

AUGUST 2020

ISSUE 4

D2E

DOWN TO EARTH MAGAZINE

The Swiss Army knife-reinvented

- A pair of PC850s arrive in Wellingtons largest quarries
- Komatsu South Island Hub is now open
- Komatsu START Safe is launched



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COMMENTS

Welcome to the fourth edition of the Komatsu New Zealand D2E digital update.

Needless to say it has been a very challenging time for all New Zealanders, the business community and all other organisations that were, and are, being impacted by COVID 19. Despite the significant impact still occurring within New Zealand, we are in a stronger position than many other countries – long may that last.

Throughout the lockdown phases, Komatsu NZ was proactively working with our employees and their families to make sure they were safe and well; while the “pathway” was uncharted, we kept the team in good shape so they would be available and committed as soon as we were able to restart.

Throughout this period, we maintained support to our essential services customers, and adapted our procedures to protect employees undertaking these tasks.

In addition, we worked with our Komatsu Finance customers to take the pressure off them.

We also made sure we provided direct access to parts via our online Parts Portal my.komatsu.co.nz from Komatsu’s Australian distribution centres when required. We also used the time to undertake significant online learning throughout the organisation.

Looking to the future, there is no doubt that the economic impact of COVID will be influencing the NZ economy for many years.

Komatsu has always looked to work with our existing and new customers to deliver high quality technology that delivers superior long-term value – and during the recovery phase this is even more important and remains our number one objective.

In this edition of D2E, we have a wide range of exciting news.

Our new, purpose built South Island Hub will be commissioned in early August.

And our ongoing focus on providing technology that delivers a positive environmental outcome is becoming increasingly important at all stages of the life cycle of our machinery.

Stay safe.

Phil Pritchard
Managing Director
Komatsu New Zealand



Pictured: The new GD655-7 Grader Finger Tip controls reduce operator hand/wrist movement by 98% compared to previous models. Read more at www.komatsu.co.nz/equipment/motor-graders.

CONTENT

KOMATSU NZ CUSTOMER NEWS

Tale of two quarries	4-5
Vercoe Contracting builds success with NZ’s largest fleet of Komatsu D61 dozers	12-13
The Swiss Army knife-reinvented	16-17

KOMATSU NZ PRODUCTS AND SERVICES

How genuine Komatsu hydraulic filters lower your operating costs	7
How Komatsu NZ achieved loader scale accuracy excellence and now leads the industry	18-19

KOMATSU NZ NEWS

SiteWise Green safety accreditation shows commitment of Komatsu NZ and its Service Partners	6
Komatsu’s new South Island Hub is now open!	8-9
Komatsu geared for post COVID-19 efficiencies	11
Helping every technician START safe every day	24-25
How quarries are gaining major benefits from Komatsu drone surveys	26-27
Komatsu selected in the Dow Jones Sustainability Indices	28

KOMATSU NZ PEOPLE

Day in the life – Ngatai Purnell Territory Sales Manager, Construction and Utility Sales	15
Day in the life – Erin Kyle CSSR	21
Apprentice profile: How Layla decided on a career with Komatsu	22

KOMATSU NZ PLAYTIME

Komatsu Kids Corner	29
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FRONT COVER
Page 16 & 17: Part of Treescape’s fleet of 45 excavators and wheel loaders.

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Tale of two quarries

The two largest quarries servicing Wellington, New Zealand's giant \$NZ850million Transmission Gully motorway project – one of the most complex in the nation's history – were each looking for a way to bring new efficiency to the job and win major business.

The Transmission Gully project was for some months up to 50 percent of their total volume, so competitive advantage was vital.

The answer was in securing an excavator so powerful, with so much capacity and yet so cost effective, that it would set new standards.

"I went down to Wellington Harbor to welcome my new Komatsu PC850-8EO Super Excavator when it arrived on the ship from Japan – and there were two of them on board," Shane Hagai, Manager of the Winstone owned Belmont Quarry said.

"I asked who owns the other one, but I already knew the answer. There was only one other quarry that would order it."

Matt Hill, Quarry Manager of the Horokiwi Quarry which operates just seven kilometres from Belmont Quarry, both equal distance from the Transmission Gully project, chuckles at the recollection:

"Just ask Shane who took delivery first – he'll tell you it was him, and I reckon it was us."

In fact, the commissioning occurred simultaneously, although Shane concedes his was held up perhaps two days, mainly because of some signwriting he wanted done.

"Our operator is just so proud – he parks it up each night high on the hill so it can be seen by the whole Hutt Valley, and there's not a scratch on it."

For five years both quarries have competed for, and shared, most of the massive supply of aggregate to the 27 kilometre four lane motorway.

The call for material has led to the quarries digging deeper into their resource of hard Greywacke rock unique to the region, made possible by the strength and power of the PC850 – the largest of Komatsu's construction excavator fleet.

The coincidental-Komatsus have levelled the playing field, to the benefit of their Transmission Gully client.

Drill and blast, to loosen rock, has become a thing of the past for both quarries.

"We used to blast once every three months, now not at all," Shane said.

"Our PC850 operator can extract more rock with greater efficiency and in far greater comfort than ever before," Matt said.

Both companies are filling their 40 tonne Komatsu dump trucks with five passes of the PC850, compared to six to seven passes with machinery they were previously using.

Fuel efficiency through streamlined workload has been

increased compared to previous machines.

Komatsu's push-to-activate boom power mode has been the key to more efficient extraction.

Both quarries also share the same service arrangement, with Komatsu appointed Machinery Specialists, an investment in Komatsu operators in the Wellington area which has substantially increased the company's local footprint.

"They've turned out on Sunday to service our PC850, to keep us competitive," both Shane and Matt independently volunteered.

Shane Hagai estimates his Belmont Quarry has contributed better than 1.6 million tonnes of aggregate to the Transmission Gully project; Matt Hill is less specific, but it could be about the same.

"I sit in my office and watch his trucks go by," Shane said.

It's a friendly rivalry - the companies tend to lean on each other to ensure they both service the project, made difficult by extremes of terrain, climate and external factors, like the 2016 Kakoura earthquake which diverted resources for some time.

"We all got together for a beer at Christmas," Matt said.

Both quarries acknowledge that their new acquisitions have given them opportunity to better service their long-term client base at the conclusion of the Transmission Gully project.

Wellington is uniquely placed in New Zealand, and the ability for civil and infrastructure projects to be serviced locally, reducing transports costs, is paramount for efficient future development.

According to Matt even greater earthquake proofing measures had placed increasing demand on aggregate for new building projects.

But both also are eying new roadworks programs recently announced in a sweeping \$NZ6.8 billion commitment by the NZ Government.

"One of them is just up the road from here, right between us," Shane said.

The rivalry, it seems, will continue.

"Our PC850 operator can extract more rock with greater efficiency and in far greater comfort than ever before"



Pictured: PC850-8EO at Winstone's Belmont Quarry in Lower Hutt.



Pictured: Horokiwi's PC850 working hard with a picturesque backdrop of Wellington Harbour



Pictured: Winstone's PC850 loading a HD325 dump truck at the Belmont Quarry.



Pictured: Elle Schutte National Aftermarket Marketing Manager, New Zealand

SiteWise Green safety accreditation shows commitment of Komatsu NZ and its Service Partners

Over the past three years, Komatsu NZ and its Service Partners have been gaining annual accreditation under the SiteWise Green annual health and safety assessment process.

SiteWise is a national prequalification system developed for the building and construction industry, that grades contractors' and suppliers' health safety capabilities.

Renewed annually, an organisation's grade is published in a database that can be viewed by main contractors and principal organisations – allowing for better contractor and supplier selection and an easier tendering process for everyone involved.

A "Green" grading in SiteWise indicates Komatsu New Zealand and its Service Partners have obtained a grade of 75% or above on the annual assessment, demonstrating they have quality health and safety systems in place.

