

THE LATEST FROM THE STACK

Edition 10 | Summer 2021

- High Demand Brings Challenges
- Fulton Hogan - Appleby Plant
- Equip2 Demo Day
- Apron Feeder VS Belt Feeder
- Used Machinery

FULTON HOGAN CASE STUDY

Read more about the MWS Appleby Plant inside



OPINION

HIGH DEMAND BRINGS CHALLENGES

Hello.

2021 has been a challenging year but also an exciting one. From our travels and conversations with quarries and customers, it's very rare that any quarry is short of work at the moment. But, high demand also brings its own challenges, like finding skilled staff in a hot labour market and maintaining product availability.

One of our clients tried to slow demand by lifting their prices, however, this only had a short term effect. After a week or so, they were just as busy again. This goes to show how much pressure the quarrying sector is under to deliver on the demand from the construction and infrastructure industries.

Businesses often seek to alleviate demand challenges by bringing on more staff. Not just labourers, but skilled people who are willing to learn and able to take on increased responsibility in the business, which is particularly important as a business grows.

With a shortage of skilled staff available, how though can a business meet the needs of increased demand (assuming the business is planning on making more product)?

One answer is to get more out of the people we have. Now, I don't mean push them harder and work them around the clock, rather, equip them with the tools that enable them to be more productive.

Add smarts and efficiencies rather than just more people. The various technological revolutions that have occurred over the last few centuries have enabled workers to do more, and now, in the information age what is available to quarries to do more with the people they have?

Machinery and automation

For example, we recently commissioned a stacker for a customer of ours who had this exact issue. The business had an R3h, excavator and loader, but only one operator. The operator can't both feed the R3h and move the material, but

With a shortage of skilled staff available, how though can a business meet the needs of increased demand (assuming the business is planning on making more product)?

because the product pile quickly built up, he frequently had to stop production and do just that. So even though production from the R3h was good, it was inefficient, in this case, an extra person on the loader could have solved this issue, but no person was available. Instead, we solved the issue with a stacker, which increased this one operator's efficiency immensely.

Other machinery and automation solutions:

- **Belt scales:** Improve loader cycle time by calculating tonnages off the machine belt. Great for contractors or single customer jobs.
- **Stackers:** As mentioned before it helps reduce loader movement frequency but can also be utilised to eliminate unnecessary movements.
- **Software:** Nothing techy or hard, but software like Xero can automate your accountancy and invoicing, making repeatable tasks faster, and at the end of the day no one really enjoys bland office work, so why not make it easier?

Bert Hart, Sales Manager

Bert Hart



QDC screening pit run with one of their K4 Scalping Screens.



The R3h Crushing It! for Masterton based Croskery Contracting.

PROJECTS ON THE GO!

Working on a project, using E2 equipment?



Tag us on facebook, Instagram or LinkedIn;

@equip2solutions or hashtag #equip2



Equip2's new offices and workshop was completed in August and recently hosted the last Demo Day.



Portafill MR-5 Scalping Screen at Northside Sand & Shingle in Invercargill.



Hawke's Bay Earthmoving pre-processing material ready to go into a chip plant.

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Equip2's quarterly magazine on all things Quarrying and Machinery.

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Customer Profile: Fulton Hogan APPLEBY PLANT

Fulton Hogan needs no introduction, and alongside their well-known roading and infrastructure arms, is also one of the biggest Aggregate producing businesses in NZ.

With dozens of Quarries across NZ, some of which have been established for more than 50 years, equipment will inevitably need updating to keep pace with demand.

Appleby Chip and Concrete Ag and Sands Plant Upgrade
Fulton Hogan's Appleby Chip and Concrete Ag Plant, located outside of Nelson is one such Plant that is on the radar for improvement.

Appleby was built as a static plant over 40 years ago, and it has, over time, been incrementally upgraded. Still, the underlying platform was aging, which was showing in some process bottlenecks and increased R&M.

The question was not if it needed upgrading, but who and what supplier would be able to provide an ideal solution that met Fulton Hogan's business case.

Due to the importance of the Appleby Chip and Concrete Ag production, upgrading the equipment and processes would take place in stages to mitigate production loss and the flow-on effect it would have on Fulton Hogan's projects.

