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Washing,Screening & Dewatering Plant
Water & Silt Management Systems

Product focus

HUB™

Double success for DUO

Gallagher invest in second DUO wash plant... pages 2 & 3

Gallagher's Invest in new DUO Wash Plant

At its Hermitage site, near Maidstone in Kent, where Gallagher's produce aggregates for the construction industry for road building, ready mix concrete and engineering work an investment in a new wash plant has increased both throughput and flexibility allowing the company to offer more high value products to the marketplace.

Part of the Gallagher Group, one of the largest privately owned, building, civil engineering, quarrying and property businesses in Kent, the Aggregates Division own and operate Hermitage Quarry which is the first Ragstone quarry in history to be worked to modern standards. This is particularly demanding due to the nature of the geology of the 'Hythe Beds', so called because they outcrop in the cliffs of Hythe.

Ragstone occurs in bands between 15cm and 100cm thick, alternating with a loose material called Hassock. This latter material has in the past been unusable but with modern advances in technology employing innovative new techniques this is now washed and used in such areas as drainage materials and pipe bedding as well as other specialist products. Whereas a proportion of the quarried material in the Hythe Beds was once wasted, Hermitage Quarry has now been reduced this figure to below 10%.

The new wash plant supplied by industry leading, specialist washing equipment supplier DUO (Europe) plc of Coventry has been installed to improve efficiency and production of high value products. Situated in a new part of the quarry the plant has enabled Gallagher's to increase production and produce clean washed materials that have a higher value on the market.

The new wash plant uses an existing on-site water treatment plant; Fintan McKeever, Director at DUO, commented, *"From past projects we have completed for Gallagher's we recognised that there was an issue with the limited on-site water supply and subsequently designed the new wash plant to run at maximum efficiency with low water usage, specifically the inclusion of a Cedarapids screen in the plant design to help the customer overcome this restriction."*

The production process is relatively simple with material fed through a mobile Maxtrak 1000 Cone which provides tertiary crushing to material already part-processed by Gallagher Aggregate's existing plant, providing the ragstone feed to the primary conveyor at 225tph; or alternatively material can fed by wheeled loader into the dump hopper positioned at the bottom of this inclined conveyor. The hopper and lattice framed feed conveyor were both designed and robustly built by DUO's manufacturing division who are vastly experienced in providing highly durable solutions to the quarrying industry. The conveyor features full length galvanised walkways on both sides and is driven by a motorised drive drum which provides low maintenance with a lifespan of upto 10,000 hours, the additional benefit of this component is its low energy consumption in comparison to traditionally driven conveyors.

The DUO Manufacturing conveyor feeds a Terex Cedarapids screen; the 20 x 6 - 3 Deck screen is of horizontal design. The horizontal screen, which provides a lower, more manageable overall height, uses an oval stroke motion which is considered by many to be the most efficient screening motion in the industry. This motion moves the material across the screening media at a lower travel rate than that achievable by gravity dependant incline screens. This lower travel rate forces near-size material through the apertures, it also increases the materials exposure to the high pressured spray; the outcome of this being the production of a more accurately sized and cleaner end product. The Cedarapids efficient use of water fits within onsite water constraints; the selection of spray nozzles fitted to this screen provides further efficiencies in this area. The processed material is stockpiled using three 65ft Powerscreen radial conveyors which, as with the DUO Manufacturing built feed conveyor, are driven by a motorised drive drum.

The underflow from the Cedarapids is sent to a compact 85tph sand plant which features advanced hydrocyclone technology in the form of a 'Separator'. This technology provides consistent low moisture content dewatering of product, irrespective of variations in feed solids content and without loss of useful fines. The operator has the option to adjust the quantity of silt in the product to achieve the specification desired. Dewatered sand from the compact plant is then delivered to stockpile via an additional 65ft Powerscreen radial conveyor.

Once again the DUO capability of being able to provide a high performance processing plant when needed was a major advantage to Gallagher's, who with bigger on-site capabilities can now provide their expanding market with clean aggregate.

