

MAY 2011



BULK HANDLING FOCUS



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GSM UK Ltd sorts Recycling picking station

Several geared motor units have been installed into a recycling plant in southern England in order to reduce down-time and improve efficiency. The plant has been converted from a hydraulic drive system with a very large power pack and complicated hose and valve system into a clean and simple electrified version with energy savings.

The plant has been operating for many years using hydraulic motors and gearboxes to perform the various individual applications which make up the picking station. The main application is the large in-cline conveyor where 2 hydraulic motors have been replaced with a highly efficient bevel helical shaft mounted gearbox and 15kw electric motor. The operators took advantage of this change and requested an increase in the speed of the conveyor by about 6% in order to improve productivity. The operator realised that with the increase in speed -the waste material was positioned more towards the middle of the belt -reducing the chance to tangle on the idlers, side skirts and head drum.

The in-cline conveyor is fed material from the "Walking Floor" Fines conveyor which when hydraulic was variable speed by varying the flow to a fixed displacement motor and gearbox. The customer was anxious to retain the variable speed function and so a shaft mounted planetary gearbox with mechanical variator and electric motor was supplied. This means that by a simple handle on the variator -the operator is able to adjust the feed of material onto the main incline conveyor whilst the conveyor is operational.

Tomas Healey -General Manager Comments: "GSM Power Transmissions UK Ltd were awarded the contract because of their hands on approach, attention to detail and willingness to understand the requirements of the plant and how it operated. There were a number of challenges on this

project including having to design gearboxes which would retro-fit with little or no additional engineering and yet provide us with new parameters of operation to improve the productivity and efficiency of the plant. The support experienced was excellent and commissioning was completed in phases which caused no down-time thanks to the new solutions mounting straight in to place of the original units, an essential requirement due to the continuous nature of this kind of industry."

Once the material has dropped from the incline conveyor onto the shaker plate -the material starts to be sorted. Lumps of rubble ,stones and buliding aggregate fall through onto a second Fines conveyor which was also converted from Hydraulic to electric drive. The use of shaft mounted planetary gearboxes and electric motors are ideally suited to this type of application because they are robust in design, highly efficient and compact so that they can be squeezed in to tight spaces with relative ease. The weight of the shaft mounted planetary gearbox together with the transmittable torque is also a big advantage especially when shaft mounting from an existing driven shaft.

The trommel which separates the aggregate by size was being driven by 2 hydraulic motors. These have been replaced by 2 electric motors and gearboxes. The Planetary gearbox option was chosen because on the Trommel they are suitable for high radial loads exerted onto the output's twin taper roller bearings which support the output shaft .The space available to fit the drives was also very limited and the plant runs 24/7 so reliability was also paramount in the decision of what type of drive to install. The planetary gearbox affords a highly efficient compact gear design which transmits torque from the sun-pinion to the planet gears all encased within a planet ring -this allows ratios on a single stage from 3:1 to 7:1 and as the planetary gearbox is a modular design -ratios up to 20,000:1 are not uncommon.



Jon Snaith -Managing Director of GSM Power Transmissions UK Ltd comments "This was a particularly enjoyable and rewarding project to work on because there was so much variation in the requirements of the drives. The Industrial Planetary Gearbox range from GSM UK LTD has a large torque range available from 1,000Nm to 170,000Nm and incorporating innovative casing and output configurations like foot

mounted, flange mounted, in-line or right-angle and the unique options for shaft mounted gearboxes like the shrink disc version and female keyed shaft version where the cost of splining the driven shaft is illuminated from the decision making process.

High radial load capacity versions of each gearbox torque size are manufactured for applications like winches and slew drives - so that the OEM manufacturer gets a competitive and compact solution to work with.

