ISSUE 1, 2023

Cummins

ASIA PACIFIC MAGAZINE

Blast Off!

Next Gen 15-Litre Breaks Cover

DIZZY HEIGHTS:
8,000 hp Kilimanjaro at the Summit

POWERHOUSE:
Pacific Energy storming ahead

MILITARY MIGHT:
No bridge too far for Birdon

CONTENTS

Welcome to Cummins Asia Pacific Magazine!

ISSUE 1 2023

These are exciting times for Cummins as our 104-year-old company continues to evolve at incredible pace to meet the ever-changing needs of the future, as the new power revolution takes shape.

Not surprisingly, a key theme running through the following pages is Cummins' focus on this new age of clean and sustainable power. "We have to act now," emphasised Jennifer Rumsey, CEO and President of Cummins Inc., in a recent keynote speech, reaffirming the company's commitment to Destination Zero, the strategy to reach net zero emissions by 2050. That commitment is reflected in Cummins' spend of around US$1 billion a year on R&D of future technologies.

As you'll read in this issue, Cummins took the Brisbane Truck Show by storm, showcasing its fuel agnostic 15-litre X-series platform of internal combustion hydrogen, biogas and advanced diesel engines, offering low-to-zero carbon fuel capability. The combined forces of Cummins and Meritor were also on display with an ePowertrain drive axle assembly attracting huge interest.

Elsewhere in this issue, we look at Cummins' commitment to decarbonisation in the mining industry as well as its involvement in the burgeoning hybrid power station business in Western Australia as renewable energy increasingly becomes a priority.

The remarkable success of Port Macquarie, NSW, family company, Birdon, which has secured prestigious US marine defence contracts involving hundreds of Cummins engines, is another story you'll enjoy, along with profiles of several trucking fleets where we look at their efficiency gains. There's also a critical message about the use of counterfeit parts, especially after a 50-litre engine was destroyed at a mine in Western Australia.

And then there's the 8,000 hp, Cummins QSK95-powered Kilimanjaro VIII, the magnificent fast ferry built by renowned Tasmanian shipbuilder Richardson Devine Marine which is making waves for its Tanzanian operator. Stories from Thailand and Japan top up to a power-packed magazine!

So, there's a lot to read – about our customers, our products and projects. We hope you enjoy this publication which recognises the many people who have made Cummins what it is today – customers, employees, enthusiasts, suppliers, community partners and everyone in between!

Peter Jensen-Muir
Executive Managing Director
Cummins Asia Pacific

FOLLOW US ON:

Cummins Asia Pacific

@cumminsasiapacific
@cumminskorea

@CumminsAPAC
@CumminsJapan

Cummins South Pacific
Cummins Southeast Asia
Cummins Philippines

CUMMINS ASIA PACIFIC MAGAZINE
is published by
Cummins Asia Pacific
2 Caribbean Drive, Scoresby VIC 3179 Australia.

Dizzy Heights:

The latest Kilimanjaro powers into

With twin 4,000 hp Cummins QSK95 engines punching Kilimanjaro VIII to a top speed of 37 knots, sea trials of the new Australian-built 53-metre passenger ferry were successfully completed and the vessel sent on its way to Tanzania in Africa where it is now in service.

The eighth member of the Kilimanjaro family – like all previous seven Cummins-powered Kilimanjaro vessels – was built by Richardson Devine Marine (RDM), the world-renowned Australian shipbuilder based in Hobart, Tasmania.

The delivery of Kilimanjaro VIII to Azam Marine reaffirms the company's standing as Tanzania's leading passenger ferry service.

With a 650-passenger capacity, the 53-metre, 8,000 hp Kilimanjaro VIII is the second Kilimanjaro to be propelled by twin Cummins QSK95 engines.

The latest vessel is longer and wider than the 2019-delivered Kilimanjaro VII and also has greater passenger capacity, while the 95-litre, V16 Cummins engines have been upped from 3,600 hp to 4,000 hp at 1700-1800 rpm.

Performance targets for the sea trials were a service speed of 34 knots and a top speed of 37 knots.

Impressive performance

"Design and build quality are trademarks of the Kilimanjaro family, and Kilimanjaro VIII is another impressive step in the evolution of the fast passenger ferry," said RDM co-founder Ron Devine. "The Cummins QSK95 has met the high expectations of the owners, delivering impressive performance and reliability."

The Kilimanjaro fleet, named after Africa's tallest mountain, operates between the Tanzanian mainland city of Dar es Salaam and the Zanzibar Archipelago in the Indian Ocean, moving thousands of passengers a day, many of them international tourists who have discovered the magnificent destination of Tanzania.

The evolution of Kilimanjaro for Azam Marine has seen Cummins engines in the form of the 38-litre (KTA38), 50-litre (KTA50) and 60-litre (QSK60) used prior to the emergence of the top-rated QSK95, the most powerful diesel engine RDM has fitted to a vessel. In fact, Kilimanjaro VII was the first fast ferry in the world to be specified with the 95-litre Cummins.

The Kilimanjaro family has been designed by world-leading digital shipbuilder Incat Crowther, an Australian company. The first vessel, measuring 36.8 metres, was launched in 2009 with a 400-passenger capacity and powered by twin KTA38 engines, each producing 1050 hp and a service speed of 22 knots.

RDM has won global recognition in the marine industry with its Cummins-powered Kilimanjaro vessels. Kilimanjaro VIII is 'hull 78' for RDM, a business established in 1989 by Toby Richardson and Ron Devine who enthusiastically set about ruling the waves with their aluminium passenger and tourist ferries.

The two men met in 1987 when they were key members of the Australian Taskforce 87 syndicate that won the right to defend the America's Cup – one of the oldest and best-known contests in international sailing.

service

Strong relationships

The success of the Kilimanjaro fleet is testimony to the quality aluminium construction produced by RDM.

When Kilimanjaro VII was launched in 2019, its build quality was described as “exceptional” by Azam Marine MD Abubakar Aziz Salim. “The vessel reflects the strong relationship we have forged with RDM since the first Kilimanjaro was built in 2009,” he said.

The Kilimanjaro fleet operates in harsh, incredibly saline conditions and constantly high water temperatures around the 30 degrees Celsius mark – a highly corrosive environment.

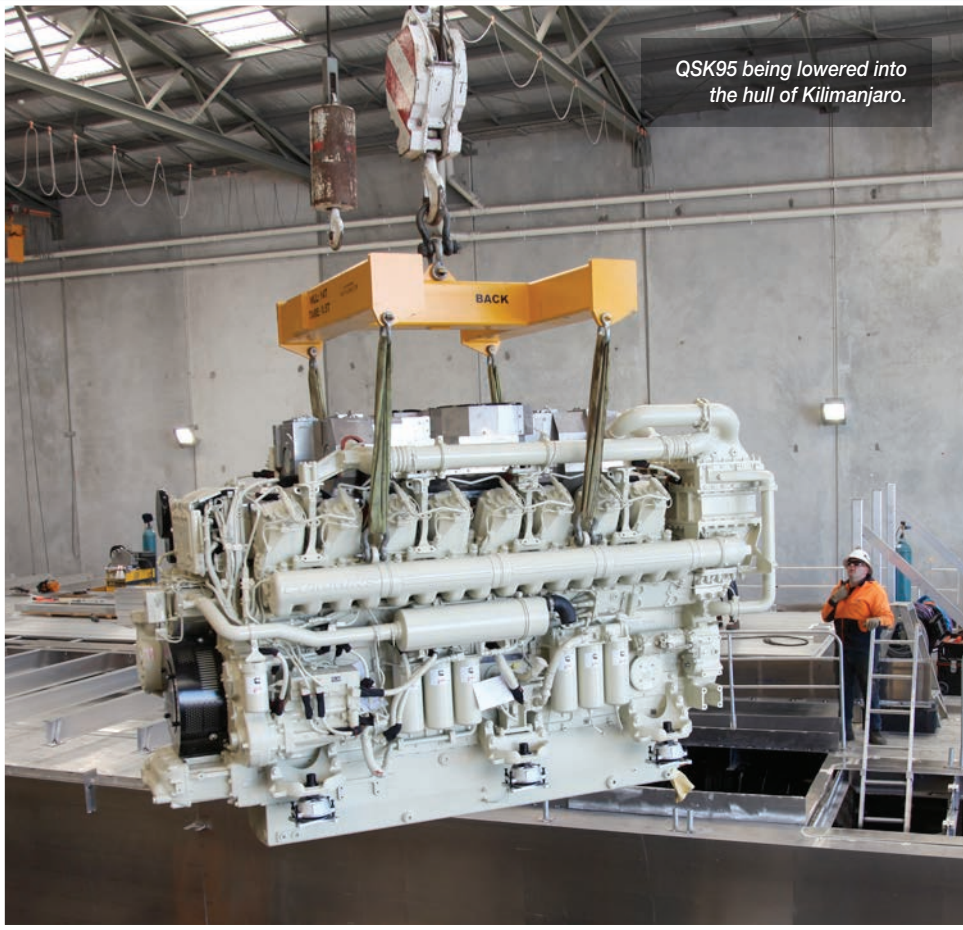
Kilimanjaro VIII has an 18,600-litre fuel capacity, and the twin Cummins 95s draw the diesel through 40 mm (internal diameter) lines while delivering their power through ZF marine gears to the Kamewa waterjets.

The Cummins influence isn’t confined to propulsion power; the electrical needs on all Kilimanjaro ferries are met by Cummins generator sets.

▲ Scan here or click here for more info.

Toby Richardson (left) and Ron Devine established Richardson Devine Marine in 1989.

> “The Cummins QSK95 has met the high expectations of the owners.”



QSK95 being lowered into the hull of Kilimanjaro.

Twin 4,000 hp Cummins QSK95 engines power Kilimanjaro VIII.

COUNTERFEIT PARTS DESTROY

50-litre Cummins at Western Australia mine

The high risk involved in using counterfeit parts in a high horsepower diesel engine has hit home at a mining operation in Western Australia.

A Cummins K50 – a long-established 50-litre V16 renowned for its reliability and durability – failed at only 6,000 hours powering an excavator when it would have been expected to clock up to 16,000 hours after midlife maintenance at 8,000 hours.

Cummins Perth workshop supervisor Gary Mollart and service technician Ryan Elliott were involved in the teardown and analysis of the 1,800 hp engine. The teardown and testing were done within Cummins with no third-party testing involved.

"There was total destruction inside one cylinder," Elliott reveals. "The technicians at site had to pull the engine out and send it to Perth when they realised they couldn't fix it in situ."

When the engine was disassembled, the reason for the destruction was glaring: Counterfeit parts, including the cylinder liners, had been used by a third party repairer to rebuild the K50.

Metal debris everywhere

"When the rocker cover was removed there was metal debris everywhere – pieces of valve spring, bent push rods, a broken crosshead, and there was fuel, oil and coolant floating around," Elliott says.

> *"When the rocker cover was removed there was metal debris everywhere…"*

"Some debris had fallen into the cylinder, hit the injector and snapped off the bolts inside the rocker box. The injector had come out and cracked the rocker cover.

"We could see straight away that counterfeit parts were used. We've pulled heaps of K50 engines apart so we know when something looks dodgy.

"The head gaskets looked cheap. When we went to undo the head bolts we found the bolts were not actually held in by the thread, they were held in by seal around the bolt.

"The head gaskets were red rather than the green, black or orange head gaskets that Cummins uses. The liners also had a laser-etched, dodgy-looking Cummins 'C' on them."

Elliott points out that most liners had cavitation, as did the insert in the block: "The liners weren't far from pitting all the way through, so the engine was on the verge of hydraulic-lock and throwing a rod out of the block."

False economy

For Gary Mollart, the lesson is obvious: "The customer is now aware of the downfall of using an unauthorised Cummins repairer to cut costs.

"At the end of the day you get what you pay for… if you want to pay for quality then you get quality, if you want to cut corners to save a few grand you get exactly what happened to this customer."

Kyle Miller, Cummins' aftermarket business development manager for mining in the Asia Pacific region, is involved in Cummins' crackdown on counterfeit activity in Australia.

"The real challenge is when third-party repairers import parts from outside Cummins' channels. Some importers think they're getting genuine Cummins parts and are telling customers the parts are genuine…but they're not genuine, they're counterfeit," he says.

"Our reputation is obviously at stake because the end-user customer perceives they are buying genuine product."

Miller points out that counterfeiters have become so sophisticated that their parts often look like the original, even down to their labelling, packaging, barcodes and QR codes.

"The magnitude of the problem in Australia is requiring Cummins to take a tough stance against counterfeiters," asserts Miller, "and we'll be announcing measures soon that will help protect our customers from counterfeit parts.

"Cummins High Horsepower Genuine parts sourced from the extensive network of Cummins branches in Australia and New Zealand are the only parts approved and warranted by Cummins."

www.cummins.com/locations

Cummins Perth workshop supervisor Gary Mollart (left) and service technician Ryan Elliott who were involved in the teardown and analysis of the destroyed engine.

Some of the counterfeit parts that resulted in destruction of the 50-litre engine.

▲ Scan here or click here for more info.

Counterfeit parts not worth the risk, warns Cummins

It's a warning often repeated by original equipment manufacturers (OEMs), yet some businesses continue to put their operations at risk – knowingly or otherwise – by using cheap counterfeit parts.

Powering more types of equipment in more markets than any other engine company, Cummins encounters and fights against counterfeiting every day while constantly warning that use of bogus parts can have potentially serious consequences in terms of safety, productivity and performance.

> *"Counterfeiters are becoming so sophisticated that their parts often look like the original…"*

The main reason for using counterfeit components is to reduce costs, even though this can ultimately compromise an engine's lifespan, resulting in a blow-out of whole-of-life costs.

"Counterfeiters are becoming so sophisticated that their parts often look like the original, even down to their labelling, packaging, barcodes and QR codes, and many consumers are misled into thinking they are buying the genuine article," says Kyle Miller, Cummins' aftermarket business development manager for mining in the Asia Pacific region.

"These products are usually reverse-engineered with poor quality materials and loose specifications. They are not designed or tested to Cummins' exacting engineering and quality standards and this can lead to rapid wear, poor reliability, high fuel and oil consumption, excessive emissions and even engine failure.

Safety risk

"Counterfeit parts can also pose a safety risk if they are poorly produced or made of substandard materials. For example, fire risk or electrical failure may result from faulty components."

