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EARTHMOVERS

Editor Graham Black

Editor@EarthmoversMagazine.co.uk

Sub Editor Paul Carter

Senior Advertising Sales Clive Coe

+44 (0) 20 8639 4402

Sales & Marketing Manager Richard Cosgrove

Administrator Martin Attis

Publishing Director Paul Cosgrove

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Sundial Magazines Ltd, Sundial House,
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www.EarthmoversMagazine.co.uk
Info@EarthmoversMagazine.co.uk

Subscriptions

Earthmovers subscriptions

Trinity House, Sculpins Lane,

Essex, CM7 4AY, England.

+44 (0) 1371 853 632

earthmovers@escosubs.co.uk

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Victoria 3616, Australia.
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NICK DREW



Back to basics

With increasingly sophisticated – and therefore expensive – machinery and attachments being deployed around the country to improve productivity and efficiency, it's time to get back to basics and ensure that the kit is still on site on Monday morning.

The widespread use of PIN pad start systems and telematics systems on modern kit helps with theft prevention and asset recovery. However, on a typical site thieves still enjoy rich pickings, particularly older machines such as mini-excavators and site dumpers.

The authorities report that the failure to record basic identification details of machines – such as the serial number – is an ongoing industry issue that greatly hinders the likelihood of recovery. Although the CESAR security and identification system is almost universally fitted to new machines, there are still countless thousands of muck-shifting machines on site without any meaningful identification. Unless the police can identify the registered owner of a digger found on the back of a truck, over a bank holiday weekend, on route to Dover, they have little chance of detecting that it is stolen.

The same applies to increasingly expensive attachments and hitches. Virtually none has a CESAR identification, very few owners bother to invest in micro-tracking devices and, once on the back of a Transit pick-up, they are effectively lost forever.

The most effective and cost-efficient manner to tackle this strategic problem in the industry is simply to ensure that every bit of kit has an identification, to help our boys and girls in blue do their job.

Yours till next month
Graham Black, Editor



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A LONG WAY TOGETHER



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GROWING TOGETHER

WORKING SMARTER WITH A BABY DUCK

Nick Drew reports on another example of the growing community of those that appreciate the advantages of operating a compact wheeled excavator

At the tender age of six, Cornwall born-and-bred Arron Shurvell had his first lesson on a backhoe-loader, and a family friend went on to teach the youngster traditional operating skills. After leaving school in 2005, Arron went to work for his father's building firm, however it was not long after that the ambitious youngster set up his own business, A.C.S. Building & Groundworks.

The firm enjoyed almost instant success and has remained busy ever since. In what could be seen as a bit of a turnaround, Arron eventually ended up employing his father and at one time

had around 20 blokes on the books. Having earned some very decent money in later years, he decided to invest in his own plant, rather than hiring in machines, which can often be seen as dead money in the long term.

As the years passed, Arron moved on from backhoe loaders and was now much happier at the controls of a compact tracked excavator, which is without doubt a lot easier to operate. His first machine was a second-hand Bobcat 325 mini, which was used on a regular basis for a year before he decided to upgrade for a brand new Bobcat E26 mini. A year later, a larger E55 mini joined the fleet.

BABY DUCK

Times change and working methods continue to evolve. Arron had been keeping a keen eye on compact wheeled excavators for some time, noting that the concept has long been popular in central Europe and →



Right and inset: Replacing two compact tracked units, Arron Shurvell's latest excavator is a wheeled Volvo 6.5-tonner complete with a Steelwrist tilt-rotator.



"ARRON HAD BEEN KEEPING A KEEN EYE ON COMPACT WHEELED EXCAVATORS FOR SOME TIME"



Top and above: The wheeled machine was driven to site under its own steam and proved to be particularly suitable for manoeuvring around the tight spaces on this building plot.

→ Scandinavia. With that in mind he started to do his homework. A trip up to JCB in Staffordshire followed and, while in the area, he also popped in to see Wacker Neuson, in addition to looking at all the alternatives in the niche sector of the UK market.

However, according to Arron, Volvo was the only company that came back to him with a price – for an EW60E – together with an offer of a demonstration model for him to try out for a week. This model was launched into the European market at the Bauma 2016 show, the long-awaited replacement for the EW55B, which had gone out of production in 2009.

Arron said, “Volvo put the demo machine into us and I absolutely loved it. Within a day of using it, I decided that it was the way forward for my business, replacing the two

tracked machines for one multi-purpose machine. I know it’s become a bit of a cliché, but it really is an all-round Swiss army knife type of machine.”

After the demonstration period, a deal was done with Mike Murphy from Volvo compact dealer Plant & Engineering Services, for the example used on Volvo’s regional dig day event, which had only 35 hours on the meter. It included the high-spec Steelwrist X06 tilt-rotator that the machine had been equipped with.

Arron continued, “This has been my first experience with a tilt-rotator and, to be perfectly honest, I did initially think ‘Oh my God, why did I bother?’

“But the more I’ve used it and learnt to control it properly, it totally blows your mind just how good it is. A tilt-rotator opens up

“SO FAR, SO GOOD. IT’S JUST A CASE FOR ME GETTING USED TO IT NOW AND REMEMBERING WHICH BUTTONS TO PUSH”

a whole new world in how you do things. In addition, having the gripper option is awesome, as on so many occasions it does away with the need for another man on the ground. I can just pick things up and move them around effortlessly from the cab. That in itself is a learning curve though, as I need to learn to be more gentle with it and not end up snapping everything.”

WALK-AROUND

We met man and machine on a really tight building site on the outskirts of Arron’s home town of Wadebridge. The contract is to perform all the groundworks and then build a bungalow and two semi-detached houses on the plot. Arron started the job with a hired-in 13-tonne excavator and then carried on with his E55 Bobcat until the recent delivery of the Volvo duck, which was initially used to install the service trenches.

He said, “So far, so good. It’s just a case for me getting used to it now and remembering which buttons to push and continuing to embrace the





VOLVO EW60E BRIEF SPECS

A large one-piece rear bonnet pops open upwards to reveal the Stage 3B emissions-compliant four-cylinder Volvo D2.6H engine, rated at 63hp (47.3kW). Everything within the engine bay is easily accessible for those vital daily checks, even for someone of my dwarf-like stature!

Sitting on standard 12-16.5 HS656 tyres, the excavator features the standard duck spec of a fixed rear axle with a dozer blade, and steering undertaken by the floating/lockable front axle.

This EW60E is configured with the standard 2.9m boom and the shorter 1.6m dipper stick (remembering that it carries a tilt-rotator), providing a standard maximum reach at ground level of 5.81m and a maximum dig depth of 3.29m.

The boom offset capability is 60 degrees to the right and 70 degrees to the left, while the slew speed is a decent 10rpm.

tilt-rotator, which I think is going to take a little bit longer!"

The first time I saw an EW60E, which tips the scales at 6.5t without a tilt-rotator, it reminded me of a teenage youth of a digger. Kind of gangly and less refined with some growing up to do, before it matures into an EWR150E.

Seriously though, this is a very useful piece of kit and it is not hard to see why Arron holds it in such high regard. For example, in terms of flexibility, just like a backhoe

Above: Shod with 12-16.5 HS656 tyres, the rear of the chassis has a fixed axle with a dozer blade, plus a floating and lockable front steering axle.

loader this machine can load-up with a couple of buckets and trundle off down the road to another job at 30kph, all under its own steam without the need for costly road transport.

There are fewer options available for this South Korean-built compact wheeled excavator compared to its German-built larger brothers. I for one would prefer to see some more stylish plastic mudguards, rather than the metal chequer-plate ones that are used on this machine. Nevertheless, the mudguards are very sturdy, strong enough →

Below and inset: Power comes from a four-cylinder Volvo engine rated at 63hp (47.3kW). The machine itself is fairly well spec'd as standard, including useful storage spaces.



**"A TILT-ROTATOR OPENS UP
A WHOLE NEW WORLD IN
HOW YOU DO THINGS"**



Above and inset: Arron is now focusing on doing more work himself with his new wheeled, tilt-rotator-equipped multi-purpose excavator.

➔ to take the weight of an operator to stand on, if required, to top up fluids and the like.

One thing I would like to see on the next upgrade of this model is the option of a three-piece TAB boom, which would really take this excavator up to the next level in terms of flexibility and adaptability.

According to Volvo the cab is 10% more spacious than an EW55B and Arron reports that is plenty spacious enough for his needs. His example is fitted with all the creature comforts you might need these days, including air-conditioning, which is usually an optional extra.

CONCLUSION

Although clearly enjoying his new Volvo duckling, Arron still had high praise for the Bobcat machines that he has owned, stating, "I really cannot fault them and I think if I was to go for another small machine again, I would probably choose Bobcat, there were just so reliable."

In some ways it's a wonder he didn't opt for Bobcat's E57W model, but it will be interesting to see how his relationship with the Volvo brand develops over the years.

Within the last six months he has decided to scale things right back, particularly in terms of employing staff and all the additional hassles that it can bring. Instead, in true Scandinavian style, he is now focusing on doing more work himself with his new wheeled, tilt-rotator-equipped multi-purpose excavator: a classic example of working smarter and thinking outside the box. E4





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NEWS

A round-up of news stories in the plant and machinery construction industry



NEW TILT-ROTATOR

Masterhitch Europe, a sister company of national plant hirer HE Services, has developed a range of Rotowrist tilt-rotators, which will be available on machines hired through its parent company.

There are three 360-degree rotating models, for three- to eight-tonne mini- and midi-excavators, the smallest of which provides a total tilting range of 180 degrees. The mid-range model, suitable for excavators up to 16 tonnes tilts 130 degrees, while the largest model, suitable for excavators up to 20 tonnes, tilts 150 degrees.

Each Rotowrist unit is designed for a specific excavator, to suit the geometry of its

front-end equipment. HE Services states that the Rotowrist is designed for landscaping and light groundwork applications, using a variety of attachments including buckets and pallet forks.

It is assumed that the Rotowrist does not come with a dedicated control system, but relies upon standard joysticks with proportional controls, as found on modern excavators.

Without a huge range of added functionality, such as an internal gripper or automatic hydraulic oil connections, this looks like an extremely cost-effective way of getting basic tilt and rotate hitch technology on hired-in machines.



JCB MARKS EMISSIONS STANDARDS

The CESAR Emissions Compliance Verification (ECV) supplementary marking system will be standard on every JCB Stage 5 emissions-compliant and electric-powered machine sold into the UK market from 1 March.

As Clean Air Zones and emissions restrictions become increasingly common in cities and on major construction projects across the UK, ECV allows site personnel to simply scan a QR code with a smart phone, or call a 24-hour helpline, rather than having to access engine data plates to check emissions compliance. In reality, the projects that have trailed this scheme report that there are far fewer delays in getting machines on to highly regulated sites and a significantly reduced requirement for air quality inspections.



DOOSAN IRISH DEALER CHANGES

Doosan has announced a number of changes to its Irish dealer network. EMS (Embankment Machinery Sales), based in Naas in County Kildare, is now responsible for sales and service for the full range of Doosan mini, midi and full-sized excavators in Leinster, Munster and Connacht.

Philip McCormack Plant, based in Clane in County Kildare, is responsible for sales and servicing of the Doosan wheel loader range in Leinster, Munster and Connacht. This is in addition to the Doosan range of articulated dump trucks, for which McCormack Plant has been the dealer in the same areas for several years.

SEND US YOUR NEWS

Have you any machinery news?

If so please email the story and a picture to: Editor@EarthmoversMagazine.co.uk

WEST COUNTRY PLANT SALE OPPORTUNITY

Over 700 lots from the fleet of well-known West Country hirer and contractor Alan Oaten are up for sale on 20 February at its premises at Foxmore Business Park, Wellington, near Taunton.

Alan said, "Our fleet replacement sale will enable our business to replace many of the older models with new machines, maintaining a modern fleet, while continuing to offer the high level of service that our customers have come to expect from us."

Saying that, the oldest machine dates from 2014, and many younger models are in the unreserved sale, all of which would have been well maintained. Viewing takes place on 19 February.

The lots include over 80 excavators from small minis to 20-tonners, together with over 300 attachments, including breakers and forks.

Euro Auctions' Brett Wood said, "On 20 February the West Country will see another truly exceptional one-day sale, on a scale not seen in the region since the WH Bond auction in late 2019."



LARGEST VOLVO COMES TO EUROPE

Volvo has announced the availability of a European Stage 5 emissions-compliant version of its new 90-tonne class excavator, the EC950F, powered by a high-torque, low-revving Volvo 16-litre engine rated at 450kW.

It's the same powerpack as is used in Volvo's huge A60H articulated hauler,

for which the EC950F excavator seems a good match. Volvo claims that its Eco mode setting achieves outstanding fuel economy, as it optimises the hydraulic system to minimise flow and pressure losses. In addition, the electro-hydraulic control system provides the operator with a number of working modes: Idle, Fine, General, Heavy and Power.

RIDGWAY 200 NEW JCB MACHINES

National plant hirer Ridgway Rentals is adding 200 new JCB machines as part of its ongoing fleet investment programme, valued at a total of £12m. They include a batch of wheeled and tracked excavators from 13 to 20 tonnes and various telehandlers. In addition, more JS20MH materials handlers are joining the fleet, together with 427, 437 and 457 wheeled loaders.

These machines have been added to the rental fleet in response to the increasing demand from the waste and recycling sector. Ridgway offers a long-term contract hire option on these machines, which may prove attractive to those in the waste sector wanting to operate modern, clean-burning equipment.

FIRST YANMAR V80 COMPACT LOADER



Masters Spreading, an agricultural contracting business covering Yorkshire and Lincolnshire, has purchased the first Yanmar V80 compact wheel loader sold in the UK. It will be used in a production role to mix custom blends of fertiliser, which the firm applies to its clients' land.

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FIRST DOZER FOR MULHOLLAND



T

he family-run business of Mulholland Contracts was founded 46 years ago and is one of Scotland's largest privately-owned construction companies.

It currently runs 60 excavators on a wide range of project types and, in the past, has hired-in dozers as and when required. As dozer use increases, at the end of last year the firm decided that it would be more cost effective to purchase its own machine. Despite running another manufacturer's range of excavators, Mulholland opted for a Komatsu dozer from dealer Marubeni-Komatsu and also took the decision to go for the 'i' variant, which includes a fully integrated 3D GPS machine guidance and control system.

The mid-size, slant-nose D61PXi-24 model was chosen as the most appropriate for their work, an all-rounder able to perform accurate and fast fine grading, while also having the grunt necessary for heavier bulk muck-shifting work.

Mulholland's Kevin Breen said, "Our aim is to be innovative leaders in our marketplace, so it made sense to choose the intelligent machine control bulldozer over the standard option."

ELECTRIC KUBOTA

K

ubota is the latest compact equipment manufacturer to announce that it is developing a battery-powered electric mini-excavator, having recently unveiled a prototype machine in Japan. Very few details on the machine have been made available, other than to confirm that it will have lithium-ion batteries. However, there is a degree of speculation in the marketplace that, with limited charging facilities and limited battery capacity, this prototype is a little more than a straightforward battery-powered machine. Watch this space for further news.

EPIROC WORK TOOL DEALER

F

ormerly known as Atlas Copco, Epiroc has appointed Coyle Equipment Services as its hydraulic attachment dealer for north London, Hertfordshire, Buckinghamshire and the West Midlands. The range includes hydraulic breakers, demolition attachments, drum cutters and magnets. William Coyle said, "Epiroc's comprehensive and robust product range, combined with our commitment to holding the full range of spare parts, supported by our fully trained workshop and field engineers, makes this the perfect partnership."

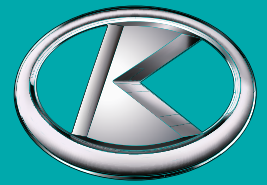
SCANDINAVIANS IN ORKNEY



Andrew Sinclair Contractors of Kirkwall, Orkney, has replaced its 16- and 18-tonne D Series Volvo excavators with smaller and larger models, in the form of an EC140E and an EC200E, for its groundworks and contracting business.

Bruce Sinclair said, "Deciding to go with the 14-tonne and 21-tonne machines this time around will give us greater flexibility for the

typical groundworks contracts we undertake on Orkney. In particular, the addition of a Steelwrist tilt-rotator on the EC140E will add another dimension and enhance the work the machine can do on site, especially when working in confined spaces. On the other hand, the EC200E will provide that extra capacity for site clearance and muck-shifting duties."



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TORQUE LOCK WORLD'S FIRST

Eoghan Daly reports from Aberdeenshire on the first Mecalac backhoe loader off the line with a torque lock feature

Nowadays an owner-operator working full time with a single backhoe loader is a rare sight, but for Aberdeenshire-based Garry Smith of S&S Plant Hire it is still a good business model, with plenty of demand for his services.

Garry purchased his first backhoe back in 1994, a used JCB 3CX that was soon replaced by a nearly new 3CX. His first brand new machine, yet another JCB, was acquired in 2002 and changed every few years thereafter. Garry sees regular replacement of his only machine as a vital part of continuing to run a backhoe loader. Each new generation of machine has helped him to do the same type of work faster and more efficiently, with an even greater degree of operator comfort. Regularly replacing his well-maintained machine also

results in strong trade-in values. A succession of JCB backhoes proved ideal for his business, but then the Coventry-built Terex caught his eye. Following an in-depth evaluation, together with positive feedback on its performance and reliability and good reports on the local Terex compact dealer Balgownie, he decided to buy his first non-JCB backhoe.

He said, "I'd been using JCB for so many years, changing was something I didn't rush into. I looked at the options very carefully before making the decision. Everything I was hearing from others about the Terex backhoe loaders was completely positive and with strong local service from Balgownie at Inverurie, it really appeared nothing could go wrong. I'm now on the fourth machine, the performance, reliability and service has been so positive I just keep going back to Balgownie again and again."

Below and inset: On this huge residential housing development the traditional advantages of a multi-purpose backhoe loader with a skilled operator are still appreciated.