Since 2018, Steve Dohnt, Komatsu NZ's HR and Safety Manager, and Brent Hepple, Komatsu NZ's National Product Support Manager, have worked with the company's Service partners for them all to achieve SiteWise Green accreditation.

"One of the main reasons we decided to do this was to give us an independent perspective that we all have minimum standards of health and safety practices in place," said Steve.

"The SiteWise process is a very straightforward way to achieve this, and our Service Partners have responded very well to it. They are proud to have the accreditation, and they can put it on their documentation – their letterheads and stationery, their websites, and email signatures.

"They are all small businesses, and this accreditation shows they've achieved something significant when it comes to health and safety," said Steve.

Under the SiteWise accreditation process, participating organisations have to submit evidence annually that they have operational safety systems, across safety training, audits, site meetings, and the like.

"An important part of the process is that an independent third party audits their documentation and processes, to show that they meet the required standards.

"And we've worked with them to assist them as required; it's been very much a partnership between all of us to ensure that we all meet minimum health and safety standards across the board," he said.

"One of the main reasons we decided to do this was to give us an independent perspective that we all have minimum standards of health and safety practices in place"



How genuine Komatsu hydraulic filters lower your operating costs

Conventional wisdom has it that "non-genuine" consumables and parts are generally significantly cheaper than genuine items – something that is demonstrably NOT the case with Komatsu genuine hydraulic filters, as Barry Millar, Komatsu New Zealand's National Customer Support Manager reports.

First up, here's the good news: **Using genuine Komatsu hydraulic oil filters can lower your combined costs of filters and hydraulic oils to as much as one-third the cost of using non-genuine filters.**

It's a standard misconception in the industry that non-genuine consumables are always cheaper than genuine products. Not only is that not necessarily the case – and certainly not in the case of Komatsu hydraulic filters! – but our rigorous (and unrivalled) manufacturing specifications ensure that your total operating costs over thousands of hours will be significantly lower using our genuine filters.

Here's why.

Komatsu's factory recommendation is that for the great majority of Komatsu machines, when using genuine Komatsu hydraulic filters, the filter should be changed every 1000 hours, and the hydraulic oil every 5000 hours (this is subject to operating conditions).

However, if a non-genuine aftermarket filter – even a recognised "quality" brand" – is used, Komatsu recommends the filter be changed every 500 hours, and the oil every 2000 hours (again subject to operating conditions).

The reason for this is that in a genuine Komatsu hydraulic filter the micron ratings, plus the type and volume of filter media are far superior to any aftermarket filter available.

Micron ratings refer to the size of particles that can be trapped by the filtration system; because the micron rating is so fine in Komatsu filters, combined with the additional filter media volume, a far greater amount of dirt and contaminants is collected – therefore significantly extending oil life.

This quality and capacity of Komatsu filters allows them to have a significantly longer service life between changes – typically twice that of non-genuine aftermarket filters.

The coarser micron rating and lower filter media of non-genuine filters means the filter and oil have to be changed more frequently to ensure that critical hydraulic components are properly protected.

In the accompanying example, we have taken a PC200-810LC-11 excavator and compared hydraulic filter and oil costs over 6000 hours (which covers three oil changes in the case of a non-genuine filter). Our example covers two reputable non-genuine filter brands, and the genuine Komatsu hydraulic filter.

The attached table shows cumulative filter and oil costs at 500-hour increments, up to 6000 hours; these costs are divided by 6000 to give the per-hour cost of each option.

At the end of this period, using the non-genuine filter results in an hourly cost for hydraulic oil and hydraulic filters of \$0.53-0.56 (depending on filter brand) per hour, compared with just \$0.22 per hour using genuine Komatsu hydraulic filters.

Hydraulic Replacement Oil & Filtration: Komatsu genuine						
Price per filter/litre of oil	Total per change	0 hours	500 hours	1000 hours	1500 hours	2000 hours



For detailed comparisons of life-cycle costs of Genuine Komatsu filters vs those of aftermarket brands, please click here.

Pictured: Filter paper medium in a typical "non-genuine" filter (left) compared with a Genuine Komatsu filter (right). It's differences like this that ensure Komatsu filters provide better filtration, but also longer service lives.



Komatsu's new South Island Hub is now open!

Pictured: The Komatsu South Island Hub in Christchurch at the end of June, just weeks away from Christchurch employees relocating to the new building.

Komatsu New Zealand's new South Island Hub facility in Christchurch opened at the end of July – about six weeks later than its original scheduled opening date, due to NZ's COVID-19 lockdown.

This completely new site and facility will greatly enhance Komatsu's service and support capabilities for customers throughout the South Island.

Almost triple the size of Komatsu's former Christchurch branch, the new South Island Hub was built in the new industrial subdivision of Hornby South, on Gallagher Drive.

The facility backs onto the new Christchurch Southern Motorway, itself due for completion in the next few months, giving easy road access to the main highways serving the entire South Island.

"Our new South Island Hub is a huge step forward in terms of the service and support we can offer our customers throughout the island," said Rob McGregor, Komatsu NZ's South Island Regional Manager.

"With a total of about 10,000 sq m of floor space, including an six-bay workshop plus a paint bay and component rebuild bay and a two-bay warehouse, it's close to two-and-a-half times bigger than our previous facilities.

"And all our staff are delighted to be working in this new bigger, purpose-built facility."

Rob said that since opening its current Christchurch facility in 2007, Komatsu has grown from six staff members, to a current level of 26. Once the new facility opens, the company expects to add more service and technical staff, as well as a trainer with expertise in iMC (intelligent Machine Control) operations.

Today, Komatsu's machine population throughout the South Island is more than eight times larger than it was in 2007 – and is continuing to grow.

"It's a key element in building our comprehensive nationwide service and support network that will ensure we can meet our customers' needs no matter where they are based – from the tip of the North Island, to the very south of the South Island"

Komatsu NZ's Managing Director Phil Pritchard said the new South Island Hub sends a strong message about the company's growing presence throughout New Zealand.

"It's a key element in building our comprehensive nationwide service and support network that will ensure we can meet our customers' needs no matter where they are based – from the tip of the North Island, to the very south of the South Island," he said.

Features of Komatsu's new South Island Hub include:

- Dedicated training rooms
- Dedicated component rebuild bay
- Paint bay
- Display area for new equipment adjacent to Christchurch Southern Motorway
- Spacious open-plan office lay out
- 5.4 metre high-rise pick racking
- Bulk pallet racking
- Dedicated MPI-approved parts container area for accepting parts containers direct from factory

Pictured: The new 6 bay workshop with drive through access and a double overhead gantry.



Pictured here and below: Render by the developer, Calder Stewart, of the new Komatsu Christchurch building



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"Once a machine has been serviced and cleaned, a tag indicates its condition and gives customers confidence that every consideration has been taken to ensure the health of their employees."

Komatsu geared for post COVID-19 efficiencies

On April 29, when New Zealand moved from Level 4 elimination strategy to Level 3 COVID-19 restrictions, Phil Pritchard, the managing director of Komatsu New Zealand, sat at his computer and watched the Komatsu heavy machinery activity across the country light-up his screen.

The country's construction and mining industries had been silent for a month, but that morning Phil's computer, linked to Komatsu's KOMTRAX system which remotely monitors the activities of more than 2600 bulldozers, wheel loaders, dump trucks, graders and excavators, burst into life.

The remote satellite monitoring, which provides real-time observation of the machine health of vital construction and mining equipment, according to Phil, will lead a post-Coronavirus revolution in greater production efficiency.

For the past two months, Komatsu senior executives across the world have sat on committees planning for Post-COVID-19 recovery with emphasis on helping not only large customers, but smaller plant operators who may need assistance to re-adjust their businesses.

"Protocols which achieve higher work productivity through solutions in supply-chain and machine management are likely to become permanent outcomes of response to the pandemic," according to Phil.

As the New Zealand government pulled back to Level 2 COVID-19 restrictions on Thursday 14 May, Komatsu forecast the country's important industries would become more agile, more reliant on e-commerce solutions and even better serviced by sophisticated machine monitoring.

