



Creating a Greener Future

Embracing sustainable change and demonstrating a strong commitment to maximizing recycling and ending the overuse of natural resources, Mone Bros earlier this year opened a brand-new £4 million soil-washing plant in Leeds to provide a local source of high-quality recycled aggregates for the buoyant construction markets in Yorkshire and surrounding regions. *Quarry Management* reports

The new CDE recycling plant at Blackhill Quarry has equipped Mone Bros with the latest wet-processing technology to advance a circular economy in Yorkshire



L-R: Steve Crossland, technical manager at Mone Bros, and Michael Coleman, managing director of Mone Bros

With sustainability goals on everyone's mind, the urgent need for environmental conservation and reducing the construction industry's carbon footprint is more crucial than it ever has been with the growing climate crisis.

As decarbonization target dates rapidly approach, the journey towards a more sustainable construction sector is well under way, with many blue-chip firms and SMEs committed to combatting climate change and addressing waste reduction challenges by applying innovative ideas and philosophies such as zero waste and circular economy.

One environmentally conscious company that has been quick to shift from the traditional linear 'take, make, waste' approach in the heavy building materials sector to a circular economy business model are Mone Bros.

Founded by brothers Phil, John, and James Mone, the family-run business has grown rapidly since it was established in 1965 and today is one of the leading contractors/service providers of its kind in the Yorkshire and the surrounding regions, with a diverse portfolio that includes quarrying, waste-disposal, aggregate recycling, earthworks/land remediation, and plant hire.

'Continuous hard work, the relentless drive and support of our 90-strong workforce, and environmental sustainability being at the heart of our business strategy have allowed us to grow and develop from what initially started out as a plant/wagon hire firm into one of the largest suppliers of recycled and quarried aggregates in Yorkshire and the Humber,' said Michael Coleman, managing director of Mone Bros.

'Over the years there has been an increasing pressure on businesses in the construction and road infrastructure industries to ensure that they use materials from more sustainable sources. And with the quarrying sector undergoing a transformative shift towards sustainability, recycled aggregates have been growing in popularity because they represent a more eco-friendly, economical, and local alternative to the use of primary materials.'

Reduce, reuse and recycle

Delivering net-zero emissions, cutting energy usage, and driving sustainability have become integral to the way construction materials firms, such as Mone Bros, now operate. A growing focus on reducing waste to landfill, reuse, and recycling, as well as preserving natural aggregate sources, have all been key drivers of the circular economy.

Earlier this year the Mineral Products Association (MPA) reported that the volume of recycled and secondary materials processed in Britain reached a record 73.5 million tonnes in 2022 – which accounted more than 30% of the country's total demand for aggregates.

The data also confirm that recycling rates in the UK are higher than any other major European economy – further evidence of the quarrying industry's long-standing commitment to resource recovery and efficient reuse, in line with circular economy principles.

'As construction significantly contributes to the UK's overall carbon emissions, it is essential to deliver materials and solutions that advance sustainability and lower environmental impact,' commented Steve Crossland, technical manager at Mone Bros.

'Utilizing sustainable materials, such as recycled aggregates, can help contribute towards a circular economy, reduce carbon emissions, and even cut construction costs.'

'As part of our zero-waste and sustainability agenda, we are committed to helping the building and construction sector optimize the use of recycled materials and develop cutting-edge solutions that can help customers meet their own green agendas and improve their environmental performance, from less reliance on virgin resources to reducing carbon emissions and recycling more construction, demolition, and excavation (CD&E) waste.'

Operating out of eight strategic locations across Yorkshire, including three quarries (Blackhill, Temple, and Eggborough), Mone Bros aim to provide clients of all sizes with a 'one-stop shop' for all landscaping and construction products in the building materials, transport and utilities infrastructure, and decorative aggregates markets.

The Morley-headquartered company – which will celebrate its 60th anniversary next year – has made huge strides in recovering a higher percentage of CD&E waste materials, enhancing its recycling rates, and improving the quality, reliability, and grading of recycled resources.

With a strong network of waste transfer stations, state-of-the-art recycling facilities, and vehicle/plant repair workshops, the sustainable aggregates firm can deliver a fully compliant and accredited, tailored waste-management solution, meeting the highest environmental standards and best working practices. ➤



CDE's compact EvoWash sand washing system integrates a dewatering screen, sump and hydrocyclone configuration

'The aggregate recycling operation is increasing by leaps and bounds, so much so that our waste-management service has established itself as one of our core provisions within the business,' said Mr Coleman. 'Our range of recycled products, including Type 1, 6F2/6F5, topsoil, environmentally sustainable sands, and single-sized aggregates account for nearly 90% of our total aggregates supply.'