He points out that while manufacturers of counterfeit parts may claim their products will work in a Cummins engine, the fact is they are not fit for purpose. Only genuine components are built to meet the original factory specifications while using the latest materials, component designs and manufacturing techniques.

"With genuine Cummins parts, customers know where and how they have been manufactured, so they can be confident in the quality, durability and reliability of the parts. In the event of failure, Cummins takes responsibility in providing warranty."

The proliferation of cheap counterfeit parts entering Australia and New Zealand is a growing concern. In both countries, the purchase and supply of counterfeit goods is illegal.

A recent case in Australia saw a mine operator buy fuel injectors through a reputable third-party supplier. The injectors showed all the signs of being a Cummins product but with a cheaper price. After the injectors were installed in 15 engines, the operator began to see performance degradation along with higher fuel consumption and increased visible exhaust emissions. A Cummins technician found the injectors to be counterfeit so the short-term savings ended up costing the customer more in lost production.

Every genuine Cummins part is backed by a comprehensive factory warranty and supported by Cummins' extensive support network in the Asia Pacific region, ensuring peace of mind and financial protection. Counterfeit parts suppliers cannot provide this level of support.

Emerald Carrying Company:
POLISHED TO PERFECTION

The words are prominent on the door of the Kenworth – PRIDE, CARE, RESPECT, EXCELLENCE – and in a nutshell they reflect what Emerald Carrying Co is all about.

The culture at ECC is obvious: Pride in everything IS everything!

The stunningly immaculate Queensland fleet will this year haul 4 billion litres of fuel to mines, fuel depots and service stations.

ECC's operational and maintenance standards are of the highest order, with the company's fleet of 155 prime movers and 350 trailers running on high utilisation schedules.

In fact, high utilisation is a trademark of the fleet with some of ECC's fuel-haul B-doubles clocking 450,000 km a year on triple-shift work.

> "Cummins is the best engine brand on the market in terms of reliability and aftersales support."
>
> *Matt Haylock*
> *ECC fleet manager*

Loyalty to suppliers

Kenworths with Cummins power dominate at ECC. What is obvious is the strong relationship that has been forged over the years between ECC and its suppliers: Loyalty received is deserving of loyalty in return!

The relationship with Cummins, dating back to the 1980s, is evident with ECC recently putting into service a set of B-double tankers promoting the Cummins brand – in particular the Euro 6 X15 with the accompanying message *'We're ready when you are'*.

"Cummins is the best engine brand on the market in terms of reliability and aftersales support," says ECC fleet manager Matt Haylock without hesitation.

"We run our trucks into some extremely remote areas across Queensland, the Northern Territory and New South Wales so reliability is crucial."

When a Kenworth has done around 1.2 million km, ECC rebuilds the engine or replaces it with a brand new one depending on how quickly the kilometres have been accumulated. The ISXe5 dominates in a fleet which has recently seen the first Euro 6 ISX engines enter service.

The latest innovation at ECC is the 'Super Triple', a PBS-certified combination that operates on the 900 km trip between Townsville and Mt Isa, hauling 130,000 litres of fuel – a gain of up to 22,000 litres compared with the capacity of a standard roadtrain triple.

The Super Triple, with 600 Cummins X15 horses in harness, features a tri-drive Kenworth T909 pulling Tieman quad-axle trailers and tri-axle dollies, with a loaded weight of 156 tonnes. Early fuel figures show the Super Triple running at 1.18 km/litre.

Impeccable presentation

If high utilisation is a trademark of the fleet, just as important is the presentation of the trucks – they are generally washed after each shift – and the way they are maintained.

I guessed that the impeccable Kenworth K200 in the photo accompanying this article was probably 12 months old with a few hundred thousand kilometres on the clock. It is, in fact, a 2016 model with over one million kilometres under the ISXe5 rocker cover.

ECC runs a stringent maintenance regime which underpins the company's fleet reliability and safety commitments.

Cummins' Euro 6 X15 promoted on an Emerald Carrying B-double.

Emerald Carrying MD Greg Haylock (left) with son and fleet manager Matt Haylock.

"We have very few breakdowns – perhaps one a month, if that," confirms ECC maintenance manager Chris Chalmers. "We're proud of that considering the size of the fleet."

Today, ECC operates out of Darwin, Cairns, Emerald, Townsville, Mackay, Rockhampton, Gladstone and Brisbane, while its Monaro fleet – ECC acquired Monaro Fuel Haulage in 2016 – has depots in Sydney, Melbourne and Adelaide.

At the time of the acquisition, the Monaro fleet totalled six trucks; today 50 trucks operate in the Monaro blue livery.

"Our B-double prime movers are brought in for checks every 12,500 km which is generally a week to 10 days while our engine oil change intervals are 50,000 km for the B-doubles and 25,000 km for the roadtrains," Chalmers points out. "We look at fuel burn every service to check engine load factors and that our servicing intervals are where they should be.

"Accurate forecasting is the key to our maintenance system, and each week we get an automated report detailing which trucks are due in for servicing. We have five workshops and 30 mechanics including nine apprentices," he adds.

Family-owned ECC has certainly come a long way since Bill Haylock's modest start in the mid-1960s in the central Queensland town of Emerald, where he had a 4-ton Austin carting off the rail. Team effort, employee loyalty and business integrity are obviously guiding principles behind an operation that today uses premium equipment to provide a premium service.

'Super Triple' – a PBS-certified unit – hauls 130,000 litres of fuel, a gain of up to 22,000 litres compared with a standard roadtrain triple.

Cummins continues its longstanding partnership with Pacific Energy whose hybrid power systems business is growing to meet increasing renewable energy demands.

POWERHOUS

A flurry of acquisitions – including big name Western Australian power station players Kalgoorlie Power Systems and Contract Power – has stamped Pacific Energy as an immense force in the delivery of hybrid power stations to remote mines and communities across the country.

Pacific Energy has a 40-year history, starting out in the 1990s with two hydroelectric power stations and one peaking power station in Victoria. It wasn't until 2009, however, that serious growth began in Western Australia when Ken Hall's Kalgoorlie Power Systems (KPS) was acquired.

Then followed the acquisition of Leon Hodges' Contract Power in 2018, along with several smaller businesses specialising in switchboards, renewable energy systems, control systems and hydrogen that enabled Pacific Energy to boast complete in-house capabilities.

Cummins generator sets were nothing new to KPS and Contract Power, both outfits using multiple numbers of the Cummins brand in their off-grid power stations. Their demand for top-shelf aftersales support and Cummins' ability to come to the party, is obviously recognised at Pacific Energy.

Grant Farquhar joined Pacific Energy last year as managing director of its Perth-based remote power business after 25 years in the construction materials industry, the last eight as general manager, which included accountability for Hansen's national quarry assets. His immediate task was to apply his corporate expertise to the integration of Pacific Energy's various new businesses.

"We've had an interesting merger of people and cultures," says Farquhar, pointing out that Pacific Energy now has more than 600 employees compared with 160 three years ago. "KPS and Contract Power were owned by Pacific Energy but were actually competing against each other under the one roof in Perth until early last year when we integrated the two businesses.

Strong pipeline

"Our core business today is hybrid energy solutions—building power stations that incorporate renewable energy," he confirms. "In fact, all our future installations will be hybrid, or microgrids as they are also known.

"We have a very strong pipeline of both greenfield and brownfield hybrid projects," he reveals, adding that the brownfield projects involve integrating renewable power into existing diesel or gas generation facilities.

Not surprisingly, Pacific Energy continues the highly successful business model laid down by Contract Power and KPS of design, build, own and operate, and today has 47 operational power station sites, most of them in Western Australia, supplying off-grid power.

Among the newest is the Esperance hybrid renewable power station comprising wind, solar, gas and diesel generation, as well as a battery energy storage system, commissioned for State Government owned Horizon Power.

Esperance is 700 km south-east of Perth and has a population of around 10,000. Its port is a vital trade hub, connecting industries in regional Western Australia with the rest of the world. Exports include iron ore, lithium, nickel, grain and woodchip.

A first for Esperance

It is the first regional town in Australia powered by a system that integrates gas, wind and solar power, and battery storage.

The microgrid, which became operational early in 2022, provides Esperance's community, industries and port with up to 50% renewable energy in its initial stage of development, without compromising power quality or reliability.

At the heart of the new power station are 11 high-efficiency Cummins HSK78G gas generator sets delivering 22 MW – the industry's latest technology gas generators that were released in 2019.

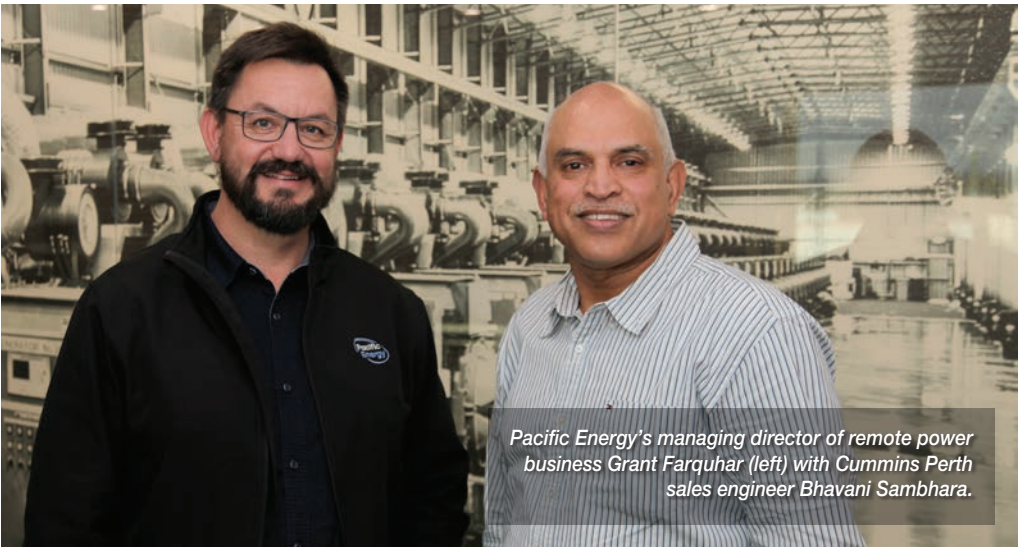
Total installed capacity is 41.5 MW: The power system integrates a 4 MW solar farm and two 4.5 MW wind turbines in the renewables hub, a 24.5 MW thermal power station comprising the 11 Cummins gas gensets and three Cummins diesel gensets, and a 4 MW battery energy storage system. Gas for the power station is trucked in from Perth.

Carbon emissions are cut by up to 50% compared with the previous power

Continued overleaf...

At the heart of the new Esperance hybrid renewable power station are 11 high-efficiency Cummins HSK78G gas generator sets delivering 22 MW.

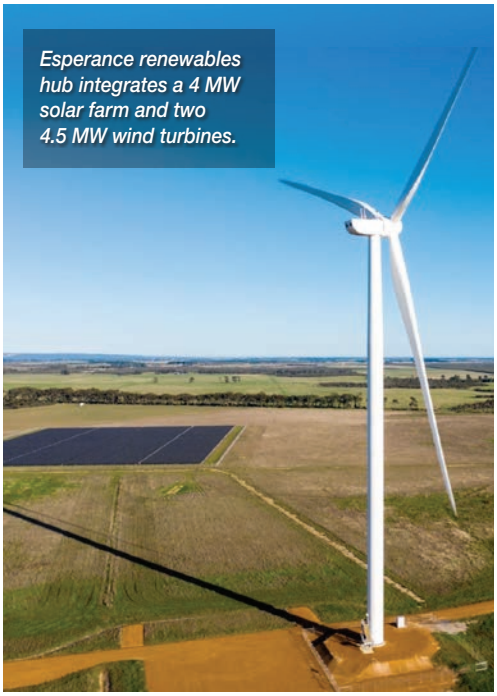
SE honing in on hybrid



Pacific Energy's managing director of remote power business Grant Farquhar (left) with Cummins Perth sales engineer Bhavani Sambhara.

> "If you line up all the OEMs, Cummins has got it right in terms of customer focus."

Cummins Perth's Bhavani Sambhara (left) with Cummins Esperance field service technician Rob Foo and power station operator Brendan Weckert.



Esperance renewables hub integrates a 4 MW solar farm and two 4.5 MW wind turbines.

Giving it the gas

▲ Scan here or click here for more info.

Cummins released the HSK78G in 2019, a completely new design from the skid up with a power density of up to 2 MW from the compact 78-litre, V12 gas engine.

This engine is not a derivative of Cummins' high horsepower, 78-litre QSK78 diesel unit; it is designed specifically for gas.

The HSK78G has the industry's longest major overhaul service cycle of 80,000 hours and is offered with ratings (50 Hz) of 2 MWe, 1.8 MWe, and 1.6 MWe.

Cummins Perth sales engineer Bhavani Sambhara points out that high electrical efficiency of up to 43.8% (50 Hz) is achieved on a wide range of pipeline natural gas down to 70 MN (Methane Number) without impacting power output and efficiency.

New technology and electronic engine management systems allow the generator to automatically manage gas fuel quality fluctuations to ensure zero loss in performance.

Peak efficiency is maintained by automatic engine adjustments, which account for fuel quality changes and quick load-step performance, without the need to calibrate or switch off the engine.

"The generator has high ambient capability, able to run efficiently at 55 deg.C without derating at an altitude of 150 metres," says Sambhara.

Continued from previous page...

generation system which incorporated gas turbines and wind turbines.

Grant Farquhar still sees the important role gas generators play in large-scale power systems. "Thermal capacity is critical in supplementing the renewable component," he says. "In Esperance, power demand is quite volatile, necessitating the thermal capacity for reliable and economical baseload power supply.

"Batteries aren't at the level yet where they could be considered a substitute for a power station's thermal capacity."

The three 850 kW Cummins diesel gensets at Esperance are 'black start' units as well as support for the gas gensets during periods of high demand.

Cummins' proactive support

"Cummins is proactive with its aftersales technical support," says Marc Grosser, general manager of design and engineering for Pacific Energy's remote power business. "It's what we expect from Cummins. If you line up all the OEMs, Cummins has got it right in terms of customer focus."

Power station with eight HSK78G gas gensets at Karlawinda gold project in the Pilbara (and below).

He points out the HSK78G generator set is "meeting expectations" and that Pacific Energy has worked closely with Cummins to further improve and optimise the genset to meet site requirements.

"Fuel efficiency along with load step and load rejection capabilities are strong points of the HSK78G," he says.