Andy Bate - Director of Gallagher Aggregates, commented, *"At Gallagher we have a long-standing working relationship with DUO. This is the second wash plant they have supplied us, they supplied our water management system and their manufacturing division have undertaken several other projects for us. The decision to use DUO for this project was not wholly about cost but primarily focused on build quality & reliability and the ability to deliver on their promises."*

When asked specifically about the new wash plant, Andy commented further, *"The plant gives us far greater flexibility and has improved the recovery of high value products. The plant is performing excellently and integrates very well with our existing operation."*

Bespoke hopper and feed conveyor designed & manufactured by DUO Manufacturing

Fully integrated with existing processing plant

Terex Cedarapids horizontal rinsing screen & a single grade sand plant.

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Experience and innovation - the right combination

Cookstown based Bruce Engineering have been providing tailor-made solutions for the minerals industry for in excess of fifty years.

Now the time has come for them to put that vast wealth of know-how into your sand and gravel production.

The BRUCE WASHING range includes bucket wheel dewatering plants which may be perceived as the more traditional way of recovering sand, however many customers still find this the most cost effective solution. Bruce also offer, dewatering screens, washing screens, modular, single and twin cyclone plants as well as turnkey closed circuit washing and water treatment systems.

Sand is a hot commodity in New Zealand and Fulton Hogan decided on a Bruce Bucket Dewaterer BWD150 to increase their efficiency in their sand processing plant. The sand is used mainly for concrete and is in high demand for the construction industry.

Fulton Hogan are a large company based in New Zealand employing 4500 people to deliver excellence to their core strengths of civil construction, surfacing, and infrastructure services. The technical teams challenge traditional engineering practices to deliver innovative solutions. Their screening and washing plant processes up to 280tph of raw feed and Fulton Hogan are extremely happy with the Bruce BWD150 and have just placed their second order.

Project Manager quoted "We were very impressed with our first washing plant form Bruce and have just placed the second order. Bruce spent additional time with us to make modifications to ensure we produced the perfect product for our customers and we can now produce sand at a more efficient rate to meet the demand."

Bruce also have options which go above and beyond the average. A range of static and mobile aggregate cleaner options such as the BWR/BWL range of coarse material washers, which will help release sand and stone content from dirtier deposits. There is also the option of a trash screen to remove any waste or organic material from your finished products.

BWD150 Bruce Bucket Dewaterer at Fulton Hogan Quarry, New Zealand. The most cost effective and efficient way to remove water from sand, clay and silt. The range is available in 90, 120 & 150tph capacity

Sand produced from the Bruce BWS60TPH Sand Plant

The company has recently had a successful Hillhead show and RWM exhibition at the NEC where they exhibited a Baioni centrifuge silt recovery plant as well as the BWR 300 mobile/modular aggregates cleaning system.

Bruce can now boast a sales team of five in its UK area of operations so should you need a site survey or wish to have more information on products then get in touch.

Tel: 028 8676 3684 Email:caroline@bruce-eng.co.uk
W: www.bruce-eng.co.uk

www.hub-4.com/directory/7470

Sheehan Haulage invest in recycling infrastructure

Sheehan Haulage & Plant Hire have announced an enhancement of the construction and demolition waste recycling infrastructure in Oxford following a multi-million pound investment in a new wet processing plant from CDE Global.

Persistence was the key to success in this instance as the result of an extended planning and appeals process. The Sheehan Group originally proposed the new waste recycling plant in May 2006 and the plant was finally commissioned in June 2012. "We knew that there was a need for investment in more advanced recycling technology for construction and demolition waste in the Oxford area and have fought for the last five years to have this recognised" says Chris Sheehan, Managing Director of The Sheehan Group. "While we regret the loss of 500,000 tonnes of C&D waste recycling due to the planning process we are now pleased to say that the new plant offers our customers a greatly improved product offer with a wide range of high value applications."

The new facility is located at the Dix Pit complex in Stanton Harcourt which covers approximately 150 hectares. The site has previously been used as a sand and gravel deposit and today The Sheehan Group has a variety of industrial and commercial neighbours including a batching plant and a household recycling centre. In addition to the supply of sustainable aggregates and construction materials The Sheehan Group is also a Groundwork & Civil Engineering Contractor as well as being involved with plant hire and waste removal and reclamation.