Jon Snaith adds "We have 3 versions of right-angle planetary - the conventional planetary gears with spiral bevel, planetary gears with bevel helical and planetary gears with a worm/wheel input. All these options allow the best selection for the application to be carried out and give the OEM customer complete peace of mind".

 www.hub-4.com/directory/14046



Summit Systems Ltd

Bulk material storage takes up a large amount of space. One solution is of course, to install an external silo. An excellent option if you have the privilege of the space, the funding and the planning permission.

However, if any of these factors are in doubt, Summit Systems; one of the UK's most experienced material handling companies, bring you the answer - Flexible Silos available from under £3000. Installed inside and designed uniquely for the space you have available, these Flexible Silo's can utilise some of the smallest footprint spaces and do not require planning permission. They are made from a breathable material which ensures excellent discharge behaviour, are easy to install and their lightweight, modular construction means that transport costs are kept low. They can be connected to existing pipe work or Summit's in-house metal fabrication division are experienced in designing and engineering bespoke options. In addition to Flexible Silo adaptations, these include big bag frames and stands, mezzanine floors, slides, chutes and many other items.

Simon Mapp from The IAC Group is one customer who has found these flexible silos to be just the answer. He says "The flexible silo's offered the perfect solution for us. We have a high number of different raw material types and colours with a low weekly usage.

This eliminated the possibility of a fixed Silo as their size is prohibitive. The flexible silo allows me to 'bulk' store material on a smaller scale (3-8 tonne capacity)."

He goes on to detail the significant benefits the company have seen from installing the silos.

"Space Saving - The flexible silo utilises height instead of floor space. I can now hold 8 octobins of material in a floor footprint not much bigger than one octobin.



Labour Saving - The labour required to manage is also reduced because I can unload all the material deliveries into the Silos. Current practice would require an octobin to be replaced each time it empties. This equates to a lot of time and labour cost.

Management - As all the material is centrally stored, my inventory management is much simpler."

Simon's comments on the service he has received from Summit Systems are unequivocal *"In addition to supplying and fitting the Flexible Silo's, Summit Systems were given a huge challenge to supply 30 different raw materials to 18 Injection mould presses, with little time and tight budget constraints. They have installed a system that fulfilled all my requirements. It is simple to use and offers ongoing cost benefits. Above all it was delivered on time and within budget."*

Summit Systems broad portfolio of material handling equipment also includes an automatic bag and sack opening machine which will handle; on average, 1300 sacks an hour with an emptying rate of 9.99%. This machine is providing excellent results in a wide range of granule and powder applications, including plastics, foodstuffs and chemicals. Additionally available are a range of ATEX approved vacuum conveying options.

 www.hub-4.com/directory/11774

ISO-Veyor: Sustainable transport for the cement industry

Cement is an essential building material, crucial to us all. Yet the high amount of energy and CO2 produced in manufacturing and transporting cement, means the industry must take steps to reduce the impact on the environment. Transportation is a key area where emissions can be reduced, through intermodal strategies for distribution. With road congestion, global trade and fuel costs on the increase, there is an economic and environmental challenge to be faced.

InBulk's ISO-Veyors are an intermodal solution that saves time and money in the transportation, storage and distribution of cement and other Dry Bulk cargoes, providing an economical platform for sustainable development in the cement industry.

The ISO-Veyor has a highly impressive technical specification. For materials with relative particle size less than 100 microns, InBulk have developed the PH Type ISO-Veyor. Available in mild steel, stainless steel or aluminium, it comes in three standard dimensions: 20 feet, 30 feet or 40 feet. Non-standard swap bodies are also available.

ISO-Veyors are discharged by standard 2-barg air supply from the horizontal position, without the need for tipping. They can be used in conjunction with a variety of intermodal infrastructure commonly used for box containers, including Intermodal Villages, Rail ports, Reach Stackers, SLTs and Cranes.

The intermodal solution that's future proofed

As the transportation landscape evolves and the demands of projects change, the ISO-Veyor provides a flexible, cost effective solution.

ISO-Veyor and the world's longest railway tunnel

When Holcim cement required a special intermodal solution for the transport of cement and binders to remote construction sites, they turned to InBulk's ISO-Veyor for the solution.