'However, we're not a company that just produces and supplies high-quality sustainable construction materials. We want to look at the bigger picture and move towards being a forward-thinking and innovative market-leading player that focuses on providing our customers holistic, integrated, and sustainable solutions that address escalating waste disposal/landfill costs, carbon emissions, and environmental impact whilst helping them strive towards a more sustainable future.'

Indeed, with more than 35 years' expertise and experience in waste-management and recycling, Mone Bros are no strangers to

driving improvements across all aspects of sustainability. In 1987, the business launched its waste disposal and recycling services from Blackhill Quarry, where construction waste is transferred, collected, segregated and reprocessed into recycled sub-bases (eg Type 1) and other saleable products.

Mone Bros have also played a leading role in raising the standards in the use of recycled construction materials across Yorkshire, having achieved the stringent YHAUC (Yorkshire Highways and Utilities Committee) accreditation for recycled Type 1 aggregate used in highways and utilities contracts.

Under the leadership of Mr Coleman, Mone Bros will continue to focus on delivering growth through 'sustainable thinking', driving decarbonization across the construction supply chain, innovating to improve circularity, and supporting the acceleration towards a nature-positive economy.

'Sustainability is deeply embedded in all aspects of our business and some of my key

responsibilities as managing director is that we continue to evolve as a company, develop a range of value-driven low carbon solutions, and lead the charge for a circular economy in the regional construction materials market,' said Mr Coleman.

'In recent years we have invested substantially in updating and upgrading our aggregate processing/earthmoving fleet, so we can serve customers in the best possible way, from waste prevention, reuse and recycling to focusing on safety and wellbeing, and promoting circular economy practices.'

Delivering sustainable solutions

To recycle waste material arisings from CD&E projects efficiently and cost-effectively, it is pivotal for aggregate producers to have the right operational processes and waste-recycling equipment in place that delivers maximum productivity, reliability, and uptime.

The recent commissioning of a new state-of-the-art CDE waste washing plant at Mone Bros' Blackhill Quarry in Leeds is a clear example of the company's ongoing commitment to delivering innovation, enhanced environmental sustainability, and a nature-positive future.

'Our business is ever expanding which subsequently means we're handling more waste materials than ever before,' remarked Mr Crossland. 'As we own and operate a wide network of strategically located inert waste-recycling facilities across Yorkshire, the company picks up a lot of utility, construction, demolition, and brownfield site waste materials.'

'As we're moving from a linear economic model to a sustainable circular approach, our first and foremost priority is not the disposal of material masses to landfill but the processing of incoming construction waste and to recover and repurpose as much as possible. The new CDE wet-processing plant at Blackhill will allow us to process higher volumes and more challenging materials.'

'Since its operation in March, we've diverted more than 99,000 tonnes of CD&E waste from landfill and the recycling equipment has enabled us to reach our target of processing 99% or more of all the waste materials we receive. More importantly, the 120 tonnes/h wash plant is adding significant commercial and technical value to our operations. We are now recovering high-grade, in-spec recycled sand and aggregates that can be returned to the local construction industry and compete directly with primary aggregate sources.'

Mone Bros' commitment to doing everything in the right way was immediately apparent and a recent visit by *QM* to Blackhill Quarry demonstrates how far the business has gone in preparing and ensuring the state-of-the-art waste-recycling plant runs smoothly, safely, and efficiently.

Collaborating closely with global washing system specialists CDE Group and an on-site subcontractor team, there were a number of specific challenges for Mone Bros to overcome during the design, delivery and installation phases. Mr Crossland explained: 'Blackhill is a very busy and active working site so the installation and commissioning phase of the



The CD&E waste-recycling plant allows Mone Bros to produce a range of high-quality recycled products

new CDE washing plant had to take into account of the daily operations of aggregate production, waste disposal, and tipping activities.

'Not only that, but all our sites are permitted and regularly inspected by the Environment Agency and operate to an integrated management system and environmental management plans, with rigorous chemical and geotechnical regimes. We are also ISO 9001 and ISO 14001 accredited, which demonstrates our commitment to providing high-quality, value-added products to our customers whilst protecting the environment.'

Mr Coleman added that it was imperative for Mone Bros to commission a turnkey CD&E waste-recycling plant in line with the company's ongoing policy of delivering good sustainable practice and its journey to be a net-zero business. 'Our recycled aggregates are produced in accordance with the WRAP protocol,' he commented. 'With CDE's cutting-edge wash plant equipment, it will help us prioritize aggregates recycling and waste recovery over disposal to landfill while simultaneously creating profitable and sustainable revenue streams.'