Maximising material recovery

Before operating from the Dix Pit complex The Sheehan Group had an existing recycling facility at Slape Hill, near the village of Woodstock on which the lease expires in 2014. This facility employed dry crushing and screening to process 60,000 tonnes per year of construction and demolition waste which was primarily applied in low value applications such as cover or general fill. "The enhanced recycling capability that our new washing plant offers enables us to progress this material up the waste hierarchy and offer a real alternative to virgin aggregates" explains Tara Sheehan, Financial Controller with The Sheehan Group.

All of the C&D waste material that The Sheehan Group handle is now processed through the new CDE washing plant at Dix Pit with the licence permitting 100,000 tonnes per year. In addition to the 60,000 tonnes of material processed at the previous site an additional 50,000 tonnes was being sent to landfill each year as a result of the limited capability of the crushing and dry screening plant. "Getting the washing plant up and running earlier would have saved us sending this large volume of material to landfill for the last 5 years" says Chris Sheehan. "The advanced processing methods that we have introduced maximise material recovery when compared to dry processing which is why we fought so hard to win the right the install the new plant."

The primary source of feed material for the Dix Pit plant is within Oxfordshire with a smaller amount coming from surrounding counties such as Buckinghamshire. External hauliers are bringing material from the fringes of Greater London.

The process

The washing plant contains a range of equipment from the CDE product portfolio including a feed system, AggMax portable logwasher, Prograde aggregate screens and Evowash sand washing plant. In addition the system employs full closed circuit water recycling with the inclusion of the Aquacycle thickener and GHT Filter Press.

As material is delivered to the plant an overband magnet on the feed conveyor removes any metals before it is sent to the AggMax. This involves four stages of processing on a single unit - pre-screening, attrition, trash removal and aggregate dewatering.

The pre-screening stage allows for any -5mm particles to be liberated and delivered to the sand washing phase. The +5mm aggregate material enters the integrated Rotomax logwasher and is subjected to a high level of attrition from the twin shaft machine. This further liberates more -5mm material while also floating off any lightweight contamination at the rear of the unit. This is subsequently dewatered on the trash screen and while the trash material - plastics, polystyrene, rubber, wood - is discharged into a bay the -5mm material and waste water are also sent to the Evowash sand washing plant to maximise recovery of the sand fraction.

As the scrubbed aggregates are discharged from the Rotomax they are delivered to a dewatering screen where they are given a final rinse before being sent to the aggregate sizing phase. On this project a Prograde P275 dry sizing screen produces 4 recycled aggregate products - 5-10mm, 10-20mm, 20-40mm and +40mm. The -5mm material is washed to produce two recycled sand products via the Evowash 102 dual sand plant.

The water treatment phase first involves the Aquacycle thickener which receives waste water from the Evowash containing the -63 micron particles. The Aquacycle design allows for high rate settlement of these fine particles to the bottom of the thickener tank while the recycled water overflows to a concrete water recirculation tank before being recycled to the washing plant. A lightweights removal screen ensures that any material such as polystyrene that has not been captured does not re-enter the water circuit.

The settled sludge from the Aquacycle thickener is then delivered to a concrete buffer tank before being sent to the GHT Filter Press to maximise water recycling. In this instance the filter press is made up of 140 plates which press the sludge at extremely high pressure to remove the maximum volume of water. The waste material is then compressed to a filter cake containing 90% dry solids content which is dropped from the filter press into a bay below.

The results

Fully operational since June 2012 the Sheehan Group report that the new washing plant has achieved what was intended of it with all of the recycled sand and aggregate products proving very popular with customers. The end uses for the material to date have included pipe bedding, drainage material and paving. The recycled sands are being applied in concrete manufacture and concrete block making,

Approximately 50% of the material is used by the Sheehan Group on its own construction and civil engineering projects with the remaining 50% sold to the local private construction market. “We are transporting material within a 25 mile radius when using it on our own projects but hauliers collecting material ex-pit are moving it further than this” explains Chris Sheehan. “All the demand at the minute has come from the private sector but we are currently tendering with various local authorities in the hope that they will come on board and embrace the use of recycled materials on their own projects.”