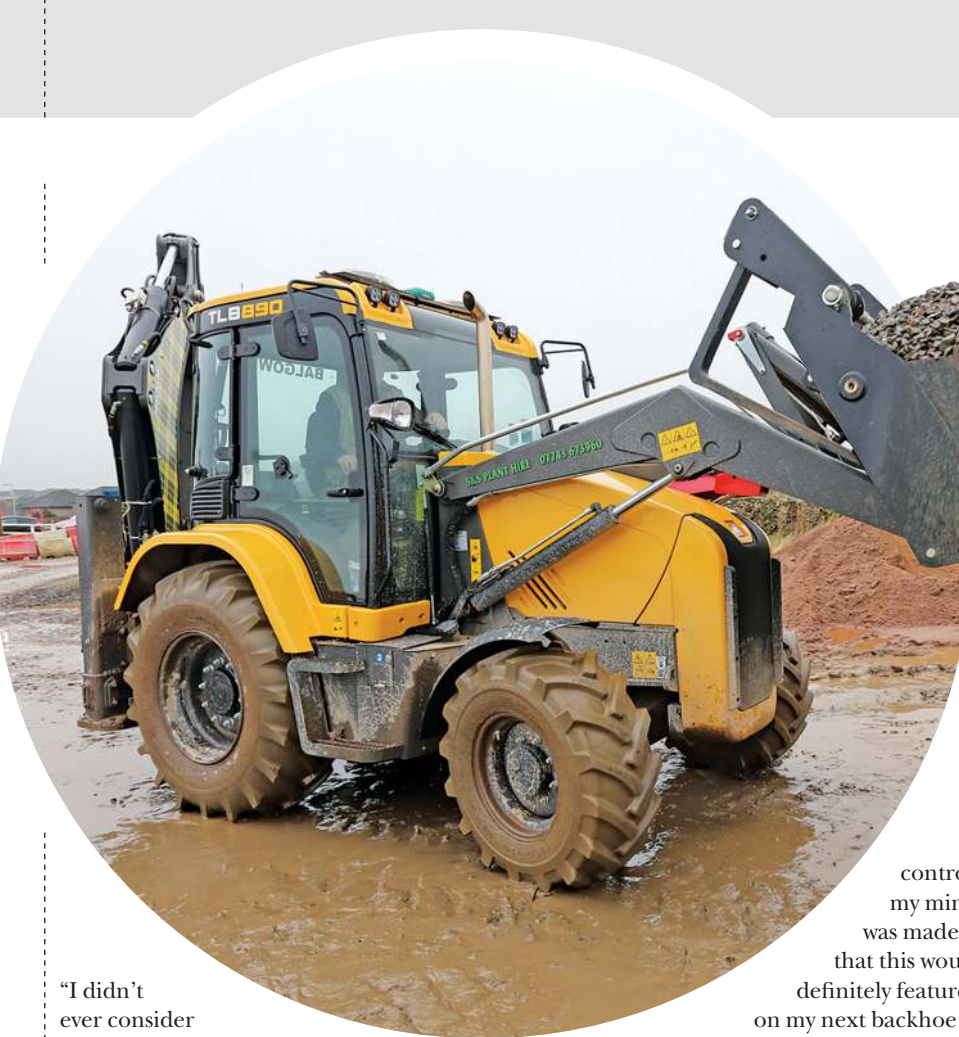


"I'D BEEN USING JCB FOR SO MANY YEARS, CHANGING WAS SOMETHING I DIDN'T RUSH INTO"

NEW BACKHOE

His previous model was a TLB890, which opened the eyes of this experienced backhoe operator, as he recalls, "The 2016 Terex was delivered with the new type joystick controls. This was the first machine I bought with this, as I had always used the original backhoe controls on the first two Terex models and all the JCB 3CX machines."





"I didn't ever consider changing until I used a joystick machine at a demonstration day organised by Balgownie. Having tried out a backhoe with joystick

"THE ACTIVE DRIVE SYSTEM BYPASSES THE TORQUE CONVERTER IN THIRD AND FOURTH GEARS, WHICH IS BENEFICIAL WHEN ROADING"

controls, my mind was made up that this would definitely feature on my next backhoe loader, since the difference was just amazing."

As Garry was contemplating his next upgrade, Balgownie had ordered for stock the world's first Mecac TLB890 – the French manufacturer having purchased the Terex Coventry range – that featured its new Active Drive torque lock system. A high-spec, Stage 5 emissions-compliant machine, it was immediately snapped-up by Garry and

delivered in October 2019. All that remained was for Garry to put his own stamp on the machine, a distinctive tartan livery finish on the inner backhoe section.

The Active Drive system bypasses the torque converter in third and fourth gears, which is beneficial on the road, particularly when tackling inclines. Although Garry has been working on the same massive housing site for the past two years, he often relocates his machine for other spells of work, which can be quite a distance away.

He continued, "After the new machine arrived I soon took the opportunity to see how the torque lock would benefit me when faced with inclines on public roads. The results were so impressive I just couldn't believe how well it performed. I almost needed to do it again, to believe how good it really was and the real difference it made!"

Another contributor to enabling faster and safer travel speeds on the road is the Auto Ride Control feature. This is activated once the predefined speed is reached, as the arm suspension system helps to make the backhoe extremely comfortable and well balanced on the road.

Garry continued, "The machine is just so comfortable and fast on the road, which takes all the strain from moving between job sites. I can relocate and get to work with no

Below and inset: With a ground level reach of over 7m the backhoe is ideal for filling house bases, while its front loader can also be used to fill a site dumper with suitable material.





The cab remains largely the same, but the jog dial control hints at a far more sophisticated control system than was fitted to previous generation models.



Below: The unique front end features a single, centrally-mounted bucket cylinder, with no bucket linkages on the arms and with a minimal requirement for hoses.



delay, which is a big part of what makes modern backhoe loaders so appealing to me.”

Picking up where the previous Terex TLB890 had left off, the new Mecalac TLB890 went straight to work on an intensive residential development on the edge of Aberdeen. Man and machine are on long-term hire to WM Donald Construction, which is conducting all groundworks and construction of house bases to sub-floor level on this huge site.

Garry continued, “I’ve been working with Willie Donald for the past 11 years and it’s been completely positive over this time. For an owner-driver with a single machine, continuous work like this all through the year gives big advantages and they have been an excellent company to work with all through this time.”

IN THE CAB

Even though the appearance of the cab remains largely unchanged from previous models, the operator benefits from a new offside dashboard, which interfaces with a more sophisticated control system, via a jog dial on the main switch panel.

TLB890 WALK-AROUND

On this residential development site, the backhoe’s reach is key, particularly when filling house bases. With the benefit of its telescopic dipper arm extension, the maximum reach at ground level is 7.14m, a little bit more when the reach afforded by the Geith quick-hitch is factored into the equation.

These latest TLB890s are powered by a Stage 5 emissions-compliant, four-cylinder Perkins engine, complete with an AdBlue system and a diesel particulate filter. This is rated at 82kW, a 10% increase in power over the previous generation machines. This additional grunt is immediately noticeable in everyday operation, especially on the road. On typical site duties this increase in the maximum power available should help with overall fuel economy, as the engine will be under less strain and more likely to be working in its sweet spot.

Serviceability is also viewed as one of the Mecalac’s strong points, with particular attention focused on addressing access issues found on competitive machines. With the loader arms raised clear, the engine hood opens to reveal the entire engine bay.

→ This feature allows the activation and fine-tuning of a wide range of machine features, including switching the auto-idle feature on and off. The auto-idle torque setting can also be adjusted, allowing the operator to select how much hydraulic effort is required before the engine returns to normal working speed. In addition, the quick-hitch timer can be set to alter the duration that the hitch remains open when the hitch button is pressed. Another setting is to activate or deactivate the double-click function on the loader control lever, which is used to control either a hydraulically-powered attachment or the telescopic dipper function. The sensitivity of the joystick's thumb slider can be altered to suit the operator or the application, while the travel speed that triggers the Auto Ride function can also be set.

Garry explained; "The machine's control system allows me to set up the machine exactly as I want it to be. It took a bit of time to get to grips with all its different options, but once I got to know my way round the system it really is brilliant."

"It also has a diagnostic function and holds error codes, which I can access if ever there is a problem, so the service man knows how to deal with a problem before they even get to the site."

Forward visibility to the bucket is particularly good thanks to the unique design of the loader arms. In particular, the use of a single centrally-located bucket cylinder, with the absence of crowd and dump linkages. With the cylinder directly connected to the front bucket, a steel plate is fitted to protect the exposed cylinder rod, which deflects any overspill material away. Another advantage of this front-end design is that there is a minimal requirement for hydraulic hoses serving the 4-in-1 bucket, and hose routing is simplified to maximise protection and ease of access.

The front loader control level includes normal functions such as raise, lower, crowd and dump movements in the normal cross pattern. In addition, a switch beneath the upper face of the lever controls direction changes, while the buttons on the face of the lever act to open and close the multi-purpose bucket.

Garry concluded by saying, "Since I stepped from the Terex TLB890 on to the new Mecalac TLB890, I can appreciate what they have done with the new machine to improve it wherever it was seen necessary. One word really sums up the new machine: unbelievable. It really is the best backhoe loader I've ever operated, as they've taken an already great machine and made it so much better."

EM

**"IT REALLY IS THE BEST
BACKHOE LOADER I'VE
EVER OPERATED"**



Above and inset: Now on his fourth Terex/Mecalac backhoe, owner-operator Garry Smith of S&S Plant Hire is exceptionally pleased with his latest machine.

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Above and below: The physical security of compact plant is becoming a more important consideration in the buying decision.

HOW SECURE IS YOUR NEXT MACHINE?

Peter Haddock interviews mini-excavator owner-operator Carl Rushby on changing attitudes towards the factors in his purchase decision

Plant theft remains a major issue for the industry, especially compact construction equipment. Particularly with the introduction of the latest Stage 5 emissions-compliant machines, manufacturers are increasingly taking the opportunity to include advanced prevention and tracking sub-systems on their smallest models.

Like most in the industry Carl Rushby, owner of CER Groundworks, unfortunately has experienced the consequences of plant theft, after a mini-excavator was stolen. The search for a replacement led him to Caterpillar's visitor centre and testing ground at its Desford factory in Leicestershire, to get some seat time in the new generation of small mini-excavators. This five-model range starts with the conventional 1.5-tonne 301.5 model and extends to the two-tonne compact radius 302CR.

PURCHASE DECISIONS

Working mainly on civils projects for house-builders, Carl chose to purchase

a two-tonne class Cat 301.8 powered by a 14.3kW Cat engine. This mini provides a dig depth of 2570mm and features joystick steering and a control panel with the functionality usually found on a much larger excavator.

He explained, "As an owner-operator, I see several key benefits with the new machines. What I really like are the new features that come with the move to joystick controls. With previous models you had to hunch over the levers all day,

which is not that comfortable. The new cruise control function is also a nice addition for when you have to move from one part of a site to another and it can be engaged simply by touching a button. Once it's enabled you just sit back as you travel from →

**"LIKE MOST IN
THE INDUSTRY,
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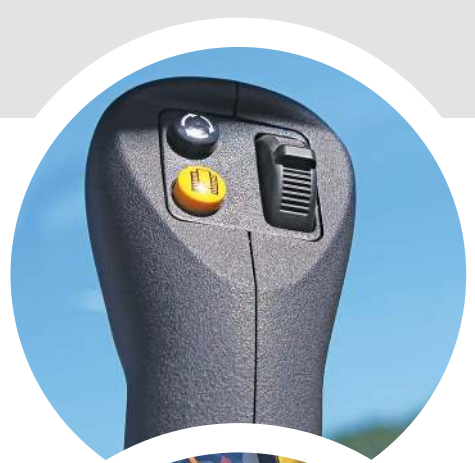


COMPONENT THEFT

Carl spoke more about his experiences as a victim of plant theft over the years. He stated that an all-too-common and frustrating occurrence is damage caused by opportunistic criminals, breaking doors and smashing windows to steal a radio or battery. Such crimes tend to go under the radar, as many folk do not bother claiming on their insurance due to a potential increase in premiums.

Another reason that Carl was pleased with his new mini was the thought that had obviously gone into its design, as he stated, "What I did find was a nice touch, to tackle radio and battery theft, was a bit of clever design from Cat. For example, the battery terminals are readily accessible for jump-starting, but the battery can't be removed without the cab being tilted, which is a much more difficult task.

"Also, due to the speakers being built into the roof of the cab and the radio being built into the body of the machine, there are no visible indications that the excavator has a radio, therefore no reason to break into it."



➔ one part of the site to the next. If you need to stop this function, you just tap the joystick and you are back to manual operation.

"One of the other new features that ultimately made me opt for the cab version is that you now have air conditioning as standard. To be honest this was unexpected and a big change for Cat in this class size. It's important for me as well because not only do I operate the machine, but so do some of the rest of our team. With skilled operators hard to come by, I am always quite conscious of the comfort features, visibility and anything that can make life easier. With the changes in weather we have had recently, from the lack of really cold winters to summer temperatures that are now reaching over 30°C, I think the air-con is a big selling point for me."

SECURITY FEATURES

Another new feature of the latest Cat minis that Carl particularly liked was the security and operator management functions within

the control panel, as he stated, "Unfortunately in this day and age, it's increasingly common for machines to be taken or broken into, especially when they are on site. With Cat keys available on the internet, getting into a machine and starting it is quite a simple process.

"This is why the operator codes on the new control panel were a nice and welcome surprise for me. The first really useful function is the ability to lock down the machine using the built-in access code. For me as a business owner that allows other staff to use machines, this is a perfect way of ensuring only our team can use the machine on site.

"This is particularly important from an insurance perspective. If anyone gets into one of our machines and uses their Cat key to operate it they could cause untold damage, which ultimately comes down to me to sort out."

The machine owner is given a master code that allows them to programme up to

50 operators on the machine. When operators are assigned their unique code to start the machine they are then able to make some changes to the machine set-up to match their own preferences. This includes simple items like linking a phone to the in-cab Bluetooth system and automatically selecting their preferred station on the built-in radio.

The codes provided to the more experienced operators allow them to alter the basic operational functionality of the mini.

For example, change the speed of the boom and dipper response to match their operating style on a particular application or when using a particular attachment.

FIRST IMPRESSIONS

Carl's Cat 301.8 mini was delivered together with a larger 308 midi, both with a CESAR machine identification kit fitted as standard by Finning. He confirmed that he had activated Cat VisionLink, the on-board

Left: The new generation of cat minis feature advanced joysticks that can steer the machine, engage the cruise control and a host of other functions.

Below and right: Carl Rushby applauds the measures that prevent plant theft, including pin-pad start codes, tracking systems of inaccessible frequently stolen components.

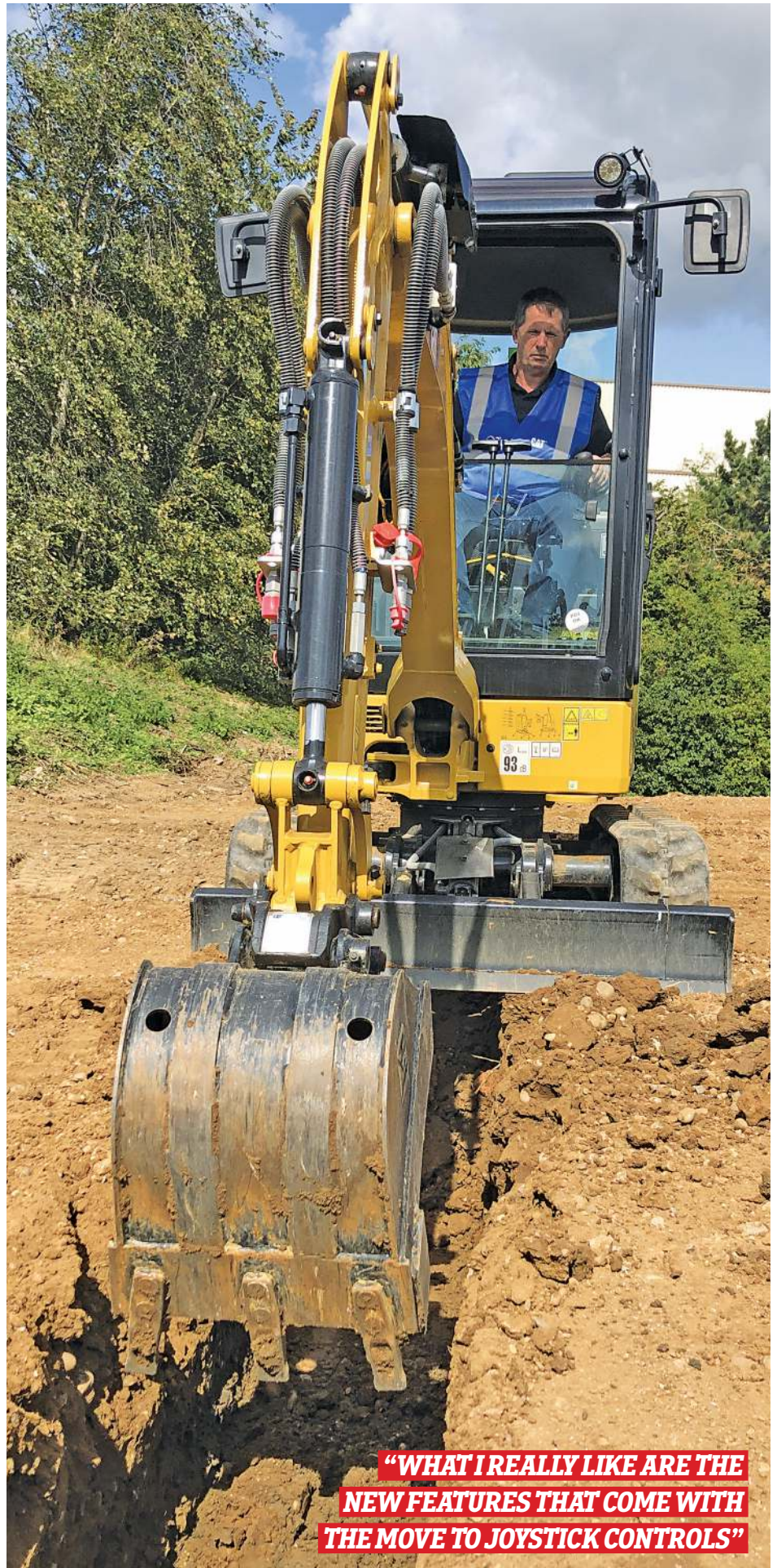


telemetry system on these new machines, as a deterrent and to trace plant thieves and to help maximise the machines' uptime.

He continued, "Like all our Cat fleet, the Finning team will be monitoring the performance of these machines for us and with our customer service agreement we will also get regular fluid samples to see the health of the machine.

"This is something I am very keen on, as Finning let us know when a service is due and using this approach, we can also take action to prevent breakdowns. For example, in the past, we have had amber warnings that have led to us changing the oil and monitoring that specific component. Fortunately, in these instances, the oil change rectified the issue, but if we hadn't been aware of it, we could have had a breakdown on our hands."

Carl and his team are already putting the new machines to good use and are looking forward to a nice warm summer, keeping cool in the air-conditioned cab.



"WHAT I REALLY LIKE ARE THE NEW FEATURES THAT COME WITH THE MOVE TO JOYSTICK CONTROLS"

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GETTING A GRIP ON WASTE

Nick Drew reports on how a new materials handler is helping to further improve the yard operations of a waste firm

There is no doubt about it, waste and how it is recycled, processed and disposed, is big business these days. Rightly so as, for example, the impact that plastic waste is having on the environment, particularly for sea life.

In the south west of England, Westcountry Skip Hire is achieving some fantastic results by diverting 98.5% of all the waste it handles away from the ever-dwindling local landfill sites. To help to achieve this, the firm continues to invest in the best machinery to keep up with the demand for its services.

The business traces its roots back to when Al Barnard, one of the current directors of

the firm, lost his job when the waste company he was working for went under. Entrepreneurial Al saw an opening and managed to secure a truck and a handful of skips from his previous employer.

At the time, Al did not have a yard of his own, but picked up work moving other people's skips around for them, trading as Specialist Skip Hire. Having established himself in the area, in the late 1990s he started up a waste transfer yard and in 2004 the business became Westcountry Skip Hire, eventually gaining a permit for waste transfer at the current site close to Saltash in Cornwall.



Above and below: Westcountry Skip Hire has upgraded its Liebherr materials handler to a larger LH24M model, which provides greater reach.

"THE MACHINES HAVE HELPED US TO UP OUR GAME AND TRANSFORMED WHAT WE DO AND HOW WE DO IT"



→ BACKGROUND

Fellow director Dave Honey said, “We are averaging around 45,000 tonnes of waste processing a year at this facility, so it’s important for us to get the right machinery for the job. Having said that, we still find the best way to sort builders’ waste is manually, so we employ a team of around 10 recycling operatives within the yard to hand pick the worst out and then our machines come in.”

Taking centre stage at the compact but efficient waste centre is a new Liebherr LH24M materials handler, which has just replaced a smaller LH22 model that has been performing the work on site for the past two years.