Another new power station added recently to Pacific Energy's asset portfolio and using HSK78G generators is at Capricorn Metals' Karlawinda gold project in the Pilbara region.

Pacific Energy was awarded the build, own and operate contract to supply power to the project, which covers an area 110 km wide and 30 km long. The first gold was poured in mid-2021 and annual production rate is between 110,000 and 125,000 ounces of gold.

Featuring eight HSK78G gas gensets, the 16 MW power station is not yet hybrid but it's expected that renewable energy will be added sometime in the future.

> "Fuel efficiency along with load step and load rejection capabilities are strong points of the HSK78G."

DESTINATION ZERO

▲ Scan here or click here for more info.

QSK95

▲ Scan here or click here for more info.

Miners in Australia take up the sustainability challenge and join Cummins on the path to zero emissions.

Destination Zero: Cracking the carbon code

The high horsepower diesel engine is just one aspect of many in the complex picture of sustainability in the mining industry.

It's an important one nonetheless due to its contribution to greenhouse gas emissions and atmospheric pollutants while powering the mighty machines involved in the extraction of natural resources as the global demand for minerals and energy rises.

The willingness of mining companies around the world to reduce their environmental footprint is seeing massive changes in the pipeline as decarbonisation gathers momentum.

In Australia, the efforts of major iron ore and coal miners in reducing their carbon footprint are well documented.

Cummins' stance is clear, as outlined by CEO Jennifer Rumsey: "We recognise that Cummins and our industry contribute to the need to address climate change…with 12 million engines in the field today, we (at Cummins) have an opportunity to make a significant impact by being part of the solution."

With its Destination Zero strategy, Cummins is committed to net-zero carbon by 2050. The strategy calls for improving the company's core products today to reduce carbon while bringing to market the zero-carbon technologies that will power tomorrow.

"We can make a big difference by improving the efficiency of diesel engines in the next decade. We shouldn't just focus on zero only, we need a combination of advancing zero and improving engine-based products that we have today," Rumsey said.

The majority of high horsepower Cummins engines sold into mining in Australia today have Tier 4 architecture, meaning industry-leading reductions in greenhouse gas and diesel particulate emissions.

While exhaust emissions from off-highway equipment are still unregulated in Australia, Cummins has developed a double-edged solution for its latest generation high horsepower engines like the QSK50 and QSK60.

Both are available with Selective Catalytic Reduction (SCR) exhaust aftertreatment technology for Tier 4 compliance. Even without SCR, the engines retain Cummins' advanced Tier 4 architecture which means a host of product improvements, mainly to improve combustion efficiency and thus reduce greenhouse gas emissions.

Renewable diesel

Cummins has also approved the use of unblended renewable diesel, including hydrotreated vegetable oil (HVO), for its entire line of high horsepower diesel engines, across all ratings. The approval applies to the QSK19, K19, QSK23, QST30, QSK38, K38, QSK45, QSK50, K50, QSK60, QSK78 and QSK95 across all industrial segments, such as mining, oil & gas, rail and marine.

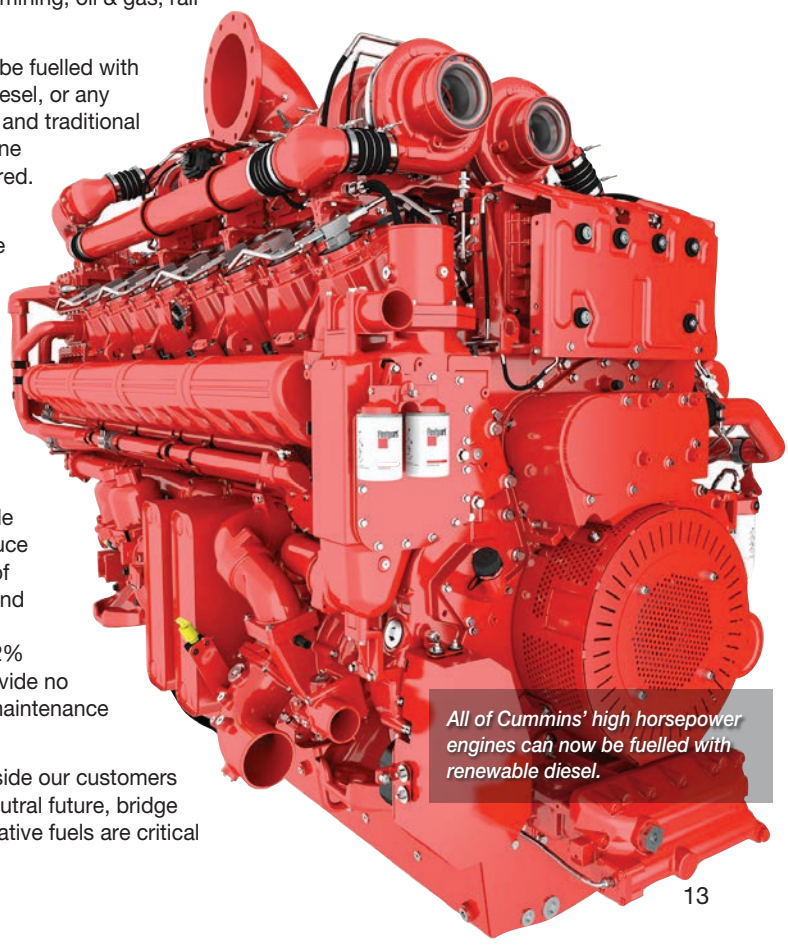
These engines can be fuelled with 100% renewable diesel, or any blend of renewable and traditional diesel, with no engine modifications required.

Utilising renewable diesels like HVO are shown to reduce net greenhouse gas (GHG) emission by up to 90% compared to conventional diesel, dependent on the exact feedstock and fuel pathway. Renewable diesel can also reduce tailpipe emissions of particulate matter and smoke up to 50%, experience only 1-2% power loss and provide no impact to service/maintenance intervals.

"As we work alongside our customers toward a carbon neutral future, bridge solutions like alternative fuels are critical in decarbonising existing equipment," said Gary Johansen, Vice President, Power Systems Engineering.

The challenge for Cummins is developing a wide variety of carbon-reduction solutions that meet the unique needs of its customers across many markets. The company's diverse line of solutions includes internal combustion (clean diesel, hydrogen and natural gas), alternative fuels, hybrid, battery electric and fuel cell electric.

Cummins is a strong advocate of hydrogen fuel technology and is collaborating with major OEMs to advance the development of zero-emission mining haul trucks using hydrogen fuel cells.



All of Cummins' high horsepower engines can now be fuelled with renewable diesel.

Cummins' next generation 15-litre diesel engine, the X15D.

NATURAL GAS

▲ Scan here or click here for more info.

HYDROGEN

▲ Scan here or click here for more info.

Highest-ever outputs for a Cummins truck engine.

Cummins Kalgoorlie apprentice Caleb Todd placed third in the HVIA National Apprentice Challenge at the show. He is being congratulated by Ben Lister, Operations Director for Cummins Asia Pacific.

Cummins won the 2023 Trucksales Innovation Award for its cutting-edge fuel agnostic platform. Pictured with the award is Scott Alexander, Cummins South Pacific's Manager - On Highway Sales and Customer Support.

660 hp Cummins
to power flagship DAF

One of the biggest news stories of the show was the unveiling of the 660 hp Cummins in DAF's flagship XG+ cabover which is set to hit Australian roads in 2024. "This 660 hp 15-litre powered truck is really going to be a game changer for DAF in this country, because this is not just any 15-litre, it is a latest generation 15-litre engine born from a close collaboration between Paccar and our supply partner Cummins," said Paccar Australia chief engineer Brad May.

Cummins unveils next generation 15-LITRE POWERHOUSE

Cummins' industry-first fuel agnostic engine platform, featuring advanced diesel, natural gas and hydrogen internal combustion technologies, was a star exhibit at the recent Brisbane Truck Show, widely acclaimed as the best ever with a record attendance of nearly 43,000 over the four-day event.

At the centre of the fuel agnostic display was Cummins' next generation 15-litre diesel engine, the X15D, which will deliver the highest-ever outputs for a Cummins truck engine – 660 hp backed up by massive peak torque of 2360 lb ft – while setting new standards for fuel efficiency at ultra-low emissions levels.

"With the all-new X-series platform, Cummins is taking the internal combustion engine to a next generation level, capable of meeting future ultra-low emission standards with a low-to-zero carbon fuel capability," said Mike Fowler, director of on-highway business for Cummins Asia Pacific.

There is no set date for release of the X15D in Australia and New Zealand. An extensive field test program which started in Australia in 2021 will determine when this will occur. "The X15D will only be released when we are completely satisfied with its reliability and durability in meeting the harsh demands of the Australian B-double duty cycle," said Fowler.

A key feature of the X15D is its dry weight reduction of 225 kg compared with the current X15. A sculpted iron block and composite oil pan are among the weight saving features that result in the X15D having the highest power-to-weight density in the industry.

The X15D ratings – 660 hp/2360 lb ft – eclipse the current X15 peaks of 615 hp/2050 lb ft and will enhance Cummins' engine downspeeding strategy for improved fuel economy.

"This strategy is about reducing cruise rpm for fuel economy gains while at the same time providing the grunt to meet both driver and trip time expectations," said Fowler, noting that peak torque extends over a wide band, from 1500 rpm all the way back to 1000 rpm.

He pointed out that field trials of the X15D rated at 660 hp in Australia have shown fuel economy improvements up to eight percent. By the end of 2023, more than 10 trucks will be involved in the field trial and the aim is to accumulate more than five million test kilometres.

Fuel agnostic family

With its industry-first 15-litre fuel agnostic platform, Cummins continues to advance the internal combustion engine technology it is renowned for with further improvements in efficiency as well as compatibility with cleaner fuels like hydrogen, natural gas and hydrotreated vegetable oil (HVO), also known as 'renewable' diesel.

The platform basically comprises one block and three cylinder head options – a compression ignition head for diesel, and spark ignition heads for natural gas and hydrogen – and is an important step in Cummins' Destination Zero strategy as the transition begins to net-zero carbon emissions by 2050.

Internal combustion engines have a significantly lower upfront cost than fuel cell or battery electric installations, require little modification to today's trucks, and provide familiarity for truck operators.

"The X15D will have the flexibility to operate on B100 biodiesel or renewable diesel to significantly reduce CO2 emissions further," said Fowler.

B100 biodiesel enables up to a 70 percent reduction in carbon while using HVO renewable diesel achieves up to 90 percent. HVO (hydrotreated vegetable oil) has chemical and physical properties like those of diesel fuel, but its fossil-free composition and low carbon content provides a simple and efficient alternative to diesel. Importantly, HVO can be blended and used in any proportion with diesel which allows for ease of transition.

The natural gas and hydrogen versions of the internal combustion X15 – the X15N and X15H – are expected to become available in Australia in the next two to four years depending on successful field testing. "There's a lot of interest in both engines," Fowler confirmed.

Simultaneously, Cummins continues to innovate zero-emissions solutions like hydrogen fuel cell and battery electric technologies, spending around US$1billion per year on research and development.

Industry-first 15-litre fuel agnostic engine platform incorporates advanced diesel, natural gas and hydrogen technologies.

Cummins Accelera 17Xe ePowertrain with 430kW electric motor and a three-speed gearbox integrated into an axle assembly.

▲ Scan here or click here for more info.

Cummins Meritor team at Brisbane Truck Show.

ZERO HEROES

The combined forces of Cummins and Meritor were evident at the Brisbane Truck Show as they accelerate towards next generation powertrain technology.

The US$3.7 billion acquisition of Meritor by Cummins last year has drastically altered the commercial vehicle landscape for decarbonised solutions.

By accelerating Meritor's investment in electrification and integrating its ePowertrain products with Cummins' New Power business under the new Accelera brand, Cummins is on course to meet its ambitious Destination Zero goal – reaching net-zero emissions by 2050.

For several years leading up to the purchase in 2022, Cummins had watched closely the nature of Meritor's product offerings and liked what it saw.

Meritor's success with its ePowertrain product, for instance, coupled with Cummins' capabilities in hydrogen fuel cell, battery and electrolyser production, had tremendous potential to drive technology development and expand the profile of Cummins as a leader in low emission transportation technologies.

Furthermore, the existing portfolio of conventional axle, brake and drivelines from Meritor were viewed as highly complementary, enabling Cummins to offer complete powertrain solutions. And so, Cummins-Meritor was born.

The hero product on display on the Cummins-Meritor stand at the Brisbane Truck Show was the Accelera 17Xe ePowertrain. The 17Xe is a 430 kW electric motor and a three-speed gearbox engineered and integrated into an axle assembly, making it suitable for use in heavy-duty transport applications.

With the ability to plug it into either a hydrogen fuel cell or battery, it's the heaviest capacity of a suite of ePowertrains that are now being marketed along with the fuel cell, battery and electrolysers solutions under the new Accelera by Cummins brand.

"Cummins' Destination Zero strategy is not about a change immediately to zero emissions technology, it's also about improving the efficiency for customers today," said Cummins-Meritor Australia managing director David Cole. "Investing in both the new technologies and that of our more traditional drivetrain product line-up is an imperative, as these technologies are expected to coexist for some time depending on the applications."

On display at the show was the latest Meritor 160 tandem series axle which has been proven in the toughest conditions in Australia over many years and recently updated into two different specs for linehaul and vocation. In the linehaul version, the oil pump has been engineered out of the tandem axle which provides linehaul customers with efficiency improvements and thus better fuel economy. The vocational version retains an integrated pump enabling greater longevity where a broader and more demanding application is required.

"The performance enhancements in our traditional product line-up bring immediate benefits to our customers in reducing emissions and operating costs, and is essential technology when coupled with evolving zero-emission engine technologies," said Cole.

Rebuild masterstroke pays off for miners

A masterstroke by Cummins engineers in Australia and the US has resulted in major cost reduction and environmental benefits for mining companies electing to rebuild their QSK60 engines under a special upgrade program.

The engineers focused on rebuild possibilities for the early generation QSK60, and how it could be upgraded to the latest diesel technology at overhaul time with no major change to the base 60-litre V16 design – a feat that eluded other engine manufacturers.

The key technology upgrade is to fuel injection, with the early unit injection system (HPI) replaced with the high-pressure modular common rail system (MCRS) that now features on all of Cummins' latest generation high horsepower engines.

The 300th upgraded engine, rated at 2700 hp, rolled off the production line at the Cummins Master Rebuild Centre in Brisbane, highlighting yet another successful step in the evolution of the QSK60 and why it is the foremost high-horsepower diesel engine globally in mobile mining equipment.

