

OCTOBER 2009



CONVEYOR PRODUCT FOCUS



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Efficient drive technology

For a future-orientated energy budget

Abingdon – UK, May 2009: Much has been documented recently regarding the draft regulations that could see mandatory minimum efficiency standards for industrial electric motors being phased in from 2011-2017, which is great news for the industry and our planet. With continually increasing energy costs and the fact that motors account for 2/3 of industrial electricity consumption it makes sense for companies to reduce their operating costs in order to remain competitive. By upgrading your existing motors from EFF2 (IE1) to EFF1 (IE2) you will see an on-average increase in motor efficiency of between 1.5% and 7% depending on the kW rating. Whilst this can save you a significant amount on running costs, if you consider your complete drive system which may include a gearbox and variable speed drive, the potential exists to save much more.



NORD has long-since made energy efficiency a fundamental part of its company philosophy, continually developing the product range to deliver potential cost of running savings to our users remains our greatest challenge. This is not simply achieved with a single product, but by means of a holistic approach which includes the motor, gear system and drive electronics.

Energy-saving motors

NORD builds energy saving three-phase motors both with and without brakes for the international market. Our motors are available in EFF2 (IE1) and EFF1 (IE2) to IEC specifications, and for the North American market to Energy Policy Act (EPACT) specification. NORD energy-saving three-phase motors allow the reduction of operating costs and our own motor production guarantees that we are more independent from supply bottlenecks and can maintain reduced delivery times.

High Efficiency Gearboxes

Industrial gearbox designs with optimum meshing of gears, efficient gear profiles, the use of the latest manufacturing technology and techniques ensure that NORD helical and bevel gears reduce frictional losses to a minimum. An average of 98% efficiency per stage, so that the drive is practically loss-free!

All our gear units are produced in the Unicast format, which we first developed in 1981; this design principle ensures that meshing of the internal gears is perfect by having all the bearing journals machined in the same main housing. This results in a more efficient design but also added benefits like extended bearing life, low running noise, high output torque capacity and high axial and radial load capacity are also experienced. These lead to greater machine uptime due to reduced maintenance and longer life, essential for ongoing operational reliability.

High efficiency gearboxes in the form of inline helical, parallel helical, right angle helical bevel and right angle helical worm are available to suit input motor powers up to 200kW.

The inline and parallel gearboxes are inherently efficient as they use helical gears throughout with typical efficiencies of 98% per stage, as is the case with the right angle helical bevel.

When right angle worm or helical worm gearboxes are used there is generally a huge potential for saving money on running costs. The worm gear design principle is inherently inefficient, but is very often used in industry to achieve a simple cheap to buy right angle drive. However with efficiency levels that can be as low as 32% (100:1) and at best 93% (5:1) they may not be cheap to run!

If your application needs ratios higher than 20:1 (on-average 72% efficient), then you should consider using a helical worm gearbox. Manufacturers such as ourselves select the worm reduction that is most efficient and then add a helical stage to achieve on-average 85% efficiency levels. Better still, change to a helical bevel unit where you will see efficiency levels on-average at 96%. Therefore you can see right angle drives utilising helical bevel gears can, on average, save in excess of 40% on running costs when compared to traditional worm gear drives.

In addition to specifying the gearbox type you should also consider the lubrication. If you specify synthetic oil then you will see longer periods between maintenance and the gearbox can be as much as 4% more efficient - a very short payback on initial outlay.

Frequency inverters - the economical components

It has long been known that by installing frequency inverters you can lower your running costs dramatically if you have a variable torque application, as is the case with many fans and pumps. Matching the speed to the application requirements is a sound principle, however if you match the speed but there are also varying loads then you could potentially achieve more savings. ►

Heavy duty primary trommel screen installed at Fond des Vaulx, Wellin, Belgium

HOLBORNE GROUP LTD. Wem, Shropshire, UK.
have recently supplied a new primary trommel screen through their sales agent **P.W.Laver Equipment Sales Ltd.**

The BT212 Trommel with a barrel 2.1 m. diameter x 8 m. long was commissioned in July 09 at a large quarry in south east Belgium.