There are two key parts to Appleby's static production equipment; the Chip Plant and the Concrete Ag and Sands Plant, both of which are interconnected. Rather than undertake a complete upgrade which would not only take longer, it would have an overly negative effect on production as one Plant could continue production whilst the other was replaced in a staged rollout.

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The upgrade was planned as two separate stages; Stage 1: Chip Plant Upgrade and Stage 2: Concrete Ag and Sands Plant Upgrade. This case study will focus on the first stage, which has been completed.

Chip Plant Requirements

As part of the planning and investment process, Fulton Hogan's local Nelson office prepared a business case and what would be required from a new plant.

James Blacklaws led the planning and tendering of the project, with experience in both the planning and commissioning of static and mobile quarrying equipment, James outlined seven critical requirements for a successful new Chip Plant:

1. Must be able to produce crusher dust separate out crusher dust before the wet screen.
2. Produce the same chip products or more varieties in line with spec.
3. Create less pea metal.
4. Must fit within the narrow site footprint.
5. New Plant was to use proven components rather than be custom engineered.
6. Stop cross-contamination of chip products when stockpiled.
7. Must not stop the Concrete Ag and Sand Plant's production during construction.



“If we needed local support there is only a few companies that have a proven history of it. Equip2 gave us the confidence that it was going to work.”
– James / Project Manger

Pre-Sale Project Planning

Fulton Hogan sought proposals from major suppliers in NZ & AU capable of supplying a Chip Plant that met their needs. The tender and proposal process necessitated a thorough review of each solution and how each supplier would ensure it would meet expectations.

In the end, Equip2's Chip Plant solution was selected as it met the key criteria listed, which not all proposed solutions could. James Blacklaws and Fulton Hogan also factored in that COVID had heightened their awareness of working with NZ based businesses as restrictions had meant that internationally based businesses would not be able to support the Plant due to ongoing restrictions.

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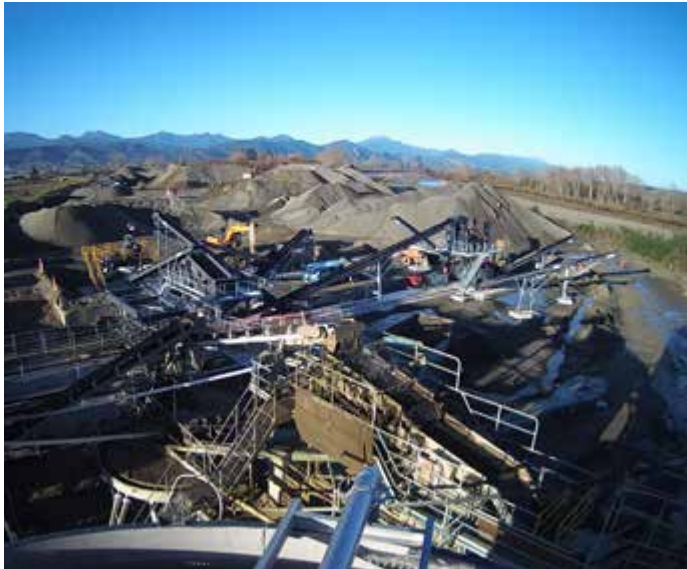
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Time-lapse images are shown in sequential order numbered from 1 to 7.

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Equip2's solution revolved around an MWS modular plant, which is customisable according to what the Quarry needs but utilises proven components, a faster build time and standardised parts for easier servicing and availability.

Designed to "bolt together" modular Quarrying Plants enables flexibility without the high cost of engineering and troubleshooting that may follow. Fulton Hogan only needed to involve an engineer to build the concrete platforms.

Following on from consultations with Fulton Hogan, Equip2 and MWS put together the equipment plan and CAD modelling of the Plant to be installed at Appleby. This aided Fulton Hogan's Quarry Management to see how the Plant would exactly fit on the site.

The 3D CAD modelling was a benefit to the planning phase, enabling more certainty around the design execution of the concrete platforms which had been a pain point for James on previous projects.

Platforms need to be precision designed and laid so that the

Plant sits correctly and everything does truly bolt together; incorrect heights or placement could have significant impacts on cost and the timely delivery of the project.

By utilising a completely defined CAD model, the civil engineer could access additional measurements, loading points and other structural information about the Plant.

Project Execution

Whilst planning the project, James involved Troy Adamson (Quarries Resource Project Manager), who would lead the on-site works and commissioning.

