

New DUO plant for Frimstone's new sand and gravel operation.

DUO Equipment have recently supplied a new TEREX® Aggresand™ wash plant for a busy sand and gravel operation in Norfolk.

Owned and operated by Frimstone Ltd, Breck Farm (part of the Stody Estate) is one of eight sand and gravel operations in the East Anglian region. A family owned business with over 70 years' experience in mineral extraction, the company supply a range of aggregates including sharp sand, soft sand, gravel, rockery stones, decorative aggregate 'slate' and screened topsoil to the general public, businesses, local authorities and the construction industry which includes a five-year contract supplying a national concrete supplier.

With potential reserves in excess of 10-15 million tonnes of sand and gravel the new site is currently producing 150,000 t/annum of soft and sharp sand and 10mm, 20mm, 40mm and +40mm products.

A greenfield site:

Development started 2 years ago on a new greenfield site within the Stody estate when the haul road was built, this was followed by the concrete pads for the plant and the weighbridge and the development of water lagoons. With all the infrastructure complete the company researched the market and following a successful tender DUO Equipment were then selected to supply a new wash plant based on the TEREX® Washing Systems Aggresand™.

As the English and Welsh dealer for Terex Washing Systems (TWS) DUO can offer innovative wash plants and water management solutions. This demonstrates TWS commitment to providing outstanding innovative products, customer support and expertise in the field to meet customers' individual needs.

The sand & gravel plant:

The main elements of the plant are the TEREX® AggreSand™ 165 modular wash plant and a PowerScrub™ 120R. The AggreSand™ is pre-wired and pre-plumbed and is an easily installed modular concept that facilitates quick installation; a combination that is very appealing in terms of access, serviceability and modularity.

Richard Blowers-Plant Manager, commented, "It's a very neat compact plant incorporating an in-line system with 'as raised' ballast being fed by loading shovel into the feed hopper. With pumps installed we are responsible for the wash water going in and the dirty slurry water coming out of the plant in to the lagoons, so it's a very simple and effective set-up."

Currently operating at 130tph the plant consists of a bespoke feed system which is fed by wheel loader via a 12m³ double-deck vibrating grid; both the feeder including the vibrating grid are electric hydraulically powered. Material is then delivered onto the main inclined feed conveyor which is driven by two 11Kw electric motors and Bonfiglioli® gearboxes mounted on either side of the drive drum. This set up not only provides balance to the conveyor but also gives enhanced torque characteristics.

The AggreSand™ 165:

The AggreSand™ 165 at Breck Farm is a two-deck version which utilizes eight individually controlled spray bars on each deck. The two bearing screen is fitted with polyurethane modular media on both decks. The top deck acts as a protection deck removing any material above 40mm which is then fed via an on-board conveyor to stockpile. A split bottom deck,

2mm and 5mm provides the feed to produce the required two sands. All chute-work on the AggreSand™ 165 employs the now well tested dead-box system which results in rock on rock set-up which is proving to give excellent wear properties.

Currently the AggreSand™ 165 sand plant consists of one 45Kw 200/150 pump for coarse sand and one 150/125 pump for soft sand. A G4-500mm cyclone for coarse sand and one G4-375mm cyclone for soft sand produce two clean in spec sands. A specially designed rubber-lined catch box allows blending to take place so that an acceptable coarse and fine sand ratio can be achieved. These sands are then delivered to separate radial conveyors and stockpiled. Any material between 5mm and 40mm is then fed by inclined conveyor to the PowerScrub™ 120R for scrubbing and removal of clay conglomerates.

The PowerScrub™ 120R:

The PowerScrub™ 120R consists of a 6.5m hull fitted with twin rotating shafts fitted with 30mm abrasion resistant blades. The blades convey the material from the feed end of the scrub to the 8 x 4 aggregate rinsing/sizing screen. As the material travels through the hull the abrasive action of the aggregate as it collides with other aggregate (stone on stone) scrubs it clean and breaks up any clay conglomerates which are then floated off through the back of the PowerScrub™. Any organics such as roots or plastics are also floated off to be dewatered over the PowerScrub™ 6x2 trash screen. Underflow from the trash screen is received in a catch box under the screen and then gravity fed to the sump tank under the hull.

Scrubbed aggregate exits the main discharge of the PowerScrub™120R to an 8x4 part-rinsing screen. The initial section of this screen is fitted with spray bars to rinse off any sand or grit residues produced during scrubbing. The rinsed grit is captured in a partial catch box under the screen and is piped to the sump tank below the hull to join the trash screen underflows. This sump tank is fitted with a 100/100 centrifugal pump which pumps this dirty water back to the AggreSand™ 165 sand plant to recover any sand and make maximum use of internal water.

Material is then fed via transfer conveyor onto Frimstone's existing 3 way split screener to produce 4-10mm, 10-20mm, and 20-40mm clean aggregate with the three clean grades of aggregate stockpiled.

Cutting Edge Control System:

The control system for this specific AggreSand™ wash plant is stored in a centralized cabin on the site which is one of the options offered by DUO through TWS on all AggreSand™ installations, alternatively the panel can be mounted onto the machine, all of which are pre-wired.

This option exemplifies the flexibility of TWS and DUO and the AggreSand™ concept to suit individual customer needs or preferences.

A total success:

Since the plant was commissioned it has been very successful consistently providing Frimstone with quality products.

Richard further commented, "I can't fault the material that comes off the end of the belts, it's very clean and a saleable material, it's fantastic!"

Total Solutions:

TWS provides cohesive solutions for all material and mineral washing needs. Focussing solely on providing solutions to quarry, aggregate, mining

and C&D recycling industries it is dedicated in providing reliable, high quality and very productive equipment. This is achieved through a broad product portfolio which offers modular, mobile and static wash plants with the ability to work in many applications. Meeting individual materials and mineral washing needs to achieve today's stringent specifications of clean material is at the top of the agenda.

The TWS portfolio offers excellent reliability, ease of transport and fast onsite installation, which is key features of the innovative washing solutions namely the AggreSand™ and AggreScrub™ Range and the latest Terex AquaClear Water Management Solutions.

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