Dave continued, “We previously ran the 22-tonne model and we have now upgraded to the 24-tonne version. If I’m totally honest, when we first decided to go down this materials handler route I wasn’t overly keen on the idea to start with, mainly due to the compact nature of our yard. I have to put my hand up and say that the machines have certainly helped us to up our game significantly and transformed what we do and how we do it.

“Especially in terms of loading out our bulk trailers, their amazing reach, capacity and visibility into the trailers – thanks to the hydraulically elevating cab – have really been game changing.”

The company has a significant fleet of trucks in varying sizes and is about to branch out into supplying a wide range of wheelie bins of various capacities. It also runs additional machines that support the materials handler in the yard, including a Cat 308E midi, a Hitachi 135US that is used on the inert waste, and a Manitou telehandler.

SITE VISIT

Managing the yard these days is well-known and respected south west plant man Luke Harris, a former plant operator with many years’ experience before he went into sales working for the local Case dealer. Luke fancied a change and joined Westcountry Skip Hire a couple of years ago and was instrumental in bringing in the new materials handler to the yard.



All daily checks are undertaken from ground level without any regular requirement to climb up to the top of the upper-structure.



He said, “I have always been a fan of Liebherr, it’s good quality kit that is well engineered and well thought out, that’s why we decided to go with them. I’m not going to lie, when we started looking to replace the LH22 we did have a close look at some other German brands, in particular Sennebogen and Fuchs, but the service we had received from Liebherr with the first machine was top drawer so we decided to stick with them.”

Luke occasionally gets in the seat of the Liebherr, covering for holidays and illness, but the machine’s regular operator is

another well-known name in the south west plant community, Simon Hall (see panel).

He said, “I joined up with Luke at Westcountry Skip Hire towards the end of 2018 on the LH22. This was my first time on a dedicated materials handler and although the geometry is completely different you soon get the hang of it. My initial thoughts were that I was surprised at how responsive and smooth it was.

“We took delivery of the LH24M in December 2019 and I must say it’s a massive improvement over our old LH22. It’s got a lot more reach, a full 13 metres in fact



Above and right: The new materials handler is equipped with Liebherr's own 0.75cu.m capacity rotary selector grab.

including the grab, and impressive power too, but it still retains that quick response and smoothness of operation in an extremely well-balanced machine.

"The cab has been greatly improved by removing the steering wheel and opting for joystick steering, and with the fitment of a full one-piece windscreen forward vision has been vastly improved.

"This in turn makes the seating position much more comfortable, for instance you don't have to lean forward to use a steering wheel or be peering through the wheel or round the steering column to see what you're doing.

"The LH24M stands a bit higher than the LH22, but you don't really notice it once you're mobile. Overall, with the extra reach, I'm able to load our artic lorries in one hit without having to move once I've set up. Making the upgrade well worth doing and, as our yard expands, the new machine will be a great asset to our business."

IN THE CAB

On a nice quiet Saturday morning in the yard, I was invited to see what I thought of operating a materials handler. Bearing in mind I had spent most of my professional life operating an excavator on house-



Below and right: Visibility is good, assisted by exceptionally clear camera feeds, and the hydraulically raising cab enables high-sided trucks and skips to be loaded with ease.



THE LIFE AND TIMES OF SIMON HALL

Operator Simon Hall has over 35 years experience on the levers and summarised his career by saying, "I'm in my 50s now and have been on the machines since I was 15 years old, starting out like so many on a JCB 3C with Ken Moore.

"I quickly progressed on to a JCB 5C tracked machine doing land drainage contracting. This was followed by a couple of Liebherr 911 and 912 models. Then I was on to a new JCB 814 Super working on the Roadford Dam project with McAlpines.

"I then worked for some other big names down here including Alex Sim Plant Hire on a variety of machines, eventually ending up on a Cat 320, before moving on to Steve Ashcroft Demolition where my mount was a Doosan DX300.

"After that I went self-employed, working for Aggregate Industries on a Liebherr 586 wheeled loader."



WALK-AROUND

Behind the cab's elevating structure, a panel door opens to reveal a fully automatic greasing system and the air filter housing. There are also integrated steps in this area, should the need arise to work up on top of the machine.

However, the with offside engine compartment accessed by a large one-piece gullwing door, all daily checks can be performed from ground level. Therefore, there is no need for any unsightly boxing ring assemblies on top of the upper-structure.

The LH24M is powered by a Stage 4 emissions-compliant, 4.5 litre Liebherr engine rated at 110kW (150hp) at 1800rpm. The engine compartment also includes a huge reversible cooling fan, an important element when working in a dusty waste yard.

The 0.75cu.m capacity rotary selector grab is an in-house Liebherr design. According to Luke this is a big plus point, as he does not have to deal with an independent dealer if there happened to be a problem at any time, as it's all sorted by Liebherr.

→ bashing sites, this was going to be something completely different.

Access to the cab is from one of two locations: at the front of the chassis or just forward of the nearside front wheel.

I was given a brief rundown of the controls, which I won't bore you with, and was let loose. My first task was relocating a pile of old mattresses into another section of the yard. Once I got used to the controls and which thumb did rotation and which one did the grabbing, I was away, albeit a lot slower than when Luke was throwing her around.

I echo Simon's comments about the smoothness of the controls, which are incredibly light to the touch. I found that I could catch myself out if I slewed too fast and hesitated when stopping, which could prompt a bit of juddering of the upper-

structure, but I think with practice that would not be an issue.

I was then asked to load the bulk trailer with waste ready for the Monday morning. For this task it's essential to elevate the cab, which raises your work platform to nearly 6m. It really is the strangest feeling initially, but with the four jacklegs down I am assured the machine is safe as houses.

Fitted with 6.6m boom and a 4.5m stick, the reach you can achieve from one spot is incredible. Visibility all around is very good, not only through the extensive cab glazing, but also via the cameras which can be viewed on the monitor.

Once I got into it, I was enjoying the operating experience so much I could have happily stayed in there all day. But with various folk checking their watches as we were getting close to the end of the Saturday morning shift, it was time to come down and leave it to the professionals. It was clear to see that this French-built Liebherr materials

handler has already made a big impact on Westcountry Skip Hire's operation.

With more expansion of the firm's waste operations predicted this year, it is going to be kept extremely busy. **EM**

Below and inset: With a 6.6m boom and a 4.5m dipper stick, if required the LH24M can load an artic truck from one position.



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THE NEW MACHINE
WILL BE A GREAT
ASSET TO OUR
BUSINESS"**

The Komatsu logo is displayed in the top right corner in a bold, white, sans-serif font. The background of the entire advertisement is a photograph of a construction site. In the foreground, a yellow Komatsu crawler dozer is pushing a large pile of dark soil. In the background, a yellow Komatsu hydraulic excavator is positioned on a dirt mound, with its arm extended. The site is surrounded by green hills under a blue sky with scattered white clouds.

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BLUE BLOCK BUSTER

Paul Argent returns to Fairhurst Stone's Whitworth Quarry to report on their latest prime mover, a Kobelco SK500-10 excavator

Our last visit to Yorkshire-based Fairhurst Stone was early in 2019, to report on the first Case CX750 excavator in the UK, supplied along with a smaller CX500 model, both in mass excavation configuration. The firm runs a large fleet of Case machinery and enjoys a good relationship with its local dealer. However, there have been a number of issues with the CX500 during its first year, prompting the firm to replace it with a Kobelco SK500-10, supplied through Molson's Warrington depot.

Right and inset: A specialised riddle bucket from JJ Bullen is used so that the minimum amount of waste material is loaded when recovering smaller chunks of stone.

WALK-AROUND

The new 52-tonne Kobelco excavator has also been configured in mass excavation specification, with a 6.3m boom and a short 2.4m dipper stick. However, Whitworth is not a typical quarry, where production is king and such excavators are configured in this way to maximise their truck loading capabilities.

Rather the mass excavation front end has been chosen to allow the operator to use all of the 363hp and 1470Nm of torque available from the excavator's

10.62-litre Hino engine to prise the large blocks of stone from the face.

The working equipment also features a Geith quick coupler and a specialised JJ Bullen riddle bucket, as operator Matt Knowles explained, "We don't need a standard digging bucket. We're either digging out the rocky overburden or the blocks. A riddle bucket allows us to transport more of the material we need, rather than a load of muck with it. This way the material going to the processing plants is cleaner and needs less screening." ➔

**"THE MASS EXCAVATION FRONT
END ALLOWS THE USE ALL
OF THE 363HP AND 1470NM
OF TORQUE AVAILABLE"**



COMPANY BACKGROUND

Established in 1997 by Edward Fairhurst, Fairhurst Stone has become one of the most highly respected suppliers of natural stone products in the UK.

Their large purpose-built production facility at Settle operates with the latest stone saw technology, producing the famous Whitworth sawn York stone paving and other materials, together with sawn six-sided sections in a variety of other UK-sourced stone.

Famed for its durability and high technical performance, Whitworth stone has been used throughout the UK in major prestigious schemes, including Kings Cross and St Pancras railway stations, involving many thousands of square metres of material.

While blocks of stone remain the main focus of the quarrying operation, a large amount of waste material is excavated to remove each block. The huge Whitworth Quarry, a few miles north of Rochdale, currently provides the vast majority of the raw materials currently used by the firm, including bulk aggregates and washed sand.

A significant volume of the sand-based products is now also used to make ready mixed concrete, and Fairhurst operates a number of ready-mix trucks from its new batching plant at Langcliffe.

➔ Access to the cab and the nearside compartments is helped by a non-slip walkway, which can quickly be removed should the individual panels require replacement or repair, or to reduce transport width.

Operator Matt Knowles rates the cab highly: "We've only had the machine a few weeks, but I'm very impressed with the comfort in the cab. It's well laid out and well screwed together. I'm very happy with it.

"Even though I've got the grille on the front screen, the cab is still light and spacious. There's plenty of light coming in from the rear window, which isn't obscured by the engine cover as on some excavators."

IN THE DIG

At the time of our visit the new Kobelco was commencing the excavation works to expose another large bench of block stone. The 52-tonne excavator is matched to a hired-in Volvo A40G articulated dump truck to haul the material to the top of the quarry for processing.

Sitting on the edge of the bench, man and machine

carefully load the lumps of stone with the riddle bucket into the hauler, being careful to ensure that the larger pieces stay intact. When a full load has been despatched, Matt then removes some of the loose material from around the next large block to be removed.

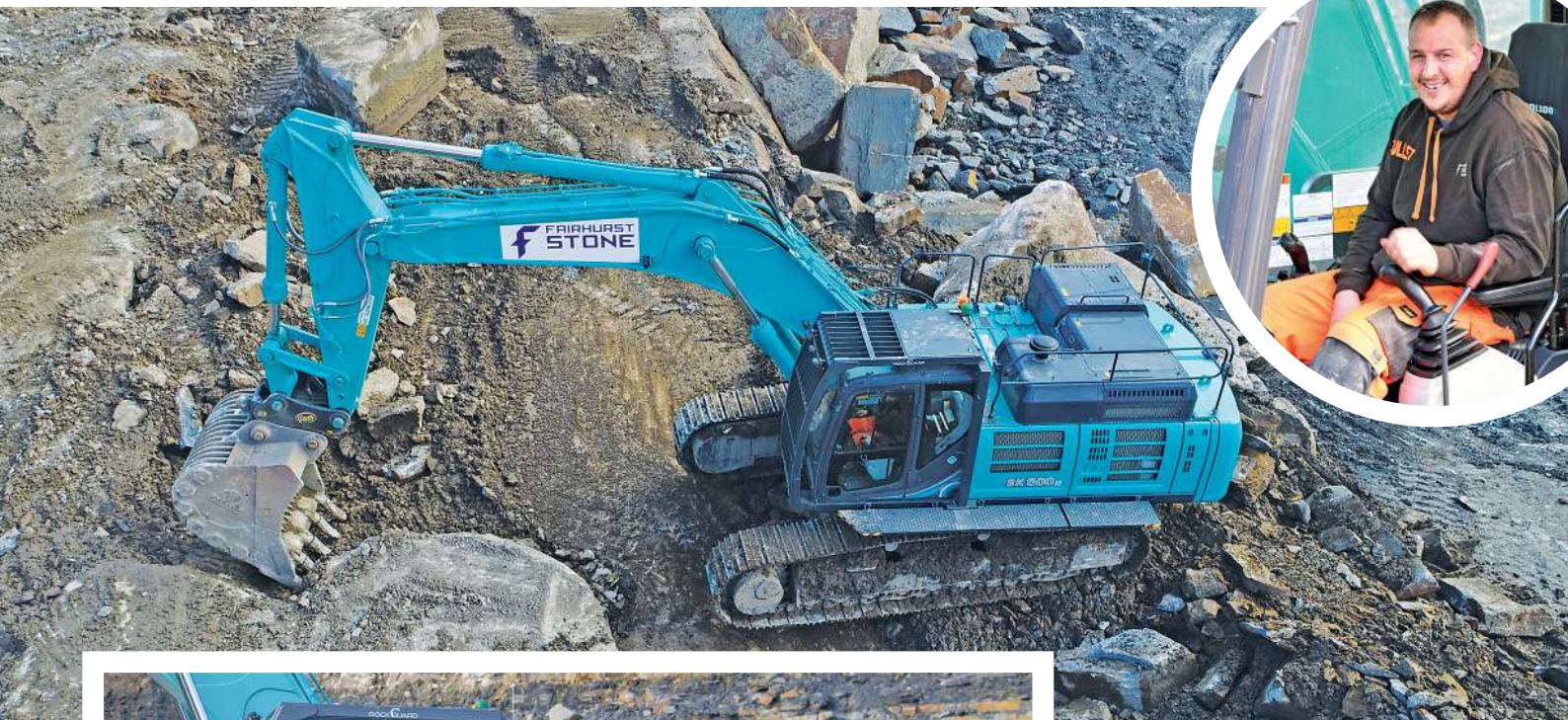
While the material can quite easily be split horizontally, the vertical break to form a large block takes a lot of expertise and hard work from Matt and the Kobelco. Matt works the corner tooth of the bucket into a small fissure in the rock, eventually working the gap to a sufficient size for it to split across the rest of the surface.

With the high-density rock working out to around 2.2 tonnes per cubic metre, the first block extracted weighed roughly 25 tonnes. Matt then moved this out of his way, to



Below and inset: A bucket tooth is worked into a horizontal fracture, gradually widening it until the entire block can be extracted.





Above, left and inset: Initial impressions of the Kobelco SK500-10 have been positive, and operator Matt Knowles is particularly impressed with the cab comfort.

**“THE BLOCK WAS
EVENTUALLY PRISED OUT
IN ONE BIG LUMP, WITH AN
ESTIMATED WEIGHT IN
EXCESS OF 40 TONNES”**

enable it to be picked up by a Case 1021F wheel loader, equipped with a set of heavy-duty forks, which carried the large block to the top of the quarry for processing.

The second block was more of a test of man and machine. Unable to split the section of bedrock in two along a horizontal seam, the block was eventually prised out in one big lump, with an estimated weight in excess of 40 tonnes. Despite the size and weight of the block, and the fact the triple grouser track pads of the excavator were directly on to the smooth rock, the big Kobelco managed to move the huge block along the rock head with comparative ease.

CONCLUSION

The distinctive blue paintwork of the new Kobelco SK500-10 certainly catches the eye in the Yorkshire landscape. Whether its arrival on site will herald a change in buying policy from MD Edward Fairhurst only time will tell. Its initial performance has been encouraging, particularly extracting and moving a grossly oversized block. Molson and Kobelco certainly seem to have a product capable of challenging the more traditional mass excavator machines on the market. **EM**



Below: The world-famous York stone paving starts life as large blocks extracted from the Whitworth Quarry.





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Left: Modern automatic hydraulic quick-hitches feature a number of safety systems to ensure that the attachment is securely locked and cannot be detached while it is in the air.

GOOD CONNECTIONS

Peter Anderson reports on the current generation of quick couplers

There is no doubt the quick coupler, also known as a quick-hitch, is one of the most impressive labour-saving devices to have been adopted by the construction industry in recent times. Not only does it save time when changing attachments, but the use of quick couplers also encourages the use of the most appropriate tool for the job.

Manually operated hitches are still in use, which are quicker and more convenient to use than an attachment pinned directly to the dipper arm. The use of semi-automatic versions, where the operator has to leave the cab to insert an additional safety pin, have been banned on UK sites due to misuse in the past. The industry standard is now automatic, hydraulically-operated quick hitches, where the operator does not have to leave the cab to change buckets.

MODERN HITCHES

The current generation of automatic quick-hitches are much safer to use than their predecessors. They feature a range of built-in safety devices to prevent the accidental or inappropriate release of an attachment. This causes a high risk to ground workers, particularly those working in a trench.

Modern couplers now include independent physical locking systems, which retain the attachment in the event of hydraulic

pressure failure.

They also include a visual indicator, often a brightly coloured tab, to offer the operator reassurance that the hitch is locked. Quick coupler control systems ensure that the attachment is firmly located by both pins before work can commence. This takes the form of a bucket curling routine or by sensing that the attachment is firmly on the ground, or by a combination of both.

Above: To ensure the safe operation of automatic quick-hitches they are often supplied with a dedicated control unit.





Automatic hitches mounted on a frame containing a tilting device are becoming increasingly popular, such as this model from Harford.



Above: A cut-away of a Hill Tefra quick coupler, illustrating the drive towards fewer moving parts within an automatic hitch.

→ VARIATIONS

A variation on the quick coupler theme is for manufacturers to mount the hitch on a hydraulic tilting actuator, to turn every standard bucket into a tilting bucket. There are also

a small number of hitches mounted on a hydraulic rotating actuator.

However, the real growth area is in quick couplers that do not just mechanically connect the attachment to the dipper, but also automatically connect and disconnect the hydraulic lines and other connections to powered attachments.

The use of such hitch systems in the UK has been pioneered by the demolition industry, to allow their operators to frequently change between a range of demolition work tools, without the risk and delay of having to leave the cab to deal with hydraulic hoses.

Left: The tidy installation of hydraulic hoses on an automatic quick-hitch will save time and money over the long term. The example shown is the banjo connection from Geith.



Such automatic oil connections are increasingly popular in tilting and rotating hitches, as those using such couplers introduce the advantages of auto oil connect functionality to the construction industry. Indeed, tilt-rotator coupler manufacturers should not be discounted as a potential source of a fixed hitch system, particularly for those that need to change powered attachments.

CONCLUSION

Although excavators are the main focus of quick-hitch technology and sales, automatic couplers are also commonly used on telehandlers, skid-steer loaders, wheel loaders and backhoe loaders. Most of the original equipment manufacturers market such quick-hitches. Typically they are produced by small, dedicated manufacturers and branded by the OEMs and sold through their respective distribution networks.

A development that is on the near horizon is the hitch system digitally recognising the attachment that is being fitted to an excavator. This data can be used to automatically set the hydraulic profile of the host machine to match the attachment,



Klac uses a different design of rotating actuator to the norm in its range of tilting automatic hitches.



Above: Austria-based manufacturer Martin produces a range of heavy-duty automatic hitches, many supplied with auto hydraulic service line connections.

or automatically inform the GPS machine guidance system of the physical dimensions of the bucket.

A development that is long overdue is the industry taking active measures to deter the theft of hitches and their attachments. Like the machines themselves, the first step in the battle against theft is to provide the at risk goods with a unique identity. CESAR has an ID system specifically covering attachments and hand tools. There must also be a greater use of miniaturised tracking or locating devices, not only in attachments but also in increasingly expensive and complex quick-hitches.