"Reduced fuel consumption and longer life-to-overhaul are keys to lower total cost of ownership, and they were the initial aims behind the engineering of the upgrade program for the QSK60," says Greg Field, mining business development manager for Cummins Asia Pacific.

"Innovation is at the core of Cummins' long history and it has certainly played its part in the QSK60 rebuild options we can offer our mining customers."

The bottom line is impressive: Diesel particulate emissions are slashed by up to 63% through in-cylinder combustion technology with no aftertreatment. There's also a plus for maintenance with less soot loading in the oil.

Fuel savings up to 5% are consistently reported in the field for significant greenhouse gas emissions reduction, while life-to-overhaul is extended by 10%, translating to fuel consumption of more than 4.0 million litres before rebuild is required.

Apart from the fuel system upgrade to MCRS, the QSK60 with single-stage turbocharging also features other Cummins innovations in combustion technology that were engineered for Tier 4 Final and Stage V emissions compliance, the most stringent off-highway emission standards in the world.

The rebuild upgrade package can be applied to the two variants of the QSK60 – one with single-stage turbocharging (known as 'Advantage') which can be rated from 1785 to 2700 hp, the other with two-stage turbocharging which can be rated at 2700, 2850 or 3000 hp.

The 300th upgraded QSK60 went to Boggabri Coal in the NSW Gunnedah Basin for installation in a Komatsu 930E haul truck. The engine has proved its worth in both coal and iron ore mining in Australia.

Early generation QSK60 HPI engine at the Master Rebuild Centre for conversion to MCRS technology.

The finished product...QSK60 with MCRS fuel system technology.


MCRS upgrade at Master Rebuild Centre in Brisbane.

Belt buckle marking the 300th QSK60 MCRS conversion and its delivery to Boggabri Coal in the NSW Gunnedah Basin.

▲ Scan here or click here for more info.

Cummins has delivered more than 800 Cummins QSB engines for Birdon's Bridge Erection Boats for the US Army.

Cummins is partnering with Australian family company Birdon on major US defence contracts involving hundreds of engines.

NO BRIDGE TOO FAR for Birdon

When Jim Bruce was a kid all he dreamed about was being a truck driver. That dream turned to reality in the 1960s and he went on to own his own truck, eventually giving him the encouragement to broaden his business horizons.

The company he established in 1977 in Port Macquarie, New South Wales, was called Birdon, and what has ensued can only be described as one of the most remarkable achievements in Australian business.

It's the story of a small Australian family-owned marine engineering company shrugging off the minnow tag to become a serious player in the US marine defence market, successfully bidding against globally recognised defence contractors.

Not so small now with more than 500 employees and growing all the time, Birdon was founded when Jim Bruce, after giving up his career in trucking, bought a single dredge to extract sand from the Hastings River at Port Macquarie.

Sadly, Jim hasn't seen the extraordinary achievements of Birdon under the leadership of son Jamie as CEO and daughter Tammy as CFO, having passed away from cancer in 2008.

Prestigious contracts

In recent years, Birdon has secured prestigious contracts with the US Army and US Coast Guard worth more than US$2 billion, while its Port Macquarie facility is still world HQ for the company and is busy in its own right.

The company slogan 'Make It Happen' says it all.

The Bruce family's long relationship with Cummins started in the 1960s through Jim Bruce's trucking aspirations when the iconic NH250 was his engine of choice.

"Creating relationships is very important in business," Jim said in an interview in 2005. "You need faith in the people you are dealing with, so you establish a relationship and you move ahead. That has happened in our relationship with Cummins."

The Bruce family's strong relationship with Cummins continues today in no small way: The 800th Cummins QSB6.7 engine rated at 250 hp was delivered in January 2023 to Birdon for the bridge erection boats (BEBs) it is building for the US Army at its Denver HQ in the US.

These twin-engined waterjet boats are used to help the army erect temporary bridges in warzones and for disaster response and are based on a design Birdon developed in the early 2000s when it won a $15 million contract to supply the Australian Army with 24 Cummins-powered BEBs.

Birdon has also taken delivery of the first of 234 Cummins QSC8.3 engines rated at 530 hp for the US Coast Guard Motor Lifeboats (MLBs) which it is upgrading under a service life extension program.

These twin-engined vessels are an important part of the Coast Guard's national security strategy, and as an all-weather fast response vessel are used to patrol vast areas of the country's coastline. They are designed to operate in extreme hurricane force conditions, and are rollover capable. Qualifying for the upgrade meant the Cummins engines, in the event of a rollover, had to be able to continue running and be ready to power the boat ahead.

The most recent US Coast Guard contract, valued at US$1.187 billion, is to design and build 27 Waterways Commerce Cutters (WCC), each vessel featuring five Cummins engines – two QSK19 main engines, two X15 auxiliary engines and one emergency QSB6.7.

These WCC vessels will maintain and protect the United States' vital inland waterways through which 630 million tons of cargo move annually, accounting for more than US$5.4 trillion annually and 30.7 million jobs.

Massive challenges

Media announcements about Birdon's success in the US, where it will soon be operating four facilities, make no mention of the massive challenges the company faced in dealing with competition described as "cannibalistic" by Birdon America president, Rob Scott, a US Marine who served in Afghanistan.

The actions of dishonourable partners nearly sank the company's efforts to win the BEB contract which it eventually secured in 2014 after four years of design, tender submission and prototype trials.

Birdon has taken delivery of the first of 234 Cummins QSC8.3 engines for US Coast Guard Motor Lifeboats (MLBs) which are being upgraded under a service life extension program.

Birdon recently won a US Coast Guard contract to design and build 27 Waterways Commerce Cutters (WCC), each vessel featuring five Cummins engines.

Cummins Asia Pacific off-highway team, from left, Nathan Usher, Sam Jones and Tim Worme with Birdon CEO Jamie Bruce and Birdon Group Chairman John White at the Land Forces Expo.

Birdon had to establish a workforce and manufacturing facility, secure finance, obtain security clearances with the US military which required massive resources, handle rising input and wage costs, and so the list goes on.

A crucial element in Birdon's bid to win the BEB contract was its last-minute acquisition of North American Marine Jet, or NAMJet, whose waterjet technology was found to provide exceptional thrust-per-horsepower coupled to Cummins' QSB6.7 engine.

"The owner of the propulsion system we used in the Australian BEB design tried to force us from the US competition by teaming exclusively, at the last minute, with one of our competitors," recalls Jamie Bruce. "As it turns out, they did us a big favour. Not only did we go on to win the contract with NAMJet as part of our design, but we now also own a unique piece of IP that is being used in vessels around the world."

Back home in Australia, Birdon's enduring roots in Port Macquarie see a wide range of civil and military projects being carried out there, including construction of Cummins-powered Regional Patrol Craft for the Australian Defence Force, construction of firefighting vessels for the Port Authority of NSW, refitment of the last of 10 First Fleet-class ferries operated on Sydney Harbour, and the design and build of the New Young Endeavour – the Royal Australian Navy's three-masted sail training ship that will replace the existing vessel that has been in service for 30 years. The new generation vessel will provide decades of education and experience to thousands of Australian youth.

Family owned – forever

"We have no desire to be anything other than family owned, it's what dad would have wanted," says Jamie Bruce with a definite tone of pride, when asked if Birdon will stay a family company. "We do our best to maintain a strong family culture based on the way we treat and care for one another. People are encouraged to speak up, be creative and not be afraid to make mistakes.

"We've been careful to pursue programs which we believe we have a high chance of winning and we've also been patient, not trying to bite off more than we can chew. Obviously in any market, it also takes hard work, tenacity…and the best people."

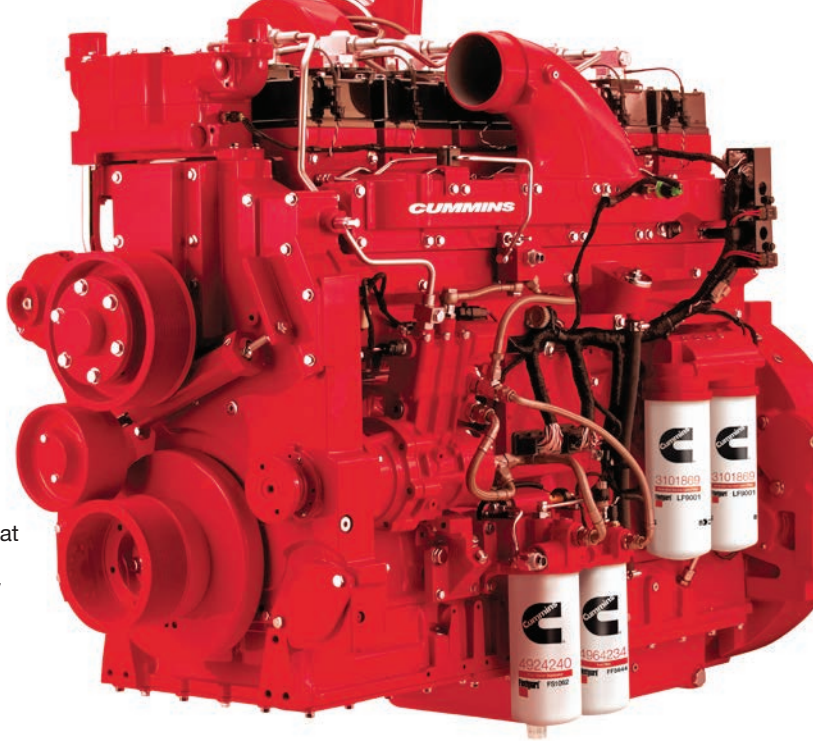
An obvious question is, how did the name Birdon eventuate? "My understanding is that when Dad started the business in 1977 it was easier to acquire a shelf company than set one up from scratch, so Birdon it was," Jamie explains. "I often get asked this question and it would be great to be able to tell a better story but unfortunately I can't!"

> "We do our best to maintain a strong family culture based on the way we treat and care for one another."

Birdon CEO Jamie Bruce... heads up a family business with sister Tammy that has achieved extraordinary success.

Underground mining contractor Byrnecut is achieving the “magic” number for engine life with the Cummins QSK19.

STRONGER FOR LONGER



Epiroc and Cummins have worked together closely to extend life-to-overhaul of the 760 hp QSK19 in underground haul trucks which have one of the toughest jobs in mining.

High engine load factors are the norm, with trucks operating at full power for long periods on punishingly steep grades at fully loaded weights in excess of 100 tonnes.

Byrnecut, one of Australia’s largest underground mining contractors, operates 27 Epiroc MT65 underground trucks among its massive fleet of equipment which includes hundreds of trucks, loaders, and development and production drills.

Acclaimed as the industry’s first 65-tonne payload capacity truck, the MT65 was introduced in 2016 with Cummins’ QSK19 MCRS engine and today Byrnecut’s 27 units are hauling gold-bearing ore at the Golden Grove, Carosue Dam, Deep South and Hamlet underground mines in Western Australia.

Jamie Armstrong, Byrnecut’s maintenance reliability coordinator, is concise in describing his role: “I just look at the data – the facts and figures – before making recommendations,” he states.

Magic number

“When we look at engine life, 16,000 hours is the magic number, and the evidence is that we can now achieve that with the QSK19,” he says. “Reliability has improved considerably over the last four years, and today we are very comfortable with the product.”

He points out that longer engine life, as well as improvements to the MT65 itself, have been critical to reducing lifecycle costs, with Byrnecut now able to extend truck life from 24,000 to 30,000 hours.

Byrnecut’s knowledge of the product has also “grown”, resulting in improved skillsets at a servicing level.

Engineering support provided by Cummins – specifically James Lim – is rated highly by Jamie Armstrong.

One example was when fluctuating oil pressure was causing premature bearing wear, a problem detected by PrevenTech, Cummins’ real-time digital monitoring and reporting system. The cause was found to be oil sump overfill, and James Lim developed a calibration to warn the operator if this has occurred.

“The QSK19 is the benchmark for reliability and durability in underground mining,” says Dave Abbott, Cummins mining business manager for Western Australia. “In fact, in some operations in Australia, we’re seeing the engine reach the 18,000-hour mark.”

Drivetrain updates

An upgraded MT65 – designated the MT65 S – will be seen in Australia late this year. Epiroc points out that the optimised drivetrain of the MT65 S combines high ramp speed with improved energy efficiency.

Among the key updates are a diff ratio change to ensure the engine is constantly operating in the ‘sweet spot’ for improved performance and fuel efficiency. Additionally, upgraded software for the transmission ensures gear shifting takes place at the right time while also providing improved retardation.

The is MT65 S is part of Epiroc’s ‘Smart’ series, which makes it prepared for 6th Sense functionality such as automation and remote control.

> “When we look at engine life, 16,000 hours is the magic number, and the evidence is that we can now achieve that with the QSK19.”

▲ Scan here or click here for more info.

▲ Scan here or click here for more info.

Joe Ribera…"Genuine Cummins parts are important to the success of our business."

GENUINE PARTS
critical to success of diesel repairs business

Joe Ribera is proud of the reputation of the diesel repair business he established with wife Donna in Derrimut, Melbourne, in 2011.

Melbourne Diesel Repairs' focus is on quality, and there are no compromises.

"It takes a long time to build up a reputation," says Joe. "If you make a mistake it spreads like wildfire the way social media is today.

"We don't advertise, we don't have a sign up outside our workshop. We're proud of our reputation for quality work."

The Ribera business in Australis Drive, Derrimut, with four mechanics and two apprentices on the tools, specialises in bumper-to-bumper truck maintenance and diesel engine repairs.

He is one of the largest parts customers of the Cummins Laverton branch.

Pay for quality

"Genuine Cummins parts are important to the success of our business," he says. "The parts are more expensive than non-genuine parts but if you want quality you have to pay for it."

He points out that the parts warranty and service support coverage provided by Cummins also "strongly favour" the use of genuine parts.

He confides he once used non-genuine parts when rebuilding a Cummins engine and it failed due to this.

"The parts supplier didn't want to know about it, they didn't want to support us," he says. "When something goes wrong like that it's hard work for all involved – the owner of the truck or engine, the mechanical repair business. There ends up being a lot of unpaid labour.

"I learned from that mistake. When you buy non-genuine parts you risk having problems.

"When you look at the R&D Cummins puts into the design and manufacture of its parts, the non-genuine suppliers don't do that, so there's an obvious risk in terms of poor reliability."