The screen was installed to reclaim and clean R O Q limestone, from some of the overburden and areas of clay/soil contamination in the quarry excavations. Sited adjacent to the primary crusher haul road, material from the working face is transported via dumper trucks into the 75 ton. capacity feed hopper to pass over a 1.5m x 4m reciprocating tray feeder into the trommel barrel. The barrel is fabricated in four sections, each constructed with 75mm dia. high grade steel bars, welded to 30 and 50mm support rings giving screen apertures of 100 x 100mm over the first two sections, and 80 x 120mm over the second two sections all driven by heavy link chain and sprocket, powered by hydraulic geared motor.



The reciprocating feeder is powered by a single hydraulic cylinder with both drive units supplied by independent hydraulic pumps coupled to electric motors. With the screen apertures being relatively small for this separation Holborne supplied and installed their patented barrel cleaner mechanism

The 2m length cleaner, constructed of a series of flame cut sprockets mounted on a shaft, is supported above the barrel drum, where the sprocket teeth engage and are driven by the rotating barrel. Any sticky or pegged material is forced out of the apertures, to provide a clear section for new feed. The barrel cleaner can be extended over further sections if required. The screen oversize is collected via loading shovel and dumper to feed back into the crushing plant together with the clean rock feed. The undersize can be utilized in the quarry or marketed as fill material depending on rock content and quality.

The investment of the heavy duty Holborne trommel screen will guarantee higher grades and quality to the quarry aggregate sales, as well as reclaiming material that would otherwise be discarded.

Automatic flux optimisation

Innovative NORD frequency inverters from the SK 500E series now provide an energy-saving function when running three phase induction motors, especially under light loads. The standard three-phase motor requires a suitable flux to output its full torque. Normally, frequency inverters keep the flux constant over the whole speed range, i.e. under varying loads a high flux level is maintained at low speeds, causing additional heat loss in the motor. Nord frequency inverters automatically adjust the flux level to match the load and thereby as a

result, reduce the motor current and losses in the motor. Especially with very light loads from 10 - 15%, energy savings of up to 30% can be achieved with this function.

The resulting motor current becomes considerably less with flux adjustment, resulting in the corresponding energy saving.

The energy-saving function is suitable for all applications; for example pumps, fans and horizontal conveyors where there are no special demands on the dynamics of the process.

For decentralized solutions NORD can supply the NORD SK200E IP66 compact drive, either directly installed on the motor or wall-mounted, and include full control and programming functions.



About NORD

NORD with its headquarters in Bargteheide, Germany and subsidiaries in 32 countries is a

global company with an extensive range of products and services for electrical, mechanical and electronic drive technology. With a staff of approx. 2500, NORD produces, markets and supports drive technology (electric motors, gear motors and drive electronics) throughout the world. The design of user-specific drive solutions with its customers and their supervision from the planning phase right up to commissioning is what makes NORD a strong and dependable partner.



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NORD high efficiency geared motors and industrial gear reducers.

Benefit from a robust modular design which allows for flexible mounting arrangements and are available with a wide range of options such as brakes, encoders, force ventilation, backstops, shrink discs and up to IP66 protection.

High axial or radial forces can be accommodated on output shaft due to generously dimensioned bearings and Unicas® design principle.

For outdoor applications we can provide special paint finishes and output shafts with RS coating for corrosion protection.

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NORD Gear Limited

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Smiley Monroe Ltd was proud to announce that on Friday 12th June 2009, its Quality and Health & Safety Management Systems were audited by a third party accreditor - BM Trada Certification Ltd - and have been upgraded to ISO 9001:2008 and OHSAS 18001:2007, from ISO 9001:2000 and OHSAS 18001:1999, respectively.

This latest upgrade ensures a sustained focus on quality, health, safety and welfare performance, which means that Smiley Monroe's consistency in improving its performance - to benefit all customers, employees, suppliers and sub-contractors - continues to be recognised. So customers can be confident that whether they purchase Conveyor Belts, CNC Cut Rubber & PU Parts, Screening Media, Spillage Control Systems, Chute Lining or On-Site Vulcanising Service, with Smiley Monroe they have full traceability, with approved documented procedures to ensure all products and services conform to the highest possible standards.