Below: Better known for producing buckets and grabs, Northern Ireland-based Spence also makes a range of quick-hitches.



The quick-hitch industry is dominated by manufacturers based in the UK and Ireland, and a representative sample of what is currently on offer follows.

ABILJO

This attachment manufacturer makes manual-type hitches: a spring type for excavators from micro machines to those weighing up to nine tonnes and a wedge-type hitch for excavators from 10 to 60 tonnes.

These simple to use and reliable manual hitches provide a cost-effective option where a fully automatic hitch may not suit the application or environment.

The lower main frame of each Abiljo hitch is made from Hardox 450 steel for strength and durability. Such hitches are easy to fit with no costly modifications necessary, such as additional hydraulic pipework or fittings.

DIGBITS

Two ranges of quick-hitches are made at its factory at Rugeley, Staffordshire: the Semi-QH and the Springlock Q-Hitch.

Despite its name, the Semi-QH is technically a manual hitch; the bucket pin has to be inserted, not an additional safety pin. This basic lightweight hitch is suitable for smaller machines weighing up to four tonnes.

The compact manual mechanical Springlock Q-Hitch is suitable for micro-, mini- and midi-excavators up to eight tonnes and, like the Semi-QH is easily fitted and requires no pipework or welding.

DROMONE

Based in Ireland, Dromone Engineering manufactures the Multi-Lock quick coupler range, for excavators from three to 90 tonnes.

The design features a fully automatic safety latching mechanism, on which the safety lock indicator is constantly visible to the operator. In addition, both front and rear attachment pins are visible to the operator and are independently mechanically locked through the full working cycle. Also, a hydraulic check valve is fitted as standard for greater safety.

These couplers also incorporate a heavy-duty lifting eye for increased functionality and use a universal-style coupler design for increased flexibility to pick up a wide range of attachments. Buckets can be mounted within the coupler in the normal orientation or reversed in a shovel configuration.

ESCO

Best known for wear parts manufactured at its North American factory, since 2018 the Esco Corporation is now a member of the Glasgow-based Weir Group.

It produces a range of quick couplers called PosiGrab. They feature front and rear attachment pins that are independently mechanically locked through the full working cycle. The natural state of the coupler is fully locked; it will only open with forced hydraulic pressure. ➔

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Left: Strickland claims its hitches are a simple and effective design, ensuring long-term reliability in harsh conditions.

→ The design includes visual confirmation that the front and rear locking mechanisms are properly engaged.

GEITH

Ireland-based firm is part of the Doosan Group and produces ranges of manual, automatic and tilting quick-hitches.

Manual quick-hitches are available for excavators from 1.2 to five tonnes. The HQC range of automatic couplers, suitable for carriers from one to 85 tonnes, feature a front and rear safety lock and are made from high strength steel. According to Geith, it is a low maintenance unit with no greasing required. A tilting quick coupler is also available, which has the ability to tilt any bucket or attachment to a total of 180 degrees, entirely operated from within the cab.

Geith also offers a hitch control system for its couplers, which is claimed to meet current and expected UK safety requirements. The compact design comes complete with a wiring harness for plug-and-play installation.

HARFORD

Harford Attachments has just launched its new Uni-Lok V2 automatic multi-centre hitch, which extends the Norwich manufacturer's coupler range to suit machines up to 15 tonnes. The proven self-adjusting wedge system ensures a safe manual double-locking action and the integrated rear safety lock indicator is visible from the cab.

Like all the company's other quick hitches, the V2 is available as a tilting coupler and the commonly used Kinshofer high-torque hydraulic actuator provides 180 degrees of movement.

HILL ENGINEERING

Northern Ireland-based firm manufactures the Tefra range of automatic couplers, a unique design that features just three moving parts.

In operation, two cast coupler hooks work together to fully enclose both attachment pins providing positive self-locking. A single hydraulic cylinder operates both hooks and incorporates a unique feature, the Hill smart valve technology. It works by recognising that the hitch is in an appropriate orientation before permitting the release sequence to commence. This feature can be used to connect the hitch to audible hitch operation warning systems.

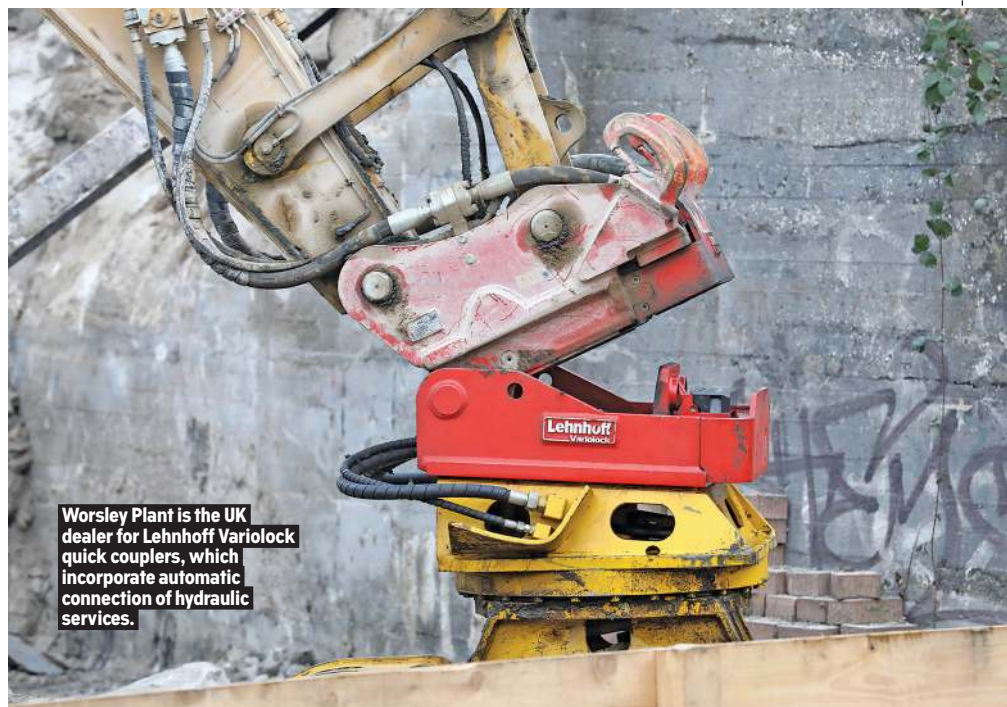
In addition, the Hill design features an active protection system, which acts as a fully independent secondary locking system. This comprises a coil spring around the cylinder that ensures that the rear hook remains in the correct position in the event of a hydraulic failure. A single leafspring on the front hook also acts to maintain it in the correct position in the event of a hydraulic failure. The hydraulic hose connections feature different thread sizes, to eliminate the risk of incorrect installation.

KLAC

French manufacturer Klac Industrie has recently introduced a new compact and ultra-slim rotating quick-hitch system called Rotok. The three-model range can rotate the attachment through 360 degrees and is designed for excavators from micro machines up to eight-tonners.

The hydraulic motor turning the self-locking/worm gear is completely enclosed for protection. It is fully greased and can operate underwater without causing oil films, while the rotation swivel joint and shockproof bearings protect the motor from rough usage.

The Klac range of manual and automatic quick couplers are suitable for excavators from nine to 24 tonnes and have a number of exclusive features. Klac Select is a failsafe device preventing the use of attachments exceeding the safe working load of the machine. Klac Serenity is a safety device that prevents the loss of the attachment in the event of failure of the locking system, while a control system alarm system continuously informs the operator of locking efficiency and safety. A main advantage of the Klac Protect feature is →



Worsley Plant is the UK dealer for Lehnhoff Variolock quick couplers, which incorporate automatic connection of hydraulic services.



→ that it eliminates a long length of hose dangling from the end of the dipper as the system reels the hose in and out during bucket rotation.

MARTIN

Mechanical and automatic quick couplers are available from this Austrian manufacturer and marketed by subsidiary Martin Attachments UK based in Featherstone, West Yorkshire.

Three types of quick couplers are manufactured at the company's plant at Braz. They comprise manual quick-change systems available for machines from 1.8 to eight tonnes. A rotating version of these couplers is also available for excavators up to 3.5 tonnes.

Automatic hitches cater for excavators between 1.8 and 26 tonnes, and rotary versions are available throughout this weight range.

Their latest products are the M-Quick hitches that automatically connect the hydraulic supplies, which is available either as a fixed hitch or with a rotating actuator. Martin says that there are no wear parts on this design, therefore no repairs or downtime.

All its quick-change systems, hydraulic and mechanical, have a visual lock control enabling the operator to recognise the correct locking position from the cab. They are also equipped with high-quality Gunnebo lift hooks as standard for high load capacity and a long service life.

MILLER

A new generation of hydraulic quick couplers, known as the GT range, has been launched, suitable for excavators from one to 50 tonnes. The firm, based at Cramlington near Newcastle, believes this new series is the lowest build height and lightest hitch it has ever made.

This new design features Ground Touch technology, using a feed from the excavator's hydraulic system feeding the working equipment. It has been designed to reduce the risk of accidents and misuse of the coupler. The hitch can only be unlocked or locked when the attachment is firmly on the

ground. The associated control system includes an LED alert, to inform the operator that it is safe to lock or unlock the hitch. The smaller GTS models feature a twin locking independent back-up

system, ensuring the attachment remains securely engaged in a working position in the event of hydraulic loss. The larger GTX models use gas spring technology with compressed nitrogen contained within the cylinder, also ensuring that front and rear pins remain securely locked in place.

OILQUICK

Sweden-based company focuses on quick coupler systems for different types of machinery, including excavators, wheeled loaders and materials handlers, that require the automatic connection of hydraulic services to the attachment.

There are nine models specifically designed for excavators, ranging from the OQ 40/24 up to the OQ/120, which cater for machines from one to 120 tonnes; the OQL10 and OQL410 models are suitable for wheel loaders up to 32 tonnes. In addition, there are specific models designed for use with its range of tilt-rotators.

STRICKLAND

This fully automatic twin-locking hitch range is known as the S-Lock coupler. The simple and effective design of the coupler is said to ensure reliability and high performance, without the need for levers, claws, latches or pivot pins. A range of 10 models is available catering for excavators from 2.5 to 50 tonnes, in addition a four-model range of S-Lock tilt couplers to suit excavators from three to 13 tonnes.

The standard S-Lock couplers consist of three main parts: the main body, the hydraulic cylinder and the rear hook. The Evesham-based company says the S-Lock has the least moving parts of any coupler currently on the market, and therefore has a low maintenance requirement. The hydraulic cylinder is fully encased and protected, giving greater resistance to potential damage.



Left and inset: Whites materials handling produces a wide range of hitches, from straightforward manual to automatic tilting versions.

SPENCE

Formed in 1961 Spence Engineering is a family-run business based at Hillsborough in Northern Ireland. In addition to producing buckets and grapples, it makes a range of quick-hitches for excavators from one to 30 tonnes.

WHITES

Bristol-based Whites Material Handling manufactures the Totalock 2 fully automatic twin locking hydraulic quick coupler. It features a variable centre twin locking coupler with removable ram guards and a rear spring guard. They are suitable for machines from 1.5 to 21 tonnes and also feature a rated lifting eye on the back of the coupler. The hitches are covered by a three-year warranty as standard.

The design's main safety feature is that when the rear hook is locked in place hydraulically, it mechanically blocks the front hook from lifting. In the event of a complete hydraulic failure, the rear safety springs hold the rear jaw firmly shut, to further prevent the bucket from being detached.

A manual hitch range is also available, which Whites claims is the strongest spring lock coupler on the market and caters for excavators from micro machines up to nine tonnes. This design features a low-profile design to minimise any loss of breakout forces, a heavy-duty spring and a heavy-duty safety pin that cannot become detached from the coupler.

In addition there is a 180-degree tilting version of the Totalock2 automatic hitch using a sealed, no maintenance HKS actuator.

WORSLEY PLANT

UK dealers for Lehnhoff, the German manufacturer of Variolock quick couplers that incorporate automatic connection and release of hydraulic services. The system consists of a valve block on the quick coupler and a corresponding valve block on the adapter on the attachment. The design of the interface between the two valve blocks ensures that they are protected from any forces acting on the hitch. According to Lehnhoff, this system has fewer moving parts than competitive units. These systems are available for a wide range of excavator sizes up to those weighing a massive 130 tonnes.

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TOP TIP TOPPER

Paul Argent visits the latest machine bought by a long-term user of Liebherr dozers

Nestled near the coast on the border between Norfolk and Suffolk, the Lyndon Pallett Group is a key local supplier of aggregates and concrete, operating a number of quarries across the East Anglian region.

Owner Lyndon Pallett traded a hectic lifestyle in the Home Counties and London for the far more serene pace of the Suffolk countryside, as he explained, "We operated a number of tips to run alongside our muck-away business and doing so required the use of a dozer. This was the start of a long relationship with Liebherr in the UK.

"Running the tips was a fiercely competitive industry in that area and we decided to look for a change in direction."

The result was a relocation

to the Suffolk countryside after purchasing what many regarded to be a worked-out quarry, but not all was as it seemed, as Lyndon continued, "We took a chance on the land and got it at the auction for a reasonable price. It wasn't until we started looking closely at the site that we realised the previous owners hadn't extracted all the material. A major plus point was that the quarry also had a considerable amount of time remaining on its planning permission for extraction, so we wasted no time in getting things ready to remove the material."

With the quarry up and running and producing a quality material through the newly installed wash plant, Lyndon was tempted back into looking after inert tips in the area. His experience and expertise of the industry left many in the shade for this job, which required yet another dozer.

Lyndon said, "We had received exceptional service from Liebherr GB, in particular from Peter Mayr. It was because of the support given to us that kept us coming back to Liebherr when we are looking for additional dozers.

"The original PR734 still does a day's work when we need it to, while the new PR736 has to rank as one of the best dozers

on the market. It's a lovely machine to operate and its ability to push all day long while using very little fuel is amazing." →

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Above and inset: The latest in a long line of Liebherr dozers to join Lyndon Pallett's fleet is a brand new PR736 model.



→ SITE VISIT

Aldeby landfill has been in operation for over 25 years and has now reached its capacity. Therefore, owner FCC Environmental is now completing work on the site and installing the final capping layers. The Lyndon Pallett Group takes up to 50 loads of inert soils on to the site each day to cap and contour the site. We met Lyndon, his general manager Keith Trew and regular PR736 operator and supervisor Shane Morrison at the site, which is located on the outskirts of Beccles.

The PR736 operating on this site is the latest in a line of Liebherr dozers to join the Pallett fleet and has been entrusted to long-term employee Shane, who said, "I drove the last 736 and loved that machine. This one has been tweaked a little over the earlier 736 and seems to be even better."

The dozer was configured specifically for this type of work in low ground pressure specification, complete with 914mm-wide double grouser pads and a 4.1-cubic-metre, outside mounted straight blade.

Shane continued, "We can move large amounts of material with this spec. As we are only topping the existing capping off, the tracked tractor can easily cover a large area from each load that comes in and the PR736 copes with everything we can put in front of it."

Although the new dozer is equipped with a Trimble GPS machine guidance system, Shane is undertaking the capping work manually.

Keith stated that, "Our client wants the land to look natural, so we are working by eye and levelling the material as we see it should be."



Above, below and inset: With large windows, a high-mounted seat and small idlers on the front of the tracks, there is an excellent view to the corners of the wide blade.



LIEBHERR PR736 DRIVELINE

The Stage 4 emissions-compliant dozer is powered by a four-cylinder, seven-litre engine delivering 238hp. It drives through Liebherr's hydrostatic transmission, which provides stepless, continuously variable drive in both forward and reverse. Travel speeds can be set through the memory function, allowing pre-set speeds to be obtained in each gear.

Access to the engine is through the large panels on each side of the bonnet, while tilting the cab allows excellent access into the main chassis and the drive system.

No sooner has a load been tipped and the truck heading back down the haul road, Shane was already blading-out the material. The hydrostatic Liebherr dozer maintained a high pushing speed, as Shane tweaked the blade to ensure a good coverage. In between each load he ensured the material was suitably compacted from several passes over the area.

The only issue for Shane to deal with was the gas vents spread across the site, as these cannot be damaged in any way. With dark mornings and evenings to contend with, an upgraded LED lighting package has



Left: Operator and supervisor Shane Morrison reckons the latest PR736 has been further improved and on this job copes very well with anything they put in front of it.

the corners of the wide blade thanks to the small diameter front idler and explained, “It makes it so much easier when trimming very small amounts off the top.”

Both seat armrests are individually adjustable and allow Shane to position them just as he wishes. The ergonomically shaped blade control and travel joysticks always allow the operator’s hands to remain in a steady and comfortable position when operating the machine, thus reducing operator fatigue.

The narrow engine compartment and well-placed exhaust stack all add to the feeling of spaciousness inside the cab, which can be accessed from either side of the machine through the wide-opening, fully glazed doors.

Machine information and settings can be accessed through the colour touch-screen mounted directly in front of the operator and, as with all Liebherr machines, the straightforward and easy to follow menu allows the operator to adjust and monitor the condition of the machine.

“IT WAS BECAUSE OF THE SUPPORT GIVEN TO US THAT KEPT US COMING BACK TO LIEBHERR”



Above: The low ground pressure dozer has 914mm-wide double grouser pads and a 4.1-cubic-metre, outside mounted straight blade.

Below: The hydrostatically-driven Liebherr dozer easily managed to keep ahead of the constant stream of trucks delivering inert soil.

EW

been fitted to the dozer, which affords an excellent view round the machine in the darkening conditions.

IN THE CAB

Shane says he is well catered for in the cab, which provides excellent all-round vision thanks to the combination of a high mounted seat and deep glazed panels. He is particularly pleased with the view to



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SOMETHING NEW SOMETHING OLD

Nick Drew reports on a Jurassic-era stone being extracted by a new excavator, assisted by some classic machinery

Q uarrying has taken place in the Stoke-Sub-Hamdon area of Somerset since at least 1598. Records indicated that this is when an excavation was opened up on Ham Hill to provide stone for the construction of Montacute House, which these days is in the hands of the National Trust.

Ham Hill takes its name from the distinctive and much sought-after golden honey coloured hamstone, a sedimentary limestone that dates back to the Jurassic period. The material is favoured by architects for high-profile buildings up and down the country. However, the original face that produced the stone for Montacute House is not allowed to be touched, effectively preserving the material for any potential renovation work on the historic building.

The Ham Hill Quarry was taken over by the Harvey family in 1982 and there are now three generations involved in running the business, not only down in the quarry but up in the masonry works. Today the business is run by Saul Harvey and his father Ray, supplying not only their own local

hamstone, but also a range of other local lime stones, in addition to Bath and Portland stone.

The hamstone is quarried from two locations right on top of Ham Hill. The north quarry is the oldest of the two current workings, where the much sought-after rock lies just below the surface. Our visit was to the southern Norton Quarry, where hamstone is encountered at depths of between 20 and 30 metres.



FLEET FOCUS

For many years the stone at Norton was excavated by an old Case Poclain 90B. Although its running gear is out of action it is still →

Left: A Case CX250D has taken over as the prime mover at the face of Norton Quarry on Ham Hill in Somerset.



Two classics still play a key role in the production process: a stationary Poclain 90B used for hammer work and a rebuilt Foden dump truck.