Expanding on this Tara Sheehan believes that the increased focus on sustainability and ethically sound operations is also having an effect on demand. “We have noticed among the private sector contractors that those operating within the 'Considerate Constructors' scheme have been very receptive to the idea of using more recycled materials” explains Tara. “They see it is a way of reinforcing their position as leading the industry in relation to the sustainability agenda.”

In contrast, the level of interest from the local quarry operators has not been as strong. “Several local operators have visited the new plant and sampled material but we don't have any firm commitments to purchase recycled materials” remarks Chris Sheehan. “Given the business case that exists for recycled material, not to mention the potential that it offers for us to protect aggregate supply for the long term I am surprised at this approach.”

www.hub-4.com/directory/163

Mogensen dewatering screens

Mogensen has been supplying vibratory screens and Sizers since the mid 1970s for the dewatering of materials ranging from copper ore tailings in Zambia to the more usual washed gravel, stone chippings and other washed, recycled materials in the home market.

Typical of the latter is the Type SPL 800/1750-L186 single-deck screen supplied over the past few years to Aggregate Processing Solutions Limited (APS Limited), a part of the Finlay Group, and used to follow Logwasher applications. This type of machine is fitted with a polyurethane deck and is usually installed with a 5º upward slope to increase residence time and ensure maximal water removal. The capacity of the SPL 800/1750-L186 screen, driven by two Invicta BL30-18/6 rotary electric vibrators, in a typical gravel dewatering application is in excess of 100tph.

APS Limited has also made use of larger Mogensen dewatering screens, such as the machine shown in the illustration - an integral part of the APS100, a revolutionary, rapid set-up washing system, which was displayed at the 2010 Hillhead quarry show. It is a type SPL DLS 3650/1530 L756 double-deck machine also fitted with polyurethane screen decks, the upper deck having 12mm perforations and the lower 4mm. This machine is designed for horizontal or inclined installation, and has a drive section with multiple fixing locations to allow for changes in the drive angle and hence the conveying rate. Another feature is that the screen is equipped with stainless steel cross tubes, which may be used as spray bars. Mogensen trash screens are also used in the APS100.

The machines described above form part of a series of twin-vibrator Mogensen screens, all of which make use of a linear mode of vibration.

www.hub-4.com/directory/583

Washing, Classifying & Dewatering from Mclanahan Corporation

McLanahan Corporation produces the widest range of equipment for washing, classifying, dewatering and managing tailings in the aggregates industry. McLanahan provides years of expertise in design and manufacturing; additionally, the company is able to offer true 'solution driven' process engineering to design a system from start to finish.

McLanahan offers various designs of feeders to deliver the material to the process, and also manufactures crushers to meet a customer's size reduction specifications. After this process, the sand fraction is than directed to an appropriately designed washing and classifying system. Where needed, McLanahan offers scrubbers, log washers and other feed preparation equipment to liberate clays and contaminants. Often, cyclones deslime the liberated clays from wash plant feed.

Wash plants can be as simple as a Separator™/Dewatering Screen plant to classification into discrete fractions with Hydrosizers™ (Recipe Plants) or separation into two products using a classifying tank. Contaminants, such as lignite, can be removed using the Lites-Out™ Classifier. Final products are dewatered by the traditional screw or more typically by McLanahan's Dewatering Screens for drip free stackable sand.

McLanahan offers Fines Recovery Systems to recover and stockpile (often sellable) fine fractions. The next stage is the use of McLanahan Deep Cone and High-Rate Thickeners for recovery of approximately 85% of the water for immediate reuse and a concentrate waste solids (underflow) stream for pumping to containment. Recently, McLanahan developed the only U.S. manufactured Recessed Plate Filter Press that takes the thickener underflow and results in greater water recovery (filtrate) and 'cakes' of ultra-fine solids as a truckable solid.

Whether it is construction grade sands or specialty industrial sands (glass, frac, sports) McLanahan has the capability to meet the needs of any customer.

To learn more about the equipment and systems email sales@mclanahan.com

www.hub-4.com/directory/11471

ISEPREN WS 85 - Tandem Deck installation ensures efficient screening

With the installation of two CDE PROGRADE P2-75, 1.5 x 5.0 metres long, 2- deck dewatering screens for a Scottish Quarry operator, CDE approached Tema Isenmann to supply an effective modular screening system which would resolve production issues.