Craig McDowell, Quality and Health & Safety Manager, Smiley Monroe, says: "Smiley Monroe is very keen to demonstrate to all its customers, the benefits of its in-house test laboratory - another important investment in quality. Based in our 20,000 Sq ft modernised production facility in Lisburn, the lab allows us to quickly and conclusively, while-you-wait, test the abrasion resistance, tensile strength and adhesion levels of the cover rubber and fabric of conveyor belts and rubber materials, to ensure conformity to DIN and ISO standards. Our in-house laboratory also boasts one of Europe's few dynamic testers, which means - through simulating accelerated life of conveyor belt and splices, especially when used with minimum diameter pulleys, we can test conveyor belt quality to its limits for: flex, durability, adhesion, stretch, joint types and tensile strength."

Smiley Monroe achieved ISO 9001 back in 2000, which operates in parallel with OHSAS 18001 Health and Safety Management - awarded in 2006 - and we remain committed to best practice in all areas of the Company's operations and to raising the overall standards of safety within our industry. Over 300 customers, all exposed to the dangers of modern bulk conveyor systems - including foremen, fitters and design engineers - have already benefited from Smiley Monroe's 'Working Safely with Conveyors' Training Course. The Quarry Products Association, Northern Ireland (QPANI) reports that, here in Northern Ireland, 'the past five years has seen accidents levels more than halved, health and safety become the number one agenda item on many companies management meetings.....and visible felt leadership, not just an idea, but an active pursuit carried out by many of the leaders within the industry.'

Vaughan Monroe, Managing Director, Smiley Monroe, states: "Earning the satisfaction of our customers, through total quality at all levels, remains our highest priority, so we are delighted to be awarded this latest upgrade to our Quality and Health & Safety Management Systems."

Northern Ireland based Smiley Monroe Ltd - celebrating 30 years in business - specialises in the design, manufacture and service of rubber & PVC/PU conveyor belts, screening media, chute lining, skirting rubber & gaskets and conveyor spillage control systems for end users and original equipment manufacturers (OEMs) of mobile crushing, screening and recycling equipment in the UK & Ireland markets, with export worldwide. Industries served range from quarrying, mining, recycling, timber and cement to agriculture, print, packaging and food.

Visit us at www.smileymonroe.com to find out more.



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About BMS Belt Cleaners

BMS Belt Cleaners is one of the leading suppliers of conveyor belt primary scrapers, secondary scrapers and 'V' ploughs and ancillary equipment relating to a belt conveyor in many countries around the world. BMS has its own companies in the U.K, Canada, USA, and worldwide distribution throughout Europe, Far East, Czech Republic, Slovakia, Russia and East and West Africa. Recently we expanded our USA operation to include warehouse and offices in Pittsburgh, Pennsylvania and Macon, Georgia.

Since 1994, BMS Belt Cleaners has supplied conveyor belt scrapers supported by professional and technical back-up to the bulk handling and mineral extractive industries including quarrying, in mining; copper, zinc, gold, diamond etc, cement, fertiliser, power stations, agricultural, recycling MRF Plants as well as fine and delicate material such as powders, vegetable oils, tobacco.

BMS also provide product to original equipment manufacturers (OEM's) and include in the package free scraper selection, CAD drawing for all products and full technical support both at the drawing stage and prior to commissioning the plant. BMS also offer on line product support plus service contracts to ensure that customers retain the long-term performance of BMS products.

The BMS Belt Cleaners 'E' range of metal-bladed scrapers are an improved design based on the original 'paint scraper principle' which has a 20 year track record for efficient belt cleaning recovering even the last 1/10mm of carry-back material from the belt cover maximizing conveyor belt uptime, productivity, safety and lower cost of scraper ownership.

BMS offers three versions of their belt scraper for light, medium and heavy-duty applications, there is also a stainless steel option ideally suited for industries where high standards of hygiene and frequent wash-downs are essential, such as food processing, confectionary, plastics and pharmaceuticals.

BMS Belt Cleaners works closely with every customer to provide practical solutions to their cleaning problems in order to achieve long-term savings whilst realising that combating carry-back is a constant problem for the management (Managers/Engineers) of a bulk material handling plant.