"There is every likelihood that business in the future will be conducted in a different and even more fail-safe manner," Phil said.

The COVID-19 pandemic accelerated the roll-out of newly introduced systems, which under normal circumstances would have been tested and refined over longer periods of time.

According to Barry Millar, Komatsu's aftermarket National Manager, customer use of an automated parts ordering portal, my.komatsu.co.nz, which removes the need for face-to-face contact, had almost doubled during the pandemic.

Importantly it had proved robust under the unexpected load.

People solutions ranging from making more use of work-from-home opportunities, through to even safer and more hygienic workplace engagement had been part of the COVID-19 adjustment.

A recently inaugurated 'Start Safe' policy intended to meet and exceed workplace safety requirements had adapted well to the COVID-19 challenge.

"Meticulous process detail goes right to the heart of good customer relations," Phil said.

"Once a machine has been serviced and cleaned, a tag indicates its condition and gives customers confidence that every consideration has been taken to ensure the health of their employees."

Komatsu's technicians who had geared-up for an additional work-load on return to duties, had been COVID-19 trained and certified.

Protocols had been introduced ranging from separated workplaces and smoko rooms through to dedicated machinery sanitised time between major operations.

Work-from-home had shown great promise in reducing unproductive travel time, especially in congested areas and could well form part of a new Komatsu workplace discipline.

Phil said further improvements in supply chain management would be a major gain from the company's pandemic response.

Four years ago, Komatsu New Zealand had moved to streamline the sourcing of components directly from Japan with its Australian operation as an important back-up.

The New Zealand lockdown which prevented access to local warehousing triggered an immediate move to provide parts from Australia's Wacol, Brisbane-hub supported by an efficient freight forwarding network.

"The pandemic has prompted us to re-evaluate and improve predictive modelling techniques to optimize the relationship between regional branches and distribution centres," Phil said.

Komatsu's KOMTRAX on-board remote monitoring telemetry, now fitted to most of its machinery, was integrated into the modelling to ensure that parts were available in advance of requirement.

Phil said the company would continue to plan its reaction to potential future pandemic scenarios to ensure that its response time is minimised.

"We are learning a lot, and will continue to do so," he said.

"Our findings are being translated into new training programs that are passing into our network."



Pictured: Vercoe Contracting team members with some of their fleet of Komatsu dozers, with a kiwifruit plantation in the background.

Vercoe Contracting builds success with NZ's largest fleet of Komatsu D61 dozers

The Puke based G&J Vercoe Contracting, which specialises in contouring works for kiwifruit orchards, as well as carrying out irrigation pond construction and forestry roading works, owns what may well be the largest fleet of Komatsu D61 dozers in New Zealand and Australia.

The family-owned business, which was started by Greg and Jill Vercoe in 1998 – and now also has son Craig working with them – works primarily in the Te Puke region of the Bay of Plenty.

Their most recent largest project is contouring a 100-hectare block into land suitable for kiwifruit farming, a project which started in April 2019, and will run until late 2020.

Vercoe Contracting owns seven D61PX (“swampy”) dozers: two Dash-15 models, three Dash-23s and two Dash-24s.

Greg and Jill have been operating Komatsu dozers since they started the business, initially with imported machines.

Greg, who worked for other contractors before he and Jill set up the business, had previous good experiences with the brand.

“I’d operated mainly Komatsu dozers, plus another make, and when I went out on my own the decision was easy,” he says.

“The Komatsu dozers didn’t have as much downtime as the other make, and they last. What stands out with Komatsu machines is their reliability.”

“The first machine we bought when starting out on our own was a used Komatsu D85 dozer, we’ve never looked back – it’s been Komatsu from the start and right through,” says Greg.

“That first machine actually ended up being too big for our needs, so we got a D53 that ended up doing nearly 17,000 hours for us – and all we had to replace in that time was track gear and an alternator.

“After we sold it, we bought our first D61, another used machine; we bought our first new Komatsu machine, a D61-15, in 2007.”

Since then, the Vercoes have built up their D61 fleet through a mix of used and new machines. Interestingly, a number of them are painted green – which is how they had been imported from Japan with only 1000 hours on them.

Their most recent machine is a D61-24, purchased from an overseas supplier in 2019.

“Having experimented a fair bit in the early days, we’ve found the D61 to be an ideal size for what we are doing,” says Greg.

“Probably my favourite feature is the six-way-blade, which we find is perfect for our contouring work.

“Other things I really like is the visibility, especially on the Dash-23s and Dash-24s, plus the joysticks are very good. Once you get used to them, you can’t do without them!

“And because we tend to work in very soft and wet soil, the wider ‘swampy’ tracks and longer track frame makes them ideal for us,” he says.

Son Craig re-joined the business in 2013 after having worked for his parents for about four years before heading overseas for a time.

“We sent him out to work for other people, and to get an appreciation for what the world is like, and to get another perspective,” says Jill.

“He worked in Australia for a while, where he got a good reputation as a skilled operator before he returned back here to join the family business again,” she says.

Jill and Greg are also very happy with the levels of service they get from Komatsu.

“We work very closely with Dave Bennett, the Komatsu Rotorua branch manager; since Dave started, we’ve had nothing but good service from him – it couldn’t be better, he is fantastic,” says Jill.

“He’s the reason we are using Komatsu for all our servicing and parts supply; he’s a real asset to Komatsu.

“When any of the machines need servicing, it’s done straight away, and we have them serviced every 250 hours,” she says.

Greg says this is a key part of the business.

“Regular servicing is cheap insurance, and it’s good to look after your machines, so they last and have minimal downtime,” he says.

The Vercoes also recently had Komatsu Rotorua carry out a midlife overhaul of one of their D61PX-15 machines.



Pictured: Five of the seven D61 dozers in the Vercoe fleet busy contouring a 100-hectare block into land suitable for kiwifruit farming

“The Komatsu dozers didn’t have as much downtime as the other make, and they last. What stands out with them is their reliability.”

Included in this were:

- New main and fan hydraulic pumps
- Engine output damper replaced
- Hydraulic cylinders overhauled
- All pins and bushes in work equipment replaced
- All new hinges and locks on panels
- New work equipment hydraulic hoses
- All grease points repaired

- All wipers and washers repaired
- Engine exhaust system repairs
- New U frame pins, bushes and line boring
- Machine stripped to bare machine with all panels, cab and frame sandblasted and painted inside and out with two pack paint system, plus new decals
- A/C system repaired
- New operator seat
- Hydraulic and engine tune

- New alternator
- Coolant and washer tanks replaced
- “Literally” hundreds of new bolts.

“Dave and the team at Rotorua did an awesome job on that rebuild,” says Greg. “It really was above and beyond our expectations.”

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*Pictured: Ngatai Purnell Territory Sales
Manager, Construction and Utility Sales*

Day in the life – Ngatai Purnell

Territory Sales Manager, Construction and Utility Sales

What team and department are you in?

NZ New Equipment Construction

Where are you based?

Bay of Plenty/Gisborne/Hawkes Bay, New Zealand

How long have you been with Komatsu?

Four years in September 2020

How did you end up in your current role?

I was encouraged to apply by a close friend after being in the industry for most of my working career; he reckoned I would be good at sales and enjoy it. He was right!

Describe your day to day tasks:

Calling on customers to build relationships, looking for opportunities to help my customers grow their business and to grow my customer base. Carrying out machinery appraisals, creating quotes and delivering machines

What's the most enjoyable, challenging or interesting customer-focused task that you've had to carry out in the past few years?

I find start up businesses the most enjoyable. It's very satisfying delivering a new customer their very first machine. then getting to be involved with the growth of their business, graduating to a second machine and then sometimes many more.

What is the most satisfying part of your job in terms of customer interaction?

Delivery day of course! There's nothing better than having a new machine delivered.

What do you do for fun/outside Komatsu?

