SPECIAL RECYCLING FEATURE – MRF'S & ASSOCIATED EQUIPMENT

Global News & Information on the Quarrying, Recycling & Bulk Materials Handling Industries

September/October 2023 | Issue 82

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Skene boosts production with a new Finlay Cone Crusher

With a history that can be traced back over half a century, Skene Group are a family-owned construction services group based in Glenrothes, Fife. The company was formed in 1968 to undertake contracting works in the local area but quickly and steadily evolved into one of the largest independent operators in the construction materials sector.

2022 sees the company supplying a variety of services to the construction sector from raw material supplies such as sand, gravel, and crushed rock as well as concrete and lightweight blocks and ready mixed concrete. Both their block manufacturing plants, and concrete batching plants are all supplied with raw materials from the company's own quarries based at Lomond and Soutra with finished blocks being shipped across the UK whilst the ready mixed concrete plants supply well over 1000m3 per day across the central belt and borders regions.

Skene's Lomond quarry on the outskirts of Leslie is a producer of high-quality sand and gravel products as well as crushed hard rock aggregates produced used in-house for their manufacturing processes. Kevin Hill, Quarry Operations Director commented "Our own concrete manufacturing plants are taking the majority of our material that we are able to produce."

To ensure production rates are maintained on a regular basis the company has recently invested in a further delivery of crushing technology from industry leaders Molson Finlay.

Molson, already the English and Welsh dealers for the Finlay range of crushing and screening equipment since 2018, acquired the former Scottish dealer Finlay Scotland just a year later making them the sole dealer for what has recently become the Finlay range of equipment.

Manufactured in Northern Ireland, the Finlay range of products is steadily expanding with fuel efficiencies and productivity gains being the main focus of the business. It is one of the latest designs that has joined the Skene fleet and is already making a huge difference in the quarry's productivity.

The Finlay train consists of a jaw crusher, feeding into a cone crusher which exits onto a tracked stacker. The first machine in the train is a tried and tested J-1480 jaw crusher. This is one of the largest jaw crushers in the Finlay range with an operating weight touching 80 tonnes. The J-1480 is constructed around a heavy-duty chassis incorporating long track frames to provide the machine with a sturdy and steady platform. The rear of the machine holds a standard 10m3 hopper which can be increased in capacity by a further 2m3 using the hydraulically actuated side extensions. The vibrating pan feeder steadily moves the material over the independently driven pre-screen giving optimum separation of dirt, fines, and difficult materials before the rock enters the 1415mm x 800mm mouth of the crusher. The crusher itself is a Jaques JW55 single toggle unit which is capable of a 750t tonnes per hour throughput in the right material. Thanks to the hydraulic closed size settings (CSS) on the jaw, a consistent material size can be achieved with any alterations in size requirements instigated quickly and safely.

Skene's J-1480 has been supplied with the standard hydrostatic drive which offers reversible operation for clearing blockages and for use in demolition applications. Powered to the crusher comes from a Scania diesel engine developing 450hp.

The material produced by the J-1480 feeds out on the 1.4m wide conveyor and straight into the 6m3 hopper feeder on the new C-1550+ cone crusher. Like the jaw, the C-1550+ takes its power from a Scania diesel, this time developing 543hp. Sporting similar build qualities as the slightly larger machine, the 50 tonne C1550+ uses a Finlay 1300X chamber that has a 1300 mm head diameter. The 1300X chamber is the main point of difference in this updated C-1550+ and offers an impressive 15% increase in throughput compared to its predecessor, the 1300 chamber.

The cone is directly driven with a variable clutch drive and a hydraulically actuated CSS. To ensure maximum productivity, the flow of material from the hopper is regulated to the crushing chamber by advanced ultrasonic level sensors to ensure a steady flow of material and a reduction in potential time-wasting blockages.

Thanks to the design of the hopper feeder, the machine can be integrated into a crushing and screening train or operate as a standalone unit and fed directly either by a crusher, screener, wheeled loader, or an excavator.

The final product in this train is a Finlay TC80 Stacker. The TC-80 mobile stockpiler is a highly portable and flexible machine that can be integrated seamlessly into stationary and mobile crushing and screening plants. The machine features a 22.8m discharge conveyor that can produce a maximum conical stockpile capacity of 3228 tonnes based on 37° angle of repose.

Whilst this train is the main production team for the quarry, they are using other Finlay products to produce a variety of other sized products. Whilst the new C-1550+ produces a consistent 100mm and down material, a second cone crusher, this time a C-1540 is used to reduce the material size further. Loaded by a wheeled loader, the C-1540 boasts a similar specification to the newer cone crusher albeit with a Stage IV engine. Material from the feeder hopper passes over a pre-screen before entering the cone and once crushed, it is passed onto the final Finlay product on site, a 694 three-deck screen. The 694 uses a new high-energy screen box that features three full size 6.1m x 1.53m decks that can process fine, sticky, and dirty material with ease. The large hopper feeder is fitted with variable speed belt feeder to ensure consistent flow of material and is fitted with remote tipping grid to remove any oversize material.

Material passing onto the 694+ is screened to provide three finished products that are used by the firms in-house concrete batching facility, with the oversized material being fed via a conveyor directly back into the C-1540.

"We have been using Finlay products for many years and have always found them to be a reliable and productive machine." Kevin commented. "They are designed to do a job and deliver just what we want them to do with very little fuss. They are quick and easy to relocate when we need to. We have dealt with the Finlay team for many years and despite the name change to Molson Finlay, the product and back up has remained constant and first-class."

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In this issue

Hub Digital Media Limited

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Advertising Enquiries:
+44 (0)114 3830243

Publisher **John Vincent**

Editorial & Marketing Director
John Edwards
07525 921714 john@hub-4.com

Media Manager
Sophie Morgan
sophie.morgan@hub-4.com

Graphic Designer
Jon Toft

Director **Sue Vincent**

Associate Director **Ash Young**

Welcome to issue 82

Welcome to our fifth edition of 2023 - issue 82.

Another bumper edition from the team at HUB-4 covering the latest news from the Quarrying, Recycling & Bulk Handling Industries.

This edition contains a feature on MRF's & their associated equipment.

Finally, our sixth edition of 2023 will focus on a review of Shredders available in the UK - I welcome any editorial contributions for this feature.

John Edwards
Editor

NOV-DEC 23

SHREDDERS - a review of the latest models.

MOBILE PROCESSING & MATERIALS HANDLING EQUIPMENT - material handlers, mobile stackers, mobile conveyors, mobile radial stockpilers, mobile tracked conveyors.

QUARRYING - Open topics for this issue

RECYCLING - Open topics for this issue

BULK HANDLING - Open topics for this issue

Editorial copy deadline – 10th Nov 2023 Advert copy deadline – 17th Nov 2023

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Cemex invests further in UK asphalt business with new site in Birmingham and several plant upgrades

Global building materials supplier Cemex is making strong progress with a significant investment programme into its UK asphalt operation. This includes the opening of a new plant in Birmingham, as well as developments at several locations to ensure a more efficient and more sustainable operation with smoother product delivery for customers.

The new plant, located on Doris Road in Birmingham, will allow Cemex to better target this key urban market with its array of asphalt solutions.

Products that will be produced on site include RUBBERMIX ASPHALT (RMA), which incorporates crumb rubber granules taken from used tyres into the mix, helping to offset the environmental impact of highway maintenance activity through the circular economy; and VIALOW, Cemex's low temperature, reduced carbon asphalt which comes with the option to offset residual CO2 to make it a CarbonNeutral® product, in accordance with The CarbonNeutral Protocol, will also be produced at this new location. Further trials are underway on other more sustainable asphalt products that prioritise circularity.

The new Birmingham site will operate as a Local Asphalt plant, providing a dedicated service for customers that require small tonnage collections and deliveries, stocking every day essentials such as tools and equipment needed to provide a first class service.

Further investment has been made into the wider Cemex UK asphalt business, with the installation of multiple new bitumen tanks at Cemex's Stourton, Preston and Dove Holes plants. These tanks have a higher capacity than those previously in place, which will enable an increased production speed, increased mix options, plus a more flexible supply.

Additionally, the new tanks are more energy efficient, helping Cemex to run a more sustainable operation, in line with its dedicated climate action strategy, Future in Action.

This is the latest stage of Cemex's plan to replace all of the bitumen tanks at its UK asphalt locations with newer, more efficient models.

Scott Jones, Director of Asphalt for Cemex UK, commented: "We are making a considerable investment into our asphalt portfolio with the opening of our new Birmingham location and development programme at our existing sites, but this is indicative of the continued success of our asphalt business and our commitment to this product line. Cemex hopes that these investments will improve the efficiency of our UK asphalt operations and enhance product delivery for customers, while better serving key metro markets."

Cemex was recently recognised by the Mineral Products Association for its bitumen system management, winning a Health & Safety award at the ceremony earlier this year.

Asphalt is a key part of Cemex's Urbanisation Solutions product portfolio, which is constantly innovating to provide customers with a broad range of more sustainable solutions to help meet the challenges of modern urbanisation.

ProStack unveils Ranger 6-27H Tracked Conveyor at Molson's Open Day

ProStack®, a leading provider of innovative material handling solutions, proudly showcased its latest product, the Ranger 6-27H Tracked Conveyor, at the Molson 2023 Open Day. The event, which took place across three days in June, offered industry professionals a first-hand look at the cutting-edge technology and superior performance of ProStack's newest addition to their conveyor lineup.

Brian Albiston and Kris McWalte from Molson with Steven Aiken and Lee Nesbitt from ProStack

The ProStack team was present during the Molson Open Day to demonstrate the conveyor's features and answer questions from those in attendance. The feedback received from industry professionals was overwhelmingly positive, highlighting the Ranger 6-27H's ease of transport, reliability, and usability.

"We are thrilled to introduce the Ranger 6-27H Tracked Conveyor at Molson's Open Day," said Lee Nesbitt, ProStack's Global Sales Manager. "This cutting-edge conveyor represents our commitment to providing the industry with innovative and efficient material handling solutions. We believe the Ranger 6-27H will greatly enhance our customers' operations and contribute to their overall success."

Side View of ProStack Ranger 6-27H

The Ranger 6-27H has been engineered with an extended conveyor for situations that require more reach than is available with other conveyors in the Ranger product line. A conveyor length of 27 m (90 ft) that can rotate allows operators to stockpile approximately 1,735 m³ with the Ranger 6-27H.

After a brief stop at the Molson Open Day, this model continued its journey to Washington, USA, where it will be used in a barge loading application. The conveyor will load the barge before being lifted onto the vessel and travelling to Alaska, where it will be used to unload the barge. This application shows the versatility and manoeuvrability of the Ranger 6-27H.

ProStack Ranger 6-27H on display at the Molson 2023 Open Day

Elite strengthens sales team

Elite Precast welcomes not one but two new members to their established sales team and you may recognise them.

Paul Cartwright and Louise Chouhan-Hodges will further strengthen our customer experience offer, product expertise and market presence, as one of the UK's leading precast concrete product manufacturers" says Richard Doody, Elite's Commercial Director.

"It's an exciting time here at Elite Precast and as Business Development Director, Paul will reinforce our sales and product offering, bringing together his extensive knowledge of existing and innovative new products, within the infrastructure and built environment. Paul has over 30 years' experience in the industry in various sales and management positions"

"Louise has an in-depth understanding of the water management and drainage market, like Paul, she has over 30 years' experience and is the Chair of the MPA Precast Drainage Marketing Committee. At Elite, she will concentrate on our brand, market presence and supporting our client's needs".

Owen Batham, Sales & Marketing Director, commented: "It's great to have both Paul and Lou join the team at Elite, service is key here and their experience in the market is invaluable, they understand what our customers need and how we can best provide that".

QMS supply new bespoke sand & gravel plant

QMS on-site service engineers have recently completed installation and commissioning on this very impressive plant, situated at new site CEMEX Pyford Brook Quarry.

The bespoke sand and gravel plant is a prime example of QMS design, manufacturing and installation capabilities and features the following QMS equipment:

- Belt feeder – P/N FHB-20-1000, 20m3
- Cone crusher – P/N 13100_00, model B2
- Primary screen – P/N SVI-B02M, 1.83x5m double deck, polyurethane
- Secondary Screen – P/N SVI-G02M, 2.4x6.0m double deck, wash screen
- Various galvanised steel support structures, conveyors and stockpilers

For more information, please contact our sales team:

Email: sales@qmsupplies.co.uk Tel: +44 (0)1530 811081

Cormac Engineering appointed exclusive agent for CAMS Asphalt Recycling Systems in the UK & Ireland

Cormac Engineering, an industry heavyweight and renowned company known for its exceptional engineering expertise and supply of Frumecar & Marini products, is delighted to announce its latest milestone as the exclusive agent for CAMS Aggregate Recycling Systems in the UK & Ireland.

With a reputation built over years of providing cutting-edge solutions, Cormac Engineering's partnership with CAMs represents a strategic move to expand its product portfolio and strengthen its presence in the recycling and waste management industry. CAMs, an esteemed manufacturer specializing in crushing, shredding, and screening plants, distinguishes itself by handling all phases of the production process, from executive design to machine development and construction. The meticulous monitoring of each production step ensures the highest quality of materials and manufacturing processes.

This exclusive partnership will grant customers in the UK & Ireland access to CAMS innovative and high-performance granulators, enabling them to revolutionise their recycling and waste management practices. By incorporating CAMS machinery into their solutions, Cormac Engineering reaffirms its commitment to delivering environmentally sustainable and efficient solutions to its customers.

CAMS Recycling is known for pushing the boundaries of innovation in the recycling industry and providing technologies that meet and exceed industry standards. Their extensive range of crushing, shredding, and screening plants caters to various industries, including construction, demolition, mining, and more.

"We are thrilled to be appointed as the exclusive agent for CAMS Asphalt Recycling Systems in the UK & Ireland," said Managing Director of Cormac Engineering, Steve Corbett. "This partnership solidifies our position as a leading provider of advanced engineering solutions, as well as showcasing the natural progression, and we look forward to working with CAMS and introducing their exceptional products to our valued customers. Together, we aim to drive sustainable growth and foster a greener future for the recycling sector."

Third US acquisition for UK Equipment Dealer, Molson Group

Molson Group, a leading UK equipment dealer, has expanded its US presence with the acquisition of Powerscreen Western, expanding the group's coverage of the Western US to now include the state of Arizona.

Following the successful acquisitions of Powerscreen of California, in April 2022 and, shortly afterwards of Powerscreen of Washington, the group now has substantial coverage across 9 states in the US.

With the entrepreneurial group generating over £375 million in revenue per annum, this third US acquisition will support the continued growth of operations in North America. With a proven model offering customers complete machinery solutions from a 360-degree product portfolio, new manufacturer partners are already in line, and further acquisitions are expected to follow.

Powerscreen Western offers a range of leading brands, predominately from the leading materials processing equipment manufacturer Terex, including Powerscreen, EvoQuip, CBI and Ecotec to name a few. With distribution and after-sales support throughout the state of Arizona and southern Nevada, the company will continue to trade under the Powerscreen Western brand whilst benefitting from the assistance of back-office support from the wider Molson Group.

Existing and new customers of Powerscreen Western will benefit, with increased availability of machines, parts, and personnel, thanks to the financial backing of the Molson Group. However, as with previous deals, Molson's ability to implement proven technology solutions and drive efficiency and growth was a key factor in the deal being agreed and driving improvements in customer service levels moving forward.

Jason Powles, Molson Group COO, understands the importance of accurate data and has driven the digitisation of the business. "Molson Group is a highly successful equipment dealer, working with some of the world's leading equipment manufacturers. We know how to optimise the performance of dealer businesses, using our own tried and tested practices, including implementing the highly effective smartCMD technology suite. We have seen the positive impact our technology products can have through improved performance in our recent US acquisitions, and we expect to repeat this success in Powerscreen Western"

Powles adds: "This acquisition further develops our footprint in the US market, providing significant opportunity to replicate our UK model in the US and offer customers a broad range of market leading products. We have already engaged with a number of OEMs, including Kobelco, Fuchs and Spaleck, which will be offered to our customers across our US locations. The implementation of our leading technology products, combined with additional products from our OEM partners, will provide significant growth opportunities for the business in the coming years."