For more information on our products and services please contact us on: BMS Belt Cleaners Ltd
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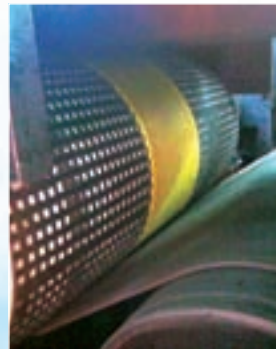


Motorized Pulleys at Clydeport's Hunterston Terminal

Hunterston's impressive dry bulk terminal, with the deepest berth in Europe of up to 26 metres, enables ships up to 350,000 tonnes to berth at all states of the tide to discharge coal to a highly mechanised stockyard of 120 acres.

After initially trialling a 75kW Motorized pulley in one of their most difficult areas, Rulmeca have since supplied to Clydeport, a further 3,132kW drives to replace existing external drives on their stockyard conveyors.

Clydeport have capability to load up 20 trains a day from this facility to deliver to various power stations in Scotland and England. The extreme conditions which can prevail in the area require excellent reliability and on-demand capability. Motorized pulleys were considered and trialled to demonstrate firstly, their performance, their excellent IP67



sealing and minimal maintenance requirements. Their dynamic internal design enables mechanical efficiencies which in turn, bring forth good electrical savings too.

Motorized pulleys also have advantages with their compact design with no external moving parts, allowing better access - therefore better health and safety.

www.rulmeca.com



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Beaufort Conveyors

Beaufort Conveyors, now established for over 20 years, is a name that has become well known and respected throughout industry due to the success of their acclaimed Easikit® trough belt modular conveyors.

Over the years, an understanding of customers' needs has enabled Beaufort Conveyors to focus on the manufacture, supply and support of a core range of ex-stock modular products that deliver quality, reliability and value for money in meeting your requirements.

Attention to detail, a commitment to quality, excellent service and in depth experience are the foundations that have built up a first-rate reputation and complete product confidence with customers.

The Easikit® conveyor system is now a well proven, established method of materials handling throughout trade. The conveyors are especially suited to industries such as recycling and composting, sewage treatment, aggregates, basement clearance, crop and grain handling etc. and will be found in many facilities throughout Europe.

There are numerous advantages of the system that have secured its place as a number one choice within industry. The unique modular simple design is the system's main strength. This puts an end to expensive, bespoke conveyor installations that eat into your budget and waste valuable time.

The Easikit® conveyors are available in widths from 300mm to 1500mm. Available from stock, they are simply joined together on site using a unique coupling system. Any number of sections can be joined together to produce a conveyor of whatever length is required. Once on site should the requirements change, conveyor sections and belt lengths can simply be added or subtracted as necessary.

Part of the unique design is the attention to safety. On all the conveyors the belt travels over the folded edge of the main frame to reduce the likelihood of material dropping down onto the returning belt. Idlers are therefore concealed during normal use which is another safety factor especially where conveyors are used in close proximity to personnel – for example underground or in picking applications.

The Easikit® conveyors can be supplied either in a static, fixed form or as a Mobile or Radial conveyor. These conveyors come with an undercarriage fitted with a hydraulic ram which enables the conveyor to have a variable discharge height. The Mobile conveyor has pneumatic wheels and an optional towing hitch for manoeuvrability on site. The fixed Radial conveyor comes supplied with an electrically powered motor on the undercarriage and is capable of rotating through a full 360° arc, essential when stockpiling.

All products receive the reassurance of a 12 month warranty and the added advantage of ex-stock back up for spares which is invaluable to assist with ongoing maintenance.

In addition to the Easikit® range, Beaufort Conveyors also manufacture Easibelt® a range of flat bed conveyors, and Easitrak® a gravity roller track system.

Whatever your handling requirements, Beaufort Conveyors will be more than happy to help and advise.

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Wileman Kicks Up Hills New Plant

Wileman Engineers recently commissioned their latest complete Sand and Gravel Processing Plant at Woodsford, Dorset for Hills Quarry Products Ltd. The 150 Tonne per Hour plant was designed and installed by the aggregate washing specialists based at Ashby de-la Zouch in Leicestershire.

The plant comprises a belt feeder system within a 3.1m Dia multiplated tunnel feeding onto a 130m long 750mm wide plant feed conveyor. The 150 tph as dug sand and gravel is then washed and screened through a low level plant via Hewitt Robins Screens and Wileman Contraflow Scrubber barrel.

The 1st screen removes the majority of the sand which then feeds into a Linatex compact plant which produces a soft sand plus a coarse sand to stockpiles. +40mm rejects is also removed on the first screen and conveyed to ground stock.