→ being used today, as a static rock breaker at the face. In more recent years the choice of prime excavator was a JCB JS240. In the middle of 2019 it was traded in against a new Case CX250D from dealer M&M Plant Sales.

Saul said, "When it came time to change our old machine we didn't bother with any demonstrators. We previously had the old Case Poclain before the JS240 and that served us well. We were happy to go for Case again. Our regional sales manager Henry Sharman sorted us out a good deal and our operator is very happy with the machine choice."

The excavator is operated by Steve Coombes, who has worked in the quarry for over 20 years on a wide variety of kit. At the time

of our visit he had amassed just over 500 hours on the CX250D and was clearly impressed with the Japanese-designed excavator that is built by Case in Italy.

A man of few words, he said, "I like it a lot. It's nice to operate with plenty of power and, when the going gets tough, the power boost button on the joystick is a handy feature for what we do here too. It's also incredibly quiet, and the cab is a nice place to spend my days."

WORKING METHOD

A highly experienced quarryman, Steve's primary role is to excavate down to the seams of stone and then prise the blocks up with either a bulk digging bucket or, for the

really stubborn lumps, with a ripper tooth. The quick change-over of attachments is helped by a Strickland quick-hitch. The various sized lumps are transferred to the area where the old Poclain 90 stands, where they can be broken down into more manageable pieces.

The smaller lumps are then loaded into an elderly Foden dump truck, which Steve apparently

"PRISE THE BLOCKS UP WITH EITHER A BULK DIGGING BUCKET OR, FOR THE REALLY STUBBORN LUMPS, WITH A RIPPER TOOTH"



rebuilt at one stage. It was a sight to gladden the hearts of many old-school plant enthusiasts: a classic British quarry truck still making a valuable contribution to a job site. Looked after and well maintained, it could continue in service for many years to come.

It appeared that Steve tends to work as a one-man operation down in the quarry. After loading the classic hauler with a state-of-the-art hydraulic excavator, he climbed out of the Case and into the Foden to take a load of smaller stones up to the masonry works.

Here two operatives generally work together to cut the lumps of limestone into more workable pieces using a hydraulic press, then performing any final trimming that is required with hand tools. Any smaller lumps that break off are then cut and shaped for house building products such as split face walling.

The larger lumps of hamstone can be sawn to make flooring, fireplaces and window surrounds, as the team of highly skilled stonemasons are capable of creating a wide range of original stone pieces. 

CASE CX250D BRIEF SPECS

The undercarriage on the CX250D is 4.65m long and 3.39m wide on its standard 800mm track pads. The operator reports that this provides a stable platform in any position, even at full stretch over the side with a bucketful of stone.

In line with all the other mid-sized Case CX models this excavator features three working modes controlled via the dial to the operator's right-hand side: SP (speed priority); H (heavy); and A (automatic). The CX250D tips the scales at 25.9 tonnes and is powered by a Stage 4 emissions-compliant Isuzu four-cylinder engine rated at 177hp (132.1kW) at 2000rpm.

This example has been fitted with a FOPS cab roof guard and, in my opinion the more sensible option, a semi boxing ring fall-from-height protection, as the engine bonnet opens to the rear to create a barrier.

Rear and side view cameras are fitted as standard and are viewed via the full-colour monitor in the cab.



Left and above: Ham Hill contains a golden honey coloured sedimentary limestone called hamstone, which is much in demand for prestigious buildings.



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Left and inset: SMGC has chosen a new Takeuchi TB2150 as the host for its first tilt-rotator, an Engcon EC214 complete with EC-Oil connections.



**"PAID BY THE JOB,
IF YOU CAN DO IT
QUICKER AND EVEN
BETTER, THEN IT BECOMES
MORE PROFITABLE"**

FUTURE EFFICIENCY

Peter Haddock talks to Steve Murphy who, after decades of working in the industry, is the proud owner of his first tilt-rotator

When he was just seven years old, Steve Murphy first sat with his father in an excavator and immediately caught the digger bug.

He was well and truly hooked and followed in his father's footsteps to become a plant operator.

For the past decade Steve has run the Surrey-based earthworks contractor, SMGC. With decades of experience in the construction industry, he wasn't fazed by a bit of bad weather and visited last year's Plantworx show to take a look at the latest technology on offer.

One result of his visit was the purchase of a 15-tonne Takeuchi TB2150 excavator, complete with an Engcon tilt-rotator, from his long-standing dealer CBL.

NEW EXCAVATOR

Steve said, "I have had great service and support from the team at CBL Plant and been happy with previous Takeuchi purchases, so I was always going to purchase another machine from them.

"However, I had been thinking about investing in a tilt-rotator for a while, for several reasons. As a small earthworks contractor, we tend to work on a lot of sites that are quite tight, busy and varied. One minute we might be digging footings, the next we might be clearing the site, lifting in pipework, or supporting piling operations. So, the more useful your machine can be on site, the better. As we are also paid by the job, if you can do it quicker and even better, then it becomes more profitable and you have a happier client to boot.

"As an owner who has operated plant for over 35 years, I also have to consider the operator experience on site, making sure they are safe, comfortable and able to be as productive as possible. As a plant owner, it's no good having a machine and operator on site idling or waiting around, as time really is money. If there are extra tasks you can be doing that either improve site conditions or help others out, then that is great.

"When I went to Plantworx I visited the Engcon stand and had a go on a machine in the demo area. I experienced not just how the tilt-rotator helps to dig, but also how it works with its other range of attachments.

"I ended up opting for a package that included its EC214 tilt-rotator with QSC and EC-Oil, adding in the DC2 controller and joysticks, four buckets, a hydraulic



OPERATOR FEEDBACK

The new Takeuchi was being operated by Chris Murphy, who was getting to grips with what is possible with a tilt-rotator on an excavator. This included swapping a bucket for the hydraulically adjustable forks, then moving the team's fuel tank to another location, then getting the bucket back on and continuing work. All in just a few minutes.

Chris said, "I have worked as a plant operator for decades now, so seen a lot of changes in the capabilities of machines and the attachments that go with them. But I can honestly say that I never expected to be able to change the way I work so dramatically, just because of an attachment.

"A tilt-rotator definitely takes a bit of getting used to, as you naturally have your style of operation after you have been doing it as long as me. I guess the first thing I realised is that you have to get used to the new joysticks and functions; this is about a bit of trial and error really, as they are very responsive.

"Then from a digging perspective, it's all about the new angles and methods you can use to dig, grade and move material round using the functionality of the system. At first, I was still moving the tracks a lot to get in position, but you soon realise that you don't have to do this as much when you get to grips with the dig options.

"For example, on a standard machine, you use the boom and stick movements to dig and unload material from the bucket. With the tilt-rotator, you have numerous different options because of the way the bucket can move. You therefore find yourself using less boom and stick movements than you were before, which takes some getting used to.

"But the best thing for me is the simplicity of changing attachments with the in-cab controller. There is no more getting out of the cab; you can go from one attachment to the next sometimes in under a minute. This is the real game-changer for me, as I can be so flexible on site. There is no more hooking up chains to lift things. I can be moving pallets around one minute and trenching the next."

→ compactor and forks. Knowing the team at CBL could also install the system and look after it for me was another bonus. The last thing you want with something like this is for anything to go wrong."

Purchased from CBL's Crawley branch, the Engcon set-up included the QSC quick-hitch controller and the EC-Oil connection that allows quick change-over of powered attachments.

SITE VISIT

We met Steve at the site of a hotel project in Ashford, a surprisingly congested site where he was working close to a Komatsu excavator-based piling rig.

He continued, "This site, in particular, throws up some challenges, as we have got to do our work around the existing teams and plant quickly, in what is a cramped site, in winter. The key difference using the new



Above and left: Jobs such as moving the fuel tank used to interrupt the work flow, now they just take a couple of minutes.

Right and below: Operator Chris Murphy is moving the machine a lot less, letting the tilt-rotator do a lot of the work and acting as the host for powered attachments.

Steve Murphy put together a cost-benefit analysis of purchasing a tilt-rotator, which proved to be a bit of a no-brainer, particularly with low interest rates.



Takeuchi and Engcon combination on this site, however, has been the ability to reduce track movements and quickly go from digging to compacting and back-filling trenches, using the different Engcon attachments.

"The QSC automates the attachment change process, with its push-button activated system that works on ground pressure. This means you don't have to curl or crowd the bucket to safely remove it. The system does it all for you, so you can have a nice neat line of all your attachments and go from one to the next in a matter of minutes.

"The beneficial thing about this is you don't have to get out of the cab at all. This ticks two boxes for me as an owner: the first is the protection of my operator and the second is the speed of changing from one task to the next. You can be saving half an hour or more a day in change-overs alone."

FINANCIAL JUSTIFICATION

The high-spec Engcon tilt-rotator and half a dozen attachments do not come cheap. Steve summarised his purchase decisions by

stating, "With some really good finance deals around at the moment, the actual cost benefit analysis I put together when justifying the additional investment worked out considerably in our favour.

"Yes, you have the financial cost of a new machine and the Engcon attachment, but there are some critical benefits around the owning and operating costs. Firstly, the machine is a lot more efficient to run and secondly maintenance costs on a new machine are considerably less than keeping an older one running. Add this to the fact that with CBL we are bundling together the plant, tilt-rotator and attachment maintenance through one supplier and you have a really solid commercial proposition.

"Also, by having the tilt-rotator, we are changing how we work. For example, we no longer have to hire in a trench compactor and lift this into place each time. Now we can dig a trench, change over to the compactor attachment and finish it off ready for the concrete or utilities to be put in place, before then completing the

backfill and compaction.

"Before, we would have typically waited till we finished a certain amount of trenching, before hiring in a compactor, getting out of the cab to attach a lifting chain and placing it into the trenches. This would not only require the excavator to be out of action for this task, but it would also need another person to manage the compaction, while the excavator continued, adding cost to the job."

It is great to see a small businessman like Steve enthusiastically investing in new kit to improve productivity and move his business forward. It is even better to hear just how excited operator Chris is to have the challenge of approaching his work from a new angle. EM

**"I NEVER EXPECTED TO BE ABLE
TO CHANGE THE WAY I WORK
SO DRAMATICALLY, JUST
BECAUSE OF AN ATTACHMENT"**



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STOCKPILE SCRAPERS

David Wylie visits a fleet of Cat 637G coal scrapers in the UK, shifting the last couple of hundred thousand tonnes of fuel at a south-Wales power station

At the peak of operations around two million tonnes of coal were stockpiled at the Aberthaw B electricity generating station, feeding the three massive turbines that worked 24 hours a day, 365 days a year.

When the power station was opened in the early 1970s (see panel overleaf), coal-handling operations were conducted by a large bucket wheel stacker/reclaimer, but with only limited success. Running a fleet of motor scrapers was soon deemed to be the best material handling option for

this site, particularly for its ability effectively to manage the stockpiles.

Large wheeled motor scrapers, with gross weights approaching 90 tonnes, compress the coal as they run over the stockpiles, helping to keep air and water at bay. If the underlying coal is too wet it does not burn well; more importantly, if air gets trapped within the stockpile the coal can self-combust. The ability of motor scrapers to cut and stack coal in thin layers also aids in this consolidation and compaction process. →



**“RUNNING A FLEET OF
MOTOR SCRAPERS WAS
SOON DEEMED TO BE THE
BEST MATERIALS
HANDLING OPTION FOR
THIS SITE”**

Above left and right: The last remaining 637E model on site, together with a D-Series machine that was used when the site was operated by the Central Electricity Generating Board.

Left: After initially using a bucket wheel stacker/reclaimer in the early 1970s, the decision was taken to use a fleet of motor scrapers, of which five Cat 637Gs are currently on site.



➔ volatile coal imported from Russia. The Russian coal supplements the low-volatile Welsh coal to help to improve the station's emissions.

At the time of my visit one generating unit was being maintained, but was unlikely ever to restart again, while another turbine was being prepared for a possible restart. The third turbine (Generating Unit 9) was operating. This required just over 1000 tonnes of coal every 24 hours, so only two of the 637G scrapers were working, one per stockpile.

Compared with the 26cu.m capacity on standard 637G models, these coal scrapers feature a longer and taller bowl with a heaped capacity of 38cu.m. Weighing in at 52 tonnes unladen, these motor scrapers typically carry around 35 tonnes of coal per cycle. Each scraper has clocked up over 18,000 hours and is powered by a pair of Cat engines delivering a total of 828hp.

WORKING METHOD

At the start of a cycle the scraper motors up the stockpile and begins to lower its bowl's cutting edge just as man and machine reach the crest. Using a mix of gravity and over 800 of Caterpillar's finest horses, the 38cu.m scraper bowl is filled within 100m of travelling down the slope. The cutting edge is lifted at the end of the cut then the 637G makes a fast run to the discharge point, conveniently located in the middle of the coal pad between the two stockpiles.

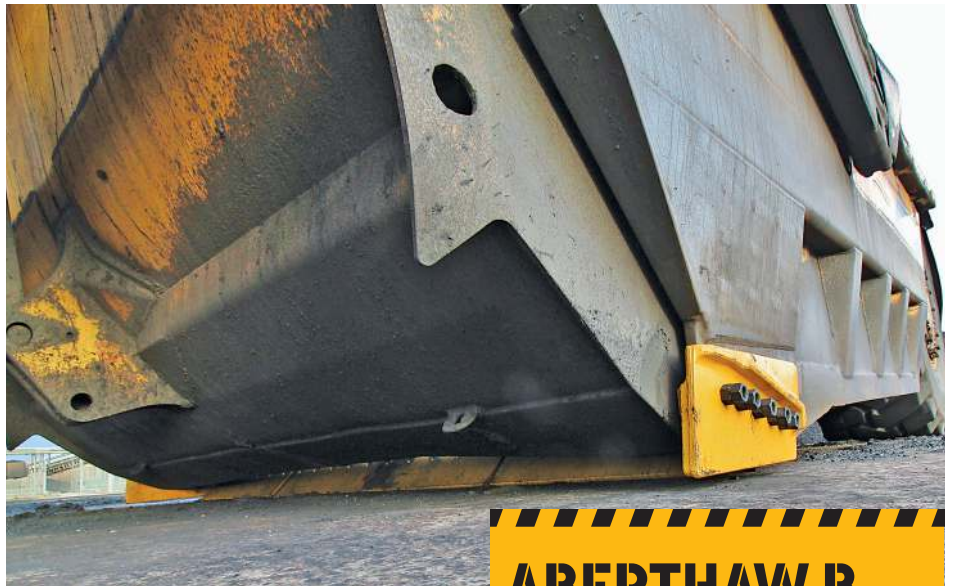
Above, left and below: The 15.2m-long 637G starts loading at the crest of the downward slope, where gravity assists this phase of the cycle.



**"AS GENERATING
OPERATIONS WOUND
DOWN, LESS THAN
200,000 TONNES OF COAL
REMAINED ON SITE"**

The discharge point is an extremely heavy-duty grate that covers an underground hopper, which in turn feeds a conveyor belt. When the scraper reaches this point, the operator opens the front apron of the bowl and uses the ejector plate to push the material out of the box and down into the hopper. The working method is designed so that as one scraper is unloading, the next one pulls in behind, ensuring a steady flow of material.

The underground conveyor belt from the discharge point feeds an overground conveyor system leading to the massively tall, triangular-shaped coal bunkers within the boiler houses. Six of these bunkers serve each boiler, and each bunker feeds its own coal mill and dynamic classifier. These units grind the coal to a 0.5mm dust material and the classifier returns any



Above: Tyres last well on this site, and the cutting edge of the bowl only needs to be replaced every few weeks. The bowl itself has been armoured with additional Hardox steel.

ABERTHAW B BACKGROUND

The Central Electricity Generating Board opened the Aberthaw B power station in 1971 at a cost of over £50m. The plant was designed to use semi-anthracitic, low-volatile local Welsh coal to fuel the three 500mW generating units, which were later upgraded to produce 520mW each.

Fast-forward to the early 2000s and the site's new owners – RWE npower – made a substantial investment in order to comply with European environmental regulations. This included the construction of a seawater flue gas de-sulphurisation system, designed to remove up to 95% of the plant's sulphur dioxide emissions. In addition, higher-volatile coal sourced from Russia and Australia was added to the mix to further reduce emissions levels. Later the boilers were upgraded to reduce nitrogen oxide emissions.

In more recent times, as cheaper electricity became available from gas and renewables, Aberthaw B has scaled down from generating at a constant peak load to a two-shift daytime operation. The generating units are switched off overnight when there is less demand for electricity. More recently, it has not been necessary to use this coal-fired generating station at all during the summer months, the boilers being fired up only when demand for electricity begins to grow as winter approaches.

Against a background of the UK Government wishing to close coal-fired generating stations, and as gas-powered stations provide lower costs and lower emissions, together with a significant increase in renewable energy generating capacity, RWE npower announced that Aberthaw B would cease operations on or before 31 March 2020, after almost 50 years of service.



over-size material to the grinder. The processed coal is then blown into the boiler under high air pressure.

After almost a decade of experience working with the 637Gs, operator Jonathan Pinch said, "I came to Aberthaw B from an earthmoving company and I enjoy driving the big 637Gs. You have two throttle pedals, and over 800 horsepower at your disposal. When making turns you have to back off the rear engine throttle pedal, as you could end up spinning the machine round too quickly if you're not careful.

"It took me a couple of years to get really comfortable operating a machine of this size and bearing in mind the height of the coal-groups, it's a lot of responsibility to work safely and productively at nearly 50 metres above the coal pad base. Overall it's a great bit of kit for this type of work."





"I ENJOY DRIVING THE BIG 637GS. YOU HAVE TWO THROTTLE PEDALS, AND OVER 800 HORSEPOWER AT YOUR DISPOSAL"

→ I spoke to Glyn Cox, the former section head of the materials handling team at Aberthaw B and now site manager at one of RWE's modern gas-fired generating plants. He claimed nothing but admiration for the 25-strong materials handling team, saying that they are all highly skilled operators, responsible for equipment costing around £1m each and driving them safely in challenging conditions. One of the main challenges is working on the high outer edges of the stockpiles, where only the most experienced operators would normally be tasked with working.

WALK-ROUND

RWE has fitted a number of additional safety systems to its fleet of Cat 637s, including hydraulically-powered fold-down steps, which deploy as soon as the parking brake is applied. In addition, a set of cameras has been installed, covering the rear of the machine, together with a detailed view of the bowl's cutting edge, and one mounted high up to provide an overall view of the bowl as it is being loaded. A radar-based proximity warning system has also been fitted to the scrapers, covering the rear of the machines. Fire suppression systems – recently upgraded – have also been installed to protect both man and machine.



Operators also benefit from a fully adjustable air-sprung seat, which rotates for a more comfortable operating position when looking behind the cab at the loading operation. Due to the relatively high operating hours on these motor scrapers, some of the seats have had to be changed, at a cost of £7k per unit! All the main operating controls are located on a single right-hand joystick.

Up front the 637G has a 525hp Cat C18 engine, while the engine mounted at the rear of the scraper bowl is a 303hp Cat C9. Each engine is connected to a Cat eight-speed, electronically controlled, planetary powershift transmission. The tractor's transmission acts as a torque converter on gears one and two for improved torque transmission, but with a direct drive in gears

Above, top and inset: The scraper bowl's ejector plate pushes the material out, and the coal falls through a grate and into a hopper.

three to eight for better drive-train efficiency. The rear engine's transmission is connected to a torque converter in all gears for maximum torque in the cut.