With genuine Cummins parts, customers know where and how they have been manufactured, so they can be confident in the quality, durability and reliability of the parts.

> "When you buy non-genuine parts you risk having problems."

Only genuine components are built to meet the original factory specifications while using the latest materials, component designs and manufacturing techniques.

Every genuine Cummins part is backed by a comprehensive factory warranty and supported by Cummins' extensive support network in the Asia Pacific region, ensuring peace of mind and financial protection.

Joe Ribera (left) with Chris Appleyard, Cummins aftermarket sales executive for Victoria (centre), and Wade Langford, parts manager at Cummins Laverton.

Tadano GR-1600XL with Cummins QSB6.7 with Tier 4 emissions compliance for North American market.

More than 1000 Cummins engines will this year be installed in Tadano cranes as the Japanese manufacturer aims for No.1 spot worldwide in the lifting equipment industry.

ZERO is the word

driving Tadano and Cummins innovation

Japanese crane manufacturing giant Tadano is working closely with Cummins on next generation power solutions as it strives to meet its commitment to reduce the greenhouse gas (CO_2) emissions from its products by 35 percent by 2030.

The strong partnership forged between the two companies since 2003, when Tadano began using Cummins engines to increase its export business, is reflected in both companies' commitment to net-zero carbon emissions by 2050.

Cummins' hydrogen internal combustion engine – the B6.7 version, in particular – could well be in Tadano's sights as a next generation power solution, especially for export to the US. Cummins has already unveiled the hydrogen-fuelled B6.7 in a 290 hp medium-duty concept truck and is promoting the engine as a practical, lower-cost decarbonisation technology.

The use of zero-carbon H2 as a commercial fuel within the Japanese market is also looking increasingly attractive, with Japan having the second highest number of hydrogen refuelling stations in the world behind China while constantly expanding its H2 infrastructure.

Tadano's contribution to the "fight against climate change" is initially focusing on the development of fully electric rough terrain cranes known as EVOLT for release in Japan in late 2023 and in North America in 2024.

The company's catchcry – Our True Mission: Zero Emissions – aligns with Cummins' Destination Zero strategy which is to improve the company's core products today to reduce carbon while bringing to market the zero-carbon technologies that will power tomorrow.

Respected global brand

Meanwhile, Cummins' latest generation, low-emission diesel engines continue to be integral to the success of Tadano's global crane business.

This year, around 1000 Cummins engines – QSB6.7, QSL9 and X12 models – will be delivered to Tadano's Kozai and Shido manufacturing plants for installation in rough terrain cranes and truck cranes.

The Kozai plant, Tadano's fifth manufacturing facility in Japan as well as its largest, was opened in 2019 and is helping the company reach the next level of competitive advantage as it works towards its goal of becoming No.1 worldwide in the lifting equipment industry.

The reason for Tadano's swing to Cummins power in 2003 to increase its export business was clear-cut: "Cummins is a respected global brand with a worldwide service support network," said Minoru Hirose, manager of Tadano's Quality and Safety Assurance Department.

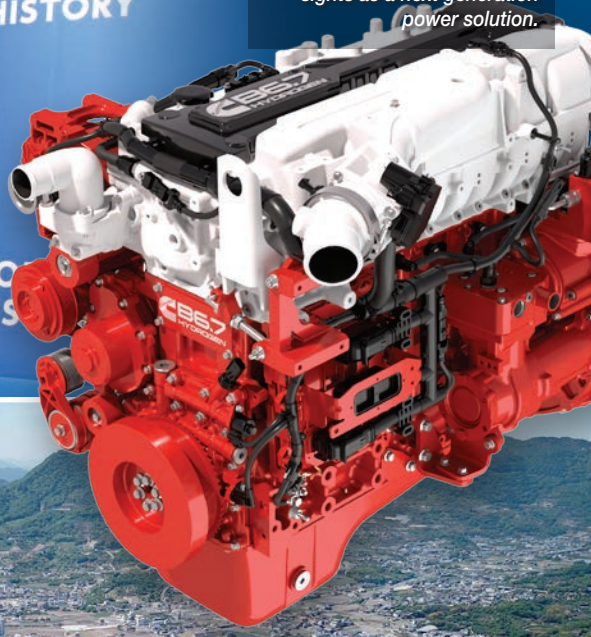
Last year, 67% of the cranes Tadano manufactured in Japan were exported.

A time-honoured company, Tadano – like Cummins – celebrated its 100th anniversary in 2019. Founder Masuo Tadano began a small welding company in 1919 and it wasn't until 1955 – after earlier developing a railroad track maintenance machine – that he introduced Japan's first hydraulic truck crane, with a 2-ton lifting capacity. The first exports were made in 1960.

Vast array of models

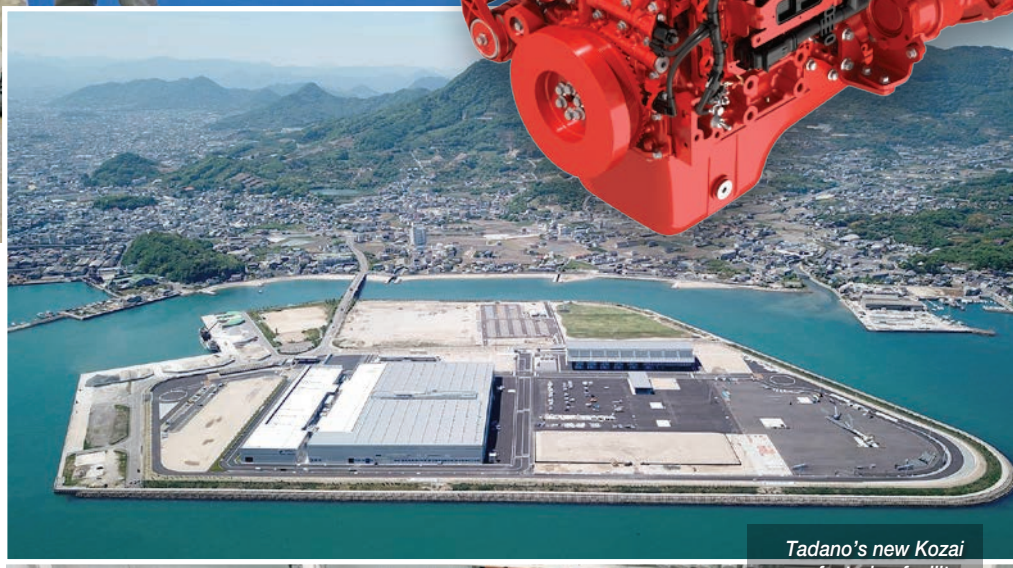
Today, Tadano manufactures a vast array of crane models for world markets – all-terrain cranes, rough terrain cranes, truck cranes, telescopic boom crawler cranes, lattice boom crawler cranes, aerial work platforms and truck loader cranes – and has six production facilities in Japan, three in Germany and one in the US.

Cummins Japan's Nobu Hirokado (right) with Tadano management team including, on his left, Minoru Hirose, manager of Tadano's Quality and Safety Assurance Department.



Cummins' hydrogen internal combustion engine – the B6.7 version – could be in Tadano's sights as a next generation power solution.

> "Cummins is a respected global brand with a worldwide service support network."



Tadano's new Kozai manufacturing facility.

Most of the Cummins-powered cranes produced in Japan have Tier 4 QSB6.7 and QSL9 engines sourced from Komatsu Cummins Engine Co (KCEC), while the X12 comes from Jamestown Engine Plant in the US and has US EPA 2021 on-highway emissions compliance.

The QSB6.7 and QL9 are installed in rough terrain cranes, with lifting capacities from 16 to 160 tons. The top-rated 160-ton GR-1600XL, designed for North America and powered by the Tier 4 QSB6.7 rated at 280 hp, has the highest lift capacity in the world for this class of crane.

The 500 hp X12 is installed in two new truck crane models for North America – the 80-ton GT-800XL-2 and the 120-ton GT-1200XL-2.

Tadano makes no secret of the fact that development of products with low environmental impact is critical to its aim of becoming No.1 globally in the lifting equipment industry. Tadano CEO Toshiaki Ujiie is decisive about the company's direction: "I'm confident we'll achieve our sustainability goals…and that we'll take on a trailblazer role in our industry with our technologically leading solutions."

Tadano's new GT-1200XL-2 truck crane with Cummins X12 power for North American market.

A key person in the future of the company, assistant managing director Jeerathida Narumitlert who will one day take over the business from her parents.

POWERING UP

> "We convinced Kaset Phattana that new Cummins product offered far greater reliability..."

Must be the most decorated harvesters in the world!

Happy customer with Cummins-powered rice harvester.

P in the paddy fields

Cummins engines and the aftersales support provided by joint venture distributor, Cummins DKSH, have added strong impetus to the market success of Kaset Phattana, Thailand's best known manufacturer of rice and corn combine harvesters.

Rice is one of the main foods and sources of nutrition for Thai people. In fact, Thailand has around 10.5 million hectares of rice-producing farmland – the fifth-largest amount of land under rice cultivation in the world.

In 2023-24, Thailand is projected to harvest 20.4 million tonnes of rice while more than 8.0 million tonnes will be exported, making the country the world's largest exporter of rice.

Kaset Phattana, headquartered in Chachoengsao province, has been in business for more than 40 years as a leading Thai manufacturer of rice and corn combine harvesters and a variety of other agricultural equipment.

High reliability and durability are at the top of Kaset Phattana's requirement list, and for good reason. With the vast amount of land under rice cultivation, harvesters are often operating in remote, undulating terrain that is not easily accessible for machinery repair and maintenance.

Kaset Phattana management team

To help Kaset Phattana meet its requirements, Cummins DKSH has been in partnership with the manufacturer since 2018, supplying Chinese-built mechanical engines from DCEC (Dongfeng Cummins Engine Co) for its rice and corn combine harvesters.

Cummins puts its case

Prior to Cummins' involvement, Kaset Phattana was using second-hand Japanese truck engines to power its harvesters.

"We convinced Kaset Phattana that new Cummins product, initially the 240 hp 6CTA engine, offered far greater reliability along with reduced fuel consumption and a factory-backed warranty," says Apiched Bunluenuecharee, assistant general manager of Cummins DKSH Thailand.

"The success of the 6CTA led to the introduction of the 130 hp 4BTA and 180 hp 6BTA in Kaset Phattana products."

The acceptance of Cummins power in the paddy fields is shown in the number of engines delivered to Kaset Phattana since 2020 when 32 units were supplied that year. In 2021, deliveries climbed to 186 followed by 280 in 2022, and the upward trajectory is expected to continue.

The introduction of electronic Cummins engines by Kaset Phattana seems not far away.

"Our engineers have carried out an IQA (Installation Quality Audit) with Kaset Phattana on the QSB6.7 engine and a prototype is now operating in a field trial," says Apiched Bunluenuecharee. "We're getting very positive feedback about performance and fuel consumption."

Cummins DKSH Thailand has an excellent reputation for aftersales support, a key reason for the strong partnership with Kaset Phattana and its technicians in the field. "Training is provided to the OEM technicians and our own technicians work closely with end-user customers on product familiarisation whenever the opportunity arises," says Bunluenuecharee.

Next generation in the sights of Seay

Two entirely new 15-litre internal combustion engines being developed by Cummins – one fuelled with hydrogen, the other with natural gas – head the priority list of future products for New Zealand haulage business Seay Distribution.

Owner Bruce Seay's interest in carbon reduction has heightened with his fleet playing an integral role in the success of New Zealand's first large scale food waste-to-bioenergy facility at Reporoa, in the central North Island.

"I'm not a greenie or climate activist but I am a believer in protecting our environment and decarbonisation is an important part of that," says Auckland-based Seay. "I also want to make sure my business is aligned in an environmental sense with my customers."

Cummins 'ahead of the game'

Seay believes Cummins is "ahead of the game" in developing alternative powertrain technologies for the pathway to net zero-carbon by 2050.

"I'm very impressed with what Cummins is doing with its Destination Zero strategy," he says. "It's a huge comfort when you see one of your suppliers investing billions of dollars in developing future technologies and knowing confidently you'll be supported by that supplier.

"To have a 15-litre internal combustion engine running on energy dense hydrogen and virtually eliminating CO2 emissions is certainly appealing," he adds.

"Of course, our plans for the future would only come to fruition if the infrastructure for hydrogen fuelling was available. The government wants us to play our part in decarbonisation and they must play their part too."

He believes the 15-litre natural gas engine, due for release in 2024 with peak outputs of 500 hp and 1850 lb ft, also looks to have great potential in that it can be powered with biogas, the fuel produced by the new plant at Reporoa which is being fed with food waste by the Seay Distribution fleet.

He notes that Cummins' hydrogen and natural gas engines – designated X15H and X15N – were displayed at the Advanced Clean Transportation (ACT) Expo, North America's largest advanced transportation technology and clean fleet event, where they attracted a lot of attention.

"Being able to refit existing trucks with either of these engines would be a definite bonus," he asserts.

Environmental focus

Bruce Seay's immediate focus is on the new bioenergy plant at Reporoa in the Rotorua district, into which his expanding fleet is transporting food waste.

"This facility will help overcome the huge environmental problem with waste food that historically has been dumped in landfills, emitting methane which is one of the largest contributors to greenhouse gas emissions," he points out.

> "I'm very impressed with what Cummins is doing with its Destination Zero strategy."

By mid-2023, the Seay fleet will be hauling around 120,000 tonnes of waste food a year from Auckland to the Reporoa facility, using nine 60-tonne Kenworth K200 truck-and-dog combinations, all powered by Cummins X15 engines rated at 600 hp.

The facility is turning organic waste, from businesses and kerbside food scrap collections, into sustainable renewable biogas to annually power the equivalent of around 2,500 households, produce bio-fertiliser for around 2,000 hectares of local farmland, and provide CO2 and heat to enhance the growth of tomatoes in the glasshouse owned by T&G Fresh, one of New Zealand's largest fresh produce businesses.

Setting high environmental standards is not new to Bruce Seay. His father Hartley and brother Graham founded Seay Earthmovers in 1978 and also acquired a quarry in Taupo in 2004 which produces red scoria and various other forms of road and construction aggregates.

"The earthmoving and quarrying operations have always been mindful of environmental standards and regulations and have achieved recognition for protection of the environment in a number of challenging civil projects," he says, with a definite tone of pride.

Those projects have included hydro-electric schemes, geothermal power station and steam field development, roading, landfill cells, subdivisions and forestry contracts.