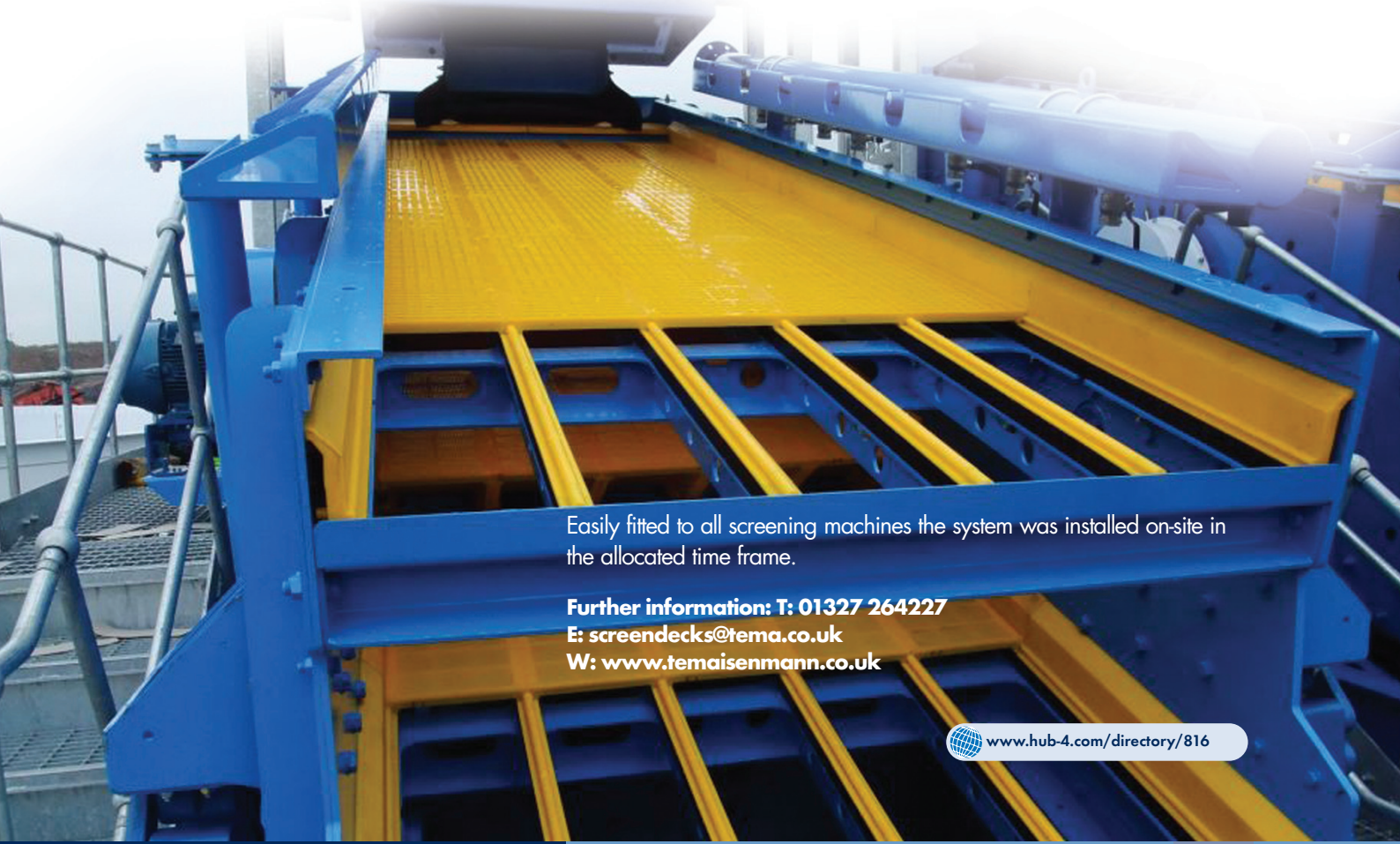
With a feed rate of 430 tph of 20mm material onto the top deck, the required underflow 1 product was specified at 0-1.5mm. This however would create obvious issues with the bottom deck loading of the screens, because the 1.5mm modules in the first 3 metres of the screen would have inefficiently screened the 20mm material due to the bed depth at the start of the screen. A second issue was also identified in the last 2 metres at 7mm, which would also be an insufficient area to pass the remaining 0-6mm material, due to the carry over.