RWE's 637Gs have the optional hydraulic transmission retardation sub-system fitted, for a safer and more controlled descent on the coal stockpiles and to reduce service brake wear. As standard, 637Gs come with an electrically-controlled cushioned hitch that dampens shock loads, particularly during the haul part of the work cycle. If required, the operator can easily lock out the hitch during loading, to achieve more accurate control of the height of the bowl's cutting edge.



Left: The air-sprung seat rotates to provide a comfortable operator position when looking forward during travel, but also to look backwards while loading.

Below left: From the scraper discharge point coal is transported by conveyors into the massive coal bunkers serving each boiler.

Finning themselves. He concluded by saying, "Finning UK has been a brilliant contractor over the years. We rely on their expertise, including regular oil sampling and remote machine monitoring, all of which has helped to keep machine availability at the highest possible levels throughout their operating life with us."

CONCLUSION

The original announcement by RWE npower was that Aberthaw B power station would close by the end of March 2020. However, shortly after I made this site visit, the decision was taken to desynchronise Generating Unit 9 from the national grid earlier than planned. On the afternoon of Friday 13 December Aberthaw B power station's massive turbine hall fell silent after 50 years of service to the public.

As for the fleet of Cat 637G motor scrapers, we understand that RWE has received strong interest from a number of parties. The massive HS2 project not that far way, so these well-maintained and highly efficient muck-shifters may well have a second life in the UK.

EN



Right: Jonathan Pinch, one of the team of experienced Cat 637 operators, also spends time each shift in the materials handling control room.

In relative terms, the running costs of these twin-engine scrapers in this application are reasonably low, as you would expect from a long-term, high-volume muck-shifting system. On this site, while performing quick load, haul and discharge cycles of 35 tonnes a time with just one operator, the average fuel consumption of a 637G is 110 lit/hr. Taking into consideration the productivity of a large motor scraper and that, until recently, the cycle included a significant climb up a steep 50m-high slope, this is considered good.

Depending of the type of coal being moved, the cutting edges on the bowl will last between three and six weeks, again this is considered good. Tyre wear in this application is also modest, which is good news as it costs £32k to re-shod one machine.

Finning has lined the inside of the bowls with Hardox steel for extra wear protection and added some extra Hardox fitted to the outer side edges. The 637Gs are serviced every 500 hours, while oil sampling is used to maximise component life.

Glyn praised the performance of the Cat 637Gs and the back-up received from the resident Finning service technicians and

OTHER OPERATOR DUTIES

Every qualified 637 scraper operator takes a turn in the materials handling control room during each shift. The task is to monitor and control the coal flowing from the discharge grate for the scrapers, all the way to the coal bunkers in the turbine hall. In addition to real time data on the material being fed into the turbine bunkers, there are also a series of camera feeds from all the conveyor belts.

The materials handling team is also involved in managing the ash, one of the coal-fired power station's by-products. Adjacent to the site is a large cement works that, over the years, has bought the ash to produce specialist cement and concrete products. In addition, ash is used to help with the progressive restoration of the nearby limestone quarry, by backfilling the void.

The RWE team load eight-wheel tippers with approximately 20t loads of ash from the large ash silo at the far end of the station. When all three boilers at Aberthaw B were online they would produce the equivalent of 120 truckloads of ash a day. Ash is also supplied to the grouting industry, where it can be mixed with cement and pumped underground to stabilise the ground where, ironically, it can include old coal mine workings.



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YELLOW AND GREEN DIGGING MACHINES

Paul Argent reports on the machine and attachment choices made by a young company, but one with lots of experience

Just over a year ago, James Covell and Daniel Olive decided to take the plunge and set up by themselves and duly formed King's Lynn Construction (KLC). The pair went to school together and have worked alongside each other for years. In many ways it was inevitable that they would eventually start their own company.

James is well known on social media and had a stint demonstrating for Steelwrist tilt-rotators on the show circuit. Despite starting from scratch, KLC managed to quickly secure a number of groundworks contracts from local developers throughout Norfolk. They have built on their initial success by reinvesting their profits into establishing themselves as the go-to

"WE HAVE BEEN VERY LUCKY IN FINDING GOOD DEVELOPERS TO WORK ALONGSIDE"

company within the region.

Initially, the business partners undertook all of the work themselves, but with an order book quickly filling, KLC took the opportunity to add new members of staff, as James

explained, "We have been very lucky in finding good developers to work alongside. We've now got seven lads working for us, including a full-time quantity surveyor."

PLANT CHOICES

To undertake their initial contracts, KLC hired in equipment as and when it was required. This soon changed and as James loves British-made JCB excavators, local dealer Watling JCB got an order for a 2.6-tonne 8026CTS mini-excavator.

James continued, "I know JCB products have had some stick on social media, but this little machine is absolutely fantastic. It's very well balanced, powerful and has been extremely reliable in the 12 months we have had it."

The mini was ideal for the growing company and the type of contracts they were initially undertaking, but as bigger contracts were won, the requirement for a larger excavator, required for longer periods, grew significantly.

Daniel said, "We had been hiring in larger machines for some jobs, but the hire periods seemed to be getting longer and longer. Looking at it logically, we needed to increase the fleet. James and I had hired a Takeuchi and were very impressed with it, but the lure of a

JCB for James was too strong and we decided to take a new 86-C2 in →



"WE STRIPPED THE WHOLE SITE WITH THE EIGHT-TONNER. WE PROBABLY COULD HAVE DONE WITH A 14-TONNER, BUT THE JCB DID IT EASILY"



Above: This eight-tonne class excavator stripped the entire site and also excavated the road boxes, all without hiring in a larger machine.

Left, below left and inset: James is particularly pleased with the cab on the new midi, as well as the performance and reliability of the smaller mini over its first 12 months.

which is so comfortable. The build quality is so much better too as everything is built from steel. I can't fault the machine."

SITE VISIT

The 86-C2 midi is the first of this model to be delivered in the region and, along

with the 8026CTS mini, was being used to undertake the groundworks package for a development of new bungalows on the outskirts of Diss.

James continued, "We stripped the whole site with the eight-tonner. We probably could have done with a 14-tonner, but the JCB did it easily. The road box was also dug out with it and, despite its lack of size compared to the more commonly seen 14-tonner on a groundworks job, I believe this machine matches that size for power and productivity, losing out on reach and dig depth."

→ groundworker spec."

The addition of the 8.7-tonne midi-excavator has made a big difference to the company, as James explained: "We're now able to do almost anything we need to in-house. The new machine is simply amazing. It's very well built, well specified and smooth to operate."

James was particularly pleased with the cab on the 86-C2, which he believes is a massive improvement over the previous models: "The new 7in colour touch-screen is simply fantastic and so easy to use. This spec has a heated and air-suspended seat,

At the time of our visit, KLC was in the process of building up the sub-base for the road through the site and was using a combination of both machines to spread the incoming stone. With 20 tonnes deposited from a tipper, James used the midi-excavator to throw the material out and around a number of manhole rings in the middle of the road. The 86-C2 was then parked up and, maybe surprisingly, the little 8026 took over to dress the material to a level.

TILT-ROTATOR

The most recent addition to the company's armoury was now put into action. While James's passion for JCB excavators is well known, it is equalled by his desire to run

Steelwrist tilt-rotators, and the 8026 mini has recently been

fitted with an X04 unit.

James used the tilt-rotator with a Keen grading beam to swiftly spread the stone along the road. Then using a combination of bucket and beam, the material was dressed around the concrete chambers and, thanks to the tilt rotator, the road cambers were put in while the mini-excavator barely moved.

James continued, "I think that having a Steelwrist, or any tilt-rotator, makes the job far more efficient. We decided to put it on the smaller machine as it's ideal in tighter locations around a house, putting in footpaths or digging services. That said, we will also be looking at one for the larger machine as and when funds allow."

Daniel agreed and joked, "The tilt-rotator has basically made me redundant from this operation. I used to be on the shovel tidying up around the manholes, but I can now go and do other, more productive work."

With the road base in, KLC awaited the arrival of Johnny Edwards, one of the country's finest kerb-layers, as Daniel commented, "We will do small amounts of kerbing ourselves, but when it comes to long runs like this, Johnny is your man."

Left: James Covell (right) and Daniel Olive decided to set up on their own, and the new enterprise has grown rapidly to meet the demand for its services.

Below: The first Steelwrist has been fitted to the mini-excavator; as funds allow the plan is to fit a larger model on the new midi.

CONCLUSION

James's working relationship with local dealer Watling JCB has been a long one, as James spent a considerable time in the seat of a JS130 while working with his father. He commented, "They are great dealers and look after us very well. We did look briefly at other makes, but I'm a JCB man through and through and believe they are one of the best machines out there."

"I say this about the Steelwrist brand too. I've tried other makes and, while they do the same job, the back-up and support from Pat and his team is second to none."

The initial success of this young company owes much to the genuine enthusiasm and passion for the job that James and Daniel bring to the party. Their desire is to create a company that delivers a quality and cost-effective service, which requires the best kit for the job. We at Earthmovers wish them every success for the future. **EM**

I-DIG MACHINE GUIDANCE

In addition to their first tilt-rotator, the young firm is also embracing machine guidance technologies. While not in use on this project, they have invested in an i-Dig system.

James said, "It's such an easy and straightforward system to set up and use. I'm surprised there aren't more people taking it on, as the initial cost is good and it can do what many owner operators and companies need, without the expense or complication of some of the larger systems."



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REMOVING RELICS OF RECESSION

Eoghan Daly reports on the demolition works to remove one of the final remnants of unfinished work during Ireland's construction boom, which still scar the landscape

Few Irish demolition contractors possess sufficient in-house plant resources to complete large-scale projects over a reasonable time frame, without having to hire in specialist machinery. One exception is Shannon Valley, which runs a large fleet of heavy plant poised to take on the most challenging projects. The firm undertakes road construction, groundworks, bulk excavation and quarrying operations. However, its experience in demolition has secured

many high-profile projects over the decades.

Managing director Michael English said, "Whatever the project we can adapt to suit its requirements from a wide range of plant, including excavators up to 70 tonnes. This gives us a high level of flexibility, which is furthered by a comprehensive range of attachments to get the most from their use, including a full line of demolition attachments." →



The long abandoned construction of the 10-acre Parkway Valley shopping centre site left imposing steel and concrete structures to be removed.



"MANY OVER-AMBITIOUS DEVELOPMENTS FELL VICTIM TO THE ECONOMIC DOOM AND GLOOM THAT FOLLOWED"



**"THE IMPOSING SPRAWLING
STRUCTURE HAS A FOOTPRINT
PLANNED TO INCLUDE OVER
23,000 SQUARE METRES OF
RETAIL SPACE"**

Shannon Valley deployed a fleet of large Hitachi excavators together with some Doosan models to tackle this massive demolition site.



→ SITE BACKGROUND

One such recent project is the demolition of the incomplete Parkway Valley shopping centre at Singland on the edge of Limerick City. The main contract was awarded to Walmac Demolition, and Shannon Valley was appointed lead sub-contractor on the project. The imposing, sprawling structure was planned to include over 23,000 square metres of retail space, and covers a massive ten acres.

Construction having begun in 2007, the development belongs to the era that was Ireland's construction boom. It saw many over-ambitious developments fall victim to the economic doom and gloom that followed. Dormant for a dozen years, the site is subject to a demolition order by Limerick County Council. The space is now owned by the Singapore investment company Novelty ICAV, which has announced plans to construct a more appropriately scaled mixed-use development on the site.

The site's sloping nature results in the incomplete structure being a split-level

design over four floors. It represents a major undertaking from a demolition perspective, as the majority of the main frame comprises large high-tensile steel beams and numerous towering concrete lift cores located through the imposing complex.

Demolition operations started early in November 2019, and considerable progress was made within the first few weeks. This was made possible by hitting the project with an array of heavyweight excavators, but also because of the people involved. The team includes foreman Michael Green, who has 21 years of demolition experience, most of which was with high-profile companies in the UK. Also included is engineer Jude Harland, who worked on the original construction of the structure.

FLEET FOCUS

Shannon Valley has a preference for Hitachi machinery (see panel) and deployed a number of its larger excavators on this job. Its fleet includes an original Dash 1 version of the Zaxis 650, which was purchased as a new machine in 2005. Hitachi 670 models

Above: Shannon Valley's 28m high-reach Hitachi 500-1 demo rig tackled the upper levels of the structure.

Below: The original Hitachi 650-1, which Shannon Valley purchased new in 2005, was also used on site.

Below right: A number of smaller Hitachi excavators were also used on site to support the activities of the larger prime movers.



were subsequently acquired, including a Dash 3 and Dash 5 versions. Their latest Hitachi heavyweight is a 690-6, which played a key role in this project.

Michael continued, “Even though we already had a full range of demolition attachments for our larger excavators, the proportions of the high tensile steel used in this structure and the massive volumes involved meant we needed to look at an upgrade. This saw us adding a larger capacity steel shear to the line-up to serve the job and others like it in the future.”

They initially hired a high capacity Rotar RSS100R shear to serve the project on their mass excavation spec Zaxis 690-6 excavator. However, the self-sufficiency ethos of the firm soon saw the arrival of their own large capacity shear, in the form of a Rammer RSS58R. It weighs 5.9 tonnes and offers a jaw opening width and depth of 760mm and 780mm respectively, while delivering a massive 4780kN of cutting force. The oil flow available from the big Hitachi means jaw closing is completed in only 4.3 seconds, resulting in fast cutting cycles.

Although hosted on the short dipper stick of the mass excavation Hitachi, the length of the Rammer attachment provided a broad working range. In turn, this allowed the pairing to conduct both primary demolition and secondary processing of the large steel sections.

In addition to the new steel shears, Shannon Valley brought a selection of other

appropriately-sized demolition work tools to site for their large Hitachis. They included an Atlas Copco HB7000 hydraulic breaker and 4TE FRP12012 concrete pulveriser.

The pulveriser made light work of secondary processing of concrete arisings, its 1500mm jaw opening able to tackle even the largest lumps.

Long-serving operator Tom Reilly said, “Since the Hitachi 690-6 arrived it has done a lot of different kinds of projects and works equally well in all of them. It has great digging power and bucket capacity, which it showed in a bulk dig in the Dublin area loading a fleet of trucks, and also has the oil flow and stability to get the most from demolition attachments, including the Rotar shear I’m using on this site.

“I’ve been on the 650, 670 and now the 690 since coming to work with Shannon Valley twenty years ago and can see big improvements in the machines over time. I know they are all great when they are new, but the 690 really is a first class machine to operate.”

Michael continued, “Anything we can do to improve safety has to be worth it, which is why we have fitted the 360-degree view cameras to a number of machines. It makes the operator very aware of what is going on round his machine on a single screen and is well worth the additional cost involved. The 690 has also been fitted with a travel alarm and full handrail package round the upper-structure, as well as extra track guides.”

SHANNON VALLEY BACKGROUND

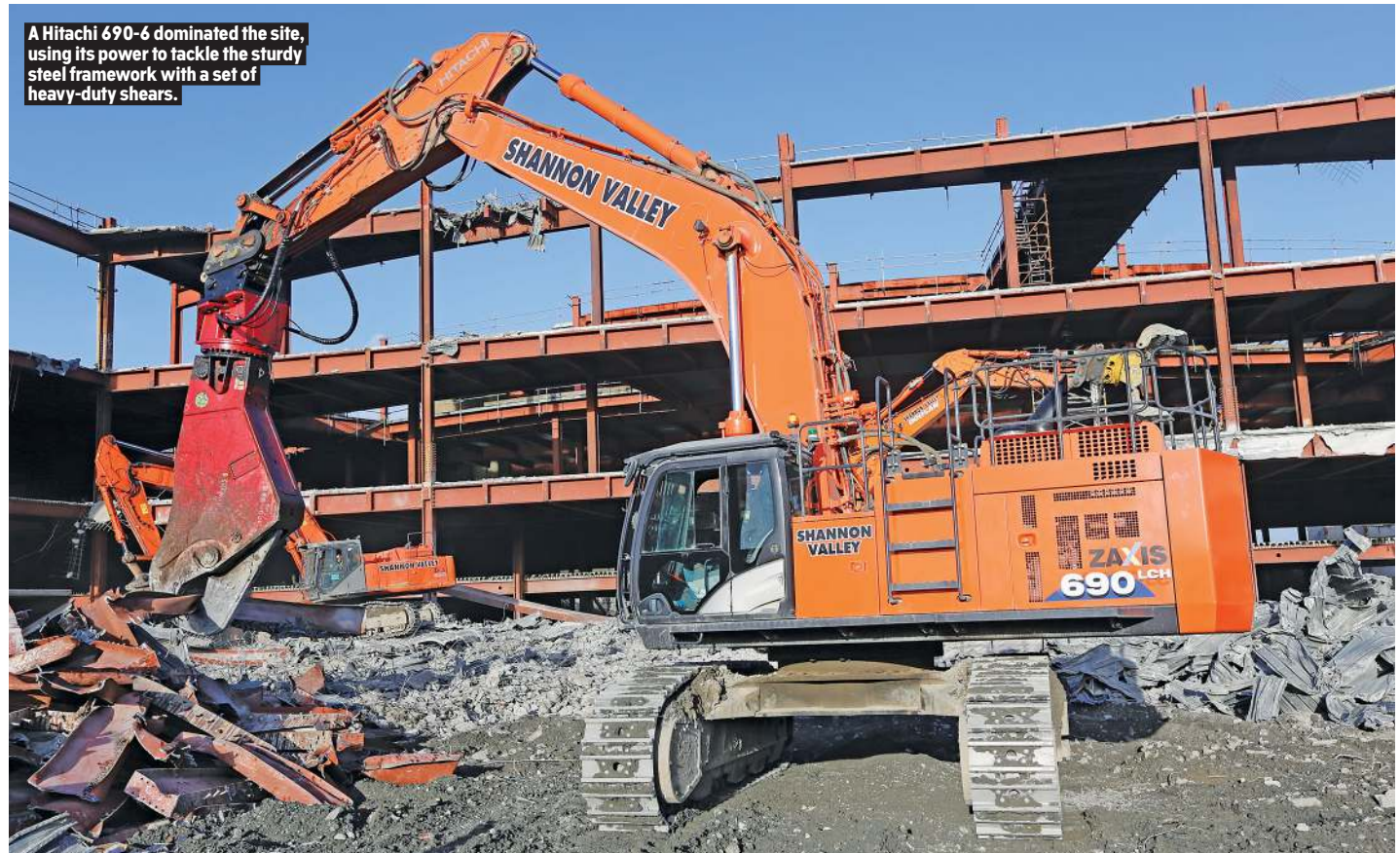
Based in Donabate, Co Dublin, Shannon Valley has been in business for the past 30 years and is run by Michael English, together with his brothers David and Dermot. The family firm has expanded and diversified over the years into many heavy-duty earthmoving sectors.

An important lifeline during the worst of the Irish recession, the firm took the decision to expand internationally and established a company in Poland to work on large-scale infrastructural projects.

They included 14km of motorway and 26km of secondary roads near Rzeszow, which partly accounts for their comprehensive fleet of larger excavators.

There is a range of excavator brands in the 117-strong fleet, but they are dominated by Hitachi, principally due to a long and successful relationship with the Irish Hitachi dealer TBF Thompson.

Michael explained, “Our connection to Hitachi is long running and goes back to the original UH063 model. We have had a wide range of models from them over the years, including the first EX600 back in 2000 and have always been impressed by their quality and performance.”



A Hitachi 690-6 dominated the site, using its power to tackle the sturdy steel framework with a set of heavy-duty shears.



Above and left: A number of Doosan excavators are also in the Shannon Valley fleet, the DX420-5 performing a number of key roles around the site.