After working in the family earthmoving and quarrying businesses for a number of years, Bruce Seay founded his own company, Seay Distribution, in 2018, hauling quarry aggregates from Taupo to Auckland. He also had an established relationship with EcoStock Supplies, transporting recycled food waste for animal consumption. EcoStock is a joint venture partner in the Reporoa bioenergy facility.

First Kenworths

He put his first two Kenworths – T409 models with 600 hp Cummins ISXe5 engines – into service in 2014-15 and since then has forged an excellent relationship with Cummins and Kenworth dealer Southpac Trucks.

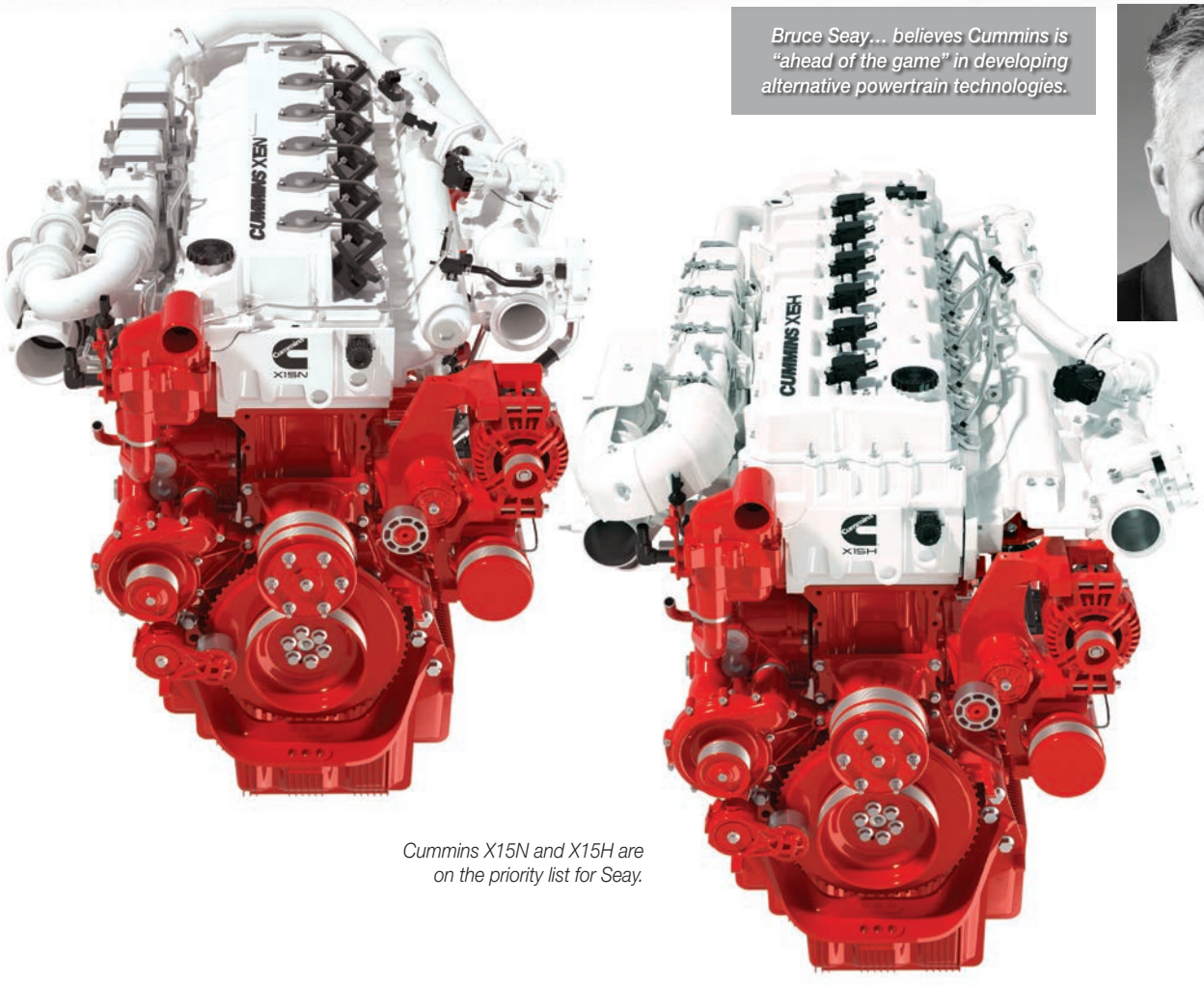
His third Kenworth, a K200, started work in 2018. "We had an engine problem and the way I was supported by Cummins and Southpac was unbelievable. I'm not a big customer by any means but they had that truck back on the road in two days which was great turnaround."

Three new K200 Kenworths have recently gone into service hauling the waste food for the Reporoa biogas plant and these are being followed by another three in mid-2023.

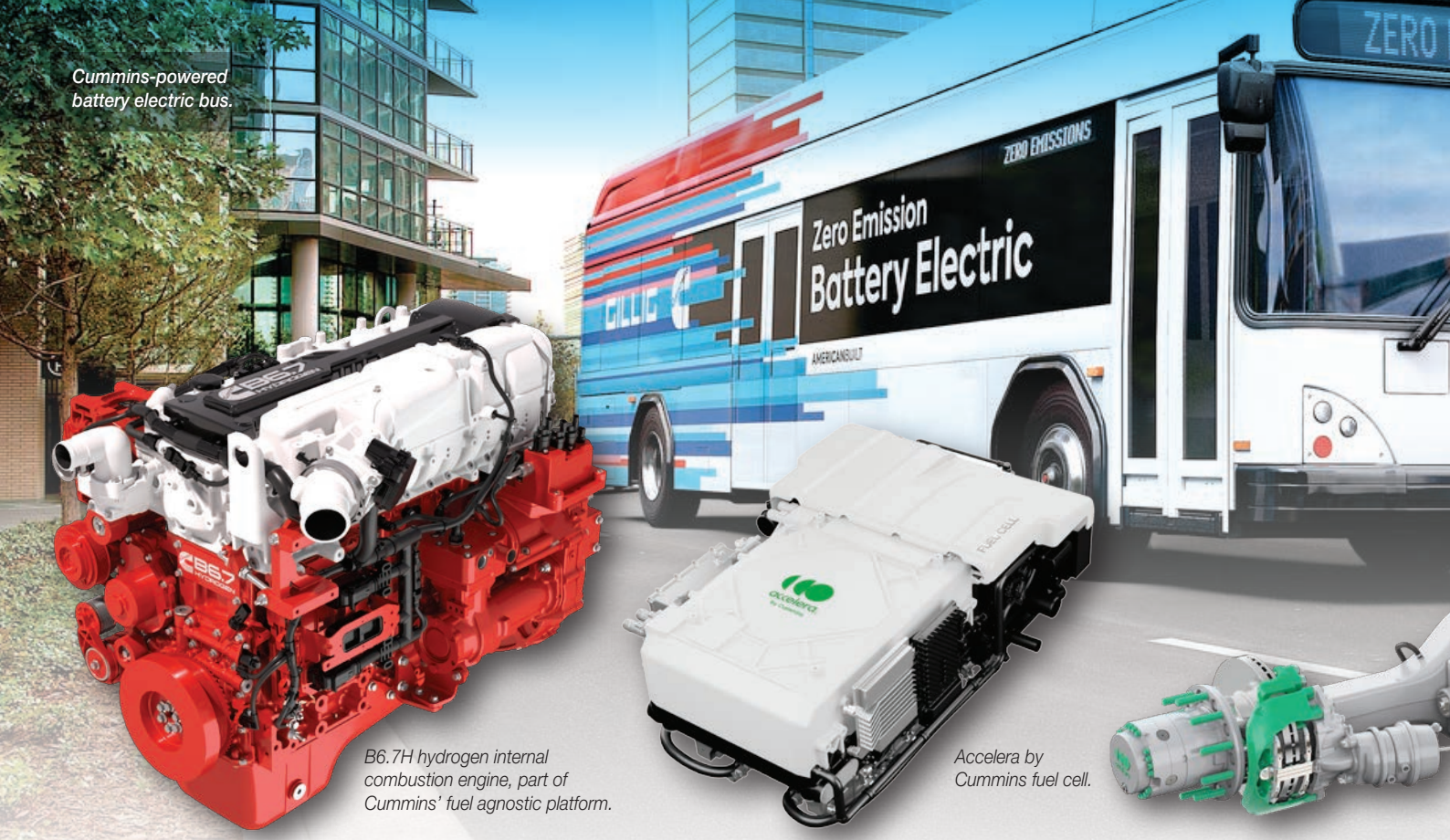
engines

Seay Distribution fleet is transporting food waste from Auckland to new bioenergy plant at Reporoa.

Bruce Seay... believes Cummins is "ahead of the game" in developing alternative powertrain technologies.



Cummins X15N and X15H are on the priority list for Seay.



Cummins-powered battery electric bus.

B6.7H hydrogen internal combustion engine, part of Cummins' fuel agnostic platform.

Accelera by Cummins fuel cell.

Cummins aboard the e-bus ex

It's all aboard the e-bus express in Australia and New Zealand as electric buses seem to be on an unstoppable rise, with an almost bewildering array of supplier promises and products dominating the public transport scene.

The overwhelming trend towards the rapid electrification of public transport bus fleets is happening globally as governments commit to a zero emissions future with bold plans and increasing action to decarbonise bus fleets. In Australia and New Zealand, governments have established clear timelines to decarbonise their fleets and have committed heavily to both trials and purchases of zero-emission buses.

So where does that leave Cummins, the largest single supplier of diesel engines to the Australian bus and coach industry?

"Cummins is perfectly positioned to be a key player in the electric bus market, wherever that market is globally and whether it be with battery-electric or hydrogen fuel cell electric technology," says Andrew Steele, bus and coach business manager for Cummins Asia Pacific.

Investing billions

Cummins is investing billions of dollars in alternative powertrain technologies as it commits to net-zero carbon by 2050 under its Destination Zero strategy which is to go further, faster to reduce the greenhouse gas (GHG) and air quality impacts of its products.

"Technological innovation, brand reputation and credibility are core to Cummins' history, and they are now more important than ever as new technologies and suppliers emerge in the burgeoning market," he says.

"Cummins has built up and acquired excellent capabilities in electrification, hydrogen fuel cells, and hydrogen generation technologies to accelerate the path to zero emissions. The acquisition of Meritor is also bringing some fantastic electric powertrain components into the Cummins family."

In the US, hundreds of school buses feature Cummins' battery-electric technology while the country's leading producer of heavy-duty transit buses, Gillig, in recent years celebrated the delivery of its 100th electric bus in partnership with Cummins.

Challenges with electric

While all the buzz is around electrification, there are challenges in adopting electric vehicles at scale, including purchase cost, energy supply infrastructure, electricity grid impacts, and skilling up to maintain and operate a fleet of electric buses.

"While Cummins is accelerating the transition to zero-emission technologies, we do acknowledge many operators are heavily invested in their existing diesel fleets which will remain in service for many years. In the short-term, there may also be a need to purchase new diesel buses while some of the challenges of getting to zero-emissions are resolved," says Andrew Steele.

"Either way, Cummins diesel engines will continue to provide increasingly clean, affordable power to customers in the decades ahead and Cummins is committed to supporting those customers."

Cummins sees the internal combustion engine (ICE) as an important transitory technology before Destination Zero is reached.

"Net-zero emissions is the ultimate goal, however the pathway to this target will require some transition through lower carbon solutions, while the technology and infrastructure challenges of zero emissions vehicles are solved," he says.

"There are still significant gains Cummins can achieve with diesel internal combustion engine technology in reducing atmospheric pollutants. Our Euro 6 engine, for example, slashes particulate matter by 50% and oxides of nitrogen by 80% compared with the Euro 5 engine."

Accelera by Cummins 14Xe eAxle.

press

Fuel agnostic

Cummins is developing 'fuel agnostic' platforms for its new-gen B, L and X-series engines. Each engine series will be available with diesel, natural gas or hydrogen fuelling while achieving high parts commonality. For each engine series, everything below the head gasket will be common components, while above the head gasket will be different components for the specific fuel type.

As Cummins' pursues its aspiration to power customer success with net-zero emission technologies by 2050, Srikanth Padmanabhan, President of Cummins Inc. Engine Business, states: "Getting to zero is not a light-switch event. Carbon emissions that we put into the atmosphere today will have a lasting impact. This means anything we can do to start reducing the carbon footprint today is a win for the planet.

"Having a variety of lower carbon options is particularly important considering the variation in duty cycles and operating environments across the many markets we serve. There is no single solution or 'magic bullet' that will work for all application types or all end users."

Accelera:

Cummins' new zero emissions technology brand

Accelera is the new brand for Cummins' New Power business unit. It provides a diverse portfolio of zero-emissions solutions for many of the world's most vital industries, empowering customers to accelerate their transition to a sustainable future.

The launch of Accelera is a significant step forward in Cummins' efforts to achieve its Destination Zero strategy, which is rooted in the understanding that multiple solutions are required to achieve industry-wide decarbonisation across the diverse applications the company powers.

Cummins' breakthrough technologies have reduced the company's product emissions by more than 90% over the past 25 years, and Accelera will continue to advance the company's path toward a zero-emissions future.

Over the past several years, Cummins has invested more than $1.5 billion in research and technology, capital and acquisitions to build Accelera's leadership and technological capabilities. Accelera is advancing a range of zero-emissions solutions, including hydrogen fuel cells, batteries, e-axles, traction systems and electrolysers, to sustainably power a variety of industries from commercial transportation to chemical production.

Both a components supplier and integrator, Accelera is decarbonising applications like buses, trucks, trains, construction equipment, stationary power and carbon intense industrial processes. The company also has hundreds of electrolysers generating hydrogen around the world today.

"The purpose of Accelera is simple – to secure a sustainable future for the industries that keep the world running," said Amy Davis, President of Accelera.

Accelera and Blue Bird aim to power a new fleet of 1,000 electric school buses across the US over the next 12-18 months.

With these new electric school buses on the road, 10,600 tonnes of harmful carbon emissions will be prevented annually.