Family time. I spend a lot of time away from my young family, so the weekends are for them. Swimming, biking, camping and general outdoor activities

What's a fun fact about yourself?

My birthday is on Halloween. My mother still doesn't know whether I was a trick or a treat!



Pictured: Treescape and Komatsu have developed a strong relationship over many years of doing business together.

The Swiss Army knife – reinvented

Komatsu has collaborated with one of New Zealand's most innovative machinery contractors to build an excavator that has become universally known as the Swiss Army Knife.

The Komatsu PC220 has been equipped with a Can Bus system that allows interchangeability between up to 10 attachments – each capable of being installed and operational within five minutes.

The innovator is Brandon Whiddett, one of two founders of Auckland's Treescape, a specialist arborist business with branches throughout New Zealand and on the east coast of Australia.

But while Brandon is the co-founder of the now 650-person strong business, he prefers to be known as the Chief Engineering Officer, and he works from a small office at the core of a workshop of 14 people whose task it is to make all their equipment more efficient.

Brandon's piece-de-resistance is his PC220.

The one machine is capable of fitting and using within minutes, a high-speed mulching head, a vertical tree-grab shear, a chain-saw felling head, a high-speed hydraulic stump grinder, a hydraulic tree transplanting spade, a rotating grapple with pusher bar and a winch bucket.

"I'm not an engineer, just someone who thinks about practical improvements," Brandon said. "I come up with ideas and Komatsu does the design to my request. There isn't a machine built yet, that isn't so perfect it can't be made to work better."

Brandon and his business partner Ed Chignell started Treescape more than 35 years ago; their plan was to pioneer the concept of ecologically sustainable arbo-culture in a world which was only just coming to terms with what that meant.

For Brandon, right from the start, success was all about efficiency.

While competitors were felling portions of forests and creating environmental waste, Brandon saw immense improvement in designing and purpose building a 3.5 tonne trailer to remove felled material.

A decade on, still seeking efficiency, he bought his first Komatsu excavator. The purchase of the PC130 was unusual if not unique in the arbo-culture industry which was still employing manual labor. But it wasn't only the machine he was after as much as the opportunity to collaborate with a major international company that could help turn his ideas into reality.

"He's made us part of his think tank," Komatsu's New Zealand product support manager Brent Hepple, smiles about the customer who's become a colleague, and a friend.

"He'll ring-up and say let's go hunting and we'll go and sit in his blind in the forest and we'll talk about his new projects."

It's a partnership that has led to Treescape having 45 Komatsu excavators and wheel loaders across its network – one of several long terms supply arrangements, Brandon has nurtured with key business associates.

Brent's job is to make Brandon's ideas work within Komatsu's operational guidelines to maintain his own company's product integrity and importantly, to help grow Treescape's reputation at the forefront of innovation in green management.

The multi-tool concept, powered by Komatsu's ability to devise a system with easily identifiable graphics, which allow an operator to switch hydraulic flow from within the cockpit, has been a major triumph of the association.

"It's the most extraordinary sight," Brent said. "You can arrive on a Treescape job and find a multitude of attachments all neatly laid out, waiting to be used in sequence with a minimal change over between them. Comparatively there are people, especially overseas, who use one machine with one attachment permanently fixed, losing so much flexibility and potential profitability."

The collaboration between Brandon and Komatsu has been exceptionally successful. Clear understanding between them has allowed Brandon to make improvements which place minimal stress on the machines, and their operators, leading to greater productivity from both.

Recently Komatsu went one-up on Brandon. It delivered him a new excavator resplendent with its own logo – a Swiss Army Knife design symbolizing his pioneering work.

"You can arrive on a Treescape job and find a multitude of attachments all neatly laid out, waiting to be used in sequence with a minimal change over between them."



Pictured: The Komatsu PC220LC-8MO that Brandon Whiddett, Treescape founder and innovator, adapted with a CAN Bus system that allows interchangeability between up to 10 attachments. Always with the focus of ecologically sustainable arbo-culture.

How Komatsu NZ achieved loader scale accuracy excellence and now leads the industry

Over the past four years, Komatsu New Zealand's product support and technical teams have been working with customers and suppliers to ensure Komatsu wheel loaders achieve high accuracy and consistent results when fitted with third party load scales.

As a result of an ongoing program of research, testing and many hours of trials, Komatsu wheel loaders fitted with these third party scales are now consistently achieving levels of accuracy that are significantly better than other brands of loader.

Following this program, Komatsu loaders are consistently achieving 0.5% accuracy or better.

Due to regulations covering on road trucks, sites that do not have a certified weighbridge, should have their wheel loaders equipped with "legal for trade" load scales, which require annual calibration to maintain their certification. Generally they are required to achieve load accuracies of 1% (or better in some cases).

The program was led by Brent Hepple, Komatsu NZ's Product Support Manager, who'd had several requests to ensure Komatsu loaders could achieve exceptionally accurate readings with load scales; the concern was the company could lose sales in significant numbers to quarries and mineral processing operations if this wasn't achievable.

"Inaccurate or inconsistent load scale results are particularly critical in operations where there is no weighbridge, so the weight of material in each bucketload must be spot on," says Brent.

"If your operation is relying on a loader fitted with scales to ensure your trucks are not overloaded, then each bucketload weight is critical.

"We have customers who want their trucks loaded to exactly 30 tonnes, to optimise their haulage operations. But if their trucks are even slightly overloaded, they'll get a ticket."

Another important customer sector reliant on highly accurate scale results is the lime industry.

"Lime blends have to have very precise mixes to meet their customer specifications. If there's too much of a lower quality mix, customers aren't getting what they've paid for; if there's too much of the premium product, the producers are losing money."

Brent, along with Ron Chilton, Komatsu NZ's technical support representative for the South Island, spent a lot of time working with customers to try to solve these issues, and also to figure out why they seemed to be unique to Komatsu loaders, and didn't as a rule happen with other brands.

Brent and Ron – who Brent credits as having done the bulk of the work with customers and suppliers – also worked closely with the two leading load scale suppliers in NZ, Loadrite and RDS.

As it turned out, there were two areas to focus on, and each interacted with each other to prevent Komatsu achieving the highly accurate and consistent results required.

"Fairly early on, we identified that friction in the loader bucket bushing was part of the issue," says Brent.

"Over a number of years, we tried a number of different low-friction bushings. They gave us some encouraging results, but they still weren't giving us the accuracy we needed.

"Then we stumbled on something in a Komatsu excavator parts book that referred to a BMRC bush, which is a special sintered aluminium/copper bush fitted to some models of Komatsu excavators so they could raise greasing intervals to more than 500 hours.

"We tried some of these, and found the accuracy was significantly improved.

"Loader scales work on hydraulic pressure to calculate load weights, and the slightest increase in friction in the bushings meant more pressure in the hydraulic system, which in turn meant the scales gave an incorrect reading."

Brent and his team brought in some sets of BMRC bushes from Komatsu Japan, and trialled them on some loaders in a couple of operations.

While these addressed some of the issues, the consistency required still wasn't there, so Brent and the team did some more research.

"We started looking at the Closed-Centre Load Sensing System or CLSS hydraulic system that's been used on just about all Komatsu construction machines since the late 1990s."

It's pretty much unique to Komatsu, and something no other manufacturers use, certainly not on loaders; most hydraulics on other earthmoving brands are open-centre systems.

"Our CLSS gives us significant advantages in precision and control, it's faster, and more reliable and robust, plus it also contributes to Komatsu machines' reputation for excellent fuel efficiency," says Brent.

"So we started adjusting the loader hydraulic circuits on these loaders that we'd fitted with the new bushes, using data logging to measure and calibrate the hydraulic systems' wave pattern.



Pictured above: Komatsu BMRC Copper / Aluminium composition Bushing



"These wave patterns are used by the load scales to calculate bucketload weights.

"We found we were able to adjust our Komatsu CLSS hydraulic systems to get the wave patterns in precisely the right spot.