**“THE 6300-HOUR DX420-5
PERFORMED A NUMBER
OF ROLES AROUND THE SITE
AND WAS GENERALLY AN
ALL-ROUND MACHINE”**

→ HIGH-REACH WORKING

A key contributor to this project was Shannon Valley’s Hitachi Zaxis 500-1 high-reach demo rig. It took care of the steelwork at higher levels and also tackled the lift cores and concrete stairwells located throughout the building. This part of the structure comprised 25cm-thick concrete walls, heavily over-reinforced with 25mm rebar, increasing to 32mm rebar at the corners. The structure at these points was 35m tall, requiring an operating platform to be constructed for the 28m high-reach excavator to have the necessary height and distance away from the building.

Operated by Mark Kinahan, this high-reach rig was imported as a used machine from the UK some eight years ago, with a mere 2000 hours on its clock. This ex-Kocurek conversion came complete with both high-reach and digging booms. Although it has a fixed cab, the operator does benefit from a tilting seat arrangement. It also features an additional counterweight and a long, heavy-duty undercarriage for good stability.

OTHER FLEET

The lower floors of the structure having been designed to accommodate a multi-level car park, this part of the unfinished project incorporates some of the largest steel sections within the structure. Unfortunately, these lower floors were not finished before the development was abandoned. In order to gain access to deal with the steel frames in these areas, a great deal of preparatory work was required.

This task was assigned to a Doosan DX420-5 equipped with a demolition grab. It removed the incomplete floor slabs on a phased basis from each bay. Mindful of the need to work in a location with reduced headroom, the operator dislodged each slab and then extracted it to the outside of the structure. They were then loaded into a Volvo A30E articulated dump truck for hauling to the secondary processing area established on site.

The 6300-hour DX420-5 performed a number of roles around the site and was generally an all-round machine, but one that could deliver plenty of grunt when required, including work with a concrete

muncher on secondary processing duties. At peak periods of truck loading activity, it also assisted a Doosan DX225-3 on the loading operations and also conducted sorting operations with its grab.

Also on site to perform secondary processing was Shannon Valley’s Hitachi Zaxis 350-5, configured with a three-piece boom and Rammer steel shears. Another machine making a valuable contribution to the project was a New Holland E385C excavator, working with a concrete pulveriser on size reduction of hollow-core floor slabs.

Very few E385Cs made it to Ireland, and Michael concluded by saying, “Unlike earlier New Holland excavators, the E385C was a genuine rebadged Kobelco and has proved to be bulletproof. I couldn’t praise it enough and with its mass excavation boom can take a four-tonne hammer, like the much bigger Hitachi 490.

“Even though all our machines must work on a range of projects, they all have their own advantages, which means we can select the right machine for every project from within the fleet.”

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FIXED COST PRIME MOVER

David Wylie visits Grange Quarry in the Scottish borders to see their new British-built Komatsu excavators in action

At the start of this millennium the family-run firm of Grange Quarry Limited was founded by Stuart Dodd in his mid-20s, with a main office located just off the M74 at Lockerbie.

Over the years the firm has aggressively expanded, to develop a network of quarries, local operating centres, concrete batching plants, together with a modern fleet of both tipper and concrete mixer trucks. It has become one of the largest suppliers of a wide range of aggregates and other stone products, together with ready-mixed concrete, in Dumfriesshire and north Cumbria.

Known as 'The Grange', their flagship quarry is hidden in

the hills between Lockerbie and Langholm, a short drive from the firm's HQ. Our previous visit to this site was in 2017, to report on the arrival of a pair of Caterpillar wheel loaders, which are currently performing well.

Blasting at the quarry takes place every few weeks, producing a heave of anywhere between 20,000 to 60,000 tonnes, depending on demand. The total output of the quarry is around 250,000 to 300,000 tonnes per year.

NEW PRIME MOVER

Quarry manager Richard Henshall said, "We've been operating here for nearly 20 years, predominantly with Cat equipment. However, we've decided to give Komatsu a try, with two new machines. So far we've →

"IT'S GOT A BIT OF EXTRA REACH, WHICH COMES IN HANDY WHEN WE ARE SIDE-CASTING MATERIAL ON TO THE LOWER BENCHES"



Below and inset: Replacing a 10-year-old Cat 345D, the new heavy-duty version of the Komatsu PC490-11 has settled well into this long-term job.





Instead of a fleet of haul trucks to transport the material down to the loading area, the crusher discharges on to a conveyor, which sends the material over the edge of the bench.



Left: Working on developing the middle bench prior to a blast, the big Komatsu casts the material over the edge and down to the processing area.

→ not been disappointed, as both the PC490 and the smaller PC210 are performing well, have been very reliable with a low fuel burn; the PC490 is averaging just 38 litres an hour in eco mode.”

Grange Quarry had previously carried out all regular servicing in-house. However, as machines become increasingly complex and main dealers offer fixed-price extended warranty and maintenance contracts, servicing of these two new excavators is in the hands of supplying dealer Marubeni-Komatsu. This includes exchanging the diesel particulate filter and flushing out the AdBlue system at 4500 and 9000 hours.

MD Stuart Dodd said, “Since the PC490-11 HD is aimed at the demolition sector, it’s a very good fit for quarry applications too. It comes with a host of factory fitted

and designed safety systems, guarding and protection for quarry operators.

“When we looked to the market for a new prime mover, the local Komatsu dealer put a very good package together. Both the machine specification and a competitive five-year/10,000-hour maintenance and warranty plan fit our needs and will help deliver fixed costs over the life of the machine.

“Given the reliability of the two new machines, we’ve not really tested Marubeni-Komatsu’s service support to the full, but when they have been called, the response has been very good and out-of-hours planned maintenance works really well for us.”

Taking over duties from a mass excavation spec Cat 345D, which has been

on site for a decade, the heavy-duty version of the PC490-11 has also been supplied in a similar configuration, with a 7.1m boom and a short 2.9m arm. Both excavators weigh approximately 48 tonnes.

SITE VISIT

At the time of our visit the new PC490 was working on the upper bench of the quarry, swinging an MST rock bucket on top of a pile of blasted rock. It was feeding a 300tph Kleemann Mobicat MC110 Z mobile jaw crusher, to produce a run of 4in/6f2 material. The material from the crusher is fed directly into a 600tph Trackstack 8042T conveyor, which has a reach of 23.5m.

The conveyor, designed for use as a mobile stockpiling machine, is used on this site in a slightly different way. It discharges

**"GIVEN THE RELIABILITY
OF THE TWO NEW
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SERVICE SUPPORT TO
THE FULL"**



After sitting in a decade-old machine on this application, operator Gordon Sandford appreciates the comfortable and quiet cab on the new Komatsu.



The cab is protected by a heavy-duty demolition-spec ROPS cage and includes a screen for the four-camera system, providing a bird's-eye view round the excavator.



over the edge of the top bench, using gravity to move a large volume of material down to the stockpile on the lower benches, without the need to run a fleet of expensive haul trucks.

After producing sufficient material at the upper bench, the PC490 then quickly tracks down to the middle bench, to conduct development work in preparation for the next blast. The narrow MST bucket is used to rip out rock and is a good match for loading the hopper on the Kleemann crusher.

However, for this job the Hill Tefra hitch is used to quickly swap attachments for a larger 2.34cu.m Miller MB700 extreme rock bucket. This is used to side-cast material excavated from the development works down to the quarry floor. As part of the package Marubeni-Komatsu also supplied a four-tonne Soosan 150 hydraulic breaker to enable the PC490 to reduce →



**“WHEN WE LOOKED TO THE
MARKET FOR A NEW PRIME MOVER,
THE LOCAL KOMATSU DEALER PUT
A VERY GOOD PACKAGE
TOGETHER”**

Right: The Cat 980M and 980K wheel loaders are working well, praised for their ability to perform multiple tasks across all the benches on this large site.

→ any oversize material and assist with the development work.

The big Komatsu has an adjustable, heavy-duty undercarriage that is set to its maximum width for the best stability. Sitting on 600mm-wide double grouser track pads, providing an overall width of 3.49m, the excavator is a stable machine, even when side-casting over the edge at full reach with a full bucket.

The material cast down from the middle bench is then loaded into another Kleemann 110 crusher, then through a scalper unit and split off to produce a 4in clean material that goes to the tertiary plant for further processing. This is then loaded by Grange's other new heavy-duty Komatsu excavator, the PC210-11, situated on top of the stockpile, loading two cone crushers. In turn these crushers are linked to two

screeners units for final separation, to produce asphalt aggregates, typically from 32mm stone to dust.

Richard commented, “The PC490 is proving to be a highly productive machine, as it's managing to service various crushers across two different benches. We find this to be an efficient set-up to produce a lot of material with the minimum number of machines and without using haul trucks.”

Operator Gordon Sandford, who has spent time in a massive Komatsu PC3000 in Scotland, said, “This is a really nice machine to operate compared to our old 345D. It's got a bit of extra reach, which comes in handy when we are side-casting material on to the lower benches. It's also a well-balanced and stable machine, the cab is very quiet and overall it's comfortable to operate all day long.” **EM**

Below: The new PC210-11 at work loading crushers on the pit floor: note the PC490 casting material down from the middle bench.



PC490-11 WALK-AROUND

Designed for both demolition and quarrying applications, the heavy-duty version of the 48-tonne PC490-11 features a large undercarriage, swing ring and high clearance between the upper-structure and the top of the track pads to help prevent rocks and other debris getting trapped. It also features bolted-on, 15mm-thick side protection on both sides of the upper-structure, plus 9mm belly plates and additional protection for the bucket cylinder and the lights.

The operator is further protected by a Komatsu demolition spec cab guard, which features a hinged front section to facilitate windscreen cleaning. The one-piece front screen is made of high impact resistant glass, as is the roof window, which also has a wash/wipe system fitted for a good clear view to the top of the face at full reach. The interior cab noise level is given as just 71dB(A).

Visibility is enhanced by the standard fitment of the KomVision system, which consists of four networked cameras, a 7in LCD screen and video image processing to provide a real-time bird's-eye view round the excavator.

At the heart of the PC490-11 is an 11-litre, six-cylinder, Stage 5 emissions-compliant Komatsu engine rated at 362hp at 1900rpm, driving a closed centre, load sensing hydraulic system. The control system provides Eco and Power modes together with six working modes: power, lifting/fine, breaker, economy, attachment power and attachment economy.

Pressing the PowerMax button temporarily provides the PC490-11 with a boost in hydraulic pressure to tackle stubborn digging or lifting tasks. Komatsu claims the Dash 11 version provides a fuel economy benefit of up to 11% compared with its predecessor.

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CAPTIVE COAL MINING

Keith Haddock reports from Center, North Dakota, on the machinery and operations of a large surface coal mine serving a single customer



Above: One of two Ingersoll-Rand DML blast hole drills are employed to drill some hard, rocky areas encountered in the overburden.

Below: Christened 'Big Jake', the Page 757 weighs some 3200 tons and digs with a 70-cubic-yard bucket on a 300ft boom.

The Center Mine in North Dakota is unlike most other surface coal mines in America. Firstly, it is the only mine operated by BNI Coal, a company that traces its history back to when the Baukol family established a coal company at Noonan, North Dakota, in 1930 (see panel on last page). Secondly, it is a 'captive' mine, meaning that the vast bulk of its output is delivered to a single destination. In this case it's the nearby Young generating station, which is reached via internal haul roads from the mine.

In addition, unlike most coal mines in North Dakota, the overburden encountered at Center Mine includes some hard, rocky areas, deemed too hard for the draglines to efficiently dig. As this material requires drilling and blasting, these randomly-occurring areas must be identified before the dragline moves in.

Production from the Center Mine averages around

4.3m tons of coal per year. A small amount of coal, usually about 50,000 tons per year, is sold to the local farming and residential communities. As an aside, although it has a population of less than 600, Center is actually a city named after its location, which is at the exact geographical centre of the North American continent.

OVERBURDEN REMOVAL

Overburden at the Center Mine is removed by three walking draglines, each operating in its own long pit, →

**"PRODUCTION FROM THE
CENTER MINE AVERAGES
AROUND 4.3 MILLION
TONS OF COAL PER YEAR"**

YOUNG GENERATING STATION

Named after the late senator from North Dakota, the Milton R. Young generating station is a two-unit, lignite coal-based power plant located near Center, North Dakota. The plant is owned and operated by Minnkota Power Cooperative and is its primary source of electrical generation, serving customers in eastern North Dakota and northern Minnesota.

The station's first generating unit went on stream in 1970 and has the capacity to produce 250 megaWatts. The second unit, boasting 455mW generating capacity, began producing electricity in 1977. This second unit is owned by Square Butte Electric Cooperative, but is operated by Minnkota Power.

To keep these older generating units working efficiently and enable them to meet ever-increasing environmental regulations, Minnkota Power continues to invest in major environmental and system upgrades. In the period from 2006 to 2011, these resulted in a 95% reduction in sulphur dioxide emissions, and a 60% reduction in nitrogen oxides. In addition, further upgrades to the electrical transmission system have increased its efficiency.

More recently the focus has been on reducing carbon dioxide. Minnkota Power has received grants from the Department of Energy for its carbon capture project known as Project Tundra. This includes technologies that will capture more than 90% of the carbon dioxide emissions and, when completed, will permanently store the greenhouse gas in a deep geological formation.

→ uncovering coal as they progress from one end to the other. They excavate from a prepared level bench and dump the spoil into the adjacent worked-out pit.

The first dragline, a Page 736, was commissioned in 1970 when the mine opened, removing sufficient overburden to extract 1.5m tons of coal a year. Some 50 years after the 875-tonne Page 736 was commissioned, this dragline, named 'Big Sandy', looks like new, having been well maintained over the decades and now sporting a new paint job.

Big Sandy swings a 23-yard bucket on a 19ft-long boom and is able to handle 60ft of overburden. The DC electric equipment on board includes hoist and drag motors of 625hp each, two 138hp swing motors and a separate 375hp walking motor. All are

Above and below: Now approaching 50 years old, the Page 736 dragline looks like new and now has a second Esco wide bucket.

powered by a 1500hp AC motor-generator set of 1500 horsepower.

This Page dragline has recently been tested with a new type of bucket designed by Esco. It's a wider design than the norm and features six teeth and a sloping rear end. It appears to fill quicker and its wide design allows it to carry a greater heaped load. The new design of dragline bucket appears to be working so well in the type of overburden encountered at Center Mine that a second example has been purchased.

In 1977 a second generating unit was commissioned at the Young Station, when the Center Mine invested in another Page dragline to significantly increase coal



**“OVERBURDEN AT THE
CENTER MINE IS
REMOVED BY THREE
WALKING DRAGLINES,
EACH OPERATING IN ITS
OWN LONG PIT”**



production. This was the much larger 757 model, which was equipped with a 70-yard bucket on a 300ft boom. Christened ‘Big Jake’, this dragline weighs around 3200 tons. The significant step up in size was due to the deeper layers of overburden being encountered at the mine.

This Page 757 has two on-board AC motor-generator sets totalling 3500hp, providing current to 14 DC motors. There



are four hoist motors of 625hp, four 500hp drag motors, a pair of 500hp walking motors and four swing motors of 375hp.

The third and newest dragline at Centre Mine is a Bucyrus 8200 commissioned in October 2004, again required to cope with a further increase in overburden depths. Named ‘Liberty’, this dragline carries a 78-yard bucket on a 360ft boom set at 30 degrees. This provides a dumping radius under the boom point of 310ft and a dumping height of 131ft. The walking system includes two shoes each measuring 70ft long x 13ft wide, which take a 7ft 6in step at each rotation. The overall width of the machine over the shoes is 97ft.

During digging, the 8200 sits on



Below, above right and inset: The Bucyrus 8200 carries a 78-yard bucket on a 360ft boom. Its 70ft-long x 13ft-wide walking shoes enable the 5210t machine to take 7ft 6in steps.



→ a circular base measuring 68ft 6in in diameter, which results in an acceptable ground bearing pressure of approximately 20psi. Electrical equipment includes four hoist, four drag, four swing and four walk motors, all DC type, driven by AC motor-generator sets totalling 8000hp. If scales could weigh the 8200, they would show an approximate operating weight of 5210 tons, which includes 540 tons of ballast.

Even though, over the decades, the site has purchased draglines with increasingly longer booms, in order to gain working range and uncover the coal where overburden is deep, the draglines can ‘chop’ the overburden above their working level. Undertaken from the side of the bench and throwing the material on to the spoil pile by swinging about 180 degrees, this reduces overburden height to within the draglines’ normal operating parameters.

HYDRAULIC EXCAVATORS

Using a dragline to chop the overburden in this way obviously slows down the main overburden removal task, but it does eliminate the need for additional equipment. However, there came a point where the overburden became so deep that even the huge Bucyrus 8200 could not handle it. Therefore a system of pre-benching was introduced, which removes the excess of overburden ahead of the dragline.

This requires a considerable investment in a load and haul fleet, together with establishing and maintaining haul roads and a supporting infrastructure. The upside is that this allows the draglines to constantly excavate at their most efficient digging depth.

Hitachi backhoe excavators were chosen as the loaders: an EX2500 with a 20cu.m bucket and a 22cu.m EX2600. These were

Below, right and inset: In addition to three walking draglines, there are Hitachi EX2500 and EX2600 hydraulic backhoes on site, loading a fleet of Cat 789C dump trucks.



matched to a fleet of 200-ton capacity Cat 789C haul trucks.

Working ahead of this equipment, a fleet of push-pull Cat 657G scrapers remove topsoil and some of the subsoils, all to be used in the ongoing reclamation process. The big Hitachi excavators are also used to remove the last few feet of subsoil above

COALING FLEET

The coal haulage fleet at Center Mine consists of three 180-ton capacity and four 240t Kress bottom dump coal haulers, all in the 2000hp class. This is in keeping with other coal mines in North Dakota; the relatively flat terrain favours the use of Kress haulers as they can reach their fully loaded maximum speed of over 50mph. The rear-wheel drive, rigid-frame design is also more manoeuvrable in the cut, where their tight turning circle is superior to tractor-trailer units.

Coal-loading equipment includes Cat 992C wheel loaders fitted with oversize coal buckets. Coal seams vary across the property, ranging in thickness from 1.5ft to as much as 10ft. The wheel loaders are also used to remove partings, which are often encountered within the coal seams.



A dragline removes overburden using the chop method and the Hitachi excavator removes upper layers of overburden ahead of the dragline.





**“THE RELATIVELY FLAT
TERRAIN FAVOURS THE USE
OF KRESS HAULERS AS
THEY CAN REACH THEIR
FULLY LOADED MAXIMUM
SPEED OF OVER 50MPH”**

A Kress SCH200C III rigid-frame, bottom dump hauler carries 250 tons. The Milton R. Young generating station can be seen in the background.



the main overburden layer, which again is used to restore other parts of the site.

As over 200 acres are mined every year, the active mining area has moved a significant distance from the office/shop complex where it began in the early 1970s. These worked-out areas have been reclaimed and now grow crops; the casual visitor would never guess they have been mined. BNI Coal is proud of its reclamation achievements and states that approximately 30% of the total cost of producing coal goes towards restoring the land. **EM**

RELOCATING DRAGLINES

A few years ago, a major change took place at the Center Mine when a brand new mining area was opened up, requiring the services of two of the draglines on site. This area was actually not far away from the original office and workshop complex, but in the opposite direction where mining has taken place over the decades.