Among recent zero-emissions highlights that Accelera will continue to build on include:

- The acquisition of Meritor and Siemens Commercial Vehicle business to advance electric powertrain solutions
- Increasing global electrolyser manufacturing capacity with gigawatt-scalable plants in Fridley, Minnesota – its first in the US – and in Spain (now under construction)
- Powering the largest proton exchange membrane (PEM) electrolyser in operation in the world in Bécancour, Canada
- Powering the world's first hydrogen refuelling station for ships, cars, trucks and industrial customers in Antwerp, Belgium
- Powering the world's first megawatt-scale demonstration plant for storing wind energy in the natural gas grid in Windgas Falkenhagen, Germany
- Powering the world's first fleets of hydrogen fuel cell passenger trains in Germany
- Deploying four hydrogen-fuel-cell-powered class 8 heavy-duty trucks with several marquis fleet customers in the US
- Powering 52 fuel cell city buses in Lingang, Shanghai

▲ Scan here or click here for more info.

Accelera electric truck.

Powering into the fu

For a fleet that hauls up to 300,000 cartons of bananas a week out of north Queensland and has a monthly fuel bill of $3.5 million, future power options are obviously high on the agenda of Blenners Transport.

Les Blennerhassett, head of the Tully-based family company he started in 1988 with wife Judy, realises that while diesel will dominate for a long time yet, he must also look closely at next generation power options.

Higher productivity vehicles such as 38-pallet B-doubles, achieved under PBS (Performance Based Standards) guidelines, are another priority for a company with massive involvement in the banana industry in north Queensland.

Blenners currently operates 185 Kenworths, around 100 of which are linehaul B-double and roadtrain units with Cummins X15 Euro 5 power – a specification providing the high utilisation needed to move the tidal wave of bananas from north Queensland to Australia-wide markets.

More than 200 Cummins engines

The strong relationship with Cummins has seen more than 200 red engines specified by Blenners in Kenworths since 2008.

Twenty-two roadtrains alone are dedicated to banana haulage across the country to Perth, WA. Overall, Blenners moves around 60% of north Queensland bananas to the capital cities – a task that is carried out 52 weeks of the year since bananas are not seasonal.

Bananas aren't the only high volume fruit transported by Blenners from north Queensland. "We had to diversify our customer base in 2006 after Cyclone Larry destroyed most of the banana crop. We went from doing 110 loads a week to four loads," Les Blennerhassett recalls.

Blenners this year transported more than 100 pallets of seedless lemons a day out of the Mareeba region on the Atherton Tablelands during the peak period, while thousands of pallets of mangoes and avocadoes will be moved during their peak.

With a monthly fuel bill totalling $3.5 million, any measure to improve fuel consumption just a fraction is looked at closely by the Blenners team.

The next generation 15-litre Cummins X15D, unveiled at the 2023 Brisbane Truck Show, will be the next major engine step for the fleet. Reports from field trials of a fuel consumption improvement of up to 8 per cent over the current best X15 obviously has huge appeal.

While the diesel truck engine still has a long life ahead of it, especially in Australia's challenging operating environment, studying alternative powertrain technologies and their impact on carbon reduction is of interest to Les Blennerhassett.

Hydrogen ICE in Blenners' sights

He sees Cummins' much-discussed hydrogen-fuelled internal combustion engine currently under development as a strong contender for the future. Having a 15-litre ICE running on hydrogen and virtually eliminating CO2 emissions has advantages over other carbon reduction technologies for heavy truck operations.

The familiarity of internal combustion is a big plus: There's no reinventing the wheel, rather the base diesel engine is adapted for an alternative fuel, greatly simplifying the installation of the 15-litre platform into an existing truck.

ture

Higher productivity vehicles such as this 38-pallet B-double are finding their way into the Blenners fleet.

Les Blennerhassett… looking at next generation power options.

Blenners fleet moves up to 300,000 cartons of bananas a week out of north Queensland.

This year, around 20 new Kenworths with Cummins X15 power will be put into service – a far cry from the days when Les and Judy wondered if they could afford to put one new truck on the road a year!

"We have a very good relationship with Cummins," he says. "We get good support from Cummins nationwide and we pay a lot of attention to our own preventive maintenance and trend analysis."

While future power sources are a focus at Blenners, higher productivity vehicles, operating under PBS guidelines, are in the spotlight too, with the number of 38-pallet B-doubles in the fleet steadily increasing, with close to 20 in service at the time of writing.

Replacing 34-pallet B-doubles, the new bigger capacity units feature a quad-axle lead trailer and operate at 73 tonnes over a length of 28.1 metres, with 16 pallet spaces in the lead trailer and 22 in the second.

Three PBS A-doubles, operating at a gross weight of 91 tonnes over a length of 30 metres, are also proving their value, running from far north Queensland to Derrimut in Melbourne. Three more A-doubles will be put into service in 2023 on this freight route.

Blennerhassett's involvement in the banana industry hasn't accrued just through his trucking business. Before he and Judy ventured into trucking in 1988, their roots were in farming – bananas and sugarcane. "The reason we bought a truck in 1988 – a Kenworth T650 – was to cart our own bananas to market," he recalls.

Understanding farmers' needs

The business has grown on the back of customer service – understanding the needs of farmers and providing the flexibility that has encouraged a strong relationship with Blenners Transport as a family company. "As our customers have grown, we've grown with them," he explains.

Blenners' continuation as a family company long term also seems assured with Les and Judy's two sons involved in the business, Roger as Brisbane manager and Ben as Tully manager.

> "We get good support from Cummins nationwide and we pay a lot of attention to our own preventive maintenance and trend analysis."

The company operates eight depots in Queensland – Cairns, Mareeba, Tully, Innisfail, Townsville, Mackay, Rockhampton and Brisbane – and offers storage and warehouse services for freezer, chiller and dry freight at its Brisbane, Townsville and Cairns facilities. Construction of a new $12 million facility in Cairns is about to begin while a new Rockhampton depot will follow in 2024.

The best for Betts

For many years, the Betts name was prominent in logging in NSW. In fact, Bob Betts started logging with bullock teams in the early 1900s and his son Lance continued the family tradition in the northern NSW forests.

Lance's three sons – Peter, Michael and Dennis – eventually took over the business, and Betts continued as a respected entity in the industry until 1996 when the NSW Government significantly reduced log quotas, making it unviable to continue.

Today, the Betts name may no longer be tied to the logging industry but is still prominent in trucking, with Michael and Maree Betts, based in Newcastle, running their M & M Betts Freight business, and Peter Betts guiding his company, Betts Transport, out of Walcha, NSW.

"The logging days were very good to us," reflects Michael Betts today. "We did the hard yards and that set us up for what we have today."

Diesel started flowing through Michael's veins at an early age: He left school when he was 15 and straight away began operating heavy equipment in the bush. "I was driving trucks before I could reach the pedals," he quips.

Well-maintained fleet

There's obviously a lot of pride in what has been achieved as M & M Betts Freight, a company built on sensible goals, strong relationships with customers, and an exceptionally well-presented and maintained fleet of Cummins X15-powered Kenworths.

M & M Betts is accredited by the National Heavy Regulator for mass, management and fatigue management, and the company boasts a safety record of over 15 million accident-free kilometres. A stringent internal OH&S policy is adhered to.

While Michael and Maree Betts have recently taken a step back from the day-to-day running of their business, it is still very much a family affair, with son Robert looking after operations and daughter Nicole handling administration.

Their core activity is hauling Bekaert wire ropes to the Bowen Basin in Queensland for the massive dragline excavators operating in the mining industry. "We have five trucks going to the Bowen Basin each week, a combination of B-doubles and roadtrains, and they're hauling a weekly average of 200 tonnes of wire rope," Michael points out.

The Betts fleet today is dominated by 10 Cummins X15-powered Kenworths, a mix of T909, T610 and K200 models, while a further three new units – a K220, T659 and T909 – will be added this year to handle the company's healthy workload.

"We tried several other brands but the longevity of the Kenworths is the determining factor in us staying with this brand," he says, adding that the trucks are replaced every five years.

'Phenomenal' service

Together with Kenworth, Cummins has been a cornerstone of the Betts fleet since it started in general freight in 2004.

Cummins' service support is described as "phenomenal" by Michael Betts. "The important thing is that Cummins backs its product. When we've had a problem, it's fixed there and then.

Michael and Maree Betts…have built a company based on strong relationships with customers

"We recently had an engine problem and put the truck in to the Newcastle branch on a Friday afternoon, expecting to get it back Monday. We got a call on Saturday morning telling us it's ready to go.

"We mainly deal with Cummins in Newcastle but other branches we've had to go to like Laverton and Mt Gambier have also been very responsive. Nothing's an issue.

"I've actually written a letter to Cummins complimenting them on their professionalism."

He points out the company has had a "great run" out of its X15 Euro 5 engines and is looking to the future positively as Cummins makes clear its plans for further advancements in diesel technology to better manage carbon emissions.

The reality for M & M Betts is that a disciplined operation is a viable one, able to provide the best customer service and ensure a clear, positive direction for the future.

▲ Scan here or click here for more info.

Betts' core activity is hauling Bekaert wire ropes to the Bowen Basin in Queensland for dragline excavators in the mining industry.

Pontoon-mounted pumps powered by Cummins QST30 engines at Woodie Woodie manganese mine.

▲ Scan here or click here for more info.

Mine dewatering: Punishing in the Pilbara

There's no glory in mine dewatering, especially in a remote region like the Pilbara in Western Australia, where diesel-driven pumps are asked to slog it out 24/7 in ferocious heat in deep pits, lifting thousands of litres of water a minute to the surface.

NPE General Manager – West, Jeremy Collins (left), discusses a project with engineering colleagues.

Bulletproof diesel workhorses are indeed the name of the game, as National Pump & Energy (NPE) knows only too well.

"Dewatering is a critical business," says Jeremy Collins, General Manager - West for NPE.

"Equipment must be the best you can buy because you don't want on-going maintenance problems. You can't afford to lose a pump on site. If you lose a critical component of a dewatering system, it can stop a mine."

NPE has a fleet of close to 400 Cummins engines for the wide range of water management projects it gets involved in around the country, from the supply of a single pump to the design, construction and installation of turn-key custom-built equipment and systems.

A recent project for NPE was the supply of four pumps for dewatering at the Sino Iron project in the Pilbara. Operated by CITIC Pacific Mining, the project is the largest magnetite iron ore mining and processing operation in Australia.

"Pump efficiency is very much tied to engine performance," Jeremy Collins points out. "Use an inferior engine and you'll get inferior pump performance."

Cummins QST30 CustomPaks

Four 1000 hp Cummins QST30 CustomPaks coupled to Cornell pumps were selected by NPE for the project which was won through a normal tender process and required individual pump set performance of 300 litres/second at a 200-metre head.

"Product quality and our ability to meet the customer's lead times were the key selling points," Collins says. "The customer was already aware of the performance of the QST30 in other applications at Sino Iron."

He describes the QST30, a 30-litre V12 configuration, as a "shining light" in dewatering with its combination of power density, flexible rpm range, and proven robustness. "We've been using QST30 engines in dewatering for more than 15 years and it is a tried and trusted workhorse," he asserts.

Collins points to its life-to-overhaul capability of 20,000 hours, which is best-in-class for an operation like dewatering where engine load factors often hit 100 per cent.

Cooling capacity of the Cummins CustomPak is another key benefit with its 50 to 55 deg.C ambient capable radiator assembly, often tested fully in deep pits.

Woodie Woodie project

Another major project NPE is involved in is at Consolidated Minerals' open pit mine at Woodie Woodie in the Pilbara, which supplies high grade manganese ore to world markets.

NPE was engaged to remove surface water from the open pit mine so it could be expanded. To accomplish this, NPE provided and installed a pair of pontoon-mounted pumps that had undergone extensive engineering and they were fitted with QST30 engines delivering 1000 hp.

The NPE package included telemetry, giving the client visibility on the critical engine and pump data as well as pumping flow rates (instantaneous and cumulative). Additionally, both pontoons could be remotely started, stopped, and controlled.

Two pump stations – one being redundant – will then be set up for sump pumping at the mine in a 10-month project using six 1050 hp QST30 powerpacks and one 800 hp QSK23 CustomPak. NPE will operate and maintain the pump stations, the operational one ramping up from 500 litres/sec to 750 litres/sec and then 1000 litres/sec.

While the pump sets for the Sino Iron project were sold to CITIC Pacific, NPE rented out the units for the Woodie Woodie project. NPE actually lays claim to having the largest ready-to-rent pump fleet in the country, with more than 6000 dewatering pumps and generators in its hire fleet. The business has a national footprint spanning 12 branches across five states and one territory.

NPE had its origins in 2001 when Campbell Mining Services (CMS) was formed in Mackay, QLD, with a vision to one day be the largest dewatering pump company in the country. In 2014, CMS – trading as National Pump Services – merged with Perth-based Resource Equipment Rental to become National Pump & Energy.

Many mine sites in the Asia Pacific region use Cummins diesel and gas generators for standby and prime power.

▲ Scan here or click here for more info.

Cummins emergency standby generators at Austin Hospital in Melbourne.

The world-class 60,000-seat Perth Stadium has four Cummins emergency standby generators.

MAINTENANCE CRITICAL for standby generators

Standby generators are essential to keeping facilities up and running during unexpected emergencies and outages. But without routine maintenance, they run a high-risk of experiencing significant system failure.

All service solutions include 24/7 support with fast response and diagnosis.

Data centre giant Digital Realty relies on Cummins for critical protection power at its facilities in Sydney and Melbourne.

Cummins, a global leader in diesel and gas generator technologies and products, is only too aware of the outcome of maintenance negligence – the single most common reason for genset and power system failures.

“Diesel and gas generator sets and their control systems are complex pieces of equipment so routine servicing and preventive maintenance are critical to overall system reliability,” says Stuart Quinn, aftermarket business development manager for Cummins Asia Pacific’s power generation business.

“Ensuring that a standby generator starts and runs when needed, especially in critical locations such as hospitals, is a facility manager’s No.1 priority.”

Cummins offers a broad range of diesel and gas generators for standby and prime power applications (8 kVA to 3750 kVA) along with digital controls, transfer switches, paralleling systems and remote monitoring.

The ability to design and build total turnkey systems and offer top-level aftersales support is a competitive edge that sees Cummins providing the energy that supports vital infrastructure in hospitals, communications facilities, office towers, factories, airports, data centres, mines and farms.

Cummins’ low-emission gas generators also feature in ground-breaking microgrid projects in Australia which incorporate hybrid gas, solar, wind turbine and battery power systems.

The 104-year-old company, which pioneered the commercialisation of the diesel engine in the early 1900s, has endured many business cycles and is well equipped to navigate those cycles now and into the future as a technology leader, delivering best-in-class products to customers.