Powerscreen Western's founder, Gerald McCarthy, is also excited by the opportunity for growth and the expansion in resources that Molson will bring. Gerald said: "We felt a strong fit with the Molson team and their approach – a total commitment to customer service, a comprehensive product range, and a culture of looking after its people. This, combined with the huge benefits Molson brings with its operational capability, makes for an exciting new direction for the future of this business and our customers."

Pat Brian, Vice President and Managing Director of Terex Corporation, commented: "Molson Group is a valued Terex partner, both in the UK and more recently in the US. This third acquisition gives Molson Group significant presence in the US and further strengthens our relationship with the business. We are particularly excited for the benefits that this acquisition will bring both for our customers and our own business."

Not a moment is wasted in the Hyundai HW210A

12 months into its role, a Hyundai A Series wheeled excavator is 'excelling on every front'...

In 2022, Essex-based Lunnon Waste, added a brand new HW210A model to its existing Hyundai fleet for use at its onsite waste management facility.

It joins two Hyundai HX140A excavators with recycling grabs and an HL940AXT wheeled loader in the fleet at Lunnon Waste - which has specialised in commercial and domestic waste management since the early 1970s and is now one of the leading waste collection, management and disposal companies in the East of England. With over 50 years of experience under their belts, the Lunnon Waste team expect the very best from their machinery and there's one brand that they keep coming back to, time and time again – and that's Hyundai – with machines supplied by dealer, Ernest Doe.

Michael Lunnon, Managing Director of Lunnon Waste, said: "We've been using Hyundai for a number of years now and with quite a few excavators and wheeled loaders in our fleet. All our waste management is done on site so the yard is always extremely busy – this means we need good, reliable and efficient machines that can work long days and work safely in smaller spaces.

"We've seen the evolution over time. With every generation, we see the changes and considerable progress Hyundai is making and the latest A series machine is truly exceptional on every front. But they have always been consistent where it matters – in performance – and that's why we choose Hyundai over any other brand on the market."

Michael adds: "The service and backup we receive from Ernest Doe has also been a huge factor in why we keep coming back to Hyundai – they have been faultless, always ready to help us wherever they can. The machines they've paired us with have always been sensibly priced and great in terms of reliability which is crucial for a busy operation like ours. The operators are very happy with the machines as well – they have all the comforts you expect from a new machine and the visibility in the cabin is excellent which gives the drivers peace of mind when working on a busy site.

"We've been impressed with the way Hyundai has developed over time and we will certainly be sticking with them for the future."

Weighing in at 21-tonnes, the HW210A wheeled excavator provides the power and mobility needed for on and off-road applications. From its upgraded, low emission, Stage V engine, to its new, cutting-edge cabin design, the HW210A is a heavy-duty excavator helps operators maximise productivity.

Safe Operation: Mobile Crushers and Screeners

In a wide range of industries such as quarrying, recycling and demolition, mobile crushers are designed to reduce raw material into smaller products by mechanically forcing the product to shatter and reduce in size. This product is then put through the mobile screener which segregates material by passing over different sized apertures allowing material to fall onto different belts. This ensures that the material is screened to a more commercial product to be sold, disposed of or recycled.

Overcoming Hazards

The environment in which crusher and screens operate contain inherent risks to health and safety which the operator must take steps to guard against. Dangers from overhead conveyor discharges, overspills material, vehicle movements etc, as well as other site related hazards must be anticipated. These can be avoided by carrying out risk assessments before the plant is put into operation to ensure appropriate exclusion zone measures are put in place and site personnel safety awareness training has been undertaken.

By the nature of the equipment and tasks required dust will be omitted into the atmosphere, regular monitoring of the dust in the air, will determine what level of PPE is required or advised.

Recycled product can consist of various materials giving different results, so consistent monitoring is strongly advised.

Only trained experience and authorised personnel must execute any work on or with the equipment, only operate if all guarding, protective and safety orientated devices, emergency shutdown equipment and water suppressions are all in place and working correctly. Any nip points on moving machinery can cause serious injury or death, do not reach into unguarded machinery and never leave the plant unattended whilst in operation. Where defects are found, these should be reported following an in-company procedure and rectified immediately.

If oversized materials are loaded into the hopper, this can result in the crusher becoming blocked. A robust Risk Assessment must be completed, and everyone involved must follow the Safe System of Work. Ideally a hydraulic arm, should be used to manipulate the offending item into a position where the crusher will fracture and reduce the size, if this fails a crane maybe required to lift out offending item although extreme caution must be exercised to ensure the crane is not overloaded.

There have also been fatalities caused by a stalled crusher. In most instances, this was due to a piece of tramp metal being jammed, then ejected leading to fatal consequences. To reduce this risk, prior to the use of the machine, plant operators should be given written instructions which outlines the procedure if the crusher stalls. These procedures should include details on the full process; from isolating the power, to notifying the site manager. It is also important to remember that if the crushing cavity of a crusher is being inspected, this should be done whenever possible from underneath the equipment rather than above.

Benefits of Training

Completing the right training for crushers and screeners is beneficial for all parties involved. Operatives remain safe whilst onsite, and operations can continue without any major disruptions. The correct training will not only help to keep people safe, but will boost your productivity, and can help to reduce employee turnover by demonstrating an investment in your staff, and improve overall morale.

For further information, guidance, or support about crushers and screeners, or any other plant training, call Certora Training on 01246 386900.

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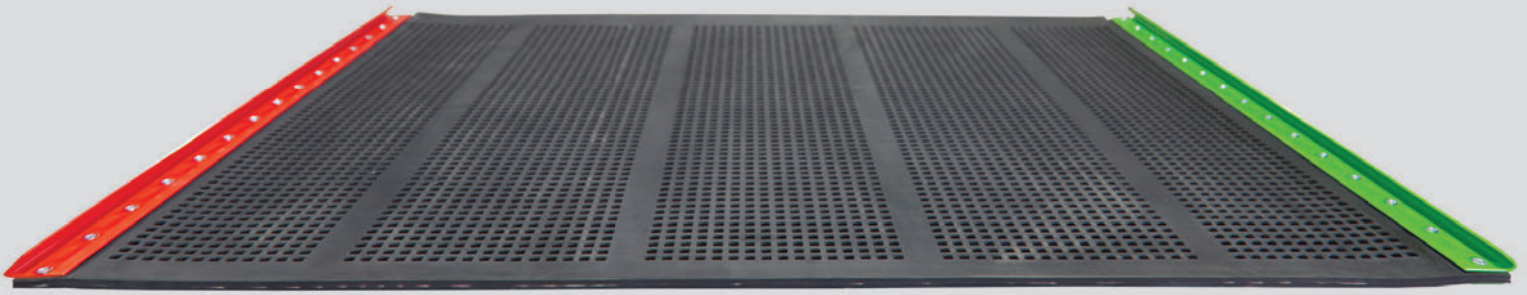

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CASE Wheel Loaders helping produce glue and plaster in Poland

When contemporary Poland was being built after the fall of communism in 1989, CASE was one of the very first construction machinery producers to open a dealership in the country through appointing an authorised distributor. Before long, the sleek yellow-brown silhouettes became a familiar sight on the busy landscape of 1990s Poland. CASE machines could be spotted building roads, digging foundations for houses and laying pipes. "The CASE backhoe loader was used as a go-to machine, a Swiss knife of construction," remembers ukasz Jóźwiak, the CASE business development manager for Poland, highlighting its versatility. "CASE backhoe loaders were used for everything."

Thirty years on, Poland's economy is booming and CASE is still very much part of the picture. After the successes of the backhoe loader, many other CASE machines are now making a difference in the country, deployed on construction sites and doing many different works. A good example are CASE wheel loaders, which are being used at waste disposal and recycling plants, at concrete plants for loading aggregate - and at production plants of glue and plaster.

Kreisel Technika Budowlana is one such example. A leading producer of glue and plaster in Poland and a part of the European construction group FIXIT GRUPPE, Kreisel has chosen CASE wheel loaders for three of its Polish locations.

The first machine chosen was a compact 321F CASE wheel loader which arrived at the Kreisel plant in Rogowiec in February 2020. "The machine was competitively priced and its small dimensions fit the size of the production floor," said Waldemar

Rozmarynowski, the production manager. "It works on three shifts pouring FGD gypsum into the dispenser at a rate of about 140 tonnes a day. We're very happy with it. It doesn't break and operators praise its comfort," he added.

A year later, two other Kreisel plants, Ostrołęka and Lubień Kujawski, acquired a larger CASE 621G wheel loader each. "We chose CASE based on the experience of Rogowiec - the two key factors were its reliability and its low running costs," said Wojciech

Zaborowski who manages the production in Lubień Kujawski. The machine is used there to dry wet sand for the production of adhesives, plasters and screeds. With an occupancy rate of approximately 75 per cent, due to the size of the plant, it transfers approximately 430 tons of wet sand to the container per day.

At the third Kreisel location, in Ostrołęka, managed by Michał Dawidczyk, a CASE 621G works around the clock, on three shifts, moving FGD gypsum at a rate of about 160-180 tonnes per day. Both plants are very happy with their 621G CASE wheel loader.

EnEWA research project aims to unlock the untapped potential of recyclable paper in mixed waste

STADLER, the globally active German company specialized in the planning, production and assembly of turnkey recycling and sorting plants, is participating in the groundbreaking EnEWA research project to obtain recyclable paper from the lightweight packaging, residual waste and commercial waste streams.

The world produces and consumes vast amounts of paper for a wide variety of uses. However, while the paper industry has made significant strides in increasing the sustainability of its production by increasing the recycled content of its products, there is much room for improvement. In fact, a smaller portion of paper produced than might be expected is recovered for recycling, despite separate waste collection being widespread. For example, in Germany, as much as 20% of the paper produced is not returned into the recycling value stream - and a part of this paper is discarded in mixed waste streams.


Annika Ludes

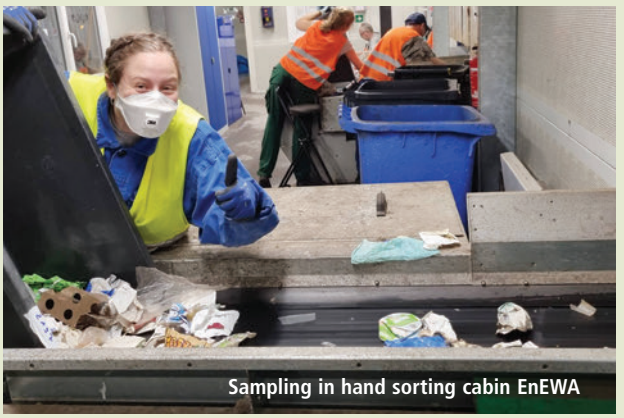
"Regulations mandating the minimum content of recycled material in new paper products will require a significant increase in recovered paper for recycling. Even if we were to recycle all the paper collected separately with the existing process, there would not be enough to meet these targets," explains Annika Ludes, Product Engineer at STADLER. An award-winning research initiative, the EnEWA project, is looking at a solution to fill the gap by unlocking the untapped potential of obtaining recyclable paper from the lightweight packaging, residual waste and commercial waste streams. While the project analysis is based on the paper from mixed waste streams as they are collected in Germany, the solution it is developing will be applicable, with some adaptations, to local situation in other countries. The project kicked off in December 2021 and is due to be completed in November 2024.

"Participating in the EnEWA project is important for us at STADLER. Research projects such as this help us in our search for ways to support the recycling industry as we evolve towards a circular economy," adds Annika Ludes. "We want to drive change, build these plants to expand the sources of secondary fibers for the paper industry. We also want to work with packaging producers to design packaging that is better for recycling."

EnEWA project: recovering paper from mixed waste streams

The members of the EnEWA project – Universität Siegen, RWTH Aachen University, LEIPA Group, PROPAKMA, TOMRA and STADLER – are developing a solution for recovering and recycling paper from the lightweight packaging, residual waste and commercial waste streams. They have set clear objectives: increase recycling rates in paper production and reduce primary energy requirements and CO2 emissions. The goal is to achieve an overall recovered paper return rate of 90% -

European Paper Recycling award Paper Packaging Day22


Sampling in hand sorting cabin EnEWA

including both separate paper collection and special collection systems, which today have a 78% return rate, and the residual, commercial and lightweight packaging streams from which barely a small part of paper is currently recovered.

The project is also looking at what can be done to create the conditions for maximizing the amount of paper returned to the recycling loop. This includes discussions with German and EU regulatory authorities with recommendations for updating waste management guidelines to improve the waste streams feeding the sorting process; communication campaigns aimed at raising awareness among consumers about the correct separation of their household waste; and collaboration with producers for the design of packaging that is better for recycling.

The task for STADLER in the project is to provide, in collaboration with TOMRA Recycling, technical solutions to extract paper from the mixed streams and sort it into different paper qualities for recycling. Alena Spies, M.Sc., Research associate at the Chair of Anthropogenic Material Cycles of RWTH Aachen University, comments: "STADLER brings its great experience in waste processing technology and plant engineering, which are of great importance for the holistic consideration of material cycles and the development of recycling processes on an industrial scale towards a circular


Composition of the paper fraction manual analyses


Paper fraction from non-separates collection

Consortium meeting at Voith paper machine manufacturer


Paper fine screening in test scale

economy. For us, its most important contribution has been the joint planning and implementation of industrial-scale sorting trials at its Test and Innovation Center."

Industrial-scale trials at STADLER Test Center: early results are promising

In March, STADLER completed extensive industrial-scale trials at its Test Center in Slovenia to identify and resolve the issues arising in sorting paper from lightweight packaging, residual and commercial waste streams. The sorting process begins with the income stream going through STADLER's ST2000 ballistic separator, followed by optical sorting with TOMRA Recycling's AUTOSORT®.

The process was tested on waste collection samples from different areas of Germany, and in different conditions that may affect the sorting process, such as wet or dirty materials. "This is important because the waste collection processes vary from country to country, but also domestically at regional level, and even on a seasonal basis. Also, waste from these streams is often dirty and may be wet. This means that the solution must have the flexibility to manage this variability," says Annika Ludes.

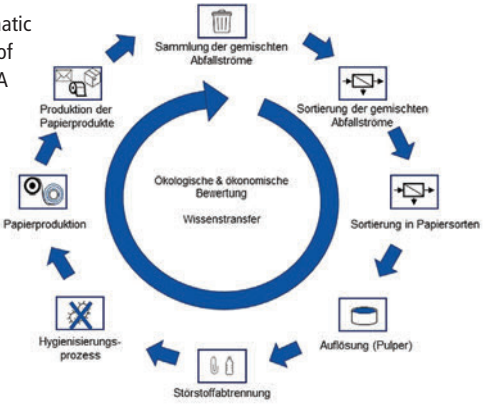
The tests have generated vast amounts of data, and the analysis is still in the early stages. The RWTH Aachen University team is examining the results of manual and sensor-based analysis of the waste streams to get a good understanding of the ballistic separator's operation with these materials. It is analysing separation of three main streams: pure paper, separation of paper out of the plastic waste stream, and separation of plastics out of paper.

In terms of the sorting process, the analysis so far has revealed that every paper fraction from the different waste streams has its own characteristics and that, due to its modularity and the range of possible settings, the STADLER STT2000 can be used effectively for sorting non-separated collected paper.

Samplings made earlier in the project to analyse the material composition and paper content of the different waste streams have revealed that approximately 50% of the paper in the lightweight packaging stream could have been disposed of within the separate paper collection. This finding highlighted the need to address the waste collection processes in order to ensure a more effective separation of the streams and, consequently, higher paper recovery rates.