Meeting with Bert from Equip2, James and Troy formulated a plan to stockpile as much chip products as possible to prevent projects from backing up; a loss of production, although undesirable, was expected to upgrade the Plant.

James, who has managed many builds for Fulton Hogan, installed a timelapse camera to aid post-reporting as the project progressed (images as shown).

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Thanks to thorough preparation and planning by James and Troy the decommissioning and build of the new Plant proceeded without any hangups and ahead of schedule.

Beginning the process, the original Plant was disassembled with belts recycled into liners and the steel structure and componentry either reused or sent for recycling; very little of the original Plant went to landfill.

The aforementioned concrete platforms were laid, ready for Equip2 to assemble the MWS Plant. The Plant arrived in 11 containers and was fully assembled in just 12 days with the remaining part of the commissioning; wiring and piping, looked after by Fulton Hogan.

With the MWS Chip Plant assembly complete Fulton Hogan could start using the dry circuit, consisting of a Barmac and Double Deck screen to produce crusher dust while the rest of the Plant was plumbed and wired into the control tower.

The operational dry circuit helped restore revenue and productivity earlier, providing extra value while the rest of the Plant was completed.



“Equip2 basically said that it would be a 3 week build on site... we thought that was a bit optimistic but to be honest it was done.”

– Troy / Site Manager





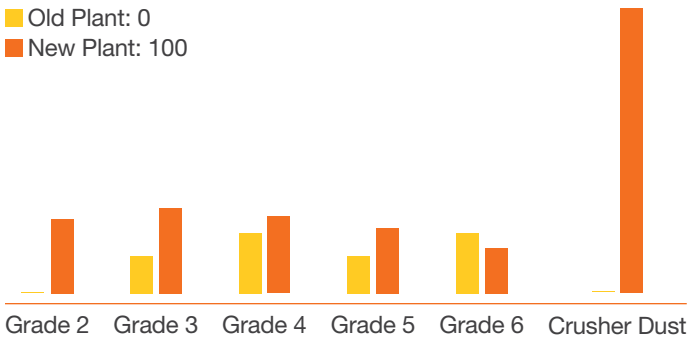
Stage 1 Post Project Conclusion

The installed MWS Chip Plant consisted of a feed hopper, barmac, double deck dry screen with a flow divider, triple deck wash screen and dual split dewatering screen.

The innovative set-up has met and surpassed initial expectations in 6 critical areas.

The Appleby Quarry can now produce Grade 2 Chip and separate out Crusher Dust prior to washing or produce Dust only.

Production increased compared to the old Plant, with the addition of extra products.



Total Processing:

The MWS Plant reduces pea metal creation and enables the Barmac to process Peas into crusher dust for blending, reducing the current Pea Metal stockpile and resource wastage.

Water and Power usage is the same as the previous Plant, improving the Quarry's environmental footprint with more material created with the same energy and water usage.

The cost of the build and implementation had minimal variation from the plan, no surprises with costs or contractors with everything matching up without rework.

There were no H&S incidents or issues to mitigate as container and component weights were clearly documented and the assembly process clearly defined.

– Article and photos by Simon Johnston





When the question of which equipment may be better than another arises, the answer is often, “it depends.”

With Apron Feeders and Belt Feeders, the question is often which one is better? The answer remains the same, both have their strengths and weaknesses depending on the application. To clear up the question, we will discuss what Belt and Apron feeders are as well as explain where they are used, and why one may be better than the other depending on the application.

What are they?

Feeders are typically found at the base of the hopper in many crushers and screens, their job is to transport the material at a controlled rate of speed from the hopper onto the screen, crusher or feed conveyor.

The apron feeder is built from undercarriage chains, rollers and tailwheels, similar to the kind of tracks you would find on a bulldozer.

Two of these undercarriage systems are placed side by side and are joined together by heavy-duty grouser bars.

The links are sealed to prevent aggregate from penetrating and wearing out the system. Due to this structure, apron feeders have a much more heavy-duty nature and can handle rocks up to 600mm+.

Belt feeders are feeders that use a single endless hardened rubber belt, a drive drum, an idle drum, and more rollers. The nature of this system allows transportation of material typically smaller than 300mm over longer distances at higher speeds. However, belt feeders wear a lot faster, and will not take big hits that apron feeders can, and are suited to applications that may have a lot more liquid runoff.