"By doing this, we were able to get to accuracies of 0.5% consistently with Komatsu loaders – which is even better than the scale manufacturers can guarantee," he says.

"So the solution turned out to be the combination of these ultra-low-friction bushes and the calibration of our hydraulic systems.

"As with all loaders fitted with load scales that are used for sales and truck loading work, our hydraulic systems do need regular calibration and checking to maintain accuracy," says Brent.

"But we are now finding as a result of our research that Komatsu machines as they get older actually get even more accurate in measuring bucketload weights, as things wear a bit and there's a touch less friction," he says.

As a result of this program, all Komatsu loaders in the WA380 to WA480 size range sold in New Zealand and Australia are now fitted with BMRC ultra-low-friction bushes as a standard fitment.

"We also think that Komatsu will be very well positioned into the future, as after market load scales are getting more and more accurate, with increased levels of sensitivity," says Brent.

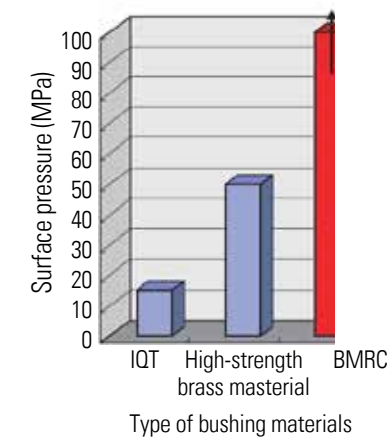
"Now that we know exactly how to set up and calibrate our loaders to get the best possible results, we believe we have a significant advantage over other suppliers."

Brent also acknowledged the assistance provided by load scale suppliers Loadrite, which started in NZ and still carries out the bulk of its research and manufacturing in the country, and RDS.

"Loadrite has the larger market share in NZ, while I believe RDS is more prevalent in Australia," he says. "We were having these issues with both brands, and both were very helpful in assisting us to resolve them.

"Thanks to our Komatsu NZ team, along with engineering support from Komatsu Australia and Japan, plus the input from load scale suppliers and customers, we have solved this issue," says Brent.

"We've had this solution since the start of 2019, and it's proven itself in that time. We're now highly confident in our ability to supply loaders that consistently deliver load scale accuracies that significantly exceed industry requirements."



Komatsu BMRC bushes are now being sold as standard on WA380 through to WA480 sized wheel loaders. The graph above shows seizure resistance of various bush materials. IQT (induction hardened and tempered steel) bushes are the industry standard bushes.

"We've had this solution since the start of 2019, and it's proven itself in that time. We're now highly confident in our ability to supply loaders that consistently deliver load scale accuracies that significantly exceed industry requirements."



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Day in the life – Erin Kyle CSSR

A day in the life is a very interesting concept for I am yet to have two days the same at Komatsu.

What team and department are you in?

National Parts

Where are you based?

Waikato/Bay of Plenty/Rotorua

How long have you been with Komatsu?

Since late 2018

How did you end up in your current role?

I came from outside the industry, so I have really enjoyed the challenge of learning new things. It is great to be a part of such a progressive industry and watch customers adapt to and enjoy new technologies. Sometimes I feel like I don't know enough, but I have some good friends who are very quick to remind me of how far I have actually come in a relatively short time. I suppose I do see it myself too and a big part of it is finding out where to go for the information you need. They also remind me of my tendency to want to know it all straight away; I think in that I find my answer.

Describe your day to day tasks:

These are extremely varied and that is a good thing. Going from boardroom to coal mine, white shirt to workboots, and from PC55 to PC1800 means that I'm never short of something to think about or someone new to meet.

What's the most enjoyable, challenging or interesting customer-focused task that you've had to carry out in the past few years?

I actually enjoy it all. We have a great bunch of customers and I appreciate them. As I get on top of things and learn more I feel like the goal posts for what challenges me changes alongside this. I am now striving to challenge myself so that I can do better. We have a fantastic and very knowledgeable team and a lot of it is marrying up our customers with the person or product that can help them.

What is the most satisfying part of your job in terms of customer interaction?

I enjoy making our customers' problems my problems, so that they can get on with their day. It is important to me that they are satisfied with Komatsu and want to stay a part of our business. I find the positive feedback, continued loyal support, and word-of-mouth referrals to others very satisfying, because to me it means that they are happy.

What do you do for fun/outside Komatsu?

To be honest, that is still an evolving answer. Most of my life has been dedicated to racing and fitting in what I need to do to get to the top of this. I won the Women's Championship in Hawkes Bay for a couple of years before going on to compete in the NZ National Championship. I was selected by Motorsport NZ as one of the top nine participants in racing to attend the Elite Motorsport Academy in 2006.

I graduated third behind now Hyundai star Hayden Paddon and from there I went on to compete alongside ex-WRC driver Alister McRae and later for Mitsubishi Rally Team NZ. It has been an awesome experience but all-consuming in terms of the dedication required to fitness, nutrition and the likes. At the moment I'm enjoying being able to enjoy my holidays for holidays and relax a little outside of work. I do enjoy fishing, watching circuit racing (never rallying now) and I'm often found on my bike.

What's a fun fact about yourself?

There are plenty, but you'll have to call Komatsu and book your free undercarriage appraisal – then you can ask me in person.

Pictured: Erin Kyle, Komatsu Waikato based CSSR shows the same passion for her job as she did for racing





Pictured: Layla Hunter, one of Komatsu's newest apprentices, is based at the company's Christchurch Branch – which is now its just-opened South Island Hub.

Apprentice profile: How Layla decided on a career with Komatsu

In January, Komatsu NZ put on six new apprentices – two in Auckland, two in Christchurch, and one each in Invercargill and Hamilton – as part of its commitment to maintain and build its service and support skills and expertise.

In this edition we profile Layla Hunter, who recently started at our Christchurch branch – and how her determination and enthusiasm helped get her start.

Layla, who left high school in 2015, had been in a range of jobs, including retail and hospitality before starting traffic control work with a fibre optic contractor. That experience is what attracted her to working with heavy equipment.

While she says she had no specific interest in big machines as a child, she has grown up with two brothers who were a big influence on her perspective and saw plenty of earthmoving and construction equipment while working in traffic control.



"I was looking at nursing before this, I did the pre-health certificate, but realised I couldn't see myself enjoying that field.

"Then I decided I want to go with my prior idea and become a mechanic. Heavy machinery was my main interest so I completed a certificate in Automotive Engineering at the Southern Institute of Technology during 2019," Layla says.

"Having a pre-trade certificate was one of the requirements when applying for an apprenticeship with Komatsu.

"I had to go through a selection process, which involved applying online, doing some maths and literacy questions, as well as some questions that show your mechanical knowledge.

"I got a formal interview, then a short time later the phone call telling me I'd got the job, which was very exciting," she says.

"Since starting at Komatsu, where I'm doing a certificate in Heavy Automotive Engineering, it's all been really good!

"As soon as we started, all us NZ apprentices went over to Brisbane for two weeks training, learning all the health and safety and HR procedures, how to use the technical support apps, and finding out all about the company. We also got a tour of the Wacol branch, which was very interesting."

Layla has been advised she should complete her apprenticeship in around two-and-a-half years due to her prior qualifications, which would usually take four years.

And her preferred equipment types? "Well, I do like dozers and skidsteers but I have been told they can be a bit horrible to work on!"

Ideally, she'd like to remain in Christchurch once she's qualified, so she's close to her family and friends. "Yeah, it would be nice to stay in Christchurch, but I'm always open to options because it would be good to have the opportunity to go and work in other areas for a bit," says Layla.

Wellington demolition specialist depends on Komatsu for critical projects

Late last year, Wellington based Quality Demolitions and Contracting celebrated its 25th anniversary by successfully carrying a particularly complex and culturally sensitive demolition project.

This achievement was highly acclaimed by local authorities.

The company used a purpose-built Komatsu PC400LC-8R excavator, specially equipped with a high reach demolition boom, to bring down an earthquake-affected building next to the gravesite of one of the country's founding fathers.