The project is also looking beyond the sorting process, as Alena Spies explains: "Different dissolution and stock preparation options as well as a procedure for the hygienisation of biological contamination and the separation of hazardous substances have been investigated. An additional focus is on the recovery of rejects that arise during paper recycling processes. Last year a complete recycling process have been conducted from the separation of paper and board from lightweight packaging waste till the production of new cardboard including several sorting and processing steps. In addition, the project is continuously accompanied by an ecological and economical assessment and the transfer of knowledge of the results to the paper industry. With this project, we hope to establish the developed recycling process into the paper industry to achieve a material recycling of paper and board from lightweight packaging, residual and commercial waste."

Schematic circle of EnEWA



Environmental benefits include potential savings of 270,000t CO2

The paper industry has already improved its carbon footprint through optimization of their plants and reducing the energy requirements in the reprocessing of recovered paper. By redirecting the paper from the residual, commercial and lightweight packaging streams into the recycling loop, the process developed by the EnEWA project has a potential according to initial calculations to save some 270,000t of CO2 a year.

Maximum Aluminium Purity for the Circular Economy

In order to conserve resources, we need to reuse raw materials as often as we can. This requires recycling materials flows that have as high and as consistent a quality as possible. It is only with efficient sorting technology that resources can be continually recycled. The STEINERT XSS T uses X-ray transmission (or XRT for short) to reliably achieve extremely high purity levels when recycling aluminium. EVO 5.0 is the latest evolutionary stage. Several customers explain here why they are so impressed with the equipment.

More and more companies are looking to save resources and expand their use of secondary raw materials. This approach can deliver a significantly lower carbon footprint and improve the security of supply.

STEINERT has long been an important partner to metal recycling firms. Its technology for dry density separation has been successfully established for a number of years now. The systems are based on x-ray transmission and are designed especially for separating heavy and light metals in metal processing. The STEINERT XSS T produces extremely pure aluminium. The sorting equipment's detection rates are so precise that it can achieve an aluminium purity of 99.8 %.

EVO 5.0, the latest version, has been available since 2021. Since then, noteworthy developments include automatic x-ray monitoring and automatic calibration of the x-ray sensors, as these ensure a consistently high detection and sorting quality without any fluctuations.

Alongside heavy/light metal separation, separating out wrought and cast aluminium is another essential application. This application is particularly important for marketing the secondary raw material.

The enrichment of solid magnesium is also key to the quality of secondary aluminium. Since EVO 5.0 and using what is known as multilayer data evaluation, the system has provided more distinguishing criteria for particularly challenging sorting tasks, such as detecting magnesium.

By separating free magnesium, the recycled aluminium produced can be used much more flexibly for recipes in the smelting furnace.

Numerous stories of success demonstrate the efficiency of the STEINERT XSS T EVO 5.0. >

Sorting from incinerator bottom ash residue

The Scanmetals group of companies has three sites in Europe where it produces non-ferrous metals out of incinerator bottom ash (IBA) from waste incineration plants. The cleaned and separated metal fractions are sold around the globe to primary and secondary smelters, refineries, foundries and mills.

The Danish company gets all its sorting solutions for non-ferrous metals from STEINERT. The owner, Ejvind Pedersen, likes the fact that this centralised method of procurement saves time, allowing him to concentrate on developing innovative recycling ideas. Pedersen compares the efficiency and reliability of STEINERT with that of German automotive manufacturers. He stresses the confidence that his production staff have in the equipment and how easy the technical components are to operate.

Pedersen explains: "We produce four truckloads of aluminium a day. What makes this so significant is that industry doesn't then have to be supplied directly from primary mining and improves its environmental footprint by using high-quality secondary raw materials. This translates into CO2 savings of 90 %."

Pedersen focuses on the production of high-grade aluminium. The process starts with the non-ferrous metals separator for recovering Zorba from the ash. The next step is separating the stainless steel using an induction sorting system. Thanks to x-ray transmission, the STEINERT XSS T EVO 5.0 produces very pure aluminium by sorting out heavy metals. The sorting equipment's detection rates are so precise that it produces an aluminium purity of up to 99.8%; material which is always highly sought after on the market. This also allows the metal to be kept in circulation for long periods. Secondary raw materials with high levels of purity are needed for high-grade applications.

It's about more than price alone

The Stena Recycling group of companies has a network of 178 recycling plants in Europe and employs more than 3500 people. Every year, Stena recycles over 6 million tons of complex waste materials. The Stena Nordic Recycling Center handles 500,000 tons of complex materials annually, saving 870,000 tons of emissions.

Jesper Fournaise, Outbound Sales Manager at Stena Recycling S/A, is responsible for the production and sale of aluminium. "We're the green gods," is how Fournaise describes his team. By this, he means that scrap is converted into recyclable material that's fed back into the production cycle. When asked what has changed the most over the last few years, he says: "We used to ship our scrap to the Far East, where it was sorted by hand and we didn't know what happened to the material. Advancements in technological sorting represent one of the greatest differences. Now, here in our own country, we're able to use x-ray technology to meet maximum quality standards and to put the metal back into commercial use."

According to Fournaise, for a long while it's not just been about the sales price of a metal: "Our customers, the smelters, save CO2 by using secondary raw materials and sorting is one of the most important primary stages. Because we strive for qualities similar to those of primary aluminium, we opted for sorting technology from Steinert. Steinert simply delivers the exact values we need for copper, zinc, manganese and magnesium. We've conducted continuous tests and now we've found the right level of quality."

High levels of reliability and availability

Stemin S.p.A., a specialist in aluminium recycling located close to Bergamo in northern Italy, has decided to use STEINERT sorting technology, especially for dry density separation by means of x-ray transmission (XRT) to ensure the maximum purity of its aluminium production. Every year, Stemin produces up to 70,000 tons of high-quality secondary aluminium. The sorted aluminium is ready for the furnace and is passed to the company's own foundry for further processing.

Board member Olivo Foglieni has been using STEINERT equipment for years and was one of the first to deploy the latest evolutionary stage 5.0 STEINERT XSS T. He is full of praise when it comes to the reliability of the technology and team: "I'm sure I don't have to explain how important absolute reliability of the x-ray unit and sorting quality is for us. Both are indispensable to ensuring a smooth process between sorting and further use of the aluminium product. Downtimes put the entire supply chain at risk. But our long-standing experience with Steinert proves that this is something we don't need to worry about."

Stemin has replaced a total of four machines from competitors with STEINERT x-ray sorting technology in recent years. "Compared with the others, the biggest difference is how reliable the machines are. We have opted for Steinert because of their ongoing research and development in the field of metal recycling, the fact that the quality of their sorting is improving all the time and because their more capable sorting systems help us to produce the quality levels we need. Each type of scrap that we work with has its own requirements and it is important for us to separate by input material, magnesium or heavy metals like copper. This is the challenge we face - and always with the goal of increasing the value of the metal," adds Foglieni.

LIBS for even greater purity

As an extra stage, some of STEINERT's customers use downstream LIBS sorting. Laser Induced Breakdown Spectroscopy (LIBS) can analyse, in real time, the aluminium content and components, such as copper, magnesium or silicon, which determine the type of aluminium alloy. This process allows various alloys to be classified effectively, enabling the product to be used directly in producing industry. Recovery of targeted alloy compositions reduces downcycling.

STEINERT LIBS sorting systems have been widely distributed on the market for a number of years and more will be deployed in 2023. AMAG Austria Metall AG is a pioneer in sorting aluminium alloys and has been using one such system to sort into various aluminium alloy qualities since 2019. AMAG produces high-grade primary, cast and rolled products out of aluminium.

Demand for recycled aluminium is growing all the time. Separating into alloys is both an opportunity and a challenge. By producing pure aluminium alloy qualities from recycled aluminium, the specific reuse can be significantly improved. This is the route to closed material recycling.

AMAG has opted for LIBS technology from Steinert for this very purpose. An STEINERT LSS line sorting system produces up to 6 products in one cycle.

New Channel Press Baler addition to the CK Product Range, CKSR16 - The Bigger, The Baler

Market leading CK International has introduced a new machine into its range, the fully automatic CK Channel Baler, CKSR16. The CKSR16 has a 50-tonne press force and can produce bales of up to 500kg in cardboard.

The waste and recycling market is continuously expanding globally as more countries are putting efforts towards reducing their total environmental impact. Therefore, there is more dependence on producer responsibility and CK International thrive on being experts in satisfying customers' requirements by continuously developing more efficient, intelligent waste management and compaction solutions. Due to demand within the market, CK International decided to research, design, and manufacture a heavy duty, robust fully automatic channel baler at the headquarters in Dungannon, Northern Ireland

CK International has installed the first CKSR16 for their customer Meade Farm based in County Meath, Ireland. When Meade Farm first approached CK International they were operating on an automatic channel press baler which struggled to meet dense bale weights for their cardboard, only achieving 280kg bales. It was clear that this channel baler was not going to be sufficient to achieve the bale density that they now required. The automatic channel press baler required numerous maintenance call outs. With the increased downtime having a detrimental effect on production and material build up they knew a change was needed. In addition to the baler continually breaking down and affecting production, there was also a huge financial strain to keep fixing the issues. The safety measures in place were also highlighted as needs of improvement for the CKSR16. With the increased importance of workers' safety within the industry, the customer required a machine that had immaculate safety features.

After analysing the correct model and solution within the engineering and product solution divisions, the CK team worked closely with

Meade Farm to ensure their requirements were satisfied. Meade Farm had a previous third-party conveyor which was then integrated with the CKSR16 controls to increase safety features onsite and manage the material. The CKSR16 successfully handles a higher throughput for the customer. One of the customer's key requirements in this project was to have improved throughputs. The throughput of 30T/week has been achieved as promised. Moreover, Meade Farm opted to use the cloud based CK Baler Performance Monitoring system. The customer can now alter the bale dimensions at the push of a button. They also have the capability of viewing the baler's performance. It allows the plant manager to view how many bales have been processed on a daily, monthly, or annual basis and highlights any downtime in the machine. This data is available on a web browser or mobile phone. In comparison to their previous machine, the CK Channel Baler is 4 times faster in production, allowing the customer to better place staff within the production floor when idle, increasing productivity. Having decreased the customer's maintenance costs and downtime of their production line, CK have increased bale weights and their return on the cardboard commodity.

Richie Sheehy, Project Manager at Meade Farm commented, "we chose CK International because our last baler was at its end of life costing us a lot of money and CK were the most professional of those we tendered. The main objectives were to increase our cardboard throughput and inevitably our profit on the baled material. I would rate CK very highly with a response rate onsite of 24 hours. We asked for an additional safety feature on the hopper to avoid accidents and this was not an issue, with it being installed within a week of order."

An old baler can drain money from your business very quickly. This could be due to downtime with unnecessary repairs. A new CK Channel Baler can help with efficient power units that

reduce energy consumption, and a design that has routine maintenance in mind. You can reduce your downtime and energy consumption while increasing your productivity and return on investment.

During the entire life cycle of your baler, CK International provides first-class service with an exceptional technical support, engineering, and aftersales team to assist you with any problems both on-site and remotely. CK International have a remarkable aftersales team with 20 field service engineers responding to customers 365 days a year, 7 days a week, 24 hours a day. By sharing knowledge and looking for the best solutions for your unique challenges, CK sets a goal to become your long-term partner for service and maintenance. Look at CK's extensive baler range on www.ckinternational.co.uk for all your compaction and baling requirements.

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How pallets become wood chips

Vecoplan offers an efficient pre-crushing system for large-volume wood components – the VPC...

Efficiently shred large and bulky components such as pallets and crates? This can usually only be done with an appropriately sized machine. Vecoplan AG has a different approach to this problem – the VPC. This primary crusher combined with the compact VHZ shredder provides customers with an economical solution that can increase throughput by up to 50 percent. And the demand is rising.

The new Vecoplan VPC 1600 pallet crusher in combination with the VHZ 1600 forms a powerful unit for crushing & shredding bulky wooden items.

"The inquiries came mainly from the USA," reports Dirk Müller, Head of Business Unit Wood | Biomass at Vecoplan. "American material & distribution centres and DIY supermarkets often use disposable pallets." These bulky wooden components must be reliably shredded in continuous operation, a process that's usually only possible with large shredders – and they have a large footprint. In addition, if components such as pallets are fed directly to the shredder, the throughput rate is relatively low due to their light and airy construction – and shredding them takes time.

LIGNA visitors in Hanover will see Vecoplan present the VPC (short for Vecoplan Pallet Crusher), which the company first marketed in 2020. This will be the first time the VPC has been demonstrated live at a trade fair. "The VPC can easily solve the space problem," says Müller. "We combine the primary crusher with the compact VHZ shredder series." The VHZ is a robust single-shaft shredder equipped with energy-efficient drive technology. The collected materials can be input directly, without additional feeding systems and intermediate buffers. With a working width of 1,600 millimetres, the 800-millimetre-high VPC 1600 fits precisely on top of the VHZ, enabling companies to save considerable space. The VPC is permanently fixed during operation. For example, if the machine operator has to change the counter knives in the shredder, he can quickly move the 5.5-tonne VPC over a frame that connects the two machines.

Crushing instead of cutting

"We carried out various tests in our Technical Centre," says Dirk Müller. "Without the Pallet Crusher, the VHZ achieves a throughput of just under 2,500 kilogrammes per hour when shredding – in combination with the VPC, the two units achieve 3,700 kilogrammes." The primary crusher operates on a special principle: The innovative rotor in the VPC 1600 pre-crushes the wooden material before the cutting crowns of the VHZ rotor shred it. "As our tests have shown, this can significantly increase throughput compared to single-stage shredding – by as much as 50 per cent, depending on the component," says Müller.

The innovative rotor in the VPC 1600 pre-crushes the wooden material …

… before it is shredded by the cutting crowns of the VHZ rotor.

The filler port of the new primary crusher measures 1,605 x 1,605 millimetres; the drive power is 2 x 9.2 kilowatts. Sixteen counter-crushers and two independently running rotors, each with a speed of ten revolutions per minute, have been integrated into the machine. If an over-torque occurs briefly during operation, the two rotors can reverse independently. In this way, Vecoplan ensures an efficient and continuous process flow. Operators also benefit from a robust design. "We designed the rotors to eliminate beater head replacement," explains the Vecoplan expert. "We can just hardface them." Added to these advantages is the relatively low proportion of wear parts.

Powerful digitalisation

At LIGNA in Hanover, the VPC will be connected to the Vecoplan Smart Center (VSC) via the cloud. This powerful digitalisation concept offers a modern communication interface between Vecoplan and the customer – the VSC.connect system. Users can access online commissioning, remote service, key performance indicators and a media database. The integrated, intuitive VSC.control operating panel serves as a communication medium for the machine's control system and a live link to the machine manufacturer in Germany's Westerwald region.

"This powerful combination of VPC and VHC gives operators a highly efficient unit that can continuously process wooden pallets and crates," says Müller. "We were able to fulfil the requests from the United States. We've already delivered 25 Pallet Crushers since we launched the machine – but interest is continuing to grow in Europe too."

The WEEE Directive is insufficient – an insight into electronics recycling practices

In2tecs revolutioanry ReUSE PCBA

Ewaste is one of the fastest growing waste streams in the world. When electrical products and electronic equipment reach the end of their usable life they will often be sent to landfill, where they are expected to rot away and be forgotten.

The underlying issue is that most electronic circuit board assemblies are built with glass reinforced epoxy laminates (FR4) which cannot be recycled! The lack of recyclability and reuse means this ewaste goes to landfill, but it will never decompose, resulting in an environmental catastrophe that will last generations.

To combat ewaste, in 2012 the European Union introduced the Waste Electricals and Electronic Equipment Directive (WEEE), "This directive lays down measures to protect the environment and human health by preventing or reducing the adverse impacts of the generation and management of waste from electrical and electronic equipment (WEEE) and by reducing overall impacts of resource use and improving the efficiency".

Many believe that this is the end of the story in the expectation that all of their waste electronics have been recycled.

