



Malcolm Construction To Host C&D Recycling Plant Open Week

Malcolm Construction are hosting a three day event at their Shewalton Quarry & Waste Management facility in Irvine on the west coast of Scotland allowing visitors to view a demonstration of the new C&D waste recycling plant installed at the site.

The site will be open to visitors from 3rd to 5th July 2012 and the company expects significant interest from the construction materials and recycling industries in the UK and beyond. “Early interest in the demonstration events indicate that as well as existing customers and others from the recycling industry in the UK there will be many international visitors over the three days” says Helen Ryan, Marketing Manager with The Malcolm Group.

The event is being hosted to demonstrate the new modular C&D waste recycling plant recently purchased from CDE Global. The washing plant includes an M2500 E4R mobile aggregate and sand washing system, Aggmax 83R portable logwasher, aggregate screening and trash removal plant and a water management and recycling system, the Aquacycle A400.

The plant is being used to process a variety of wastes including arisings from Malcolm Construction public works contracts and construction, demolition and excavation waste received at the landfill sites operated by the company. The processing of this material results in a recycled sand product with application in concrete and a clean recycled aggregate. “There has been significant interest in the recycled concrete sand

from some of the major players in the Scottish construction materials market” explains David Balmer, Environmental Manager with Malcolm Construction. “The recycled aggregates have shown significant quality improvements from dry processed material thanks to the removal of lightweight contaminants by the Aggmax.”

Material is first delivered to the M2500 and an overband magnet on the feed conveyor removes any ferrous material which is subsequently discharged to a skip. A wash box at the head of the feed conveyor fluidises the material before it is delivered to the integrated Prograde P275 double deck rinsing screen.

The 5m x 1.5m screen is fitted with wire mesh on the top deck with a 40mm aperture which delivers the +40mm material to the oversize stockpile via one of the four integrated 9m stockpile conveyors. This material is then crushed before being sent back to the M2500 for further classification.

One of the major benefits of the Prograde screen is the independent washing system which ensures it is entirely separated from the vibration of the screen minimising the risk of plant failure. “This is a unique feature of the Prograde rinsing screen in that it has been designed with washing in mind” explains

Eunan Kelly, Regional Sales Manager in Scotland for CDE Global.

The lower deck of the Prograde screen is fitted with polyurethane screen media (5mm aperture) and the 5-40mm material is then sent to the Aggmax 83R. This unit integrates several processing phases including attrition, trash removal, dewatering and sizing of the clean recycled aggregate.

As material enters the integrated Rotomax RX80R logwasher attrition is applied through synchronised rotation of the dual shafts which are fitted with highly wear resistant high cast chrome paddles mounted in a fan arrangement. This arrangement not only ensures that the material in the Rotomax is subject to the highest level of attrition but also eliminates shock loading on the bearings thus reducing plant maintenance requirements. Efficient synchronisation of the dual shafts is achieved by the drive mechanism with a single motor and gearbox. "The Rotomax is designed to deliver on all fronts – maximum attrition for the material to produce the



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cleanest aggregates possible with additional steps taken to maximise wear resistance and reduce the on-going operational costs of running the Rotomax” explains Eunan Kelly.

As the recycled aggregate moves through the Rotomax the liberated fines, waste water and lightweight contaminants are floated off at the rear and delivered to a trash screen. Efficiency at this stage is maintained through the steep waste discharge chutes which eliminate the risk of blockages by the recovered sand product. The trash screen allows for the liberated fines to be sent to the sand washing phase while the lightweight contaminants are discharged into a bay.

Once the aggregates have progressed through the Rotomax logwasher they are discharged to the dewatering and sizing phase. In this instance a triple deck dewatering screen is employed to allow for the production of a 5-10mm, 10-20mm and +20mm recycled aggregate which are sent to stockpile via three 15m mobile conveyors.

The configuration of this dewatering and sizing phase can be altered with the option of single deck, double deck or triple deck screen. The option chosen will depend on a variety of factors including the aggregate specifications required and existing equipment available on-site. “If there is an existing mobile dry sizing screen on-site this can be employed at this stage allowing for specification of the single deck dewatering screen on the Aggmax” explains Eunan Kelly. “The advantage of the two or three deck screen is that it can save considerable space on site by removing the requirement for an



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additional dry sizing screen.”