With millimetre precision, Quality Demolitions and Contracting removed the eight-story Wellington Electricity building that was literally within touching distance of the grave of Chief Honiana Te Puni-Kokupa, who took part in New Zealand's 1840 Treaty of Waitangi, the basis of the country's constitution.

It is the latest in a long series of specialist jobs undertaken by a company formed quarter of a century ago by father-and-son team Gavin and Shane Gray.

Shane is now the sole proprietor of the business following his father's untimely death just two years ago.

Precision and passion are the two cornerstones of the company's success, a regime shared by its specialist employees.

The company has equipment, including 14 large Komatsu machines, on jobs across the country.

It also has a strong policy of training and retaining skilled employees – the longest serving has been with the company coming up for 20 years.

Quality Demolition and Contracting's partnership with its principal equipment supplier Komatsu goes back beyond 20 years and the Grays' association with the machinery giant pre-dates the formation of their company.



"Progressively, as we move into the future, we're going to be able to use more of the intelligent Machine Control (iMC) technology built into Komatsu machines."

Young Shane began driving machinery, a Komatsu PC300 digger, at just 15. He and his father joined an existing company and worked as a team before they took over the business when it was in decline, rebuilding it to become Quality Demolitions and Contracting Ltd.

The growth in their business has coincided with a corresponding increase in commitment from their machinery supplier.

"Service is hugely important and since Komatsu moved to place a dedicated service agent in Wellington through Machinery Specialist Ltd, we have had even greater confidence," Shane says.

Quality Demolition and Contracting has since outsourced some of its machinery monitoring directly to Machinery Specialists, relying on it for reports from its KOMTRAX on-board systems to optimise machine use.

The PC400LC-8R excavator fitted with a high reach demolition boom is one of the company's main machines, and was at the heart of the assignment to remove the Wellington Electricity building's superstructure without once allowing material to fall on the neighboring Te Puni Urupa graveyard.

The machine has an arm length of 27 metres, and is fitted with a Genesis multi-jaw pulveriser.

Quality Demolition and Contracting's operator used the PC400LC-8R to delicately pick at the building's superstructure and to clamp it securely.

"There was a purpose-designed demolition plan to it, and it worked perfectly," Shane says.

In fact, a lot of the success of the Wellington Electricity job, because of its difficult location, was the result of operator skill, experience, and using the right tools for the job, including 3D mapping.

"There's still not a lot of 3D mapping available in New Zealand, but it's coming," Shane says.

Site development continues to go from strength to strength.

"Progressively, as we move into the future, we're going to be able to use more of the intelligent Machine Control (iMC) technology built into Komatsu machines."

The relationship between the two companies also continues to grow.

At the end of 2019, Quality Demolitions and Contracting took delivery of three new Komatsu excavators, a PC130-8, a PC300LC-8 and a PC35MR-5, building a strong base for consolidating the association between the two companies across a range of machine sizes.

"The name of our company is a bit misleading," Shane says, pointing out that Quality Demolition and Contracting has a great dedicated team with a number of different niche skills.

"About 40% of our work is specialised demolition and the rest comes equally from site works and building removals, so we need a broad spread of machinery."

Nonetheless, building and site rectification and removal remain an on-going task, with New Zealand's experiencing a number of major earthquakes in the last decade.

According to Wellington City's Department of Resilience, the area sits on 33 known fault lines.

The 7.8 magnitude 2016 Kaikoura earthquake, whose epicentre was located on New Zealand's South Island and had a major impact in Wellington in the north, has resulted in \$NZ1.8 billion of insurance claims, many of which are still being resolved.

And Shane says it's the demolitions that really ignite him and his team.

"If you want to see what happens if you get it wrong – just go and watch YouTube," he says.



Take 5 moves to **START Safe** – and better safety and protection for Komatsu technicians

Phil Morrell, Komatsu New Zealand's Service Manager, outlines what's behind SMART Safe, a new process change designed to ensure Komatsu technicians start and complete every job safely. We also provide some comment and feedback on this new process from those who work with it every day, and the difference it's making to them.

At Komatsu, we have a vested interest in the safety of our people; our aim is Zero Harm, and we want each of our team members to go home in the same or better condition than they came to work.

In order to help achieve this, we have recently implemented a process change, replacing our Take 5 process, which we've had for many years, with something we call START Safe.

Over the past few years we have been working on giving our service technicians a number of digital tools focused on safety. Take 5 is a great example of a process which has evolved from paper into an electronic form.

Digitising processes like Take 5 meant service technicians could identify risks, put controls in place and record the process on their smart phone.

These digital tools also gave us better ability to understand the number of Take 5s completed, along with the time taken to complete the form.

However, the data obtained from Take 5 actually told us that, be it paper or electronic, the form was just a "tick and flick" sheet.

This led us to recognise that with our old Take 5 process, we were relying on our personnel to assess perceived risk, decide on appropriate controls and implement these controls around tasks – often alone and without a review, or any review after the task was completed.

This started us towards a tool that would give us the ability to work with our service technicians, add a control verification step, something specific to our Golden Rules 1 (Isolate all energy sources), 2 (Use appropriate protection when working at heights) and 6 (Beware of the fall zone).

START Safe has been designed as a process to specifically remove or mitigate the risks covered in these three Golden Rules.



Pictured: Phil Morrell

David Butler, Komatsu's National Service Technology Manager, explains how Komatsu developed and implemented START SAFE



Pictured: David Butler

START Safe was developed in Komatsu's technician portal, KOMSERV, which is designed for all things service, including our digital timesheet platform and all relevant condition and PM reports.

KOMSERV itself was created internally by Komatsu with the aim to provide easy access for users through mobile phones, laptops, tablets and PCs.

One of START Safe's main objectives was to align Komatsu's safety processes with Komatsu's Golden Rules.

START Safe was initially introduced as a pilot in September 2019 to branches in Auckland, Perth and Wacol (Brisbane), later followed by all our other branches.

An important element of START Safe is a verification process, which means that any time someone is working with stored energy, working at height with risk of fall or working with suspended loads, they are required to have a conversation with a Peer or Supervisor about the task before starting.

Although this was a major change from the TAKE 5 process, it has been well received by Komatsu technicians, supervisors and managers.

The number of weekly START Safes completed is now over 1400, compared to around 900 for TAKE 5. The most noticeable difference has been the average time to complete a START Safe (4.6 minutes) versus TAKE 5 (2.2 minutes).

Additionally, there is also greater detail of the task, hazards and controls, including photos and comments which are added to START Safe.

Thanks to feedback from START Safe, we are now developing and integrating an augmented reality (AR) system, which we have called KOMAssist.

KOMAssist allows face-to-face video chat, including sharing of the verification requester's screen where they can add annotations to highlight hazards/controls.

The verifier can add comments, and is required to sign off on the START Safe, providing approval for the technician to proceed with the task.

KOMAssist and the START Safe verification process is currently being piloted in Auckland, Perth and Wacol, with plans to roll these out nationally by the end of March 2020.

OUR GOLDEN RULES

HEALTH, SAFETY AND ENVIRONMENT

ALL EMPLOYEES, CONTRACTORS & SUB CONTRACTORS MUST:

- 1 ISOLATE ALL ENERGY SOURCES** when required and never remove (without authorisation), damage or misuse an isolation, lockout or tag-out device
- 2 Use appropriate prevention or fall arrest devices to WORK AT HEIGHTS** or where there is a **RISK OF FALL**
- 3 Enter a CONFINED SPACE** or exclusion zone by **AUTHORISATION** only
- 4 OPERATE EQUIPMENT** and vehicles in a safe manner and to conditions, with appropriate licenses and authorisation
- 5 Use TOOLING** that is not prohibited, in good condition and **FIT FOR PURPOSE**
- 6 Never work within the FALL ZONE** of a suspended load
- 7 Properly dispose of HAZARDOUS SUBSTANCES** and other waste
- 8 BEHAVE APPROPRIATELY** at all times and stop inappropriate behaviour or non-compliance to the Golden Rules.