'We are extremely excited by the potential of this project. Working in partnership with CDE equips us with the technology, knowhow, and expertise to supply high-quality, in-demand recycled materials for the construction industry – taking our waste-recycling to the next level and placing us at the forefront of championing sustainability throughout Yorkshire.'

The new washing plant installation at Blackhill has been specifically designed as a stationary setup but offers maximum operational flexibility by utilizing a combination of modular products from the CDE portfolio, including a log-washer, screening, stockpiling, sand washing, water treatment, and filter press. Essentially, this means the waste-recycling facility can meet Mone Bros' on-site requirements and commercial needs, including accommodating any future capacity changes or final product specifications.

Another important consideration for the company is the health and safety of its quarry

operatives/HGV drivers, and the waste washing plant has been carefully designed for ease of use, inspection, maintenance, and repair to deliver a clean, safe, and productive site.

Critical to the success of the project, for example, was the construction of wall barrier panels and concrete pads/storage bays that maximize stockpile capacity from the numerous conveyors on the plant. Also, new concrete roads and paths have been built in to facilitate efficient transport movements on site and easy accessibility for essential plant inspections and maintenance.

Greener materials

The highly engineered wet-processing plant installation at Blackhill Quarry has been configured to a bespoke layout, bringing together modular units to create a tailor-made solution to meet Mone Bros' exact requirements for business expansion. Designed around CDE's proven AggMax 160 scrubbing and classification system, the newly constructed bespoke wash plant – since commissioning – has so far contributed immensely to the aggregate producer's environmental aims and commercial goals.

'Due to the diverse range of services Mone Bros offer, we process a large variety of inert waste materials, from construction and demolition to those generated by the utilities sector and our own earthworks and site clearance activities,' said Mr Coleman.

'Recycling has always been, and continues to be, a fundamental part of the business and it will help us build a bright carbon-free and more profitable future. With CDE's fully bespoke, high-efficiency wet-processing solution, we are recycling 99% of input material that comes into the site and converting it into a range of saleable products. By essentially moving our operations into aggregate washing and processing, we are taking a restorative and circular approach to meeting the sustainable demands of the local construction industry.'

Indeed, the CD&E waste-recycling plant is already proving its effectiveness and producing high-quality recycled aggregates

for Mone Bros, including 0–2mm soft sand, 2–4mm grit sand, and three single-size aggregates (10mm, 20mm, and 40mm). Featuring the AggMax 160 modular logwasher, CDE's market-leading technology is engineered to operate in the toughest of conditions to maximize product yield from the most abrasive of feedstocks.

Its versatile design incorporates five processes on a single and compact portable chassis, including pre-screening, scrubbing/attrition, sizing, contaminants removal, and stockpiling.

Combined with an integrated trash screen, the heavy-duty AggMax 160 has been specially designed to process challenging CD&E materials containing large quantities of organic and other inert physical contaminants into high-value aggregates suitable for a variety of applications in the construction industry.

Also supplied is CDE's flagship EvoWash sand washing system, which provides the most efficient removal of unwanted fines and delivers higher value washed sand products straight from the belt. The new turnkey plant also incorporates efficient water recycling with the AquaCycle thickener system, which recovers over 95% of the process water for immediate recirculation.

The water management solution uses a flocculant to aid the separation of the silts from the water, with the clean water being recycled into the AquaStore water tank and the silts pumped into the sludge buffer tanks ready for processing by the filter press. Here, CDE's filter-press technology recovers more water for recirculation and creates a dry filter cake that can be used as a construction fill material for use in flood defences etc.

The waste washing plant is controlled by a sophisticated computer-based system, with easy-to-read screen dashboards and real-time, holistic views of the entire operation. Using Siemens' innovative Xcelerator digital platform, Mone Bros are able to access CDE's Performance Indicator software program which provides key operating parameters and functionality, including production figures ►



Leading the charge – Mone Bros are fully committed to a strong environmental and sustainability agenda

(tonnes/h), idle time, filter press cycles, and water tank levels.

Mr Crossland believes having this real-time data at Blackhill Quarry allows proactive decision-making and performance optimization, significantly impacting the efficiency and profitability of the company's aggregate operations. He commented: 'Such visibility of the wash plant's performance is a key element that provides a real-time overview of what is happening but also captures weekly and monthly trends that will be used to take appropriate decisions and better manage our plant assets going forward.'

'By then combining this performance data with our known energy consumption provides us with a real insight as to what further improvements and opportunities may potentially be available for the business to consider and drive to become even more sustainable. Initial engagement is also underway with several local solar panel installation specialists to develop viable options for a more sustainable power source to supplement the existing grid supply to the site.'