Specific Advantages/Disadvantages

When stacking belts and apron feeders against each other, the differences are distinctive (see table 1 & 2).

Application

The distinction between belt and apron feeders should now be clear leaving little to be discussed other than specific application and actual use.



Table 1

APRON FEEDERS

PRO

- Built from hardened steel
- Not prone to slips
- Can take heavy loads (rocks up to 600mm)
- Can take impacts
- Can handle many different types of materials
- Better for bark and mulch applications
- Wear takes a lot longer

CONS

- More upfront investment
- Slow-moving
- Can be worn out by very wet fine material
- Can have some leakage of fines

Apron feeders are the best suited to primary applications. Wherever there is likely to be big heavy material with sharp edges that may be dropped from a height, apron feeders will always be the better choice in this situation.

This is also applicable to uses such as bark, mulch, or recycling that are prone to slip on top of a belt. They will last much longer and need servicing much less, however, they come with an extra cost. Apron fed machines often cost about \$20,000 more than their belt fed counterparts.

Belt feeders on the other hand are much better for secondary applications where smaller aggregates that will not be dropped from height are to be considered.

They can move material over longer distances much more efficiently however come with the added cost of servicing regularly and are much more prone to damage.



Table 2

BELT FEEDERS

PRO

- Good for small material wet or dry
- Better suited to smaller materials (max size 300 mm)
- Moves faster
- Less upfront investment

CONS

- Can require more maintenance
- Cannot tear with sharp material
- Cannot drop material on to belt as it may cause damage
- Possibility for material to slip on the belt

Rounding it all up

At the end of the day, the decision between the two lies in the specific application and what the needs of your quarry are. Keestrack, Portafill, MWS, and Edge all use feeders specific to the job they will be doing.

When comparing machinery, if 2 machines have to do the same job, you must be aware that different components like feeders can and will contribute to ROI, therefore making the right decision relative to the application is quite important.

– Article written by Tristan Tolley

2021 DEMO DAY

NZ'S BIGGEST QUARRYING EQUIPMENT EVENT

Every year we host a Demo Day, it gets better, more to see and discuss, more people to network with and more comforts. Our goal is to create the goto Quarrying Equipment Event for NZ Processing Businesses.

Our industry has diverse applications across the country, and the equipment we use to create the country's key resources plays a pivotal role in a business's success.

Since the first Demo Day in 2016, every Demo Day has gone from strength to strength, offering more equipment and different material use-cases. This year's Demo Day was no exception, with over 20+ pieces of processing equipment sourced from Equip2 customers, loading equipment from Terra Cat and water management from Prime Pump.

Hosted at Equip2's new offices, workshop and warehouse, the demonstrations were held at a local quarry owned by Quality Demolition, providing a place for networking and discussion and a separate area to view equipment in action.

Morning

There's no better way to start the day than a hot breakfast and coffee, as people filtered in from far and wide a bacon, egg and hash brown buttie was the perfect start to the big Quarrying Demo Day.

At 9:30am, the Demo Day officially started, starting with a brief introduction of the key events of the day, timetable and important H&S for being around working plant.

This year we held the Live Demo's at QDC's Quarry, conveniently located down the road with a large floor for all the demo equipment and space for everyone to move about the active and static equipment safely. It was on the bus down to the Quarry, a quick 10-minute drive.

Quarry Demonstrations

With two and a half hours allocated for the Demo's there was plenty of time for Bert, Equip2's Sales Manager, to introduce the Demo, the material, how the machinery is configured and what it will be producing.

Starting with the Kee track B4 Jaw Crusher and Kee track H4e Cone Crusher processing 0-500mm Alluvial (see images below).

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B4 CONFIGURATION:

Pre-Screen:
0-40mm

Jaw C.S.S:
120mm

H4E CONFIGURATION:

Recirculation:
On

Cone C.S.S:
22mm

Oversize Belt:
20-40mm

Midsize Belt:
7-20mm

Fines Belt:
0-7mm

KEESTRACK B4 JAW CRUSHER

KEESTRACK H4E CONE CRUSHER

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**KEESTRACK R3
IMPACT CRUSHER**

Processing 0-500mm
demolition sourced
concrete.