This sadly is not correct. Whilst most materials in consumer electronics can be recycled and reused in new products, such as the non-electronic outer casings and mechanical parts, the electronic components, and printed circuit boards (PCBs) cannot. With PCBs it is not practical or economical to remove the components meaning these remain and are shredded, burned, or sent to landfill along with the board.

The reason behind this lack of recycling in electronics is simple. Many manufacturers feel that the materials sent to landfill are just an unfortunate by-product of the electronics industry, one which is unavoidable when electronics reach end of useful life. This does not have to be the case as the technology to recycle electronic components has existed for 15 years, it is only a recent cultural shift that has seen sustainability rise up on both manufacturers and customers agendas.

In2tec Ltd., a UK headquartered, sustainable electronics design, development and manufacturing company has the answers to the current WEEE issues.

In2tec's patented technology provides fully recyclable integrated electronics. ReUSE® uses a fully 'unzippable' suite of materials that allows electronic and mechanical components to be placed and removed from a sustainable substrate, such as PET, bioplastics, or nano-polymers. ReCYCLE™ is the ultra-low energy closed loop process delivering clean, undamaged components ready for reuse in second life applications.

"We've been working on this technology for over 15 years. It's disappointing that manufacturers still prefer to use conventional PCBA's when a more sustainable version is available," says Emma Armstrong, Sustainable Electronics Ambassador at In2tec Ltd.

"The planet has reached a point where every process humans enact must be as sustainable as possible. The electronics industry though is slow to react and accept its responsibilities to the younger generations who will have to live with the consequences of our actions."

"Whilst the WEEE Directive is a good idea, the targets set are insufficient. It addresses only part of the environmental problem. What's needed is technology to reduce the electronics going to landfill to zero, which is what our patented In2tec technology does. Not only that, but the increasing usage of second life components will also help to reduce the mining of rapidly depleting resources and the global chip shortage by ensuring there are more second life parts available to use."

In2tec's sustainable electronics allow full end-of-life disassembly, reuse, and recyclability. Using mechanical force and hot water as a catalyst, the ultra-low energy unzipping process provides opportunity for the full supply chain to gain value from end-of-life electronics. Not only can the circuit boards be recycled, and the electronic components removed, cleaned, and reused in the manufacturing process, but it makes in-line repair very simple for OEM's when needing to replace a component and extend the useful life of an otherwise wasted PCB assembly. Both reducing the amount sent to landfill to zero, and truly fulfilling the WEEE Directive.

EDGE Recycling Equipment brings operational benefits to a leading UK Recycler

When Bloomfield Composting needed to invest in a new shredder and trommel for their 18-acre waste and recycling facility at Cannock in Staffordshire they turned to EDGE Innovate, and not without good reason.

Bloomfield Composting established 15 years ago takes in green waste, wood and forestry waste from a number of sources to produce not only PAS 100 compost and BS3882 multipurpose topsoil, but also biofuel and pellets used in power stations and for other applications.

Nigel Gill Managing Director of Bloomfield Composting has gained a wealth of experience in the waste recycling and demolition sectors having worked for some 30 years alongside David Humphries of the Humphries Holding Group of companies. Today, as an independent, privately owned and managed company, Bloomfield Composting's facilities are considered to be among the best in the country.

EDGE Innovate supplied the company with an EDGE VS420 slow speed shredder and an EDGE TRT620R tracked trommel, both of which have been earning their keep for over two years processing a variety of waste streams without any hitches. As a prerequisite for any new pieces of equipment brought into Bloomfield Composting, it had to withstand the rigors of processing different waste streams whilst also maintaining a consistently high production rate. Favouring the products from EDGE, the operators at Bloomfield Compost liked the robust design and versatility that the product from EDGE offered.

High Performing Waste Shredder

Featuring an intelligent operating system with tramp metal detection system, the EDGE VS420 installed in June 2021 has proven to be highly dependable having been utilized to process a wide range of waste streams, some of which contain a high percentage of contaminants or non-shreddables. The fuel-efficient EDGE VS420 provides Bloomfield Composting with a high production capacity shredder thanks to its extremely high torque and twin shaft chamber set up which makes the unit an ideal solution for shredding a large array of materials including green waste, stumps and wood waste. EDGE's twin shaft design provides exceptional material intake, ensures less wear, promotes self-cleaning and prevents material wrapping. Customisable shredding programmes adds to the unit's application versatility as Bloomfield Composting quickly discovered.

A shredder that is robust, operator friendly, versatile and fuel efficient

"After discussing our specific requirements with the team at EDGE Innovate, we took delivery of the VS420 shredder in the 2nd quarter of 2021 and we added the unique TRT620R trommel several months later," says Nigel Gill. "We needed a shredder that was robust, operator friendly, versatile and efficient to process a variety of wood waste, a lot of which contained metal such as nails, hinges and door handles. It also needed to break down other difficult waste like tree stumps and roots before putting the material through our high-speed grinder, and the VS420 fits the bill perfectly with its different programme options and settings".

"Our operators like the VS420 because of its user-friendly design, they found it to be extremely easy to operate plus it can be controlled remotely from the cab of his excavator, so it is essentially a one-man operation. Our excavator operator actually runs two shredders and a screener all via wireless remotes. We particularly like the reverse rotor functionality of the EDGE shredder chamber as it helps to keep the rotors clean and if they are kept clean, we find it cuts back on the power required and uses less fuel, so we found the VS420 to be very efficient.

New Trommel Screen with unique features

Complimenting the VS420 shredder on site is an EDGE TRT620R trommel. With its heavy-duty construction design and high manoeuvrability, it has proven to be perfect for Bloomfield Composting as it is well suited to handling biomass, soil and compost, as well as construction and demolition waste.

Brought in a several months after the EDGE VS420 and based on the reliability displayed by their first EDGE unit, Bloomfield Compost returned to the market and invested in an EDGE TRT620R. A unique trommel, the 620 class trommel from EDGE can accept trommel drums from competing brands but with the added advantage of an end-to-end discharge conveyor trommel format complete with a 180° slewing fines conveyor. This added functionality and design format allows for enhanced production capacities, reduced material handling and the ability to create large radial or windrow stockpiles.

Trommel has the ability to track, screen and stack material simultaneously

Used to screen compost, topsoil, and other waste streams the EDGE TRT620R track trommel has a few additional design features not found on competing models, such as its ability to track, screen and stack material simultaneously. This has proven very beneficial especially when screening compost windrows with Bloomfield Composting seeing an improvement in the time taken to screen product whilst dramatically reducing their double handing of material on site.

"EDGE Innovate were very accommodating when we asked for some modifications to the trommel," says Nigel. "We don't tend to shred the kerbside collected green waste when it comes into our facility, it goes straight into windrows, but there tends to be quite a lot of oversize material now and again and it was catching on the chute, so EDGE made changes to their system to compensate, and it is performing brilliantly."

"We had some initial concerns over the working length of the EDGE TRT620R due to its end discharge format but when you position the radial fines conveyor at 180°, the trommel unit has the same small footprint of a standard trommel but with the ability to create much larger stockpiles".

Drum Compatibility

Another notable bonus of the TRT620R is that it can accept several other trommel manufacturers' drums, enabling Bloomfield Composting to take full advantage of their existing drum stock. A quick and simple drum exchange procedure is facilitated via an innovative sliding feeder design and double sided 180° swinging drum doors all of which allow the screening drum to be exchanged in a matter of minutes.

"We hadn't dealt with EDGE Innovate before acquiring these two machines, but they've been very supportive, although to be honest we haven't had any issues since putting the shredder and trommel to work; they've been reliable and have been performing very well," says Nigel.

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Rockster R1000S delivers optimal closed-circuit crushing for GK Baurestmassen

After renting various mobile crushing plants, GK-Baurestmassen has made a strategic decision at the end of 2021 to invest in the purchase of their own crusher. The choice fell on the tracked mobile impact crusher R1000S from Rockster, an experienced Austrian manufacturer and developer of mobile crushing and screening plants.

GK Baurestmasse GmbH is a merger of the companies Gojer, Kärntner Entsorgungsdienst GmbH and Knafl & Co. Gesellschaft m.b.H. Gojer's historical development dates back to 1965, when Adolf Gojer senior laid the foundations for the company. Originally known as the individual company Gojer, later under the name Gojer, Kärntner Entsorgungsdienst GmbH, the organization established itself as a key player in the field of disposal and recycling. In 2019, the success story expanded with the founding of GK-Baurestmasse GmbH (GK for short) as a subsidiary of Gojer.

Both companies play an essential role in the Austrian waste disposal and recycling landscape. Based in Carinthia, in the southern part of Austria, GK acts as a provider of construction waste landfill, soil excavation landfill and it has its own c&d recycling center. The expertise ranges from processing of various construction waste and excavated soil to the

L-R: Markus Silly (Machine Operator), Oskar Preinig (CEO) and Wolfgang Tischler (Customer Relations) in front of their new R1000S impact crusher

production of quality-assured recycling building materials, supported in this case by Rockster's flagship, the R1000S closed-circuit impact crusher. The R1000S has proven itself to be a very flexible and powerful all-in-one crushing solution, especially when it comes to high-quality recycling of C&D waste. This enables GK to further emphasize and put into the foreground the sustainable use of resources.

Efficiency of Rockster R1000S mobile impact crusher in the construction waste centre in Blintendorf, St. Veit/Glan, Austria

In November 2021, the tracked mobile impact crusher R1000S was delivered to GK, which was immediately put to a demanding test. Referring to this significant investment, Managing Director Oskar Preinig stated: "The decision to go with the Rockster R1000S was based on its hydrostatic drive and the highly effective closed circuit crushing system. The weight/throughput balance played a central role in our choice and the decision was an easy one."

All in one pass - crushing, screening & separating non-aggregate light materials:

This R1000S model is equipped with a full range of features to ensure the highest quality and clean final products. Highlights include a powerful circular vibrating screen, a double-functional return belt, a hydraulically height-adjustable magnetic separator and an Air Blower for effectively removing light non-minerals such as paper, wood, Ytong, Styrofoam or plastic from the final crushed material. This is complemented by a belt scale with two measuring points.

Easier access to the screen box thanks to the hydraulically foldable main discharge belt

Efficient processing with the R1000S crusher – GK processes an average of 230 tons of C&D waste per hour, producing a clean 0/63mm (minus 2 ½ inch) end product.

The Rockster R1000S, powered by a powerful 340HP CAT StageV 9.3 engine in combination with a hydrostatic drive system, delivers consistent and continuous power to process the material effortlessly. The end products produced are used in various areas such as substructure, the cement industry or brick production.

User friendly with a focus on easy maintenance

In addition to the excellent performance when processing a variety of materials, the R1000S impact crusher is also characterized by its ease of maintenance. Designed with an end-user in mind, the generously dimensioned engine compartment, the machine proves to be extremely accessible for service technicians. The main discharge belt hydraulically folds out and this function allows the operator to conveniently inspect the screen and remove ferrous debris. This also applies to the replacement of the screen mesh, which can be carried out in less than 10 minutes.

Markus Silly, who works as a machine operator at GK, emphasizes: "Daily operation with the R1000S is extremely uncomplicated. Operating Rockster crusher is intuitive, and all the necessary control elements can be conveniently set using a radio remote control. Changing or cleaning the screen is done quickly, which makes my work more efficient and easier." This ease of use and easy maintenance make the R1000S an effective and time-saving solution for GK's operations.

The R1000S presents itself as one of the most versatile crushers on the market - a combination of impressive performance and effortless mobility. Thanks to the hydraulically foldable discharge belt, the overall length of the machine is just 14 meters (46 feet). With dimensions of 2.83 meters in width and 3.20 meters in height, as well as a weight of 35.5 tons, use and breaking are extremely uncomplicated.

The remarkable flexibility of the R1000S in terms of transport and operation makes it an exceptional crusher for GK demolition waste. Its compact dimensions allow it to adapt smoothly to a wide range of working environments without compromising on performance.

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GR Plant proving their metal

Steel making has always been seen as a dirty, but necessary industry. And whilst this was once true, advancements in material recycling and material re-use now sees almost every single piece of what was once waste material leaving a steel works now being recycled.

Celsa steel works sitting on the banks of the Taff in Cardiff, is one of the UK's largest producers of steel reinforcement products delivering over 1.2 million tonnes of material to the UK and Irish markets annually.

The huge electric arc furnace at the state-of-the-art plant handles thousands of tonnes of steel on a daily basis and ends up producing huge quantities of arc furnace and pit waste. This waste has traditionally been sent to landfill as it is a mixture of lime, steel, and other aggregates from the steelmaking process.

With the cost of landfill increasing hugely and the company's desire to look at other greener alternatives to disposal, options for recycling the material have been explored and instigated. Celsa, working with Harsco their processing and material handling provider, asphalt recycling specialists Steelphalt and Swansea based GR Plant have built a system that can take the waste material from the production process and recycle almost 100% it.

Like any typical steel making process, elements are mixed according to the precise requirements of the steel and once melted, the remaining slag is taken from the mill and transferred to a tip site where, at 800°c it will sit being turned on a regular basis until it comes down to a more manageable 80°c.

The huge site opposite the mill is home to a range of machines operated by GR Plant, who have been ensconced at the steelworks for the past 14 years mastering the art of recycling

the slag. Looking like a moonscape, the entire site is grey from the material the machines handle and move around. Over 25,000 tonnes of slag is handled by the team on an annual basis and to do this, a range of machines have been sourced to cope with the extremely arduous conditions.

GR Plant have built themselves an enviable reputation across the globe for delivering a variety of environmental engineering projects and trail construction works. Built out of owner Gareth Rees's passion for cycling, the company has successfully delivered numerous high profile trails courses including Lee Valley for the 2012 Olympics. Whilst the environmental side of the business flourishes undertaking a variety of disciplines, the company is also busy with their crushing and material processing teams on contracts such as Hinkley Point and Celsa. Starting out with a Ford H45 at the age of 22 in 1989 undertaking the construction of mountain bike tracks, Gareth has developed the company to a point where there are over 50 machines on the fleet and a staff of almost 20 operators, and engineers.

The work at Celsa has called for the GR Plant team to look at machinery that is not only reliable, but also capable of dealing with the extreme conditions on site. From the cooling slag to the steel recycling, the list of machines has all been sourced and adapted by Avonmouth based Molson Group. "Gareth has developed a brilliant working relationship with the Molson team over the years and we buy almost all of our equipment through them." Contracts Manager Rob Jones commented. "We know that they have a broad range of machines that will fit our requirements exactly and when it comes to some of the kit we run at Celsa, they are able to make any adaptations in-house and deliver us a machine that can go straight to work."

The first part of the process for the GR Plant team is sorting and handling scrap steel. For this process they have purchased five Sennebogen 830E material handlers. The wheeled material handlers sort any incoming material removing and contaminants before loading it into a mobile shear which cuts the scrap into shorter lengths to fit into the furnace. "The Sennebogens are a great piece of kit." Rob commented. "They are reliable and solidly built giving us very little in the way of issues. Fitted with a 17m reach and 600 litre five-tine grab, the 830E tips the scales at around 38 tonnes. With the steel cut and stacked, it is then transported when required and loaded into the furnace

Moving on to the back end of the recycling operation and once the slag has sufficiently cooled, it is stockpiled allowing it to be pre-screened prior to the final crushing and screening operation. A pair of Hyundai wheeled loaders play a key role in the management of the material both pre and post processing with a 24 tonne HL970A and the largest Hyundai loader, the 31 tonne HL980. Like the Sennebogen material handlers, the wheeled loaders have a key role to play in keeping the back-end operations running. Moving the material from process to process could be undertaken with an excavator and truck but with the material and processing points spread apart, the wheeled loader working a load and carry system is seen as the easiest and most efficient process.

The cooled slag is first passed over a heavily modified Finlay 693 screen. Modifications to the screen have included a reinforced and lined hopper, upgraded rip-stop belts, additional magnets, and protective plates to the external sides of the hopper to prevent potential damage to the machine. These modifications have been undertaken as the slag contains large quantities of metals left over from the steel making process. 125mm hexagonal punch plate has been installed over the grizzly bars on the

hopper to try and divert as much steel from entering the screen deck itself. Metal coming off the magnet and grizzly falls to the floor where one of the five Sennebogen material handlers sifts through it with a magnet before depositing it on the side. This material is then transferred to the other Sennebogens where it is sheared and set aside to re-enter the steel making process.