Sedrun is a remote holiday town in the heart of the Swiss Alps. It's also the location used to provide materials for the construction of the world's longest railway tunnel. From Sedrun, a supply line runs 800m into the mountain, then a further 800m down. This brings material to the midpoint of the new Gotthard rail link, which will be a staggering 57KM in length when completed in 2016.



The Sedrun site is rail connected via a narrow gauge mountain railway, which carries the ongoing materials needed to build the tunnel. InBulk Technologies are currently supplying PFA ash to the site with a number of 20ft ISO-Veyors carried on small 20ft intermodal flat wagons.

The project highlights just how versatile InBulk's ISO-Veyors can be in serving the most difficult and remote customer locations, giving quality logistics solutions, tailored to the most demanding situations.

ISO-Veyor and Lafarge Cement

Lafarge Cement UK has chosen the self-discharging ISO-Veyor as the key element in the supply chain for the cement additive of Ferrous Sulphate. The flow of material comes from the continent and includes a road leg, short sea journey, then onwards via road to various UK cement production facilities.

Key factors in Lafarge's decision to utilise the ISO-Veyor concept, were its ability to be transported economically by sea and road. Security of product during transit is guaranteed and the ISO-Veyor discharges the product directly into the process silo whilst in the horizontal position. No tilting equipment is required, avoiding a potential Health & Safety issue. The ISO-Veyor is also used to provide additional storage and the number of units in the supply chain can be easily adapted to meet changes in demand.



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What's up Dock? Easilift's Advanced Control Centre Provides all the Answers at a Glance



Easilift Loading Systems has launched the Advanced Control Centre, an intuitive management system that helps distribution centres and warehouses to efficiently and pro-actively take care of loading bays and vehicle traffic.

The system comprises four easily accessible web-based modules - Service; Dock Management; Facility Management; and Statistics & Reporting - providing a comprehensive overview of loading bay activity.

Benefits of the system include faster maintenance, more effective servicing, reduced waiting times, and improved safety, security and energy savings.

"The modern technology of the Advanced Control Centre integrates a whole host of useful functions into a complete operational solution," explains Rob Fay, managing director of Easilift. "With unprecedented control over loading bay processes, warehouse co-ordinators can optimise efficiency for maximum uptime."

The Service module supports everyday operation with 24/7 monitoring of maintenance requirements. An Easilift specialist is automatically notified upon any equipment breakdown, so that problems can be immediately analysed and solved - sometimes before the problem is detected on-site. Where possible, this is achieved remotely, significantly reducing disruption as well as avoiding service engineer call-out charges.



By delivering an ongoing audit of loading bay activity, the Advanced Control Centre can also measure usage to ensure that periodic maintenance is appropriate to the specific bay. Automatic planning arranges routine maintenance at the correct service intervals to extend product lifetime.

Dock Management offers real-time information on the status of all loading and unloading dock stations to enable the swift and appropriate allocation of vehicles. With remote reservations ahead of arrival and automatic re-allocation upon vehicle departure, bottlenecks are minimised and dock usage maintained.

Facility Management complements these capabilities with an 'at a glance' inventory of essential station data. With expensive utilities energy lost every time a door is opened unnecessarily, or internal lighting systems left on, warehouse co-ordinators can restrict usage only to active bays. And with security paramount, the system can augment or replace existing walk-around surveillance.

The final module, Statistics & Reporting, gives the customer up-to-date information on everything from loading bay station usage rates to average loading and unloading times. As well as substantiated analysis to optimise the flow of traffic and goods, it delivers an overview of operational costs.