The +4-40mm fraction is then fed directly into a Wileman 2m Dia x 3m long Contraflow barrel. The barrel has the capability of removing any remaining silts and sands adhered to the stone and also dewateres before conveying the clean products to the sizing screen. Water and any silts are returned to the Linatex plant via pump. The graded sizes; +4-6mm,



+6-10mm, +10-20, +20-40mm are all conveyed from the Hewitt Robins screen to ground stocks.

Wileman Supply further equipment to Summerleaze

Following on from the recently installed New Sand and Gravel Plant at Denham Buckinghamshire for Summerleaze Gravels Ltd.

Wileman Engineers Ltd were awarded the challenging contract to design and install a travelling field conveyor system under the M4 motorway near Bray, Berkshire. Planning demanded the nightly removal of the field conveyor which transfers as dug material from a reserve on the opposite side of the motorway to the existing field conveyor system.

The contract is due to be completed by Christmas 2009. This is another example of the Wileman Engineers taking on challenging jobs of any size.



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REMA TIP TOP INDUSTRY UK Limited Conveying Excellence

In April 2008, REMA TIP TOP INDUSTRY UK Limited acquired the conveyor belt specialists 'Ace Conveyor Equipment Ltd'. The acquisition signalled a major landmark for REMA TIP TOP INDUSTRY UK and marked a statement of intent to become the leading Conveyor Belt specialist in the UK. The company, post acquisition now employs over one hundred and fifty people, across head office sites in Leeds and Doncaster and throughout the multiple service depots and warehousing facilities based in all of the home nations including Ireland.

The REMA TIP TOP INDUSTRY UK team of service engineers have acquired a significant number of years experience working with belt conveyors, and several of the industry's leading specialists in conveyor engineering, belt technology and conveyor design are employed within the company. Many customers have come to rely on this level of expertise and welcome the regular inspection services scheduled through a TCO contract or programme to assess the condition of conveyor components and avoid potential breakdowns. Many of these assignments are scheduled to coincide with shutdown periods.

TCO – TOTAL COST of OWNERSHIP contracts represent a comprehensive and unique service agreement with the client, designed to make significant cost savings to plant and drive the ultimate improvement and development of the plant conveyor system. The service is available as a full technical survey, where detailed information about each component is captured and documented for future reference. This information is held on a database with a copy for the customer to refer to when components require changing or upgrading. Alongside this a detailed condition survey is conducted which assesses the serviceability of each component, and identifies recommendations for action. A full conveyor safety review is also available that highlights any issues that may need future attention.

REMA TIP TOP don't just provide unparalleled service excellence! The company is also a leading supplier of quality 'Belt' and is complimented by a global team of experts involved in pioneering innovation for the design and manufacture of conveyor accessories and vulcanising equipment. Significantly, REMA TIP TOP Distribution depots in the UK and Arnhem in Belgium hold over 10 million euros of 'Belt' at any one time, thus stock availability is always completely guaranteed irrespective of the project size and materials requirements.

For further information related to this article please contact Don Marshall or Andrew West at REMA TIP TOP INDUSTRY UK Limited on 0870 143 1600.

Gearbox manufacturer awarded OHSAS 18001

Gearbox manufacturer, Hansen Transmissions Ltd in the UK, anticipates additional interest from customers as a result of their BSI Health & Safety OHSAS 18001 certification.



Hansen Transmissions' Industrial Gearbox division in the UK are celebrating after their commitment to promote a safe and healthy working environment was officially recognised in March, meeting the rigorous standards set by the Occupational Health and Safety Management Systems OHSAS 18001.

The achievement acknowledges Hansen's risk management strategy and the company is proud to claim that it provides the same level of health and safety support to their Field Service Engineers servicing and maintaining transmission units all over the world, as they do for those working in its factory and offices.

"Employees' health and safety is the highest priority for Hansen Transmissions Ltd and we want to ensure that we take every step possible to make that a way of life within the company", said Richard Gough, Compliance Manager, Hansen Transmissions Ltd. "The certification process of OHSAS 18001 was an excellent experience for us to go through and benchmark our systems against the world's best."

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Many industries including power generation, cement and lime production, combined heat and energy plus the glass manufacturing process use fossil fuels such as coal or gas.