The screened material coming from the Finlay 693 is then moved to the second stage in the process where it is crushed and screened. Site Foreman Kevin Norton takes up the story; "Over the years we have used a variety of crushing and screening equipment to get the right size and cleanliness of material. This train we are running now does exactly what we want and can produce a steady quantity of material so long as what we feed in isn't too wet!"

The material the company requires goes into the production of asphalt by Steelphalt. The Rotherham based company has been using reclaimed steel mill material for over half a century. The exceptional strength and durability of steel slag extends the life of the road and increases the time between road maintenance needs. The reclaimed steel slag achieves and maintains high skid resistance throughout its whole life on the road as a result of its capacity to regenerate its surface roughness over time and not only provides a more durable surface but also increases the longevity of a road topped with this material. The processing plant employed by Gareth's team consists of a Hyundai HX300AL loading a Finlay 694 screen producing four products. Oversized material from the screen is fed back into a Finlay C1540 cone crusher which reduces it down to size before putting it back into the 694. Two finished products come off the 694 at 4mm and dust with the larger material being sent to the first of two Terex Ecotec TTS 620T trommels. These heavy-duty tracked trommels have been fitted with different sized screens to allow a further three finished products sized at 6mm, 10mm and 12mm. The resulting

materials are used mainly in the production of asphalt at the

on-site Steelphalt plant and are also shipped around the country for use in other manufacturing plants. The larger product is in particularly high demand as a road dressing product with Steelphalt's Rotherham plant taking almost every tonne of material produced.

While GR Plant are not contracted to produce a minimum tonnage of material per week, Kevin and his team have to ensure that the incoming material is handled as quickly as possible. "We need a reliable fleet of machines and Molson have been able to supply us just that. On the rare occasions we have had an issue, they have responded very quickly to our call. The kit here takes a fair beating but has stood up to the test. We do tend to change some of the machines sooner than we would normally, due to the work we do." He commented. Rob is also very pleased with the service and back up they get from Molson. "We do have our issues occasionally, but overall, they are a great company to deal with. We ask them to supply at our specification and they do just that. They look after us from a service point of view even though they know the pain we put the machines through. They are a very fair and open company to deal with and one will continue to do so going forward."

Liebherr handlers keep Westminster happy

When a company is processing 130,000 tonnes of material a year in one of the world's biggest cities, it needs to have confidence in its materials handling fleet. That's why Westminster Waste continues to invest in Liebherr equipment.

The company's recycling facility on the south bank of the River Thames in London continues to adopt the latest techniques and machinery and that means its mobile handling equipment must keep pace.

Liebherr L 546 and L 556 XPower® wheeled loaders are the most recent newcomers, brought on board to replace three-year-old L 538 and L 550 XPower® models and to handle waste 24-7, of which close to 100% is recycled. Managing Director Dominic Moule explained why the mobile fleet is dominated by the German manufacturer: 'We have been purchasing Liebherr material handlers for several years and have always found their build quality to be second to none. We work the machines hard here and they stand up to our industry very well, which is why we keep investing in their latest machines when it comes to fleet upgrades.'

A wide range of construction and demolition waste is processed at the site and incoming material is pre-sorted as it is tipped, either by hand or by one of three Liebherr LH 24 material handlers fitted with selector grabs. With obvious items removed and sent to their respective waste streams, the remainder is fed into a Kiverco fixed plant that continues the separation process via a series of screens, trommels and a picking station to leave a variety of materials ready to send away for reuse and recycling.

The larger of the new arrivals, the L 556 XPower®, is usually deployed inside the shed where it copes with large volumes of raw and recycled material passing through each day. With an operating weight around 21 tonnes and powered by a 249hp Liebherr diesel engine, its specification is aimed squarely at achieving maximum efficiency and production.

'We work the machines hard here and they stand up to our industry very well'

Managing Director Dominic Moule

Brawler Solid Flex tyres are fitted to the heavy-duty axles, allowing the machine to operate on any material without fear of puncture yet at the same time giving a ride more akin to that of a standard rubber tyre than a traditional solid option. 'The solids we had on the last machine were very hard on the ride and whilst they were extremely durable, we wanted something a little more forgiving on this machine,' noted Moule.

The waste specification also includes additional under-body plating to eliminate waste build-up and further measures include a protection plate on the cab roof, FOPS guard to the front windscreen and guarding over the light clusters. Liebherr's 3m straight, industrial-style loader arms are finished off with tipping cylinder protection and carry a heavy-duty, 3m3 bucket manufactured by HSM in Sunderland, allowing a load-over height of 4.1m. 'We expect the Liebherr to be able to handle a wide variety of material, from lightweight insulation to bricks, timber and everything in between,' Moule added. 'The HSM bucket is a sturdy unit and looks like it will be able to handle anything we can throw at it.'

Newcomer number two is the 15.5 tonne mid-range L 546, similarly specified in full waste handling specification and powered by a compact 6-cylinder engine delivering 188hp. Like its larger stablemate, peak torque is delivered at low engine speeds which means reduced noise and low fuel consumption, a feature throughout the Liebherr wheeled loader ranges.

The L 546, which uses a standard hydrostatic transmission compared to the combined mechanical and hydrostatic driveline on the L 556, has a longer loader arm configuration and is also fitted with Brawler tyres and a similar protection package as the larger machine. The main difference between the two is the addition of a 4m3 capacity toe-tip bucket from Viby, now manufactured in the UK by HSM Buckets. Adding the toe-tip bucket and longer arms resulted in a load-over height of more than 4.6m, enabling the machine to load the walking floor trailers that take wood chip away for recycling.

Timber is graded according to its state and make-up before it is loaded into a mobile chipper by another LH 24 handler. Screened and graded material is then stockpiled, with the L 546 responsible for moving it around the shed, an environment where its compact dimensions and tight steering angles are shown to best effect. Even with a bulk walking floor trailer parked in the shed waiting to be loaded, the loader can comfortably handle the stockpile, load the truck, and empty the bays under the screening plant.

The waste industry is a dusty, dirty environment and to ensure the new loaders work to the best of their abilities, they are fitted with reversible fans as well as a comprehensive fire suppression system from Amerex.

The arrival of the two loaders underscores a strong business partnership between the two companies. 'We have used Liebherr for several years and like both the machines and the back-up," said Dominic Moule.

Reliable Results with Rubber Screen Cloths

Rubber screen cloths are one of the corner stones of the screen media industry; due to their flexibility of design they are as popular today as they have been in the past. Rubber screen cloths have a relatively simple manufacturing process, however as with most things the devil is in the detail, such as the specification of the rubber and tensioning cloth, the side iron design, specialist fixings used, etc. However even with all this in place the ability to design a screen cloth to suit a customer's specific application and requirements requires many years of experience to ensure the end product will perform its intended duty. SCS has been designing and manufacturing rubber screen cloths for over 30 years and in that time has produced over 10,000 different designs.

At SCS before the design and manufacture of a rubber screen cloth can start our personnel will discuss with the customer their requirements and if required one of our area sales managers would come to site to measure up, noting as much information as possible regarding screen duty and product requirements.

The following case demonstrates that due diligence and extensive understanding is paramount to a successful design, manufacture, supply and installation of rubber screen cloths.

Before

After

Before

After

A Short Lesson in Competency

A long-term customer contacted us regarding issues with rubber screen cloths fitted to a mobile scalping screen supplied by a competitor. The customer reported that the rubber screen cloths were failing prematurely from the back and that they were struggling to tension them properly.

After investigation by phone, email and a site visit, the root cause was identified. There were two main contributing factors, namely incorrect profile side tension clamps and exterior angle wedges. These were causing the side irons to rotate, thus lifting the underside of the rubber screen cloth off the longitudinal camber bars, this was therefore not allowing the rubber screen cloths to be tensioned correctly. The incorrect tension meant the rubber screen cloths were flapping up and down, and had worn through from the underside, this movement lead to capping rubber being destroyed and to some damage to the longitudinal camber bars.

SCS undertook the rectification work on this installation, firstly repairs were carried out to the longitudinal camber bars and the exterior side angle wedges were removed. New rubber screen cloths, capping rubber and side tension clamps were installed, and for greater security the tensioning wedges and pins were replaced with screen bolts to ensure the mats remain tensioned correctly whilst in operation.

In Summary

The success of rubber screen cloths can be put down to the fact that static or mobile screens setup for side or end tensioned woven wires can be easily converted to rubber screen cloths. This is normally for one of the following reasons,

- To improve service life normally quoted as a five to seven times that of woven wire, which reduces the time for maintenance, reduces the cost per tonne of production.
- To reduce pegging or blinding, with greater flexibility in the screening surface single particles are less likely to get stuck in an aperture or lead to material binding together on top of the screening surface, this leads to a greater available open area and hence increased throughput.
- To reduce noise, generally a 10dB(A) reduction can be achieved.

As this case shows care should always be taken to ensure everything goes smoothly.

Speak to the experts at SCS, for unrivalled screen media expertise and individually tailored advice. Contact us on 01788 553300 or sales@scsrugby.co.uk

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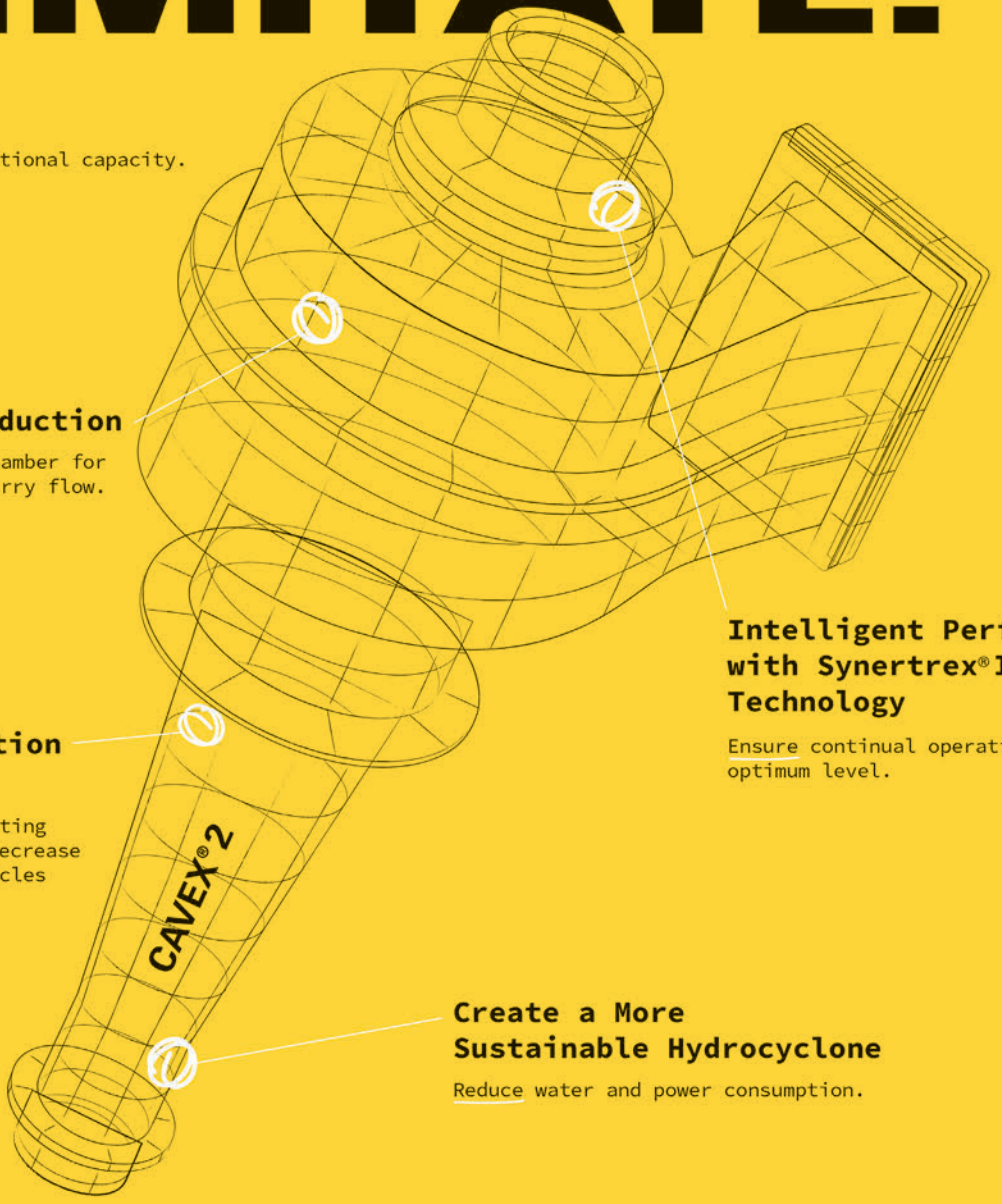

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Impressive first appearance for Develon at STEINEXPO 2023

Develon, formerly Doosan Construction Equipment, made an impressive first appearance at the STEINEXPO 2023 Exhibition from 23-26 August 2023. STEINEXPO provides an ideal meeting place for the national and international raw materials and building materials industry and was held again in Europe's largest basalt quarry, operated by Mitteldeutsche Hartstein-Industrie AG, in Homberg/Nieder-Ofleiden in the state of Hesse in Germany.

The show provides an impressive stage for leading manufacturers of machinery, suppliers of mineral processing technology and add-on equipment as well as service providers to present their machines and systems, industry innovations

and service offerings.

The Develon stand display at STEINEXPO focused on the company's crawler excavators, wheel loaders and articulated dump trucks (ADTs). The combination of these three machine types offers customers from the quarry, mine and construction sectors complete solutions for excavation, loading and transport work, as well as meeting the needs of many application types from general earthworks to the production of aggregates and building materials, all from a single source.

Demo Area the Highlight of the Develon Display

The Demonstration Area was definitely the highlight of the Develon STEINEXPO 2023 display, where the company showcased the perfect interaction of its DX800LC-7 80 tonne crawler excavator, DL550-7 wheel loader and, for the first time at the show, the new DA45-7 4x4 ADT.

The DX800LC-7 is the second largest crawler excavator in the current Develon range, alongside the new DX1000LC-7 100 tonne model. The operating weight of the DX800LC-7 is 79.5 tonne and it is powered by a Perkins 2506J six-cylinder engine with an output of 402 kW (547 HP). The DX800LC-7 has the highest hydraulic flow for this size of machine, providing best-in-class performance, with higher productivity, lower fuel consumption and smoother controls.

The DX800LC-7 worked in the Demo Area with the DL550-7 wheel loader, part of Develon's award-winning 'DL-7' family of wheel loaders. In the DL550-7, the powerful hydraulic system allows it to work quickly and efficiently. The Scania DC13 283 kW (385 HP) engine in the DL550-7 delivers optimal power while meeting Stage V environmental regulations. The combination of these features gives this Develon wheel loader excellent balance, ensuring optimal bucket loading with every cycle of the loader's 5.7 m^3 bucket. The lifting arm with Z-kinematics provides excellent breakout forces and lifting capacities, especially for heavy materials.

The DA45-7 4x4 ADT is Develon's first dump truck with 4x4 drive. The new 4x4 version of the DA45-7 ADT is intended to challenge rigid dump trucks in the 40-tonne class. With its 4x4 design, the new version of the DA45-7 is better at handling bad roads, smoother driving surfaces and steeper terrain than rigid dump trucks. The DA45-7 4x4 ADT also has a better turning radius than comparable rigid dump trucks.

In the Static Display

The static display on the Develon stand included the company's DX490LC-7 crawler excavator, the DL420CVT-7 wheel loader and a DA30-7 ADT.