"Effective business management means knowing what is happening in the workplace, in order to reduce wastage and focus on the essentials. With our Advanced Control Centre, distribution centres and warehouses now have an authoritative tool to co-ordinate all loading bay activity," confirms Rob Fay.

 www.hub-4.com/directory/12690

Martin Engineering India Announces Acquisition of Clean Cat Conveyors



Martin Engineering, a global supplier of systems and services to improve the handling of bulk materials, has taken another step in its expansion into India with the acquisition of an Indian manufacturer of conveyor components and systems, Clean Cat Conveyors Pvt Ltd., of Goa. The acquisition of Clean Cat Conveyors follows closely on the heels of Martin Engineering's announcement in February of the opening of a business unit, Martin Engineering Company India Pvt Ltd., in Pune, India. Martin Engineering India's managing director Jibananda "JS" Samal, formerly of Larsen & Toubro Limited, will lead combined operations.

"This acquisition is a rapid entry to the important India marketplace with Clean Cat's existing and loyal customer base," said Ron Vick, Chief Financial Officer for Martin Engineering. *"This will provide a firm basis to further establish our rapidly-growing Martin Engineering India."*

The acquisition of Clean Cat Conveyors was finalized April 5, 2011; purchase price was not disclosed. During the transition, Pranesh Dhond, former owner of Clean Cat Conveyors, will assist in the introduction of Martin Engineering products to the Indian market.

Clean Cat Conveyors is a manufacturer and supplier of steel conveyor idlers, belt cleaners, vulcanizing machines, sealing and skirtboard systems and other conveyor accessories. The Clean Cat Conveyors facility in Goa will operate as a branch of the Martin Engineering India operation, and continue to offer products through its existing sales channels.





Handling Minerals and Waste Materials - Blown Over by the Wind of Change?

“Plus ça change, plus c'est la même chose” say the French; “The more things change, the more they stay the same!”.

In 1981, the Rand Corporation published the results of a survey of the performance of solids-based process plants; it showed incredibly poor results. Based on 20 new solids processing plants each with a novel process step, about 60% did not reach full capacity even two years after nominal start-up. The cost over-runs were legendary - compared with the cost estimate against which the business case for investment was made, the plants cost on average more than double. By comparison, plants based on liquids feed-stocks suffered only tiny problems. Haven't you read this? If you're in the solids handling field, it should absolutely be required reading before you are let anywhere near a new plant design!

The Rand Report is 30 this year; but have things changed in these three decades? And how has the business environment changed to affect things?

The nub of the matter in the Rand report was that when ordering a new process plant, people don't spend enough time planning, and especially studying the behaviour of the materials they are going to be handling. This is still as true, judging by the number of plants we at The Wolfson Centre get asked to troubleshoot every year. The usual problem is that the plant buyer invariably expects the vendor to know what is required in terms of kit to meet the performance specification, but the vendor usually knows very little about the material the buyer is going to put through it. As a result, as often as not, the equipment design is not optimised around the material to be processed. Frequently there is a lack of definition of exactly what the performance specification is; a few classic mistakes include

- Specifying an annual throughput without defining the length and number of stops for clean-down and product change-over
- Specifying a measuring or dosing accuracy without defining the time or quantity over which the percentage accuracy is to be measured
- Not identifying that the material being processed is subject to variation

Today's watchwords are customisation and adaptability to change. Processing companies need to respond to the fluctuating prices of feedstocks, and the rise and fall of demand in different markets. This means the need to change the materials going through the system.

All bulk solid materials behave differently; so it is ever more important to identify what you might want to handle, at the planning stage; not just the initial target material, but what might happen in the future. Waste materials are in flux due to the increasing demand for them as resources; mineral sources are subject to change due to working out of existing beds, planning restrictions, aggregate tax etc.

How to cope with this? In a world of accelerating change, don't close your eyes to the future. It is ever more important to obtain efficient use of input materials, energy and manpower which means reliable flow of bulk materials is essential.

Characterisation of the bulk materials to be handled, not just the obvious targets but those that might realistically be processed in the future, is critical at the design stage; and when change of material is in the offing, characterisation of the new material to check if it will go through the plant will save immense grief finding out the hard way that it won't.