“Technological innovation, brand reputation and credibility are core to Cummins’ history, and they ensure the company is committed more than ever to supporting its customers with the best solutions for their needs,” says Stuart Quinn.

Capped price servicing

He points out that Cummins’ aim is to provide peace of mind with capped price, customised service solutions that underpin generator system reliability and long life, ensuring that any minor issues are identified prior to becoming major problems.

“In the Asia Pacific region, these solutions include minor services on a monthly, quarterly or biannual basis and include comprehensive engine, fuel tank and generator controller checks, a generator operational test and, in the case of the biannual service, oil and fuel analysis,” he explains.

“Major services are offered on a 12-monthly basis and include all the checks and operational testing as well as oil and filter changes and environmentally-approved disposal of oil and filters.

“All service solutions include 24/7 support with fast response and diagnosis, a 90-day workmanship guarantee and 12-month parts warranty, and a detailed service report.”

He points out that additional services offered by Cummins include load bank testing, building facility load testing and a genset controller upgrade. The company also services other brands of generator sets.

The support capabilities Cummins has built in the Asia Pacific region are unmatched: In the South Pacific, for example, 35 company-owned branches are dedicated to customer support in strategic locations around Australia, New Zealand and Papua New Guinea.

All these branches offer both in-shop and field service capability.

Cummins also operates a Customer Care Centre, based in Melbourne, which is staffed 24/7 by highly qualified technicians and parts interpreters who handle around 30,000 calls per month. The centre, which is available to customers in Australia and New Zealand, organises breakdown support, provides diagnostic and one-on-one technical support, and handles parts orders and enquiries.

With Cummins diesel and gas engines powering more types of equipment in more markets than any other engine brand globally, Cummins continues to invest in, and develop, these engine technologies that will serve for decades to come. There are still significant gains Cummins can achieve with internal combustion technology in reducing atmospheric pollutants.

At the same time, the company is investing billions of dollars in alternative technologies as it commits to net-zero carbon by 2050 under its Destination Zero strategy which is to go further, faster to reduce the greenhouse gas (GHG) and air quality impacts of its products.

“At Cummins we have developed a deep understanding of the key reliability and cost metrics for our customers,” says Stuart Quinn. “In power generation those metrics are headlined by customised service and support to eliminate unwanted issues and deliver peak performance, so providing our customers with peace of mind.”

▲ Scan here or click here for more info.

Kenworths do the hard yards at Goodsell Earthmoving.

THE GOOD OIL:
Why the earth moves for Goodsell

Russell Goodsell with wife Robyn… started Goodsell Earthmoving nearly 40 years ago.

Russell Goodsell has a reputation for being meticulous the way he runs his Townsville-based business, Goodsell Earthmoving, which he started nearly 40 years ago and is well-known in the construction industry.

It's obvious he has built a lot of trust with his client base. "I take a lot of pride in the relationship I have with my customers," he confides. "A lot of them ask me to do a job without asking for a price."

Goodsell Earthmoving is a family business, with wife Robyn and daughter Joelene managing the administrative side, while Russell is very much hands-on to ensure the cornerstones of success remain in place.

Cummins Townsville plays a key role in the efficient running of the operation, providing technical advice and maintenance consistency with a range of aftermarket products that are used across all brands of Goodsell machinery.

Goodsell has close to 60 pieces of equipment, including Kenworth trucks, crushing and screening plant, excavators and loaders. Twenty sub-contractors back up Goodsell's five-strong truck fleet.

Concrete and bitumen recycling are core activities – crushed concrete and bitumen are produced for a range of industrial uses – while supplying quarry and landscaping materials is also important. The company has its own quarry as well as a sand lease in the Burdekin River.

Trusted partner

Cummins is a trusted partner in the Goodsell business which currently operates two Kenworths with Cummins X15 power – a T610 and T409 SAR – and has a another T610 on the way. Hyundai and Case loaders also have Cummins power.

"We get excellent support from Cummins in Townsville," says Russell Goodsell. "We rely on them for technical advice on oils and filtration and any issues we may have with the engines. If something a bit technical arises we go straight to Cummins."

Cummins Townsville supplies Goodsell with a wide range of aftermarket products – lubricants, filters and coolant – for use across its entire machinery fleet, not just the Cummins-powered equipment.

Products include Premium Blue engine oil, Fleetguard filters and coolant, and hydraulic, compressor and gear oils. Fuel Doctor, a fuel conditioner for bulk fuel tanks, is also provided by the branch.

"Russell will come to us with a problem and we'll come up with a solution," says Graham Owen, aftermarket sales executive for Cummins Townsville.

> "We get excellent support from Cummins in Townsville."

Cummins unveils new B4.5 marine engine.

PACKING A MIGHTY PUNCH

Cummins has announced availability of its new hybrid-compatible B4.5 propulsion and auxiliary engine for Asia Pacific marine markets.

▲ Scan here or click here for more info.

Available as a stand-alone engine with controls system, as a generator set or as a hybrid-ready package, the light but power dense B4.5 is designed for both recreational and commercial marine applications.

The B4.5 may be small and compact but it packs a mighty punch, offering a power range of 150-250 hp in propulsion format and 76-112 kWm (50 Hz) prime power in auxiliary format.

"This robust, fuel efficient pairing continues the tradition of the time-honoured Cummins B-series family of which millions of engines have been built since its inception in the mid-1980s," said Wally Kafer, marine business manager for Cummins South Pacific.

"The B-series has found its way into every conceivable application around the world, and the latest evolution now landing on Australian and New Zealand shores meets even higher reliability, durability and power density targets and is also quieter and cleaner."

Based on the proven industrial engine, the new B4.5 marine powerhouse complies with IMO II and US EPA Tier 3 emissions regulations without the use of aftertreatment.

It also expands Cummins' hybrid compatible packages beyond the current QSB6.7 and QSL9 and shares many of the proven QSB6.7 marine specific components in a smaller footprint.

As a propulsion engine, the B4.5 is suited to shaft drive and stern drive applications.

Best-in-class fuel economy

Thanks to its optimised turbocharging, the 4.5-litre engine features best-in-class peak torque for greater acceleration and also to make it easier to maintain speed, even for vessels with high loads.

The high-pressure common rail fuel system delivers class-leading fuel consumption and greatly reduced noise and vibration while the cast water-cooled exhaust manifold makes for lower surface temperatures and improved overall performance.

> "The latest evolution of the Cummins B-series meets even higher reliability, durability and power density target, and is quieter and cleaner."

The air intake system includes commercial and recreational reusable washable air cleaners for more cost savings.

The electrical system is offered in both 12 and 24 volts with simple electrical interface connections that can be integrated with Cummins' C Command engine monitoring systems. The product also features engine protection and derate reducing the risk of catastrophic failure.

Cummins is confident in the total reliability of its engines and generator sets. The B4.5 engine is available with a base warranty of 24 months or 1000 hours for high output and light duty applications; 24 months or 3000 hours for intermittent duty applications; or 24 months or unlimited hours for continuous duty and prime power applications.

The B4.5 marine offerings are backed by Cummins' extensive network of over 9,000 service and dealer locations around the globe.

Wally Kafer, marine guru at Cummins South Pacific.

No combat fatigue for Cummins V903

A prominent engine in the Australian trucking industry 40 years ago, Cummins' V903 never made it to the scrapyard, instead becoming an acclaimed engine in combat vehicles.

The 14.8-litre (903 cu.in.) V8, which has powered the US Army's iconic Bradley Fighting Vehicle since the early 1980s, was centre stage for Cummins at the 2022 Land Forces exposition in Brisbane.

In actual operations, the VTA903-powered Bradley has showed a combat readiness of over 95%, the highest combat readiness of any armored vehicle in the history of the US Army.

The big news out of the US is that a new peak rating, in excess of 750 hp, is being developed for the 903, which has been available in recent years with a maximum 675 hp for combat vehicles – a far cry from the days when the V8 Cummins was rated at 280, 300, 320 or 350 hp for heavy-duty trucks.

Confirming the drive by Cummins for greater involvement in the defence industry in the Asia Pacific region, Sam Jones, manager of defence business for Cummins Asia Pacific, points out that the 903 is a prime candidate for heavy combat vehicle applications where high power-to-weight ratio and compactness due to limited installation space are key criteria.

"The 903 is a vastly different engine today than the 14.8-litre unit that powered heavy-duty trucks in the 70s and 80s," he says. "As a high horsepower combat engine, it has an unmatched reputation for reliability and durability, using technologies developed by Cummins for its commercial products."

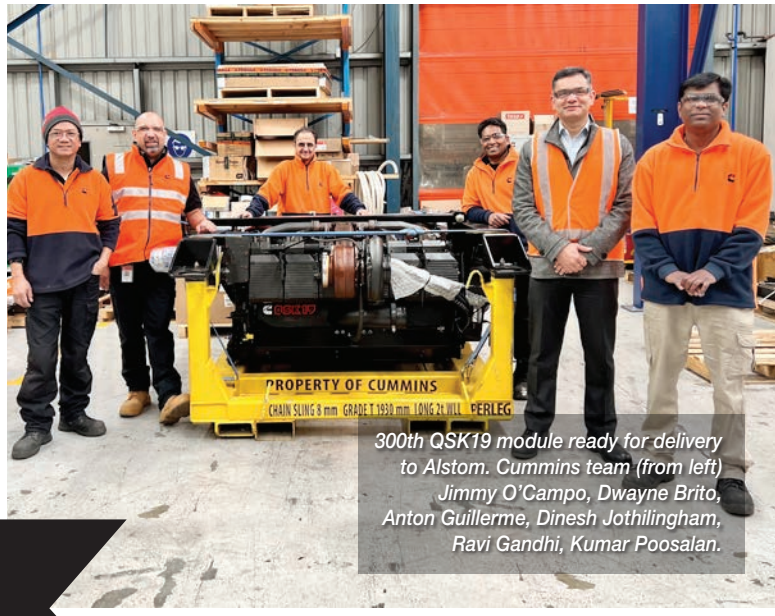
One of the most enduring engines in Cummins' long history, the V903 celebrated a remarkable 50 years in service in 2017. The first V903 crankshaft was laid at the Cummins Engine Plant in Columbus, Indiana, in the fourth quarter of 1967, and the engine soon became prominent in trucking, marine and agricultural applications.

The 675 hp VTA903 today powers the Bradley ECP2, Paladin howitzer and Armoured Multi-Purpose Vehicle (AMPV) which replaces the M113 armored personnel carrier.

V903 featured at 2022 Land Forces Exposition in Brisbane.

Bradley Fighting Vehicle.

VLocity, a world-recognised railcar for reliability.



300th QSK19 module ready for delivery to Alstom. Cummins team (from left) Jimmy O'Campo, Dwayne Brito, Anton Guillerme, Dinesh Jothilingham, Ravi Gandhi, Kumar Poosalan.

Cummins has delivered the 300th QSK19 engine for Victoria's world-recognised VLocity railcar.

FULL VELOCITY

Another major milestone has been achieved in Victoria's VLocity rail project with Cummins delivering the 300th QSK19 engine for the world-recognised trains which operate on the state's regional network.

Cummins has worked closely with the railcar manufacturer – originally Bombardier and now Alstom – to ensure high availability and on-time performance of the VLocity fleet. In fact, VLocity is one of the most reliable passenger railcars in the world today.

When the 200th QSK19 was delivered in 2017, it was pointed out that the key measurement of the reliability of a rail fleet was the MDBF, or mean distance between failures. The MDBF is based on any delay in station arrival time of five minutes or greater.

'Unheard of' reliability

"The original expectation for VLocity was an MDBF of 100,000 kilometres, but the actual long-term MDBF average exceeded 150,000 kilometres which was unheard of in the diesel railcar industry," says Mark Pellington, who heads up the VLocity business for Cummins. "That same MDBF is maintained today."

Pellington has been involved in the VLocity project from the outset and before that performed a similar role for Cummins in the UK where there were 350 Cummins QSK19 powerpacks in Virgin Voyager trains.

The first VLocity trains went into service in Victoria in late 2005 and move more than one million passengers a month.

Operating at speeds of up to 160 km/h, they are powered by 750 hp horizontal Cummins QSK19 diesel engines. Each car in the latest three-car VLocity trains has 19-litre Cummins power as well as a 182 kWe load-sharing Cummins generator set powered by the QSB6.7 engine.

When the VLocity project was mooted in 2002, Cummins was considered the only diesel engine manufacturer capable of providing the engineering expertise to ensure its success.

The VLocity railcars are manufactured by Alstom at its Dandenong facility, while production and assembly of the propulsion, cooling and electrical power generation modules is carried out at Cummins' South Pacific headquarters in Scoresby (Melbourne).

The innovative module concept was developed by an engineering team at Cummins to significantly reduce maintenance downtime. Each module is designed for quick replacement with a standby unit, meaning fast turnaround during scheduled servicing and maintenance.

When the modules are removed they are taken to the Cummins Laverton branch for refurbishment in readiness for the next train scheduled for a major service. The proven durability of the Cummins QSK19 engine is highlighted in the 18,000-hour life-to-overhaul being achieved.

"VLocity is a great success story with the trains providing outstanding service reliability and passenger comfort," says Pellington.

"Local employment has also benefitted. We have a team of employees dedicated to production and assembly of the modules at our Scoresby facility, as well as a team of business managers, technicians and apprentices at our Laverton branch who liaise with Alstom and manage scheduled and unscheduled maintenance," he adds.

Cummins also has more than 50 local suppliers specifically for the VLocity project. Close to 600 components are used in local assembly of the modules.

Hydrogen fuel cells

While the Cummins-Alstom partnership focuses on conventional diesel rail power in Australia, Cummins is a key partner in the development and implementation of hydrogen fuel cell systems for Alstom's Coradia iLint passenger train in Europe.

iLint is the world's first hydrogen fuel cell passenger train and is completely emission-free, using electrical energy for propulsion and putting off only steam and water. By the end of 2022, more than 40 iLint trains were in revenue service in Germany.

Cummins has developed a hydrogen fuel cell systems production centre in Herten, Germany, to initially focus on supplying Alstom with hydrogen fuel cell systems for the iLint train.

cummins.com

FOLLOW US ON:

Cummins Asia Pacific

@CumminsAPAC
@CumminsJapan

@cumminsasiapacific
@cumminskorea

Cummins South Pacific
Cummins Southeast Asia
Cummins Philippines

Scan here to contact our Sales team.

Scan here for Cummins locations.

FOR A WORLD THAT'S ALWAYS ON™