The DX490LC-7 crawler excavator is powered by a Stage V-compliant Scania DC13 diesel engine, which provides 257 kW (349.5 HP) of power. The increased power of the DC13 engine is combined with a Virtual Bleed Off (VBO) hydraulic system (D-Ecopower+) and the new generation Smart Power Control Technology (SPC3), to optimise productivity and fuel consumption, depending on the mode selected.

The DL420CVT-7 has a SCANIA DC9 engine with an output of 240 kW (327 HP) at 1800 rpm, that complies with Stage V emissions standards. High-pressure fuel injection and precise timing ensure highly efficient fuel combustion and a perfect engine power stroke. The DA30-7 ADT has a maximum dump capacity of 16.8 tonne (without tailgate) with a maximum payload of 28 metric tonne.

For more on DEVELON, please visit the website: https://eu.develon-ce.com/en/

Boğaziçi Beton commissions new wash plant in bid to increase output

CDE plant assists concrete producer to remove excess fines and decrease water absorption

Boğaziçi Beton, the largest concrete manufacturer in Turkey, has partnered with wet processing experts CDE to commission a new 220tph wash plant to remove excess fines from its concrete sand and meet industry standards.

Established in 1997, Boğaziçi Beton has 28 separate concrete batching plants in Turkey pouring 6 million m3/year. In total, the firm has poured some 35 million m3 of concrete which has been used in major construction projects in Istanbul, including the new central bank, metro construction projects, highways and viaducts and high-rise buildings in the financial district.

The firm, which has been listed among the top 500 industrial companies in Turkey for the last 10 years, took over a 50-acre quarry in the Kemerburgaz-Cendere region in 2015 to begin processing crushed sand and aggregates for its own concrete production.

The following year, Boğaziçi Beton increased crushing plant capacity at its Cendere quarry to 2,000tph, enabling the firm to process up to six million tonnes of crushed material annually.

Addressing the problem

In Turkey, the methylene blue absorption test is used to determine the quality of the fine material used in concrete batch and therefore its application. It measures clay content and other expansive materials in the fines fraction of quarried sand and aggregates which can have an adverse impact on concrete strength, performance and increase the demand for cement, water and admixtures.

In Kemerburgaz, where Boğaziçi Beton's site is located, all quarries have natural sandstone which has a major water absorption problem in crushed sand.

With approximately 15-17% of 0–63-micron content after crushing, Boğaziçi Beton was producing methylene blue test results above the acceptable limits which resulted in higher production costs due to the need to add additional cement to the concrete mix.

Seeking to address this, Boğaziçi Beton engaged with wet processing experts CDE to design and commission a plant to remove excess fines content in its sand and decrease water absorption with the aim of achieving a lower methylene blue result in line with industry standards.

A co-created solution

Doğan Özel, business development manager for CDE, explains how CDE met Boğaziçi Beton at its site to begin the process of designing a solution to meet its exact needs.

"At CDE we use a unique co-create approach so that we can meet the individual needs and requirements of each customer. We were invited to Boğaziçi Beton's site to assess the performance of the existing plant, and to better understand how our pioneering technology could enhance performance."

Mr. Kıvanç Baş from Boğaziçi Beton states how the collaboration with CDE allowed them to ensure the new plant would achieve exactly what they wanted it to.

"CDE worked with us to ensure the new plant was going to achieve our desired output. We invited them to our site to observe and discuss our issues. During the visit, they collected samples for testing which confirmed that our products weren't up to standard.

"From this, we worked together to create a solution which would improve the overall quality of our product. We were able to visit other sites using CDE plants to give us a first-hand demonstration of how CDE's technology could benefit us."

A compact solution

The issue central to Boğaziçi Beton's high methylene blue values is the integration of bucket wheels in the existing plant, which increase water absorption.

CDE commissioned a 220tph EvoWash 251 to help improve the quality of the product whilst also increasing outputs.

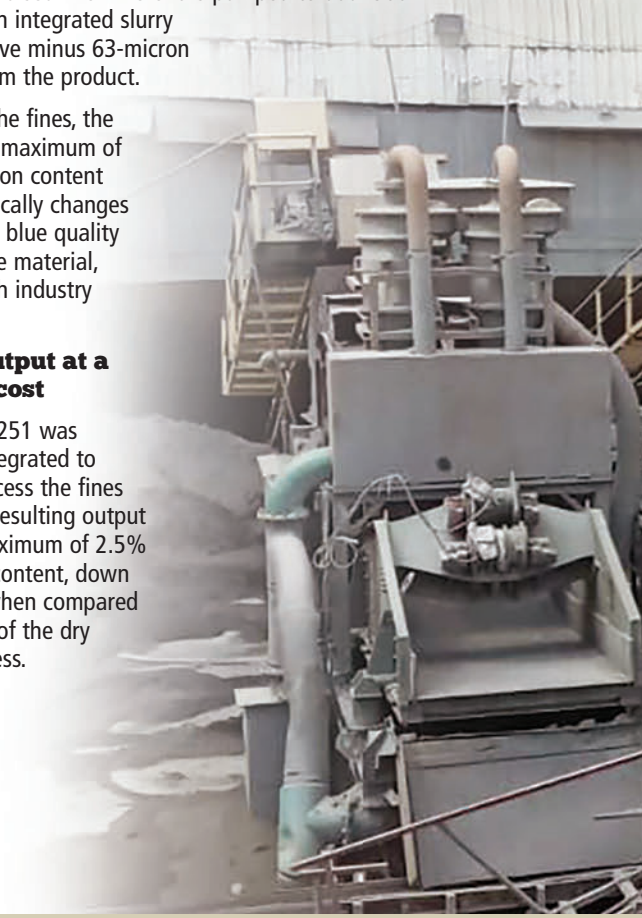
A compact, modular sand washing system, CDE's EvoWash screens and separates the smaller sand and gravel fractions through an integrated high-frequency dewatering screen, the hydrocyclone technology provides unrivalled control of silt cut points and eliminates the loss of quality fines.

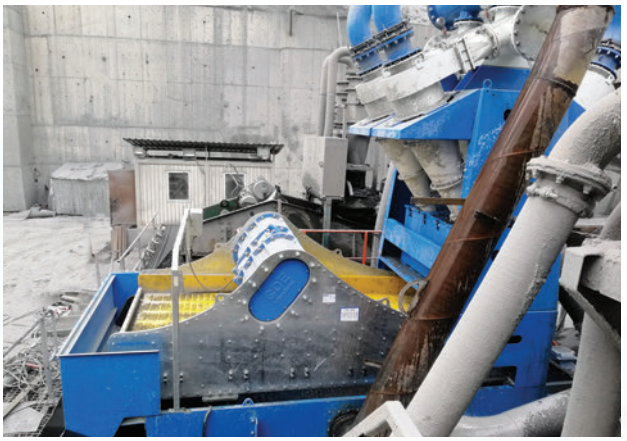
The feed material is delivered to the plant dry, before being adequately fluidised. From here it is pumped to dual 500mm cyclones via an integrated slurry pump to remove minus 63-micron fines away from the product.

By removing the fines, the product has a maximum of 3% 0–63-micron content which dramatically changes the methylene blue quality measure of the material, aligning it with industry standard.

Increase output at a decreased cost

The EvoWash 251 was seamlessly integrated to efficiently process the fines material. The resulting output contains a maximum of 2.5% 0–63-micron content, down significantly when compared to the output of the dry crushing process.





CDE's patented Infinity™ dewatering screen technology results in an increased power

CDE Evowash™ Sand Wash System

Thus, in turn, decreases operational costs due to the lower methylene blue product, helping save on cement addition to their ready-mix operations.

Not only is micron content decreased, but overall outputs have increased by 100%. The EvoWash allows Boğaziçi Beton to process over 200tph. Comparatively, when the sites existing three washing units are at the maximum, they process only half of the EvoWash's capacity.

Mr. Kıvanç Baş said: "After seeing the EvoWash in action, and how it has enhanced our process, we plan to replace all of our existing models with EvoWash models.

"Before we integrated the EvoWash, the washing units were a major pain point as we had to stop production of the 2,000tph crusher plant to allow the washing machines to keep up with production. Now that we have the EvoWash in operation, we can avoid any such issues.

"We pour high strength concretes like C50 to the new Turkish Republic Central bank complex in Istanbul, so it's critical that we use top quality sand and aggregates for such high concentrate production range. The integration of CDE's technology has been integral in allowing us to produce high quality product at a reduced operational cost."

Doğan states that the plans to incorporate further plants are a testament to the EvoWash's efficiency.

"We're delighted that our technology could have such a positive impact for Boğaziçi Beton by increasing outputs and improving the quality of the end-product. We look forward to a continued partnership with Boğaziçi Beton to enhance their plant efficiency even further."

For more information about CDE and its wet processing technologies, visit CDEGroup.com

Evowash sand wet processing technology guaranteeing high value, in-spec product straight from the belt

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November | December

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QUARRYING - Open topics for this issue

RECYCLING - Open topics for this issue

BULK HANDLING - Open topics for this issue

Editorial copy deadline – 10th November 2023
Advert copy deadline – 17th November 2023

January | February

AGGREGATE CRUSHING & SCREENING – screens, screen media, wear parts, spare parts, static & mobile crushing & screening, grizzlies, feeders, stockpilers, magnets, contract crushing.

RECYCLING - Open topics for this issue
BULK HANDLING - Open topics for this issue

Editorial copy deadline – 15th January 2024
Advert copy deadline – 22nd January 2024

Sustainability integral to operating ethos at Rokbak

At the heart of its sustainability strategy, Rokbak has implemented a set of ambitious goals in operating measures and articulated hauler design and construction. These underscore a determination to reduce environmental impact and promote sustainable practices – all of which benefit the company's valued customers.

A commitment to minimising its ecological footprint has seen the sustainability goals of Scottish articulated hauler manufacturer Rokbak showcase a dedication to environmental stewardship in the heavy machinery industry.

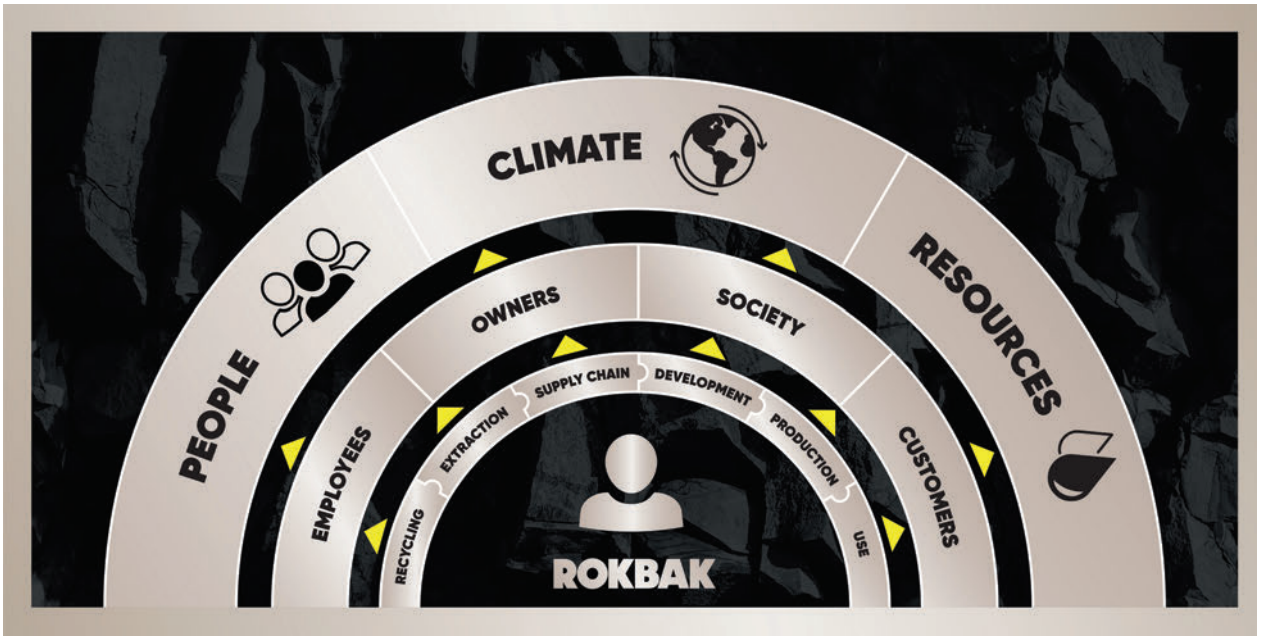
"A lot of work has gone into our sustainability drive over the years," says Charlie Urquhart, Rokbak Product Manager. "Rokbak's heritage, knowledge and resources mean that we're constantly developing and looking to improve the trucks and the way we operate, in a manner that benefits our customers."

As part of the Volvo Group, Rokbak is aligned to the Science Based Targets initiative (SBTi). Specific aims include a 30% reduction in CO_2 by 2030, a 50% factory operations emission reduction by the same year and becoming net-zero by 2040. These incentives have influenced the design of Rokbak trucks, the daily operation of the Rokbak Motherwell factory and a strict adherence to the Rokbak sustainability roadmap.

Reducing impact on the environment has seen Rokbak employ strategies stemming from fuel consumption analysis, examining alternative fuels, extending maintenance cycles and lessening maintenance consumables. Furthermore, this research and development in sustainability has led to the reduction of total cost of ownership (TCO) for Rokbak customers.

Low waste, low cost, high performance

Fuel consumption is the biggest cost of operating a machine and the Rokbak RA30 and RA40 EU Stage V engines produce a fuel consumption saving of up to 7%, when compared to the previous EU Stage IV engines. This means lower operating costs and, fundamentally, less impact on the environment. Rokbak's articulated haulers both have lean burning engines and a confirmed low-fuel consumption. The RA40 has a class-leading transmission fluid change interval of 6,000 hours, the RA30 offers an impressive 4,000 hours.



Both the RA30 and RA40 are compatible with hydrotreated vegetable oil (HVO), a fuel that allows customers a 'quick-hit' on their individual net-zero targets. HVO, also referred to as "Renewable Diesel" or "Green Diesel", is a paraffinic bio-based diesel fuel originating from animal fats or multiple vegetable oils (waste cooking oil, rapeseed oil, palm oil, etc). HVO fuel has chemical and physical properties like those of diesel fuel, however, its fossil-free composition and low carbon content differentiate it from diesel and make it attractive to those seeking a sustainable fuel option. It is a modern way to produce high-quality bio-based diesel fuels without compromising fuel logistics, engines, exhaust aftertreatment devices, or exhaust emissions. HVO can provide up to a 90% reduction in CO_2 emissions on a well-to-wheel analysis.

Extensive periods between scheduled maintenance, with infrequent parts and fluid changes, mean less material going to landfill. Maintenance and fault alerts allow customers to keep on top of the truck and be informed of the machine's next required servicing. Instigating the ordering of parts in advance and getting the labour in place increases operational efficiency, not only improving sustainability measures but also reducing TCO.

"When the customer buys a Rokbak hauler, they are acquiring a hauler that has been developed with sustainability in mind." says Charlie. "It is a hauler that has been manufactured on a site powered by green energy and redirects waste away from landfill."

Collective effort

Today, the Rokbak factory is completely powered by sustainable sources. Working towards accreditation on a zero-waste-to-landfill policy, 95% of generated waste is now diverted away from landfill.

Rokbak's sustainability initiatives resonate with employees from the factory to the management team and the company's dealers and customers. Everyone from the factory floor to the head office has an eye on energy reduction. Internal trackers inform Rokbak employees how much energy has been used in comparison to the previous week and "green champions" are recruited from throughout the business to promote sustainable practices in their respective work areas.

"It's to make sure everyone's doing their bit," explains Charlie. "Whether you're monitoring power tools usage or remembering to switch off the lights and air conditioning, you're part of a united drive."

Rokbak's sustainability goals and incentives exemplify how we can address environmental challenges within the heavy machinery industry. Rokbak demonstrates the potential for sustainable manufacturing while reaping a host of benefits and stands as an example of how other movers in the manufacturing industry can drive positive change while securing individual success.