Several leading UK suppliers of solids handling equipment are exploiting the advantages of bulk solids characterisation, having established their own labs, so they don't get caught out on site. The techniques are more affordable than ever, and easier to use. Examples include

- Shear cells to obtain the geometry required for reliable flow in hoppers and silos, and predict feeder power
- Impact degradation and dustiness tests to determine the likelihood of the material breaking down and/or causing dust emission
- Segregation tests to predict levels of de-mixing of the blend
- Moisture sorption tests to understand the effects of moisture on bulk solids behaviour

Educate yourselves of the advantages of these, and save a lot of lost time and money. If you are in doubt of the value, buy them in as a service to start with. And while you are about it, read the Rand Report!

Kingfisher Basalt Wear Protection System Chosen for Energy from Sewage Sludge Waste Plant in Qatar



Kingfisher's Industrial's experience of providing wear protection systems for energy from waste plants (EFW) used in the water industry has resulted in a major order from a leading bulk handling systems manufacturer for a sewage treatment works project in the Gulf state of Qatar.

The treatment works, situated to the North West of Al Gharrafa in Qatar, operates 24hrs/365 days a year under very demanding environmental conditions. In view of these conditions, Kingfisher has provided a 20-year design life on silo cones lined with its K-Bas material, and a warranty of 400-days.

The silo cones have to cope with environmental impacts, such as maximum wind speeds up to 42m/s, relative humidity's up 100% and ambient building temperatures of 40 deg C; with higher temperatures still in direct sunlight. A further problem is the considerable amount of salt contained in the surrounding atmosphere. This, together with the relatively high ambient humidity, can cause severe corrosion problems for unprotected equipment.

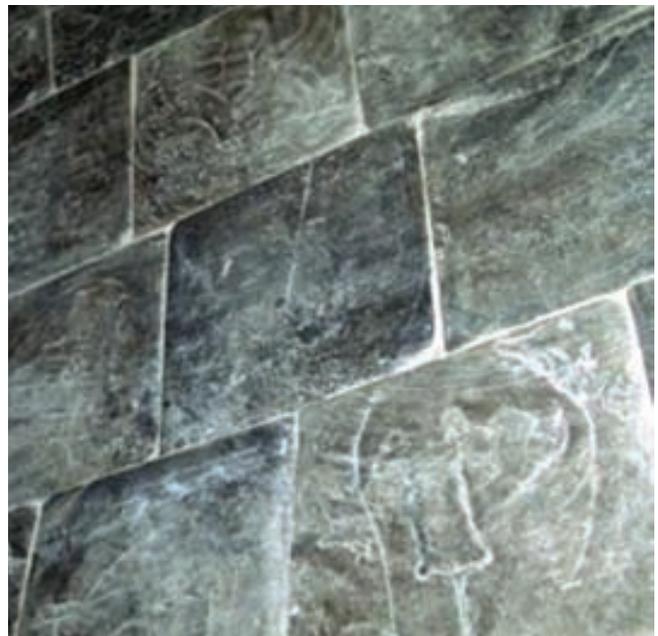
In addition to the external environmental problems, wear protection is necessary on the silo cones due to the fact that sewage sludge is highly abrasive. On its passage through sewers, sewage becomes contaminated with debris, sand, grit, deposits from environmental structures, residue from the land mass, plus metallics, and plastics. Sand and grit, in particular, are a major problem, due to their high silica content. They are highly abrasive, causing problems of wear and erosion with the equipment used to treat and process the sludge into dried sewage pellets - the culmination of the process.

The mild steel silo cones are divided into intermediate sections 4M dia. x 3M high; and lower sections 1.2m dia x 750mm high. They are all lined with Kingfisher's K-BAS cast basalt lining system. K-BAS is an extremely hard and smooth material that is resistant to most acids and alkalis, and can be used at elevated temperatures.

An inexpensive form of wear protection, K-BAS is characterised by its excellent resistance to sliding abrasion and corrosion. This quality is key, because once the silos are empty, they are filled from the top, so the basalt lining not only has to cope with sliding friction abrasion while the silo discharges, but also from initial direct impact for a short period of time while they are re-filled.