Utilising the proven industry standard - ISEPREN WS 85 Modular System, Tema Isenmann resolved all the issues with the installation of a WS 85 - Tandem Deck system that would allow the 1.5 x 12.00mm polyurethane modules to screen more efficiently due to lower deck loading. Additionally, a gap in the screen to divert 1.5-5mm material directly to underflow 2 also successfully reduced the loading on the second half of the screen which ensured efficient screening of the 0-6mm product on the second half of the screen.

As the most versatile and cost effective modular system on the market the WS 85 - Tandem Deck arrangement in this installation provided several benefits:

- Working as a protective deck to increase the service life of the separation deck
- Working as a relief deck to increase the throughput
- Working as a separation deck to obtain four products in one pass
- A better surface drainage (water) of solids
- Reducing screening costs to a minimum

Based on a proven design concept the benefits of the ISEPREN WS85-Tandem Deck System underline a performance that offers total screening efficiency even under the most difficult conditions.



Easily fitted to all screening machines the system was installed on-site in the allocated time frame.

Further information: T: 01327 264227
E: screendecks@tema.co.uk
W: www.temaisenmann.co.uk

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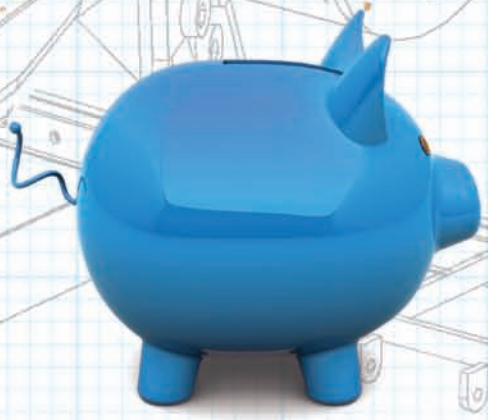

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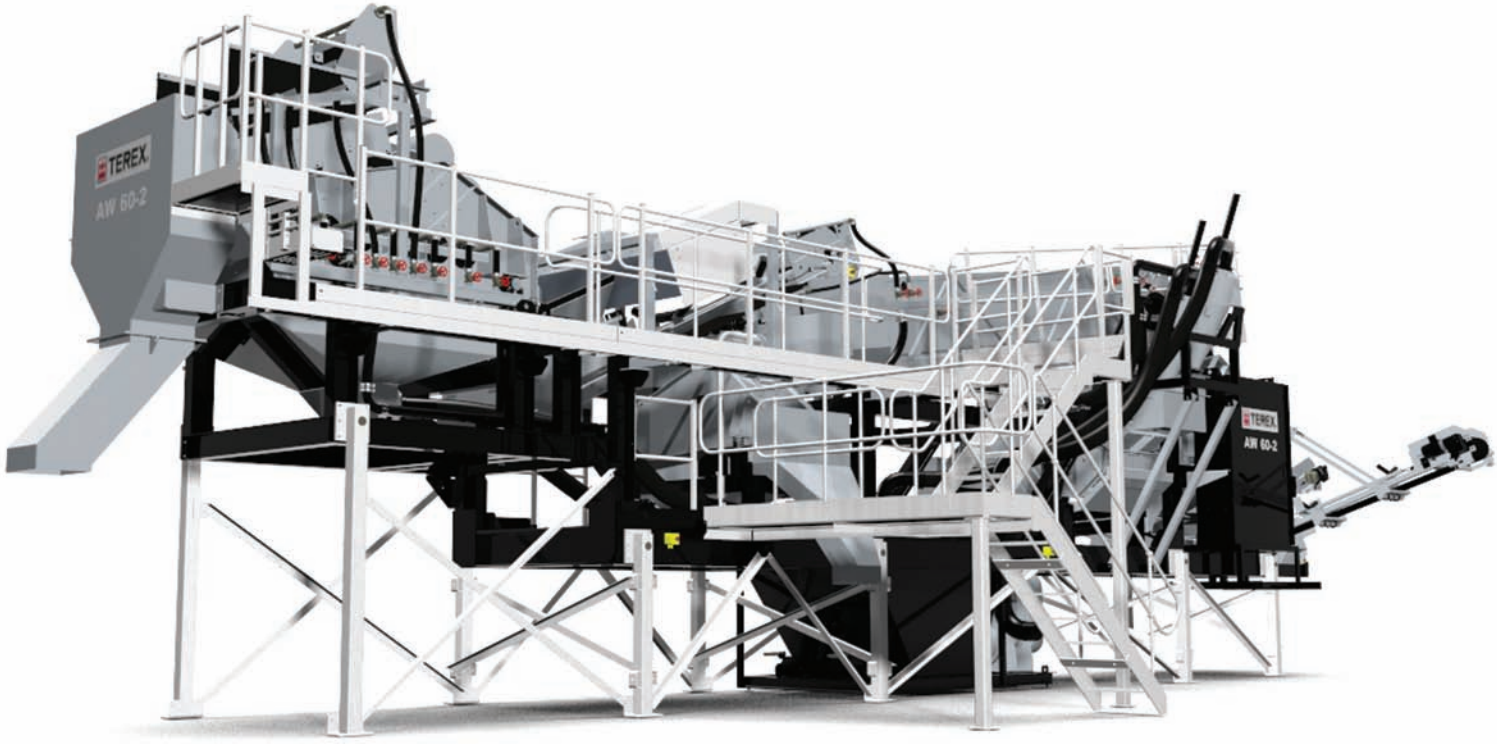