"We are creating significant steppingstones towards a sustainable future," says Charlie. "And this not only results in less waste being generated, but also benefits the Rokbak customer's wallet."

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Terex Washing Systems facilitates sand and gravel product supply for Cork's concrete sites:

Terex Washing Systems washing plant is helping a third-generation company feed sand and gravel products to concrete sites in Cork, Ireland.

Keohane Readymix's plant in the Irish county of Cork processes natural sand and gravel deposits. The material, while fairly free-flowing, can get sticky and contain clay or organics like roots.

The feed material is 60:40 sand to gravel, predominantly minus 150mm but can be up to 300-400mm.

Keohane's old wash plant was worn out, and they needed a new installation that could handle their unique requirements.

Terex Washing Systems (TWS) was selected to design the plant and began to analyse a sample of Keohane's as-dug material and used this to propose the plant's design.

Plant overview

The new plant consists of the following equipment:

- H30 feed hopper
- Aggresand 206 3D 2S
- Aggrescrub 150
- DCT220 deep cone thickener
- FDU 3000 flocculant dosing unit
- Central control cabin
- Stockpiling conveyors

Terex Washing Systems designs and manufactures a range of feeders, from H9 to H30, including static grids available in multiple spacings. The hopper volume of the H30 is 30m3 with an internal breaker bar to relieve the load on the belt. The feeder's heavy-duty 1050mm wide belt is supported by impact rollers and is driven by a direct drive gearbox with variable speed control.

The Aggresand 206 is an integrated sand washing plant with a main conveyor powered by dual 11W electric motor and gearbox combinations, with alignment rollers to keep the belt centred and prevent belt damage. The main conveyor transfers material from the feeder to the main rinsing screen, where it is rinsed and screened on all three decks with polyurethane media, X spraybars, and ball valves. The rolling chute, a popular design feature on the Aggresand 206, splits the aggregates into three products, and a simple flip of the blending plate can blend mid-overs and mid-fines into a single product.

The Ringman controls the water delivery, and the washbox, which briefly contains the feed material while introducing a high volume of water to fluidise the sand and gravel, is key to maximising the rinsing screen's performance. The high-capacity sealed washbox is supplied with water independently controlled for volume. The Aggresand has been designed with multiple valves that allow the drainage of the complete water system at the end of each day, preventing frost pockets that can cause blockages and damage.

20 x 6 Screen

This rinsing screen is a 20x6 three-deck box. Powered by a single 22kW electric motor, it operates at a fixed angle of 18°, ensuring optimal speed and throw for effective screening across all three decks. The screen is equipped with spraybars on each deck, which have staggered nozzle patterns to ensure efficient rinsing of all material. The spraybars feature individual ball valves that can be shut off as needed, with each spraybar being statically mounted to increase its lifespan and prevent additional weight and stresses on the screenbox.

Polyurethane media is used on all three decks, providing maximum wear life in washing applications. The screen is designed to wash sand through the bottom deck, with three different aggregate sizes being collected at the end of the screen and directed to a rolling chute. The rolling chute can be used to split the aggregate into three products, with oversize material going over the top, mid-overs going over the middle section, and midfines dropping into the closest chute to the screen. Alternatively, the mid-overs and mid-fines can be blended into a single product by flipping a blending plate. The oversize product can also be blended by repositioning the plates at the end of the chute.

The screen's roll-away chute provides access to the discharge end of the screenbox, with a drop-in, lightweight flooring providing a safe platform for inspection and maintenance. Keohane is currently running the screen with 55mm apertures on the top deck, 24mm apertures on the middle deck, and a split of 2mm and 5mm on the first and second sections of the bottom deck to produce two grades of sand. The oversize material is directed to a stockpile at the back, while the mid-overs are discharged to the right. The 5mm-24mm aggregate is transferred via an extended conveyor to the AggreScrub 150.

Main collection sump tank

The main collection sump tank is one of the critical components of the plant. Its primary function is to collect the water used in the washing process and provide a central point for the collection of fluidised fine material.

Water from the wash plant flows into the sump tank, and from here pumped to the cyclone stage for sand cleaning and separation.

Underground Water Storage

Uniquely for Keohane's the reservoir for the recycled water used in the wash plant is located beneath the plinth to safe footprint on the overall layout. The water recycling system employed reduces the amount of freshwater required for the operation. In addition, this subterranean tank helps to maintain the proper balance of water in the system and prevents overflow during heavy rain or excessive water use.

Pumps and maintenance

Two types of pumps are used for handling sand and water – coarse sand pumps and fine sand pumps.

Typically, the pumps used in a wash plant are natural red rubber-lined to provide resistance against abrasive wear and tear caused by the sand particles. Terex has lined all the pipework to protect against wear and tear from the abrasive nature of the sand particles. The lining is a wear resistant rubber that can withstand the harsh conditions of the wash plant environment.

Regular maintenance of pumps is crucial to ensure their smooth operation and prevent breakdowns that can cause production downtime. During maintenance, the pumps are rolled out of their positions, dismantled, and inspected for any signs of wear and tear. Worn parts are replaced, and the pumps are reassembled, aligned, and reinstalled back into position.

Cyclones and underflow blending

The sand and water slurry is pumped to two rubber lined cyclones. The larger 660 Cyclone receives the higher volume coarse fraction, while the 500 Cyclone receives the lower volume 0-2mm fraction. Inside the cyclones, silts and clays are separated from the sand and discharged out the top of the cyclone, while the in-spec sand is discharged via the spigot into the underflow collection box.

Easy access lids allow for visual inspection of the umbrella flow out the bottom of the cyclone. A simple blending box within the main underflow box provides a second opportunity to blend fine sand into the coarse sand.

Sand dewatering screen

The sand is then discharged onto a 14x6 high frequency dewatering screen, which uses polyurethane media and dividers to keep the material apart the entire length of the screen. By the time the sand reaches the end, the moisture content has been reduced to below 14 per cent. The dewatering screen's underflow is returned to the central collection sump for maximum recovery of fines.

TWS designed a custom lined chute for Keohane's site to use one standard radial conveyor for the fine fraction, and a radial conveyor for the higher volume 0-5mm sand. This chute provides the third and final opportunity for the Keohane to blend some of the fine sand into the coarse sand.

All dirty water reporting out the top of the cyclones is collected and discharged into the ground collection sump, and pumped from there via a high capacity, wear resistant vertical shaft pump to the water treatment stage.

Scrubbing

When there is a high concentration of silts and clays in feed material, the aggregates can bind together, making it difficult to remove the clay through washing alone. The material analysis completed during the initial proposal stage determined that scrubbing of the material was required.

Scrubbing involves a process of stone-on-stone attrition, which breaks down conglomerates and frees the aggregates. TWS washers are designed to handle a feed rate of 60 to 200 tonnes per hour and produce a clean and marketable aggregate. The AS150 version is modular and can be easily transported and assembled. It comes equipped with a part-rinsing sizing screen, a high-volume trash screen, and a central collection sump, and offers easy access to all serviceable areas.

In this specific application, most of the conglomerates are found in the mid fines portion. The stock is diverted to the AS150 via the Aggresand extended conveyor. The challenge is to then liberate valuable aggregates and light material, such as organics or trash, from difficult-to-break-down fines and insoluble clay.

The Aggrescrub range features twin rotating bladed shafts with two dedicated motor gearboxes that introduce energy to the feedstock, causing the particles to collide and scrape against each other. This stone-on-stone attrition liberates conglomerates, which are transported across the water and expelled out of the rear weirs, and onto the trash screen where they are dewatered. The water then travels to the integrated sump tank.

As the aggregate exits the hull, it receives a final rinse to remove any 0-5mm carry over, and this is sent to the integrated sump. All the water used in the scrubbing process is contained in a closed loop, and the dirty water is collected in the integral sump. From here, it is pumped back along the extended conveyor to the Aggresand sump, where it enters the sand washing process. What remains is a pile of clean, marketable aggregate in distinct-sized stockpiles and a neat pile of trash and organics.

Flocculant dosing unit

The plant uses an FDU3000 flocculent dosing unit. The 3000-litre capacity unit is a stainless-steel construction split into three separate tanks, a mixing tank, maturing tank and storage tank.

During flocculant preparation clean potable water is pumped from a water storage tank situated outside the control room. Simultaneously dry flocculant powder is fed into the pressurised water entering the mixing tank flow by an auger mounted in the flocculant hopper. The flocculant solution is then thoroughly mixed using a mixer in the mixing tank.

Premixed flocculant is displaced and overflows from the mixing tank into the maturing tank via a weir, where it is further mixed and allowed to mature for between 45 -60 minutes.

Flocculant in the storage tank is then pumped via a mono pump into the slurry feed pipeline just before the static mixer, where it thoroughly mixed with the slurry feed, before entering the thickener.

The settling rate of the solids within the slurry are continuously monitored automatically by the dosing control unit. This allows the control panel to monitor and adjust the amount of flocculant used and therefore optimise consumption.

Deep Cone Thickener

This is where the dirty water, now dosed with flocculant, enters into the centre feed well. Immediately you can see the floc working, causing the particles of silt & clay bind together and sink to the bottom of the DC220. Here you can see the clarified water weiring over the troughs and channelled into a below ground water storage tank. The thickened sludge is compressed in the deep cone and the volume of sludge in the thickener is controlled via this sensor. When the level reaches its set point the sensor sends a signal to the control system which automatically opens the discharge valve. The thickened sludge is then transferred to the pond under gravity This being a key advantage of the deep cone thickener, not requiring a sludge pump. A further advantage is the fact that the sludge can reach a higher solids ratio, on average 50% solids, meaning that a greater level of water in recovered / recycled. At the exist position of the Deep cone, you can see the valve arrangement, we install flush out points. This allows the operator to and easily flush out any blockages safely and quickly.

The thickened sludge is piped to the settlement ponds where is contained and easier to handle.

Central control room

TWS also incorporated a central control room with insulated panels lighting and heating. This is where the main panels and switch gear systems are located. The control panels have a touch screen system that allows operators to drill down into the system and look at an individual machines performance to optimise plant efficiency. Should alerts arise, these are highlighted on the large display screen and can be identified and rectified quickly.

The system also allows for Terex engineers to remotely dial in for troubleshooting and fault diagnostics. They can help with plant performance and change settings if feed material change or support are needed.

End to end

The plant was designed with custom features to meet Keohane's specific needs.

The company provided a full turnkey solution that leveraged its wide product portfolio. All of the equipment used in Keohane's Brinny plant comes from TWS's product line. TWS's decades of in-house experience helped ensure its equipment is applied properly and efficiently.

Crushing and Screening - With Rubble Master and Red Knight 6 Ltd

Crushing

Austrian based Rubble Master are leading the impact crushing world with their range of RM crushers, available from UK distributor Red Knight 6 Ltd. The range is led by the RM120X, delivering maximum efficiency and simplicity for use on a wide range of applications.

The RM120X features a range of solutions to make the life of the operator easier and safer, whilst also delivering cost benefits back to the business through intelligent management of the machine, based on the amount and type of material being crushed.

The RM Operations Assist and RM GO! SMART functions enable the operator to keep track of the machines performance from the excavator cab, with live updates on engine performance, fuel consumption and machines performance all clearly visible via a lighting system on the outside of the machine.

"The Rubble Master impact crushers are industry leading for a reason. Built to the most exacting standards, we've sold over 130 machines into the market in the last 5 years and those customers know they can trust the RM range to get the job done. The RM120X is the next evolution in the range. The largest of the impact crushers it also offers simplicity of use, maximum efficiency and safety for the operator via the Operations Assist," said Paul Donnelly, Managing Director of Red Knight 6 Ltd.

The Rubble Master range are highly mobile, versatile and powerful machines are ideal for crushing natural rock (riverbed material, basalt, limestone, gypsum, granite) and for recycling rubble, asphalt, concrete, glass and production waste.

The range consists of 5 machines, ranging from the RM 60 to the full spec RM120X. The hallmark of all 5 crushers is simplicity and efficiency, meaning short set up times and ease of use, getting RM crushers to work quickly.

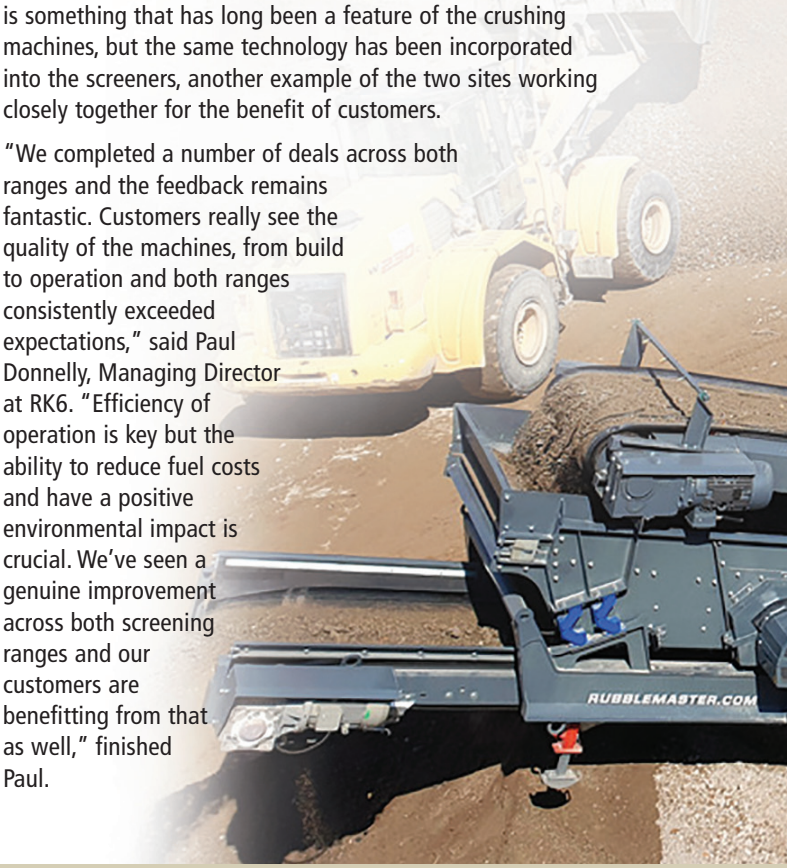
Screening

Rubble Master have built their success on their market leading impact crushers, but their range of tracked scalping and sizing screens continue to gain traction in the market.

Run out of the RM Dungannon site, the factory see to bring the expertise from their crushers to the range of screens. There remains close cooperation in product development between the RM headquarters in Linz and RM Dungannon, driving excellence across the ranges.

The range of scalping screens has 4 machines in total, from the incredibly compact but robust HS3500M through to the largest screen, the HS11000M. There is also an extensive range of sizing screens with both two and three deck options, depending on your requirements. The MSC8500e also offers full hybrid drive capability, allowing you to limit fuel costs. It is something that has long been a feature of the crushing machines, but the same technology has been incorporated into the screeners, another example of the two sites working closely together for the benefit of customers.

"We completed a number of deals across both ranges and the feedback remains fantastic. Customers really see the quality of the machines, from build to operation and both ranges consistently exceeded expectations," said Paul Donnelly, Managing Director at RK6. "Efficiency of operation is key but the ability to reduce fuel costs and have a positive environmental impact is crucial. We've seen a genuine improvement across both screening ranges and our customers are benefitting from that as well," finished Paul.