Detailed costed options were worked up to move the 875-ton Page 736 and the 5210t Bucyrus 8200, including walking the machines under their own power or moving them on the back of specialist mobile transporters. The latter option was chosen and the bid by Mammoet accepted, the firm having already achieved success in moving large draglines in Australia.

The eight-mile long route was selected and the road prepared. The actual move took place in the dead of winter to take advantage of hard frozen ground to support the heavy loads. As the largest of the draglines, the 8200, weighs in the region of 5000 tons with shoes removed, no errors or road failure could be tolerated. Mammoet assembled a series of multiple modules with all-wheel drive and steering. Each assembly was computer controlled so that each wheel automatically carried an equal share of the load. The move was completed successfully and without incident.

BNI COAL BACKGROUND

The letters BNI stand for Baukol-Noonan Incorporated, which was established in 1949 from a former coal company founded in 1930 by Harris M. Baukol and his brothers. In 1950, surface mining began near Noonan, North Dakota, just south of the Canadian border. Then in 1965 Baukol-Noonan Inc acquired coal leases covering 15,000 acres near Center, North Dakota, and mining commenced there in 1970.

At Noonan, mining increased for a while, especially during the world coal shortage in the 1970s caused by the Arab oil embargo. However, coal mining at this location ceased in 1986 and the company concentrated on its large mining operations at Center. Meanwhile the former mining area at Noonan was returned to pasture and crop production. In 1988, Baukol-Noonan Inc merged with Minnesota Power and changed its name to BNI Coal.

North Dakota is known for its extreme weather conditions and wide swings in temperature. In summer, temperatures can climb as high as plus 40degC and drop as low as minus 45degC in winter. These temperature extremes coincide with the greatest demand for electric power, so coal-fired power plants such as the Young Station maintain a stockpile able to provide a dependable year-round supply of electricity.

In extreme weather conditions, however, mines must sometimes stop work if severe snow storms cause working conditions to be dangerous. Also metal becomes brittle at low temperatures and Center Mine's policy is to shut down large equipment when colder than minus 20degC to protect both the equipment and operators.

BNI Coal employs approximately 170 workers, about 70 of them working per shift along with office and support staff. Normally, the draglines work 24 hours per day on a three-shift basis, while the rest of the mine runs two shifts Monday to Friday plus one shift on Saturdays.



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BOOSTING PRODUCTION AND MANAGING COSTS

Eoghan Daly revisits the Zbraslav quarry near Prague to review their latest machine upgrade

The Czech construction industry's phenomenal growth in the last few years has placed immense pressure on local quarries to increase their production levels.

While this increase in demand for aggregates and concrete products is obviously welcome, there is a degree of caution being exercised by the sector. It is thought that construction activity has reached its peak and that there will be a cooling off period in the demand for quarry products. In these circumstances it is critical to avoid the pitfalls of over-investing in new machinery. A better strategy in these circumstances is to take a more measured approach to capital

expenditure and look for further efficiency savings to satisfy the current peak demand.

Zbraslav Quarry, run by the leading Czech quarry products group Kamen Zbraslav, is one of the largest extraction sites serving the Prague area. Its high quality stone is processed into a number of quarry products and extensively used for ready-mix concrete.

In 2015 a number of new machines joined the Zbraslav fleet, helping to increase production to 1.3 million tonnes by 2017. Over the →

Inset and below: The 2015 fleet upgrade programme included a Komatsu PC800 excavator and a WA600 wheel loader, both of which are working exceptionally well.



"WE ARE GETTING FULL UTILISATION ACROSS THE COMPLETE FLEET, EVEN THOUGH HAUL DISTANCES ARE NOW LONGER"

“BASED ON THE RELIABILITY AND PERFORMANCE OF ITS PREDECESSOR, IT WAS NOT A SURPRISE THAT A KOMATSU HD605-8 WAS CHOSEN”

Below, inset and below right: Having experienced the previous generation of Komatsu HD605 rigid dump truck, the management team had little hesitation in ordering a new Dash 8 version.



→ last two years production levels have been increased by 200,000 tonnes to reach a peak production rate of 1.5mt per annum. This has been achieved without extending the working times of the quarry, as these are strictly controlled to provide local residents with a decent quality of life.

Kamen Zbraslav's head of aggregate production, Libor Stejskal, explained, “Expanding our operation with additional machines was not an option for us, as the current level of product demand is very much at its peak and is likely to reduce in the future to more typical levels. Since the static plant here at Zbraslav Quarry had sufficient crushing and screening capability to meet these new demands, there was no need for upgrades in this area. However, much of our mobile plant fleet has been upgraded in recent years and through applying these machines in the most productive way we have coped with the strong demands placed on the quarry.”

MAIN EXCAVATOR

Part of the 2015 fleet upgrade programme was to establish a better resource for high volume overburden stripping, something that this huge, long-established quarry had not found necessary to perform in any meaningful way in recent years. This

resulted in a 50-tonne class Cat 349E excavator being replaced by a much larger Komatsu PC800-8, which is used both at the face and on quarry development work.

Moving up to an 80-tonne class mass excavation machine has certainly played its part in dramatically improving the productivity of the site, as Libor explained, “We are very pleased with the performance and reliability of the PC800 excavator. Its greater capacity is allowing us a much faster load cycle time for the quarry trucks, which means we are getting much greater volume moved over each shift.

“Previously we were running five quarry trucks and had no overburden to move. Now we use four quarry trucks, which meet the needs of overburden and rock transport to the crushing plant. We are getting full utilisation across the complete fleet, even though haul distances are now longer.”

The PC800 excavator was joined at the face by a new Komatsu WA600 wheel loader, which has been well received by the quarry team. Previously running an almost exclusive fleet of Cat machinery, together with a Liebherr 954 face shovel, Komatsu kit now dominates the machines working at the face, which includes the 2015 purchase of an HD605-7 rigid dump truck.

Libor continued, “We continue to have very



The MacPherson strut-type front suspension system allows a tight turning angle, resulting in an overall turning circle of just 8.7m.

high respect for Cat machines and still run two quarry trucks and loaders from them here. With the quarry trucks, there is an eight-year age difference between Cat and Komatsu and they are still excellent performers.

“Since we tried our first Komatsu we have



been very impressed with its performance and the service we get from the dealer Kuhn Bohemia has also been very positive. Since management are very happy with Komatsu, the fleet working at the face and on haulage is very much dominated by them and the latest HD605-8 quarry truck is the most recent addition."

NEW QUARRY TRUCK

The quarry originally used Russian-built Belaz haulers, but made the transition to Cat rigid dump trucks and, more recently, Komatsu.

Libor said, "Our first HD605-7 has been working two shifts per day since it came here new in November 2015 and has recorded just over 10,000 hours. In that time it just needed a turbo replacement at 8000 hours, which is normal and something that is always expected after 7000 hours has been passed.



Left and below: Hauler operator Antonin Kubice reports that the Dash 8 version is more comfortable, quieter and has better climbing ability than the previous Dash 7 machine.

With the exception of this there have been no problems with electrics or anything else."

Based on the reliability and performance of its predecessor, together with a strong local dealer, it was no surprise that a 63-tonne capacity Komatsu HD605-8 was chosen as the next upgrade to Zbraslav's haul fleet, which started work on site during 2019. As the quarry is extremely close to Zbraslav village, and both are located within the same river valley, noise pollution is something that the management team take very seriously indeed.

This has been entrusted to operator Antonin Kubice who, after a 15-year spell as a heavy plant service technician, has operated haul trucks on this site for the past decade, saying, "There are many improvements on the latest HD605-8 quarry truck over the older model, which make it better in both performance and driver comfort. The main advantages are its climbing ability, which is much better than before and it is also much quieter than the older model, which is very important to us here."



➔ The overall design of this type of Komatsu hauler features a MacPherson strut-type front suspension system, which employs A-frames between the wheels and the chassis. This allows the space for tighter turning angles, which in turn considerably reduces the overall turning circle of the HD605-8 to just 8.7m.

The route from the face to the central processing plant involves a long downhill haul with a series of acute bends. On this part of the working cycle, the new Komatsu's automatic retardation speed control system really comes into its own. It allows the operator to set and adjust the downhill travel speed by clicking a button on the control lever, to provide controlled descents without over-using the truck's braking system.

However, the ramps up from some of the working benches at the face have gradients that would challenge any decent-sized, fully-loaded hauler, which the new Dash 8 Komatsu seems to be taking in its stride. One reason for this is that the dump truck was ordered with Komatsu's optional traction control system. It senses the level of wheel spin and, when it becomes excessive, the system appropriately applies the brakes to regain traction and minimise tyre wear.

Climbing and descending steep gradients is also greatly assisted by the hauler's transmission, which is a Komatsu electronic shift box with automatic clutch modulation in all gears for smooth changes and less strain on the components. The transmission also incorporates a skip shift function, which comes into its own when hauling up a steep hill. Instead of downshifting through each gear to reach the appropriate ratio based on the severity of the gradient, the transmission skip shifts to what it considers to be the most suitable gear.

"THE NEW VOLVO L180H IS RETURNING A FUEL CONSUMPTION OF JUST 15 LITRES AN HOUR, THE SAME RATE AS A CVT-EQUIPPED CAT 972M XE"

The Dash 8 versions of the HD605 feature sloping access stairs, as opposed to a simple ladder arrangement on the Dash 7. With a hydro-pneumatic suspension system and a heated air suspension seat, operator comfort levels have also been improved within the cab. Komatsu calls the latest generation of hauler cab a 'Space Cabin'. As its name suggests, it is a large structure with a sensible layout of all the controls. A redesigned dashboard displays all key information and the feed from the rear view camera is displayed on a separate screen, allowing an uncluttered format for the main display.

This hauler also features a real-time payload management system, complete with coloured lights to inform the operator of the WA600 wheel loader how close to the target weight the truck is.

Powered by a six-cylinder Komatsu engine rated at 578kW, over its first 1300 hours of work the HD605-8's fuel consumption is averaging 31 litres an hour, a similar figure to their Dash 7 model.

WHEEL LOADERS

With over 4000 tonnes of material dispatched from the site each day, coupled with stockpiling and concrete batching plant-feeding duties, wheel loaders are a vital part of this operation. The fleet includes the technically advanced Cat 972M XE, which features a continuously variable transmission (CVT). Now with over 10,000 hours on its clock, reactions to this loader have been mixed.

As Libor explained, "We have had the same operator on our 972M XE and our 972H, so there is no difference in style of operation and it makes the comparison very accurate. The 972M XE has a fuel consumption of 15 litres per hour, which is noticeably lower than

the 18 to 19 litres per hour consumption with the 972H using a standard transmission. There have been no mechanical problems with the Cat loaders. There have been repeated software and electrical problems however, which have caused a certain level of downtime when they arise."

Even though many of the Kamen Zbraslav operations use Cat wheel loaders, the firm remains open-minded when it comes to fleet upgrading. The most recent purchase has been a pair of Volvo L180H loaders, one of which was assigned to the Zbraslav Quarry. It was entrusted to operator Lubos Brezina, who previously drove the 972M XE. Much to everybody's surprise, after six months in the new Volvo, Lubos was achieving 15lph, the same fuel burn rate as the CVT Cat.

Libor commented, "Technology and efficiency enhancing systems may be a big part of the future, but it is also very important to look at operator technique too. We have the same model of machines performing identical types of work at different quarries across our operations, with much different fuel consumption. This shows how big a role the operator plays in achieving efficiency." **EM**

Inset and below: The new Volvo L180H is returning a fuel consumption of just 15 litres an hour, the same rate as a CVT-equipped Cat 972M XE.



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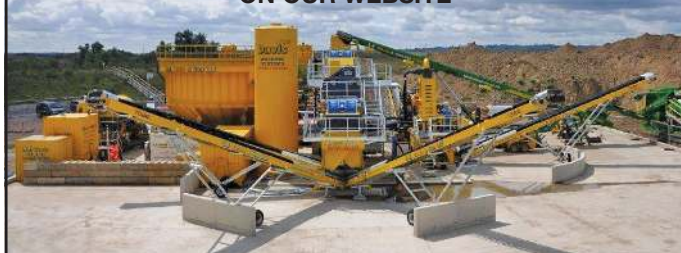
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KNOW YOUR MARKET

Rupert Craven, Ritchie Bros UK & Ireland sales director, discusses current trends in the used equipment market

With the Government and its new majority promising an 'infrastructure revolution' in the March budget, in which billions of pounds are to be invested across the country, what will this mean for buyers? As we enter the next purchasing cycle, it is worth looking back at the final auctions of 2019. What we have seen for buyers of equipment in both our UK and Netherlands auctions is that it's still the home country that attracts the most buyers, but we have witnessed a shift in other regional trends.

When it comes to the statistics, at our November auction in Maltby we sold 1243 lots, of which 600 were sold to overseas buyers and 294 buyers won lots on the day. As we restarted the ramp display of machinery again at this auction, we saw an increased attendance at the auction itself, which due to the time of year we didn't expect. This was further strengthened by the number of bidders registering online, which was the highest for five years, showing a growing appetite for the live online mix.

Again, the biggest star of the auction, which attracted frenzied bidding, was an all-terrain crane. This time it was a 100-tonne 2004 Liebherr that took the high value crown, selling for £175,000. In other machine categories we saw a Cat 2015 950M wheel loader selling for £91,000 and

a 2018 Hitachi ZX135US-6 excavator selling for £69,000.

INTERNATIONAL BUYERS

When looking at international buyer trends, there has definitely been a shift, as we had been seeing a lot of equipment being sold into the Middle East in the past. However, at the latest auctions we have witnessed a clear uptake for older, more vintage equipment heading to North Africa. This is particularly the case for wheel loaders and articulated dump trucks that have less technology on them.

Here buyers continue to seek out and pay a premium for these units to be used on site or for parts. It was clear before both auctions that this would be the case, as the number of buyers from this region that came to the pre-auction walk-around days, requesting engine starts for these machines, far outweighed any other category.

Similarly, global buyers are seeking out those specific and niche models from global brands like Caterpillar. For example, in our UK auction a hotly contended Cat 345 demolition spec machine was eventually sold for export to South America. On the flip side of this, UK buyers who know about the sellers and how they look after their equipment homed in on specific items like a Liebherr 734 dozer sold by Stokey Plant Hire, which is set to remain in the UK market.

PREPARING FOR SPRING

The seasonality of work with winter weather will also contribute to this, but from what we are already seeing, there is likely to be a bounce in activity in 2020, as projects start to ramp up. We will also see how the Government goes from austerity to infrastructure boom with its billions to spend, which is a big stimulus for the plant sector in particular.

Within this winter period there is also opportunity for those thinking about buying, as there are definitely going to be some good deals to be had on online eBay-style platforms like our Marketplace E.

As 2020 progresses, I think we will also see new equipment dealers experimenting more with different routes to market. So don't be surprised as a buyer to see new equipment appearing at online auctions, of course with appropriate reserves. I can definitely see 2020 being a transformative year for the online buyer experience, as video technology and inspections provide more information and clarity online.

But of course you will never beat seeing a piece of equipment in the metal and hearing it roar when you attend a live auction.

EM

One current used equipment trend is for low-tech wheel loaders and articulated dump trucks for end users in North Africa.



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IN EARTHMOVERS

FIRST IMPRESSIONS LIEBHERR 914 COMPACT

Paul Bradshaw, owner of the Brad-Pave civil engineering company, has invested in a 17-tonne tracked Liebherr excavator, complete with a Steelwrist tilt-rotator and a Moba 3D GPS machine guidance system.



WASTE MANAGEMENT YORWASTE

One of Yorkshire's largest waste management companies, Yorwaste operates from 29 locations across the county. We look at their latest wheel loader, which helps to shift almost 600,000 tonnes a year.



FORESTRY HYUNDAI HX145LCR

A site visit to see the converted compact-radius Hyundai excavator run by Weeks Forestry. It's configured with a forestry processing head, a substantial cage to protect the upper-structure and additional lighting.

PLUS

MARKET GUIDE ROTATING GRABS

All the latest news concerning excavator rotating grabs used within a wide range of sectors including demolition and materials handling.

SHOW REPORT EXECUTIVE HIRE

Graham Black reports from Coventry on the compact machinery highlights on display at the Executive Hire Show.

EURO FOCUS TAMPERE TRANSIT

We report from Finland on the construction of a mass transit tram system in the City of Tampere.



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LOADING, HAULING & SCRAPING

Steven Downes reviews another batch of 1:48-scale precision die-cast models of historic Caterpillar equipment from Classic Construction Models



Before the advent of purpose-designed articulated dump trucks a number of different hauling machines were used. It is refreshing to see some of the more unusual looking vehicles modelled by CCM, like this Cat 660 tractor coupled to a rear dump trailer via a gooseneck.

The tractor has an open engine bay on both sides allowing the engine block, exhaust piping and radiator module to be seen. Its front axle has a limited range of steering movement and the fully enclosed cab has opening doors and a modelled interior with detailed instrumentation and controls.



Once more using a Cat industrial tractor, the 660 is a huge 80-ton capacity, twin-engine scraper.

The bowl has the ability to rise and lower, while the ejector plate and apron are also functional. A combination of flexible hoses and metal piping has been added from the tractor to the cylinders for the hydraulic circuits, which are fairly stiff in operation. The tractor has an open engine bay allowing the Cat D346 engine to be seen while the scraper engine – a D343A – is also partly visible. The model is limited to only 500 pieces and is supplied with a reproduction brochure that is signed and serial numbered.





There are three different configurations of the classic 973 tracked loader that has been produced by CCM. The first version is fitted with a general-purpose toothed bucket, which has an authentic range of movement of the loader arms and bucket.

The rear of the model is fitted with a three-shank ripper unit, which can be adjusted in height. The model features a photo-etch slotted panel used for the main cooling grille. The fully enclosed cab has clear windows with printed surrounds and metal grab rails. Both doors open to reveal more of the interior where the operator's seat, control levers, foot pedals and instrumentation display can be seen.

The chassis and track frames of the model are nicely engineered, and free-rolling, individually linked tracks have tensioned idler wheels giving just the right amount of tension.

An unusual configuration for the 973 is the demolition version, complete with a specialist Peterson bucket.

This attachment features a hinged upper grapple that can be used to clamp large items while also functioning as a dozer blade.

Protection for the tip cylinders has also been added with static covers that would slide on the full-size machine to protect the rams.

The rear engine housing is shrouded with a protective frame and a different style of rear grille with raised work lights. Another difference on the model is the addition of protection for the track tensioning system, which is covered over. The fully enclosed cab has opening doors and a built-in air-conditioning unit with integrated work lights and a fine mesh panel protecting the front windscreen.



Featuring a 4-in-1 toothed bucket with a working clam, the third version of the classic 973 has an open ROPS-protected canopy. This allows every detail of the operator's station to be clearly seen, including the hand and foot controls, instrumentation and warning information labels.



These are available through your local scale model dealer, or direct from the manufacturer at www.ccmmodels.com from US\$224.95.

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↑ A JCB 3CIII with a 3-in-1 front bucket run in the past by civil contractor Franki in Aberdeen, not in the north of Scotland, but in Hong Kong.



← A Cat 5130 with a hot load: digging out burning colliery material at the former Damside opencast coaling site.

This tractor-pulled scraper box slid down the slope on wet topsoil, then flipped when it came to a rapid halt on dry material. →



← An open-top version of a Terex ADT, at least on a temporary basis as the cab was removed to sort out a hydraulic issue.

→ This wide-tracked JCB JS145 found a bit of a soft spot. Thankfully it was easily recovered and suffered no damage.



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