Everyone has the authority to stop work that is unsafe.

KOMATSU

Illustration 1: The Eight Golden Rules of Komatsu Australia

Additional Feedback on START SAFE:

By Phil Morrell

With the development of START Safe we have seen a cultural shift away from the "tick and flick" approach, towards this new system as a tool to enable a conversation to take place with a colleague.

This change in culture now focuses our teams in thinking about their safety, the safety of their mates and the overall message that safety is, our Number One Priority.

Our teams now have the tools to highlight risk, understand the controls required to eliminate the risk, or reduce it as much as possible.

It also provides the ability to help support people in building confidence by verifying that controls put in place are adequate, in particular the risks associated with Komatsu's Golden Rules.

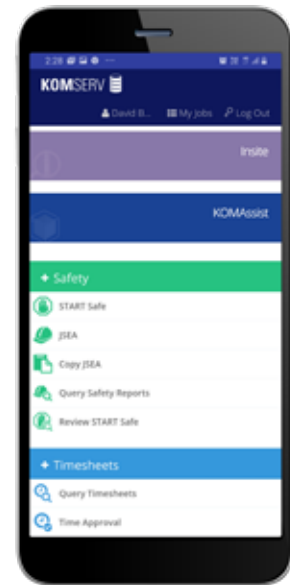
What is great for me to see is the teams having a conversation and thinking about how best to perform their tasks.

This may result in a recommendation to purchase new tooling or equipment, or just approaching the task in a different way by looking at safety as being part of their job.

As a result, we can see improvements in efficiencies on the job and confidence that the risks are either eliminated or reduced as low as possible.

We've also had excellent feedback on the recently introduced KOMAssist augmented reality (AR) system from our Auckland Leading hand, Willem Nel.

"At Komatsu, we have a vested interest in the safety of our people; our aim is Zero Harm, and we want each of our team members to go home in the same or better condition than they came to work."



He commented that, in the past, he would have to get a field technician to take a photo, send it through to him, wait for the image to come through, then they'd ring each other back to discuss what was required.

This generally ended up taking too long and would result in miscommunication.

With KOMAssist, Willem is now able to have this conversation through a live video chat, highlight exactly what each person is looking at through the interactive AR function on screen, and then provide feedback on the spot to verify the controls are adequate and that both understand the task.



Pictured: Aerial surveying using Komatsu's SMARTCONSTRUCTION drone technology is paying off for Hy-Tec's NSW quarry operations.

“James comes out to the quarry twice a year and does our stockpile surveys, as well as providing aerial photos and surveying for potential offset areas, and future quarry development.”



Pictured: This Komatsu WA500-8 stockpile loader was delivered to Hy-Tec's Austen Quarry in mid 2019.

Hy-Tec gaining major benefits from aerial surveys using Komatsu's drone technology

Leading quarry operator Hy-Tec is seeing major benefits in site safety, along with community engagement, efficiency and productivity advances, through the use of Komatsu's SMARTCONSTRUCTION EDD drone technology for stockpile management, regulatory compliance and site auditing in its quarries throughout NSW.

Hy-Tec, one of 19 respected bands within the ASX-list Adbri Limited Group portfolio, operates quarries throughout the east coast of Australia to supply aggregates and sands to the infrastructure, commercial, civil and residential construction sectors, as well as supporting the Group's 95 pre-mix concrete plants. In total, Adbri's group of companies operates 44 quarries across Australia.

In late 2018, Komatsu began aerial surveying and stockpile volume reporting of Hy-Tec's Austen quarry at Hartley, west of the Blue Mountains.

Following this initial success, it now provides twice-yearly aerial surveys and stockpile volume reports at Austen and the company's other six quarries in NSW: Penrose, Tinda Creek, Dunbogan, Grants, Yarrabee and Tumbulgam.

These aerial surveys are primarily to provide volume reporting of stockpiles, but also help confirm each operation is complying with its licensed extraction limits, and to identify potential offset areas – as well

as giving efficiency, production and site management benefits.

The surveys are carried out by James Mackenzie, Project Solution Consultant with UNISI, a joint venture between Komatsu and Topcon distributor Position Partners, using Komatsu's SMARTCONSTRUCTION technology and offerings.

Komatsu's EDD (EveryDay Drone) technology is a high precision UAV survey system that provides industry-leading super-fast onsite processing using SMARTCONSTRUCTION's Edge technology.

Craig McDonald, Quarry Manager at Hy-Tec's Austen quarry, said the aerial surveying process using Komatsu drones was very simple and straightforward.

“James comes out to the quarry twice a year and does our stockpile surveys, as well as providing aerial photos and surveying for potential offset areas, and future quarry development,” he said.

“When he does the stockpile surveys, James sets up the same points each time, flies around the stockpiles, then sends us a draft report of the volumes and materials in each stockpile.

“We update them according to our actual material stockpile numbers and volume, and compare them with our previous drone surveys,” said McDonald.

Hy-Tec's quarries use these aerial surveys to measure stockpiles gains/losses for accounting and auditing purposes.

“Each six months, they show us the volume that's in each stockpile. We know how much we've extracted

and sold, and if there's a discrepancy – say, has it been misallocated, or gone to a different customer – we can track it down.”

He said using Komatsu's EDD technology was resulting in significant safety benefits and time savings.

“Previously, we'd have a surveyor on the ground with a staff, taking about two days to survey the stockpiles. Now James is on site for maybe two to three hours.

“It's very cost-competitive, a lot faster and safer, because James is well out of the way of fixed and mobile equipment,” Craig said.

Hy-Tec's quarries are also using the technology to monitor extraction limits – particularly in areas that are relatively inaccessible, or have dangerously steep slopes – to ensure the quarries always within their approved extraction limits.

“The drone can fly over and physically check boundaries, as well as monitor how wide and deep we are extracting, to show that we are not going too deep or working out of area,” he said.

“As well, at Austen, we have 15m benches into the quarry, and it's on a very steep hill – so it's not a very nice place to have to survey on foot.

“The other application we're using it for is aerial photography for our rehabilitation works, so we can monitor progress every six months.”

In addition to these survey-related benefits, Craig said the regularly updated aerial visuals of the site were proving invaluable in operating and managing the quarry on a day-to-day basis.

“When we're having our regular toolbox meetings, they are a really useful way to communicate with the team on what we're planning with pit development, or the next stages of the quarry,” he said.

“When we have haul road changes, we can communicate easily with other users of the area, show them the aerial image and where they have to get to.

“And going forward, we're going to incorporate some of this technology into our induction process.

“So, rather than using traditional handwritten maps, we can go through images showing what's happening, where people will be working, and pinpoint areas of concern, such as high benches, bench identification, drill work areas and so on.

“We can also use them for driver induction and traffic management flow plans; we can show someone who's come on site to load some aggregates exactly where the stockpiles are, and how to safely get there.

“Again, that's so much better than the old-style handwritten maps.”

Craig sees benefits in using this technology across improvements in safety, productivity, efficiency and costs, plus a whole host of extra benefits that have only become apparent since the quarry has been using it.

“Really, the sky's the limit in what you could be using this technology for,” he said.

“There's potential for our load and haul team to use it to help optimise cycle times, identify optimum routes and gradients, pinpoint areas of hold-ups and choke-points, geological faults and so on.

“And again, we can be using them even more in toolbox meetings so that everyone's on the same page.

“Going forward, I think we could benefit more from using EDD technology's RL (Reference Level) capabilities, working in with our excavation equipment,” Craig said.

“So we could set our excavator to only go to RL100 and no more, so that we are extracting 100% of what we've paid to drill and blast, plus it would ensure we always had nice level benches and floors.”

Another unexpected benefit of the aerial drone technology has been its ability to provide a 'fly-through' of the total quarry operation for our engagement program.