Model	Output (material dependent)	Feed material size	Inlet opening	Weight
RM 60	Up to 80 tph	Edge length max 500mm	640 x 550mm	12000kg
RM 70GO!	Up to 150 tph	Edge length max 600mm	760 x 600mm	19500kg
RM 90GO!	Up to 200 tph	Edge length max 650mm	860 x 650mm	23600kg
RM 100GO!	Up to 250 tph	Edge length max 750mm	950 x 700mm	29000kg
RM 120X	Up to 350 tph	Edge length max 850mm	1160 x 820mm	35120kg

Models Compared	HS3500M	HS5000M	HS7500M	HS11000M
Screenbox surface	2743 x1220 mm	3660 x 1430 mm	4880 x 1525 mm	6100 x 1830 mm
Hopper volume	3.84m³	6m³	8.7m³	8.7m³
Oversize belt discharge width	1050 mm	1300 mm	1600 mm	1600 mm
Basic machine weight	17000 kg	24000 kg	35000 kg	43000 kg

Models Compared	RM MSC5700 M-2D	RM MSC8500 -2D	RM MSC8500 -3D	RM MSC8500e (Hybrid drive)	RM MSC1050 0-2D	RM MSC105003 D
Screenbox, screen surface	3660 x 1525mm	5485 x 1525mm	5485 x 1525mm	5485 x 1525mm	6700 x 1525mm	6700 x 1525mm
Feedhopper volume	9.2m³	9.2m³	9.2m³	9.2m³	9.2m³	9.2m³
Main conveyor belt width	1050mm	1050mm	1050mm	1050mm	1050mm	1050mm
Standard weight	26800kg	32000kg	34500kg	32000/34500kg	33000kg	35500kg

For more information visit - www.redknight6.co.uk

Martin Engineering highlights safe conveyor equipment design

Conveyors are among the most dynamic and potentially dangerous equipment in bulk handling. The operational basics of belt conveyor systems regarding the hardware installed and the performance required from the components are too often a mystery to many employees. This knowledge gap also creates a safety gap. Since personnel are the single most important resource of any industrial operation, to meet workplace safety standards, the consensus among safety professionals is to design the hazard out of the component or system, which historically yields more cost-effective and durable results.

Designs should be forward-thinking. This means exceeding compliance standards and enhancing operators' ability to incorporate future upgrades cost-effectively by taking a modular approach. This method alleviates several workplace hazards, minimizes cleanup and maintenance, reduces unscheduled downtime and extends the life of the belt and the system. Before the drafting phase, designers should:

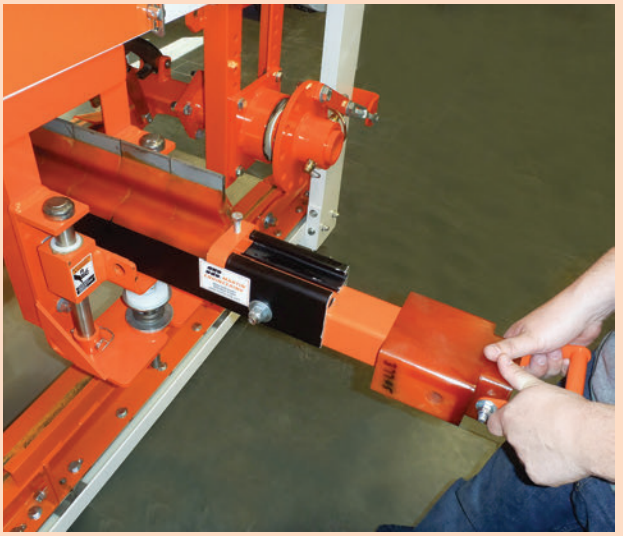
1) establish the goals of reducing injuries and exposure to hazards (dust, spillage, etc.);
2) increase conveyor uptime and productivity, and;
3) seek more effective approaches to ongoing operating and maintenance challenges.

Martin® Guarding is designed to protect workers from reach-in injuries in unauthorized areas

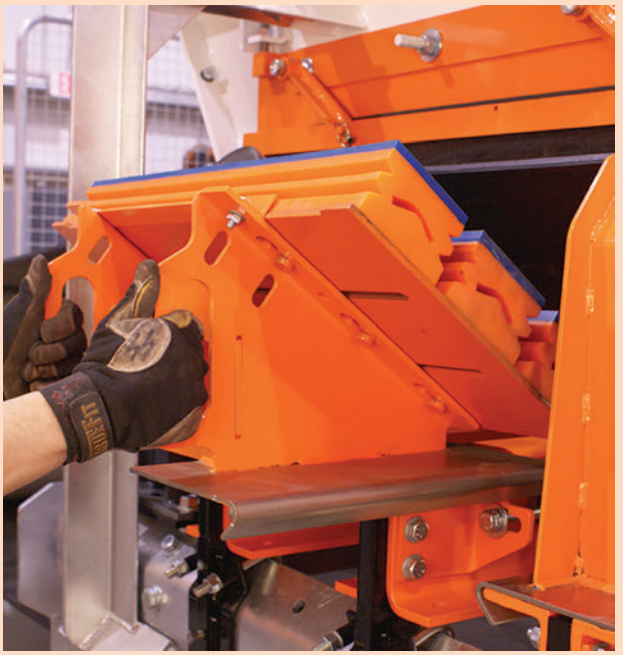
Combining Safety & Productivity

To meet the demands for greater safety and improved production, some manufacturers have introduced equipment designs that are not only engineered for safer operation and servicing but also reduced maintenance time. An example is the Martin® QC1™ Cleaner HD/XHD STS (Safe-to-Service) primary cleaner and the Martin SQC2S™ STS secondary cleaner, designed so the blade cartridge can be pulled away from the belt for safe access and replacement by a single worker.

The same slide-out technology has been applied to impact cradle designs. Systems like the Martin Slider Cradle are engineered so operators can work on the equipment safely, without breaking the plane of motion. External servicing reduces confined space entry and eliminates reach-in maintenance while facilitating faster replacement. The result is greater safety and efficiency, with less downtime.



This Martin SQC2S STS secondary cleaner allows for safe external maintenance by a single worker.



The track-mounted Martin® Slider Cradle can be serviced quickly and safely, with no reach-in maintenance.

An example of a safer belt cleaner is the CleanScrape®, which received the Australian Bulk Handling Award in the "Innovative Technology" category for its design and potential benefits. The revolutionary patented design reduces the need for bulky urethane blades altogether. It delivers extended service life, low belt wear, and significantly reduced maintenance, which improves safety and lowers the cost of ownership.

Unlike conventional belt cleaners that are mounted at an angle to the belt, the CleanScrape is installed diagonally across the discharge pulley, forming a three-dimensional curve beneath the discharge area that conforms to the pulley's shape. The novel approach has been so effective that in many operations, previously crucial secondary belt cleaners have become unnecessary, saving further on belt cleaning costs and service time.

The CleanScrape® forms a 3-D curve beneath the discharge that conforms to the pulley's shape.

Low-Bid Process and Life Cycle Cost

Although the policy is generally not explicitly stated by companies, the "Low-Bid Process" is usually an implied rule that is baked into a company's culture. It encourages bidders to follow a belt conveyor design methodology that gets the maximum load on the conveyor belt with the minimum compliance to regulations using the lowest price materials, components and manufacturing processes available.

When companies buy on price, the benefits are often short-lived, and costs increase over time, eventually resulting in losses. In contrast, when purchases are made based on the lowest long-term cost (life-cycle cost), benefits usually continue to accrue and costs are lower, resulting in a net savings over time.

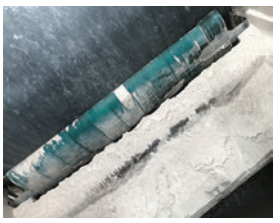
Conclusion

Engineering safer conveyors is a long-term strategy. Although design absorbs less than 10 percent of the total budget of a project, Engineering / Procurement / Construction Management (EPCM) services can be as much a 15 percent of the installed cost of a major project, additional upfront engineering and applying a life cycle-cost methodology to the selection and purchase of conveyor components proves beneficial.

Safety-minded design at the planning stage reduces injuries by engineering hazards out of the system. The system will likely meet or exceed the demands of modern production and safety regulations, with a longer operational life, fewer stoppages and a lower cost of operation.

ProSpare improves performance of belt conveyors at one of the UK's largest Limestone Quarries

The quarry's network of 100+ belt conveyors are critical to the success of the plant. Conveyors are known to be a hotspot for maintenance teams, with frequent maintenance and daily housekeeping commonplace.



The maintenance team recognised that further improving performance of these conveyors would provide significant payback, both in terms of improved efficiency and reduced maintenance spend.

ProSpare was invited to site to see if they could help with two troublesome conveyors:

1. A conveyor carrying <100mm aggregate suffered from excessive carryback. The build-up of material overwhelmed the undertrays and required clean-up several times a week.

2. A conveyor carrying fines experienced severe premature wear to the conveyor belt. Build-up in and around an under-performing sealing system would cut into the belt itself, resulting in replacement of the belt every 3 months.

To solve the problems, ProSpare installed a number of new components.

The belt with the carryback problem was fitted with Starclean PU pre-cleaner and tungsten secondary scraper. After 12 months operation the carryback problem has all but been eliminated, with little clean-up required from site operatives.

On the fines belt, the team upgraded the transfer point sealing system to Spill-Ex and installed a Starclean secondary scraper. 9 months on, the belt is still in good working order, tripling the life of the belt so far.

These successes led to the creation of a program of conveyor improvements. The ProSpare engineer devised the program for conveyors in target areas to solve specific conveyor issues. It included training for site maintenance staff and site vulcanisers in best practice operation and maintenance procedures.

In this period, the client has seen a vast reduction in carryback and spillage, reducing clean-up requirements and keeping more of the product within the process.

For more information visit www.prospare.co.uk

Paving the path to sustainability

Transforming quarrying for a more efficient future...

The quarrying industry, essential for supplying raw materials for construction and infrastructure development, faces critical environmental challenges. Energy-intensive processes, emissions and resource consumption have prompted the need for sustainable solutions. Here David Strain, technical director at quarrying systems integrator Technidrive, explores how the industry is undergoing a transformation towards efficient practices, with an emphasis on energy use, resource optimisation and renewable power.

Carbon dioxide (CO2) emissions attributable to the mining and quarrying industry in the United Kingdom amounted to nearly 17 million metric tons in 2020. Embracing the vision of a greener future, quarrying companies are now looking to minimise their environmental impact while maintaining operational efficiency. The focus has often been on making individual processes, such as rock blasting, crushing and screening, more energy efficient.

However, the key to a truly energy efficient quarry lies in optimising the entire operation. But where should site managers start when considering upgrades to legacy equipment and aging infrastructure?

Quarry equipment design

Sustainable quarrying goes beyond operational efficiency, it necessitates responsible land management and ecosystem conservation. That being said, choosing the correct equipment is probably the most frequent opportunity to be more sustainable. The same can be said when considering equipment packages.

For example, in one jaw crushing application, Technidrive developed a turnkey solution using a WEG W22 premium efficiency IE3 motor, motor controllers and alternators. The equipment was chosen specifically due to its superior efficiency, reduced energy consumption, cost effective performance, high radial load capacity and impressive productivity — as well as delivering a cost reduction for the end user. Moreover, by using entirely WEG products, Technidrive was able to offer a three-year warranty and ensure the system worked optimally in unison.

Traditional motor control systems and outdated technologies often result in energy wastage and increased emissions. By installing cost effective electric motor sensors, quarry managers can monitor the efficiency of their entire motor fleet, thus making informed decisions. By adopting such technology, quarries can significantly reduce their carbon emissions, aligning their operations with sustainable practices that support global efforts to combat climate change.

Optimising resource use

Resource efficiency also plays a crucial role in achieving sustainability in quarries and a key area of loss is material transportation. Traditional conveyor systems often lack precision, leading to wasteful material handling and higher operational costs. By leveraging advanced solutions that incorporate real-time data from sensors on site, quarries can ensure precise material transport, minimising resource wastage and enhancing overall efficiency.

This approach not only promotes eco-conscious practices but also provides a tangible economic advantage through cost savings and improved resource management. For example, when drilling and blasting operations are better aligned with crushing and screening processes, the material flow can be optimised, leading to reduced downtime and improved efficiency.

Harnessing renewable energy

Renewable energy integration marks a significant step towards sustainable quarrying. The adoption of renewable energy sources, such as solar panels or wind turbines, to power quarry equipment and motor control systems can reduce reliance on fossil fuels. Embracing such energy solutions makes the quarrying industry more resilient and independent from volatile energy markets, while also contributing to a cleaner, greener energy future.

The quarrying industry has tons of potential to become more sustainable. As the industry strives towards this goal, it will be important to focus on improving energy efficiency by using smart industrial equipment, optimising resource usage, and incorporating renewable energy sources.

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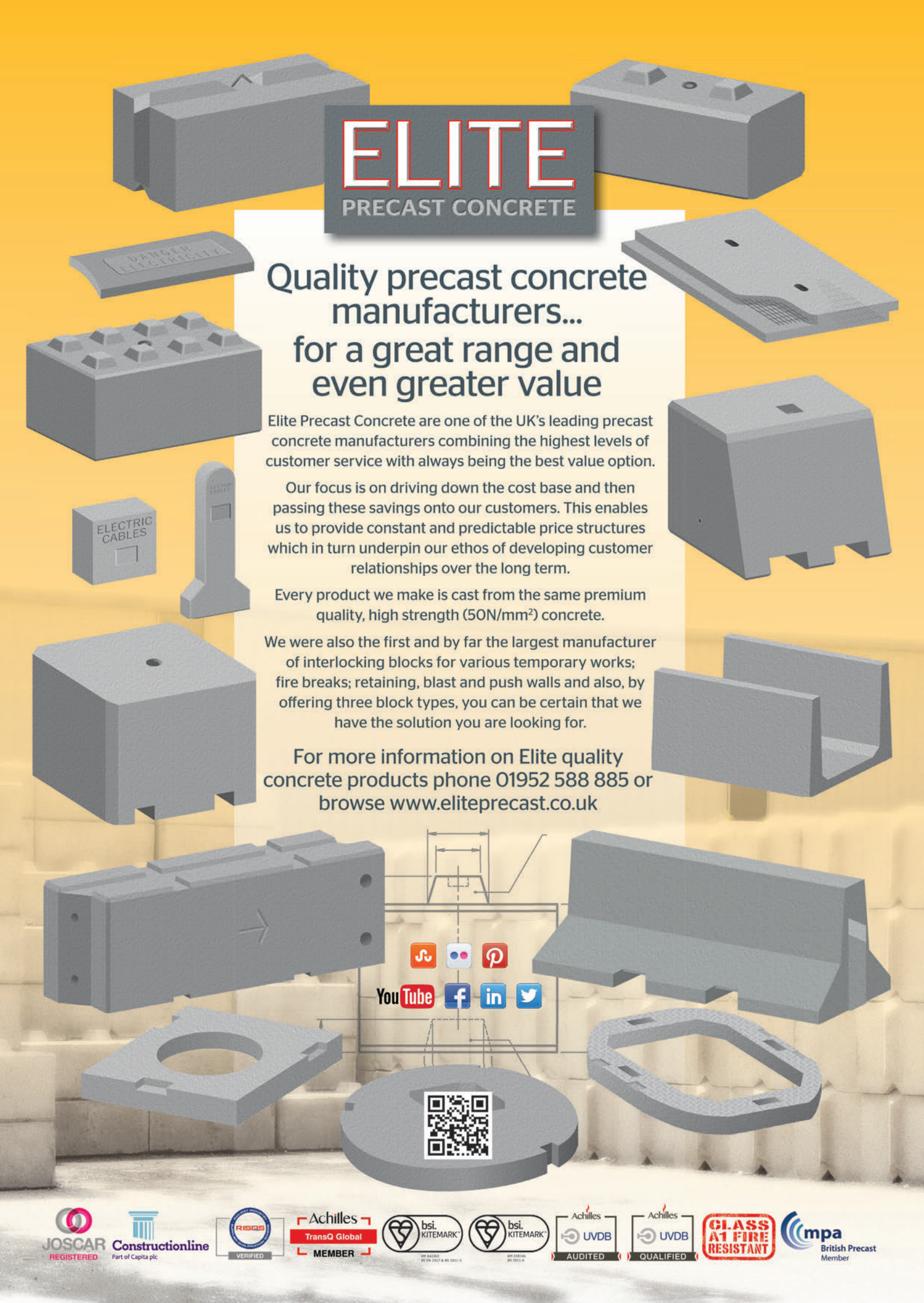

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