuel consumption and increases engine life and service intervals.

Carlisle is confident he has the technology roadmap in place: Over 200 Komatsu 830E and 930E haul trucks will be upgraded with the latest Cummins QSK60 engines in the next few years. Already the data is showing an 11% fuel savings.

The QSK60 in question is the newly engineered MCRS 'Advantage Plus' version that combines component technology from both Cummins Tier 2 and Tier 4 Final engines. One of the technology keys is the high-pressure modular common rail fuel injection system (MCRS). In fact, as Carlisle puts it: "MCRS is the technology roadmap for our truck upgrade project, primarily for its benefits of reduced operating and maintenance costs."

A world-first for Rio Tinto is the 2700 hp rating for the single-stage QSK60 MCRS Advantage Plus engine – 2700 hp was previously available only with the QSK60 that uses dual-stage turbocharging to achieve a maximum rating of 3000 hp as well as efficient operation at high altitude. Pilot installation was carried out at the Nammuldi iron ore mine, which has 37 Komatsu 930E-AT autonomous (driverless) haul trucks. All the QSK60 MCRS Advantage Plus engines for Rio Tinto will be remanufactured units, supplied by the Cummins Master Rebuild Centre in Perth.

Carlisle is precise in his summation: "The whole package we've been working on with Cummins and Komatsu ticks all the boxes for Rio Tinto in terms of our technology road map, lowering life cycle costs, simplifying the product and improving maintainability and serviceability." For more information visit [QSK60 for Mining \(Tier 4 Final/Stage V\)](#).



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