“We had an open day recently, and in preparation for that, we flew the whole process, from the rock face through to the crushing operations and stockpiles, then onto loading material and trucking it off site through the gate,” he said.

“We used this for the open day for our local community, and also for a recent board members' meeting, and as a presentation for potential investors.”

Looking to the statewide picture, Ethan Pettiford, Hy-Tec's NSW Quarry Operations Manager, said the aerial surveying package from Komatsu worked very well for the company.

“In terms of mapping our quarry operations, the technology works extremely well, giving us all we need to survey and monitor our quarry operations throughout NSW.

“James comes and does all our flyovers; he's very helpful, and the operation is completely pain-free,” said Ethan.

About Komatsu's EDD technology

Komatsu SMARTCONSTRUCTION's EDD technology uses purpose-designed Explore1 precision 3D mapping drones to provide total site solutions for customers.

Komatsu's highly specialised EDD UAV technology is the only commercial quadcopter capable of creating 3D point clouds with sub-5cm accuracy, without the use of ground control points.

It's coupled with Edge 1 technology allowing Komatsu to process rapid high-accuracy point clouds in remote areas without internet connectivity or the need for a high-performance laptop, representing a major advance in data processing.

The system is able to record current as-built data, and provide high-resolution imagery for daily updates and construction progress, plus cut and fill volume reporting.

Komatsu SMARTCONSTRUCTION's EDD UAV capabilities include:

Site survey cut/fill and stockpile volume calculations, allowing users to:

- Measure quantities to confirm cut and fill estimates
- Identify potential delays and verifying truckload estimates
- Carry out continuous as-built surveys at the beginning, middle and end of projects.

Progress tracking and site logistics, allowing:

- Billing verification and work-in-place tracking
- Site logistics overlay and site constraint analysis
- Quicker and more accurate site planning.

Online collaboration and communication, including:

- Frequent map updates for improved safety and coordination with outside agencies
- File exports for data manipulation, reporting and site meetings.

Komatsu selected in the Dow Jones Sustainability Indices

Komatsu Ltd has been selected as a component of the Dow Jones Sustainability World Index (DJSI World) again this year. The DJSI tracks the stock performance of the world's leading companies in terms of economic, environmental and social criteria.

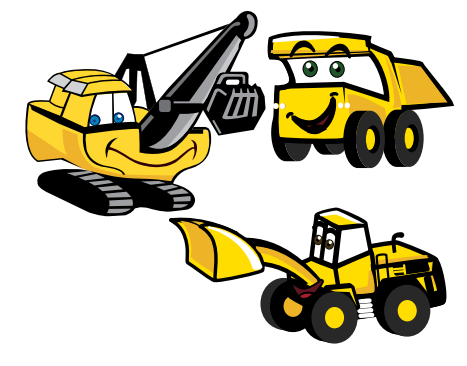
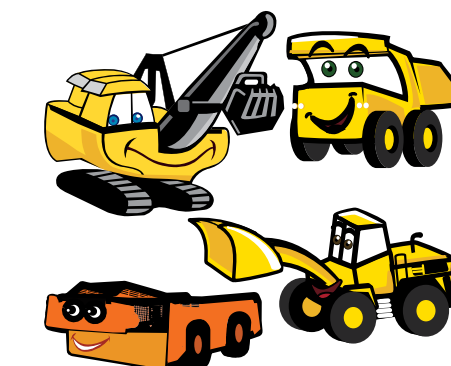
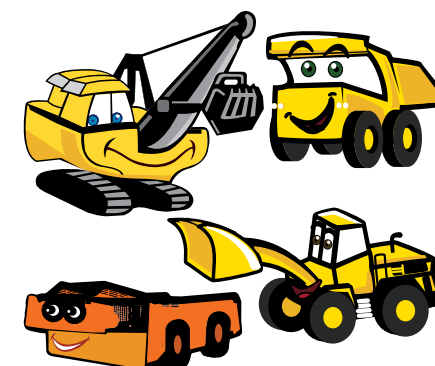
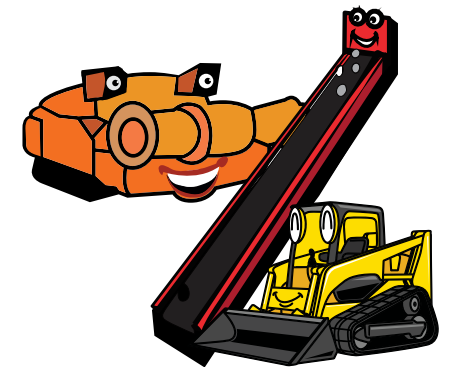
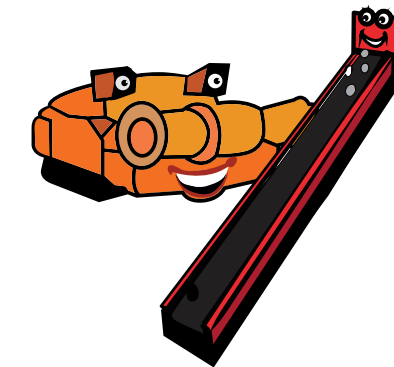
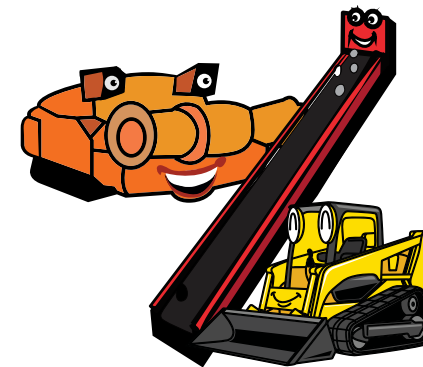
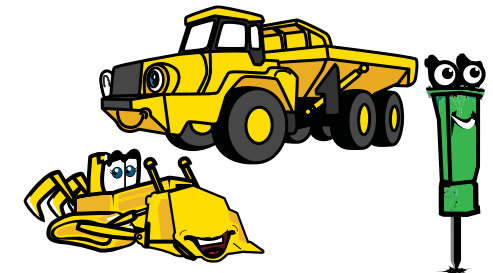
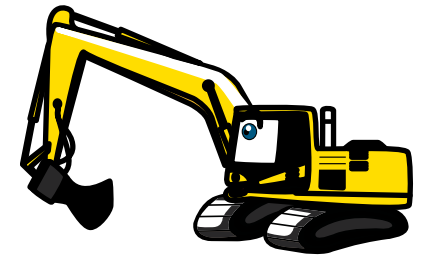
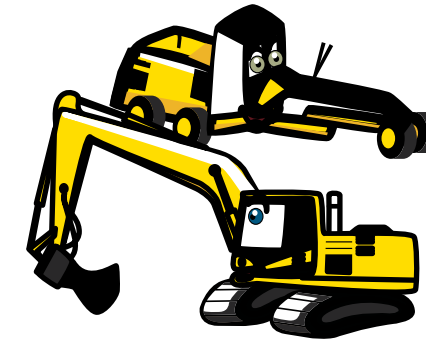
Komatsu is pleased to receive the recognition by this world's leading corporate social responsibility index developed jointly by S&P Dow Jones Indices of the United States and RobecoSAM, an investment specialist focused exclusively on Sustainability Investing in Switzerland.

For DJSI World selection, companies are analysed and evaluated along a diverse range of items in the three areas of economic performance, environmental conservation efforts and social activities. In 2019, they surveyed a total of approximately 2,500 major-scale companies around the world, from which 318 companies were selected.

We believe that our corporate value is the total sum of trust given to us by society and all stakeholders. To continue our sustainable growth, we are firmly determined to continue our efforts to remain as a company trusted by society while improving our business performance and our sound and transparent management.

Count the Machines

Circle the group that shows the **same** number as the first one.



SMARTCONSTRUCTION

WORK *SMARTER* NOT HARDER.



intelligent
MACHINE CONTROL

SMARTCONSTRUCTION is here to change the world of construction, digitise a construction site with IoT. Connect equipment, machine operators and measure change of jobsite condition.



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