R3 CONFIGURATION:

Blow Bars: 2 + 2 Halves

1st Apron: 180mm

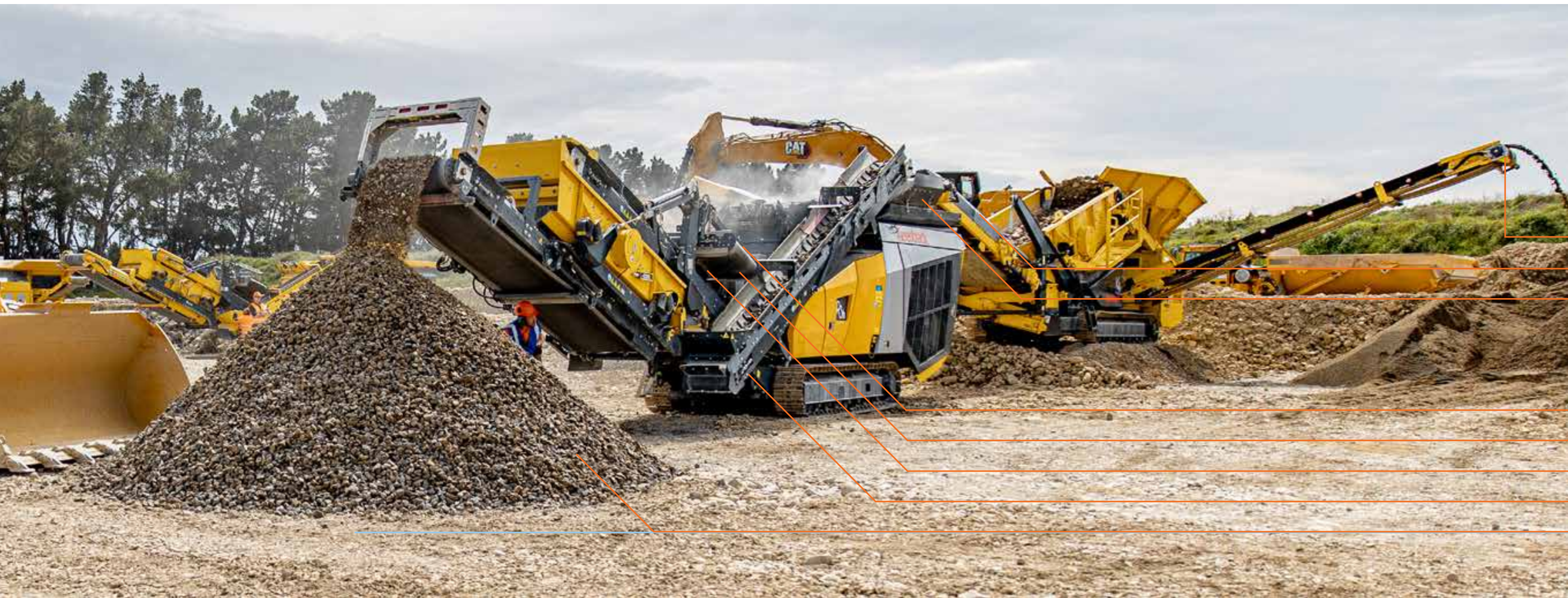
2nd Apron: 65mm

Recirculation: On

Production: GAP65mm



“The 2021 Demo Day received some positive feedback as our best yet, and even with current events restricting some from attending, it was still our most popular yet.”
- Bert Hart / Head of Sales



**KEESRACK K4
SCALPING SCREEN
& KEESTRACK R3H
IMPACT CRUSHER**

Processing 0-500mm
alluvial.

K4 CONFIGURATION:

Fines Belt: 0-20mm

Midsized Belt: 20-40mm

Oversize Belt: 40mm+

R3H CONFIGURATION:

Blow Bars: 4

1st Apron: 180mm

2nd Apron: 65mm

Recirculation: On

Production: GAP65mm

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Finishing off the Quarry
Demonstrations with some
screening with one of the
largest mobile Scalping
Screens from Keestrack;
the K6.

**KEESTRACK K6
SCALPING SCREEN**

Processing 0-500mm alluvial.

K6 CONFIGURATION:

Fines Belt: 0-22mm

Midsize Belt: 22-65mm

Oversize Belt: 65mm+



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Next was a series of
demonstrations utilising the
R-Series Impactors with other
Keestrack equipment crushing
various materials in different
configurations.

**KEESTRACK R5
IMPACT CRUSHER
& KEESTRACK S5
STACKER**

Processing 0-550mm Blue
Face Rock.