Terex Washing Systems announces new Automation and Control Initiative

Terex Washing Systems (TWS) announces the release of its new Plant Automation & Controls Service (PACS). This service will allow customers to improve plant efficiency by utilising state of the art, fully integrated control systems for the full range of Terex® Washing and Water Management equipment.

Barry McMenamin, manager of the Electrical Systems team at Terex Materials Processing states: "Over the past eight years, Terex Materials processing has established a strong team of electrical, electronic and software engineers employing some of the most experienced and skilled individuals in the market place. This has allowed Terex to develop some of the most advanced and user friendly control systems in the industry for our full range of mobile and stationary crushing and screening plants. This helps our customers achieve the most cost effective and efficient operating and control systems, whatever their plant requirements from basic push-button single plant control to complete large scale multi-plant automation, including radio and telemetry control and data acquisition."

Adding to this, Sean Loughran, Product Line Director for the TWS business, said: "With Sand, Ore, Coal and Recycled Material Washing all requiring an increasingly sophisticated level of operator controls, bringing a range of equipment into the control sphere - such as Cyclones, Dewatering screens and Filter Presses along with the sampling and analysis of chemical additive systems - Terex Washing Systems is perfectly placed to offer an unparalleled service of plant automation.

"This service begins with a simple questionnaire, followed by site meetings, requirements gathering and eventually the creation of Functional Design Specifications. Once agreed by all parties, the full control system designs are created including all schematics, Bills of Material and full software files as required for all automation functions. TWS also integrates existing plant controls to their systems, including crushing, screening and even third party wash plants.

"We expect this initiative to be a major benefit to our customers and distributors and allows TWS to offer the complete wash plant solution from concept to commission."

www.hub-4.com/directory/15386

Metso THOMASTM pump ensures dredger success .....with 1200tph of Sand & Gravel

Known throughout the industry for static and mobile crushing plants, Metso Minerals are the leading global provider of solutions, equipment and services to both the construction and the mining industries.

Industry-leading solutions embrace an extensive services offering and the latest technology across the fullest full range of processing equipment often making Metso the first choice for many in these difficult times.

With ever expanding slurry handling solutions product lines, Metso provide numerous ranges of both vertical and horizontal pumps, specifically engineered for the most abrasive of solids handling applications.

Back in September 2007, Pump Engineer magazine first quoted the phrase *"Metso Minerals; the solutions provider that tries harder."*

Since then Metso have done what they set out to achieve, increase their market share, and more significantly, introduce into Europe the highly successful Thomas™ Dredge pump range.