In addition to its wear life, K-Bas was also chosen because the Basalt lining was robust enough to cope with being

multi-handled, stored and shipped - open- deck, transported via land through the desert to its final destination, and then installed and craned into position without any detrimental effects. As K-Bas is applied as tiles, these demanding conditions also dictated that Kingfisher had to get the choice of adhesive, for bonding the tiles to the cones, absolutely right first time.



"This latest order provides further evidence of the increasing use of technologies designed to help extract energy and other valuable products from wastewater sludge", said Julian Brindley Sales & Marketing Director of Kingfisher. These technologies make economic sense: as a renewable energy source, sludge by-products can be used as a valuable fossil fuel substitute. However, if these plants are to achieve their projected ROI and payback timescales, wear protection is vital. Plants that process sewage sludge into pellets or granulate are continuous 24/7 operations that cannot stop for adhoc repairs and refurbishment, so optimising their wear life saves a mountain of maintenance and refurbishment costs further down the line."

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Next generation transfer points offer dust free operation

Cleveland Cascades Ltd are at the forefront of the design and manufacture of handling systems for dry bulk materials and have extensive practical experience handling a wide range of dry bulk products.

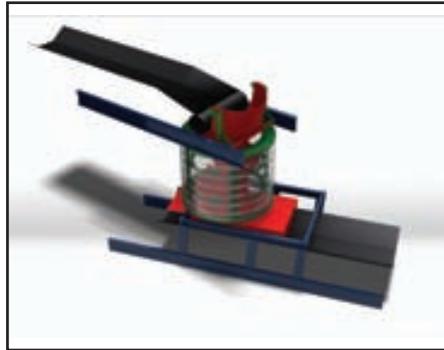
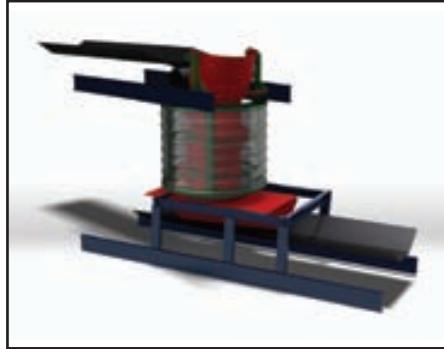
Recently the company has introduced an entirely new transfer point concept which is designed to eliminate dust production, spillage and the degradation or segregation of materials during handling. Based on the proven Cleveland Cascade loading chute technology, the system is so effective that expensive, high maintenance energy-consuming dust extraction and filtration systems are not required and spillage problems are avoided. The system is fully self-contained and no additional containment structure is required as with conventional transfer points.

Material fed from the delivery conveyor enters the headchute section of the transfer point from where it is directed to flow into the deflector section. In the deflector section, the material flows downwards over a series of inclined deflector plates. This action controls the materials speed of descent and ensures the material travels in mass flow without entrainment of air. The angles of the inclined deflector plates can be adjusted to optimise performance of the transfer point even when different materials and flow rates must be accommodated, this can be performed remotely from an operators position if required. Where reception and delivery conveyors are set at an angle to one another, each deflector plate is partially rotated in order to gradually redirect the material flow into the correct orientation whilst eliminating material degradation and dust production.

In the Taperflow section material is placed gently onto the reception conveyor in the direction of travel minimising impact damage, belt abrasion and reducing the need for impact sections. The TaperFlow skirtless delivery section further controls dust production and helps ensure that material is placed uniformly on the belt thus eliminating the need for skirting systems which historically have been a major source of issues associated with belt tracking and ongoing maintenance costs.

The Cleveland Cascade transfer point provides dust free operation even though a dust extraction system is not required, this means housekeeping tasks such as removal of spilled materials and renewal of access door seals is eliminated, reducing operating costs. The inherently effective design of the Cleveland Cascade transfer point means that build-up of materials in valley angles is eliminated, further reducing housekeeping costs.