R5 CONFIGURATION:

Production: GAP65mm

Pre-Screen: 0-40mm

Blow Bars: 2 + 2 Halves

1st Apron: 190mm

2nd Apron: 65mm

Recirculation: On



**PORTAFILL MR-5
SCALPING SCREEN**

Processing topsoil.

MR-5 CONFIGURATION:

Oversize Belt: 65mm+

Midsized Belt: 12-65mm

Fines Belt: 0-12mm



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Afternoon

Arriving back at Equip2's new offices for lunch breaks up the two main sessions, with Homekill Vension Burgers on the grill! The new Equip2 workshop and offices provided a great spot to host the Demo Day, with plenty of space to sit or move about. As lunch came out there were a few quick presentations to keep everyone entertained.

Kees Hogendoorn, Keestrack's Founder gave an introductory speech about Keestrack and its progress through the decades via video message. Bert from Equip2 provided some information on washing solutions and some of the latest installed projects.

Glenn from Prime Pump gave a rundown on how Prime Pump provides clean water solutions. And to conclude the presentations, Geoff from Equip2 introduced everyone to EDGE Innovate, an Equip2 Partner, supplying recycling processing solutions and how their range of equipment fits in with Equip2's existing ranges of equipment with a demo taking place later in the afternoon.

A static display of equipment in the yard provided a great opportunity to tour and understand what Equip2 offers and talk to Equip2 service technicians and customers who use the

equipment every day, how they use it and configure them and what results they have achieved.

A unique highlight of this year's Demo Day was the introduction of the EDGE Innovate range of equipment. As part of that introduction, Equip2 Demonstrated one of EDGE's flagship machines; a mobile tracked slow-speed shredder.

The Slayer XL fills an important processing role in waste minimisation by offering a way to resize and process often irregular, large and various materials present in waste.

The demonstration utilised some locally sourced C&D Waste containing brick, wood, plastic and tin materials that combined would not be effective to screen or crush using a traditional machine.

With the final Demo completed, everyone was able to have a beer, a chat, and network with other Quarry Professionals in the field from across NZ.

The 2021 Demo Day received some positive feedback as our best yet, and even with current events restricting some from attending, it was still our most popular yet.

– Article by Simon Johnston and photos by Tristan Tolley



USED EQUIPMENT

Increase your Productivity & Financial Performance
with Equip2's Used Range of Machinery!

If you're new to screening and crushing or want to take on a newer machine but with less up front investment, used gear could be the way to go. Even better, we have some machines available to rent; making it hassle free when it comes to adding capability to your operation.



Keetrack H4e Cone Crusher

- Hours: 2030 +/-
- Weight: x
- Metal Detector EGE 3000
- 3 Deck After-Screen
- Fully Electric Drive
- Auto Greaser unit
- Radio Remote Control 10F

Asking Price:
\$850,000 + GST



Keetrack B4 Jaw Crusher

- Hours: 1980 +/-
- Double Deck Pre-Screen 2300 x 1200mm decks
- Side dirt belt
- 5m3 Hopper capacity
- GPS tracking systems
- 10 Function Radio Remote
- Hopper wear plates made from HB450 steel

Asking Price:
\$645,000 + GST



Keetrack Destroyer 1112 Impact Crusher

- Hours: 4,500 +/-
- Weight: 50 Tonnes
- Independent 2 Deck Pre-screen 2.2x1m
- Side Dirt Conveyor
- Rotor Speed: 470-580 rpm
- Feed hopper: 5m3
- Capacity: up to 400tph

Asking Price:
\$550,000 + GST



Portafill MJ-9 Jaw Crusher

- Hours: 900 +/-
- SN: JC107
- Overband Magnet
- Operating Radio Remote
- Automatic Lubrication
- Screening Mesh

Asking Price:
\$350,000 + GST



Keetrack C4 Classifier Screen

- Hours: 150 +/-
- Condition: Demo Model
- SN: 40E158
- Hopper with hydraulic tipping grid c series
- Main conveyor hydraulic 15 kw bw 1200
- Radio remote control 10 functions with display

Asking Price:
\$330,000 + GST



Terex Pegson 1000SR Cone Crusher

- Hours: 13,000
- Double Deck Post Screen
- Cat Engine

Asking Price:
\$260,000 + GST

Talk to us to find the right Solution!

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