Following initial successes in Germany, word spread and now additional dredge manufacturers and operators are selecting the ThomasTM pump as a first choice solution to their needs.

Italy in particular has proven to be a good market for Metso and the ThomasTM range, where a truly international team effort has assured continued success for one particular dredge manufacturer and operator in Northern Italy.

Supported by Metso engineers from Italy, UK and America, Metalmeccanica Strobietto s.r.l. Ozegna (TO) Italy, designed and manufactured what is reported to be the largest aggregate producing cutter water suction dredgers (CWSD) in Italy.

Dredger 'Nessie' was commissioned in 2011 and incorporates a Thomas TU46WD, 550 mm suction under water pump mounted on a modular suction ladder enabling maximum aggregate production at a variety of depths. *(Fig 1 Pipe from barge to shore.)*

Extensively used in North America, the Metso TU46WD dredge pump is of High Chrome white iron construction having a minimum hardness of 650 BHN and a 46", 1168 mm diameter solids handling high efficiency impeller. Designed for continuous under water applications the bare shaft pump alone weighs in at over 11 tonnes.

Like all Metso pumps, basic selection is made using Metso's in house Pumpdim™ selection programme one of the most advanced pump sizing tools available today for accurate pump selection making appropriate allowances for effects of solids on head, efficiency and flow as appropriate.

Fig1.


Fig 2 & 4.


Fig 3.

Pumpdim™ ensures safe and reliable operation with maximum time between rebuilds, by not only selecting the right pump for the job, but also considering all mechanical and hydraulic limitations of both pump and system.

At the current extraction site where solids are anything up to 450 mm diameter, the dredger "Nessie" is producing on average some 1200 tph of solids through a 500 mm discharge line to shore, where excavators continually load the 'washed' aggregate on to trucks for despatch to various road construction projects throughout Northern Italy. *(Fig 2 Dredge pump lifted out for transport and Fig 3 1200 TPH of S&G discharging in draining stockpile).*

The CWSD dredgers produced by Metalmeccanica Strobietto are considered by many as state of the art, innovative machines, specifically designed for dredging customers who want to obtain high production volumes with reduced operating costs.

Primarily for use in quarries, ponds, lakes and other groundwater areas where deposits are compacted, or the presence of silt and clay make conventional extraction difficult, the modular construction design of the CWSD dredges allows Metalmeccanica Strobietto engineers to manufacture to order in the minimum of time, normally around four months.

All dredgers can be adapted for versatility and reliable production to suit a variety of applications and dredge depths, currently ranging from 15 metres to a maximum of 60 metres. *(Fig 4 Dredge Pump in transport position out of the water and Fig 5 Dredge Pump being lowered in working position).*

CWSD dredgers and the lighter WSD (water suction dredgers) cover all likely deposits, ranging in size from 8 "(200 mm) up to 24" (600 mm) with slurry flow rates between 900 m3/h and 9000 m3/h.

Designed and manufactured to specific requirements, the CWSD 500 dredger was manufactured exclusively to supply aggregate in large volumes for an extensive road building project in the shortest time possible. All targets were either met or exceeded as road construction continued unhindered.

The dredger, designed and built entirely within the Metalmeccanica Strobietto workshops, took just 4 months from order to complete and commission. It is currently built in a basic 24 metre version (using four 12 metre modules), but the design allows for up to 45 metre deep excavation, achieved by the simple fitting of additional modular elements.

The submerged Metso TU46WD dredge pump is powered by an inverter controlled electric motor, with power being transmitted through a speed reduction gear box and heavy duty transmission shaft.

Electrical power is supplied via a 15 KV power line from the local grid, with on board processing for all local services, control equipment and monitoring equipment all controlled by PLC.


Fig 5.

The main control cabin contains everything needed to control the entire dredging operation by a single operator. All *'visualization'* is via the operating panel's 17" touch-screen providing the necessary checks and continuous GPS positioning system.

Further information is available from both Metso and Metalmeccanica Strobietto websites, with selected users/engineers free to request copies of PumpdimTM on the Metso site.
www.metso.com/pumps
www.strobietto.com/en

www.hub-4.com/directory/560