Where highly abrasive materials are being handled, the Cleveland transfer point can be supplied with material running surfaces lined with one of a number of



protective linings including ceramic tile, hardox steel, UHMW Plastic or chromium carbide.

The system is of modular, pre-assembled design for ease of installation. This also enables different heights to be accommodated, typically between 1 and 30 metres. The system is easy to integrate into your conveyor system whether the project is a new build or a refurbishment of an operational facility. Cleveland Cascade transfer points are engineered to match your precise requirements, and a variety of special features can be incorporated if required, such as an impact weigher which can be programmed to transfer a pre-determined amount of material then stop, display a flowrate or a totalised count of material transferred.

The Cleveland Cascade series of transfer point designs have been developed using the latest dynamic modelling technology to achieve superior material handling performance incorporating mass flow techniques. This helps to ensure reduced housekeeping and maintenance costs whilst promoting dust controlled operation, spillage elimination and reduction in material degradation and segregation.

Further benefits include compliance with environmental protection standards and the ability to demonstrate adoption of best practice in minimising environmental pollution. The Cleveland Cascade transfer point is one of a family of systems produced by Cleveland Cascades Ltd for producers and shippers of difficult-to-handle dry, dusty bulk materials.

 www.hub-4.com/directory/9500

Flexco Introduces Stainless Steel Cleaners for Corrosive Environments

Flexco recently announced that four of its belt conveyor cleaners are now being offered in stainless steel. The Mineline® MSP Standard-Duty Precleaner, Mineline® MMP Medium-Duty Precleaner, Mineline® MHS Heavy-Duty Secondary Cleaner, and Eliminator® U-Type® Secondary Cleaner are all available in stainless steel.



"We developed these cleaners based on increasing demand from markets requiring stainless steel cleaner options," said Ryan Grevenstuk, BCP product manager for Flexco. "We aren't simply focusing on certain components of the cleaners. These are full stainless steel products that can handle even the most demanding, abusive beltlines."

The Flexco line of stainless steel cleaners can be used in any application, but are ideal for use in aggregate operations, copper mines, fertilizer plants, power plants, salt plants, sugar plants, ports, and other corrosive environments.

 www.hub-4.com/directory/313



Tennants Bitumen choose BRUCE for bespoke specialised solution

Tennants Bitumen, are based in the Belfast harbour estate and is ideally placed for the import and distribution of bituminous binders for the Northern Ireland road construction and maintenance industry.

With almost 100 years of operational expertise in the sector, Tennants Bitumen provides a comprehensive range of conventional and specialist binders including penetration grade bitumen, polymer modified binders, clear binders and bitumen emulsions.

Through local reputation Tennants were aware of the bespoke engineering services BRUCE offered and contacted them with the objective to design a system to provide safe access onto their lorries to load bitumen without compromising the safety of the operator.

Tennants stated “We needed to upgrade our loading facilities to offer the best possible protection to our operatives. We have improved access to our tanks and reduced the risk of a driver falling during loading operations”

After working closely with Tennants the solution BRUCE offered was a system with static access steps that the lorry can drive under allowing the operator to step onto a platform with a safety cage for edge protection. If an incident occurs the system not only protects the operator from the danger of falling from the lorry but also has a mechanism to move the platform quickly away from the lorry

Tennants were extremely happy with the quality of standard and workmanship of the access steps and Steven Caldwell, General Manager quoted “ Over the past year Tennants Bitumen have initiated an upgrade programme at our



storage terminal. Bruce Engineering has worked closely with Tennants Bitumen staff to develop a cost effective solution to overcome circumstances in our depot. We are delighted with the outcome and look forward to working with BRUCE in the future”

Features

- Push button for drop down and release mechanism
- Safety cage around operator for edge protection
- Adjustable height
- Durable & easy to operate
- Improves health & safety for operator

 www.hub-4.com/directory/7470