The -5mm material liberated from the 5-40mm fraction is sent back to the Evowash sand washing plant integrated on the M2500. This is combined with the -5mm fraction from the initial screening phase which is delivered from the Prograde sump to the Evowash dewatering screen which is split to allow production of two sands.

A 0-5mm sand is dewatered and stockpiled while the 0-2mm material is collected in the Evowash sump and pumped to the hydrocyclone. The -63micron fraction is removed along with the waste water via the cyclone overflow and is sent to the water treatment phase. Meanwhile the fine sand fraction is discharged via the cyclone underflow onto the second side of the split Evowash screen before being dewatered and stockpiled. “Demand for the recycled sand product has been considerable since the new washing plant has been commissioned as a result of the quality of the material” says David Balmer of Malcolm Construction.

Waste water containing the -63 micron material is sent from the Evowash to the Aquacycle thickener by means of a gravity feed. This water recycling phase involves dosing the material with a flocculent which is prepared in the FloccStation poly plant. This is housed in an insulated 6m cabin alongside the full wash plant control panel.

The flocculent forces the fine particles to bind together and sink to the bottom of the Aquacycle tank where the settled sludge is conditioned by the quadrake mechanism. This ensures that the sludge density is optimised for discharge from the Aquacycle and allows the sludge to be pumped much greater distances than would otherwise be the case.



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As the sludge settles, the recycled water overflows the weir at the perimeter of the Aquacycle tank and is then re-circulated around the washing plant which reduces the volume of fresh water required to feed the plant by 90%.

In this project, as on all C&D waste recycling plants which include an Aquacycle thickener, an additional lightweights removal screen is included over the Aquastore tank to ensure that lightweights such as polystyrene do not make it back into the water circuit preventing downstream issues with water pumps becoming blocked.

Visitors to the Malcolm Construction site at Shewalton Quarry will have the opportunity to inspect the new washing plant accompanied by members of the CDE team. Malcolm Construction will also have a team of people available to answer questions on their experience with the new plant. “Our investment in this new plant demonstrates our commitment to reduce the volume of waste going to landfill and to maximise the recycling and recovery of materials for re-use” says David Balmer. “We look forward to welcoming our customers and other visitors to the site in July.”

Further information on the open day series can be found at www.cdeglobal.com where you can also register to attend.





MALCOLM GROUP INFORMATION

PRACTICAL SOLUTIONS, SUCCESSFUL PARTNERSHIPS

Originating as a family-owned business in the 1920's, The Malcolm Group has become the leading provider of Logistics, Construction and Maintenance services in the UK. The Group endeavours to provide innovative and practical solutions, promoting the building of successful partnerships for long-term mutual gain with all stakeholders.

The Group's corporate culture still upholds the personalised, hands-on approach of its family-owned background. Over the years the company has seen considerable growth from its beginnings with just a single horse and cart.

Malcolm Logistics offers fully integrated road, rail, warehousing and bonded warehousing services nationwide and ever increasingly into Europe. Current warehousing facilities encompass around 5 million square feet of warehousing space over ten locations, 3 of which are rail-side.

Malcolm Rail's service provides reliable daily and overnight transit between various locations. Operating from three terminals in the UK it offers a substantial range of intermodal services, which handle UK and European road/rail movements for customers in the manufacturing, logistics and retail sectors. This service benefits a wide range of users, providing a crucial link between ports, production facilities and distribution terminals.

Malcolm Construction provides comprehensive civil engineering and groundwork services and has earned an enviable reputation for quality service and problem solving. Projects are delivered either on a stand-alone basis or as part of a larger package for major contractors, local authorities and engineers.

Malcolm Maintenance employs a team of highly skilled HGV mechanics, spray painters and MOT testers with expertise that is second to none. This is reflected in the excellent condition and reliability of The Malcolm Group's own in-house fleet. The garage and paint shop facilities work on a 24-hour shift rota offering customers flexibility around their workloads.

The Group is a forward-thinking organisation and its focus is to develop marketable and highly innovative solutions that offer flexibility to meet the challenges of the future, both commercially and environmentally, whilst preserving its heritage and values which have been built successfully from many years in business.

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