A collaborative approach

Looking ahead, Mr Coleman is confident of the positive impact the new CDE recycling plant will have on the company's operational processes. While the engineered-to-order wet-processing system has operated successfully for several months to date, there have been challenges along the way, too, and these have been overcome by adopting a collaborative approach between CDE and Mone Bros' on-site operational team.

'This is a really exciting time for us,' said Mr Coleman. 'At Blackhill, we have invested in a site for the long term which not only supports the expansion of the business, but also strengthens our commitment to the UK aggregates market.'

'There is no doubt that active collaboration with CDE has contributed greatly to the success of the project, ensuring all production requirements are met, a first-class after-sales service is provided in a timely manner, and allowing us to divert vast tonnages of waste from landfill, transforming them into sustainably sourced concrete, asphalt, and various other construction materials.'

Effective supply chain engagement and collaboration across the value chain are essential to delivering a net-zero carbon industry. A greater focus on the sustainability credentials of building materials (at varying stages of a project's lifecycle) has become increasingly under scrutiny and in order to significantly improve the sustainability of supply chains, businesses must work collaboratively to understand the environmental impact of procurement decisions, and collectively reduce emissions.

'To do what is needed, SMEs need improved access to more reliable data, as well as encouraging greater collaboration between customers, contractors, materials providers, and other suppliers across the wider supply chain,' explained Mr Crossland. 'At an early stage on projects – planning and strategy, not just delivery – we need to harness the sustainability expertise which exists across organizations and work together to manage whole-life carbon across construction projects and embedding low-carbon decision making into every phase of works.'

Recognizing the need to work collectively in meeting challenges, such as sustainability and decarbonization, Mone Bros have taken a more collaborative approach with clients, industry key sector organizations, local authorities, universities/colleges etc to drive materials innovation, and develop and implement sustainable solutions that address the current climate emergency and meet the evolving needs of the construction industry.

By designing in recycled materials in projects at the earliest stage will help to reduce the overall environmental impact of the construction industry through minimizing waste, reducing the need for virgin aggregate and conserving our already diminishing natural resources.

The aggregate producer, for example, is currently engaged with University of Leeds to expand the uses of the wash plant's products through research projects in order to further drive the circular economy. 'We recently received some initial research findings based on the research team's analysis of provided samples, with the next progress meeting with the university planned to evaluate further research potential options to redefine or

develop products for higher added value,' said Mr Crossland.

Mone Bros are also underlining their collaborative approach for the benefit of the mineral products sector with support and leadership from local government and communities. In March this year, the cutting-edge CDE recycling facility was officially opened by the Lord Mayor of Leeds, Councillor Al Garthwaite, and then in June the local Parish Council (Bramhope and Carlton) visited the waste washing plant. Both events highlighted the importance of advanced wet-processing aggregates technology from CDE and the positive impact it will make across the Yorkshire construction industry.

Mone Bros' commitment to environmental stewardship and conservation has extended to their ongoing good relationships with national concrete producers, as the demand for low-carbon concrete products intensifies and increases. And to help drive and support its decarbonization journey, the business has linked up with the West Yorkshire Combined Authority to promote the many sustainability benefits of its CD&E waste processing plant to the local economy.

The company is also helping to address the skills shortage in the quarrying industry. In April/May, the business welcomed two groups of college students from Leeds College of Building to the waste-recycling plant and learn what career opportunities exist across the sector.

And as part of their commitment to ecological stewardship and conservation, Mone Bros have engaged with a number of environmental organizations, including the RSPB, Wildlife Trust, Butterfly Conservation, and Buglife, to seek their advice and guidance on ensuring that biodiversity is protected and enhanced, where practicable, throughout their sites.

Aggregates recycling helps promote and sustain a circular economy, and Mone Bros' plans to invest further in CDE wet-processing technology at other strategically located waste transfer centres in the future is a major boost for the Yorkshire construction industry. By increasing the capacity, flexibility, and reliability of recycled aggregate production, the company aims to be a leading force for change and a vocal advocate for the use of sustainable building materials repurposed and recovered from construction, demolition, and excavation waste.

'There is a growing acceptance of recycled aggregate and with the CDE waste washing plant now in place, we can produce higher-quality sands and graded recycled products, which will support the construction industry's transition to a net-zero carbon economy,' said Mr Coleman.

'We are aware of the need to tackle the issues of climate change, biodiversity loss, and resource scarcity head-on by making sustainability the main driver of our company growth strategy. The transformational investment at Blackhill brings our corporate environmental philosophy to life and is fully aligned with our ambitions to build a greener, more sustainable future for the construction sector.'

QM