Recent understanding of the effects of the fossil fuels on the environment and changes in the control of emissions legislation's has seen a vast change in the type of fuel used in the industries. One of the prevalent alternative fuels has been biomass.

Biomass is derived from waste wood, grain husks, nut shells, and forestry waste and among many other natural materials. Although biomass and alternative fuels are relatively new terms within the home, within industry they were established in the 1980's. Combined with more efficient firing processes the cleaner energy provides a sustainable viable alternative to fossil fuels.

New fuel, New challenges

With the biomass's unique make up from different materials, new considerations for size and consistency had to be factored. Supplied as pellets, shreds, and chips or even in the raw, the biomass could cause problem in the firing or transporting process. Safe guards and material checking are implemented to protect the firing equipment.

Systems for screening the material to ensure foreign material such as steel is removed, and large pieces are separated from the material flow were developed by forward thinking companies.

One such company **Geo Robson & Co Ltd**, based in Sheffield, recognised in the early days that systems had to be designed or adapted for the new fuels, consequently they have been at the forefront of research and development of biomass and alternative fuel conveying systems for many years.

Developing a complete solution to the biomass checking and screening.

The screen house is a automated system of grading screens and metal checking equipment that ensures the material is free from items that may cause damage or problems to system.

The biomass is transported to the top of the building via a belt conveyor or Robson's Airglide Conveyor and onward to a vibratory screen, the screen sieves the biomass to separate the over size material, the vibration effect of the screen helps with the break down of the lumps that could cause blockages further on in the system, over size lumps that don't break down are prevented from travelling any further. Two unbalanced motors, mounted to the top of the robust system, power the vibratory screen, the screen is isolated by springs to ensure the vibration does not affect surrounding equipment or building structures.

Attractive Systems

The screened biomass travels through feed chutes down wards to a vibratory feeder. Mounted above the feeder is an overband magnet, the magnet attracts any metallic objects as they pass on the vibratory feeder; the feeder's construction is very similar to the screen. A robust trough driven by two unbalanced motors, with this design the motors are mounted to the underside of the trough and again isolated by springs. The overband magnet has a ribbed conveyor belt travelling around the central electromagnetic core, which forms a barrier between the attracted metal and the magnet. The motion of the belt keeps the magnet clear; the attracted metal objects are moved by the belt to a non-magnetic part of the overband and are deposited to a reject chute.

Once the biomass is conveyed across the vibratory feeder it is fed to a chute, within the chute is a rotating drum magnet.



Screening for a Greener Future

ROBSON
HANDLING TECHNOLOGY

The drum magnet is constructed from an 180° stationary magnet system within a revolving cover. The magnets are mounted on to heavy-duty back plates, to optimise the magnetic strength directed at the product stream. The rotating drum holds the attracted metal until it reaches the non-magnetic area, where it is directed to a reject chute.

The metal objects are normally residues from the wood biomass such as nails, nuts and bolts but also can be tramp steel or objects picked up along the supply stream. With feed rates in excess of 500 tonnes per hour the screen house ensures the biomass is free from metal objects, for critical systems other scanning and reject systems are added such as inline metal checking. Adopted from the food industry the inline metal check works similar to a airport metal detector as the biomass passes through it is scanned, if metal is detected the slug of material is rejected by means of a flap valve.

The screened biomass material is conveyed onwards to the firing process or to silo storage ready to be used. With Robson's vast experience of many industries the screen house is utilised in various forms for many products including sugar and food processing, the systems used are adaptable and redesigned to suit the customer's requirements.

The biomass and sugar industries require that the conveyor and screening systems are ATEX certified, the dust created from the material can cause a potentially explosive atmosphere. The stringent certification process ensures that all risks of ignition are removed from the conveying or screening system. Robson's core products are certified as Category 1 internal and Category 3 externally, ensuring protection of the system and surroundings. Other systems are assessed and certified to suit the ATEX zone and customer requirements.

With a range of mechanical handling systems that are enhanced by the ability to design and build bespoke systems, plus the in house engineering workforce with mechanical combined electrical skills, Robsons are able to construct systems to relevant industry standards. Having departments for the service and maintenance plus the in house refurbishment of handling equipment, gives Robson the edge over its competitors, providing the customer with the complete package.



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