

# **CEMENT & BUILDING MATERIALS REVIEW**

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### UAE

### Fujairah Cement Industries to establish new company Sohar Cement Co. in Oman

Oman: Fujairah Cement Industries announced it will establish a new company in the Sultanate, entitled Sohar Cement Co.

Daily Cement: 248/

### Arkan Building Materials aims to enter new markets and boost exports

Arkan Building Materials said it has registered a solid growth this year and is now aiming to increase exports to 20% of the group's total revenues over the next 3 years.

Daily cement

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# Höganäs Bjuf inaugurates the world's most modern plant for monolithic products

On 01<sup>st</sup> of September 2016, Höganäs Bjuf inaugurated the world's most modern plant for the production of monolithic products in Bjuv, Sweden. The facility, with a total capacity of 30,000 tonnes per years, will be used for production of a new generation monolithic products for customers in e.g. the cement, steel and aluminium industries in 70 countries around the world.

In 2015, Höganäs Bjuf took the strategic decision to develop a new generation of monolithic products with even better properties than those available on the market today. To ensure quality and safe deliveries, Höganäs Bjuf also decided to build the world's most modern plant for the production of monolithic products in Bjuv, Sweden. The plant, which represents an investment of about 40 MSEK was inaugurated on 01<sup>st</sup> of September 2016.

The new factory has a floor area of approximately 1,000 m<sup>2</sup> and is designed to produce 30,000 tonnes of monolithic products per year. High degree of automation and the latest mixing technology ensure high and consistent product quality. The factory is completely dust-free and designed with sustainability in mind.

The new Höganäs range of monolithic products has significantly better characteristics than current products on the market. A unique bonding technology makes it possible to both mix and dry them significantly faster than conventional monolithics, saving time and money for the customers. Four product families, plus the well-known Borgestad range, meet all relevant market requirements. An app for smartphones gives customers access to product data and installation instructions in a few clicks.

Höganäs Bjuf has been manufacturing refractory products for almost 200 years thereby gaining a technology leader position in the market. In recent years, the company has intensified and enhanced research and development by recruiting international expertise and building up one of Europe's most modern laboratories for refractory products.

Along with the new factory and product range, these extensive investments are fully in line with the company's commitment to offer customers a total solution, which in addition to a broad product range includes design, engineering, logistics, supervision and installation.

For more information contact Egil Friestad, phone <u>+46 705 746622 or at egil.friestad@hoganasbjuf.se</u>

Höganäs Bjuf is part of Borgestad Industries, a leading global supplier of refractory solutions and products to customers in more than 70 countries. Operations are conducted through eight renowned brands: Höganäs Bjuf, Borgestad Fabrikker, J.H. Björklund, T Knutsson, GL Contracting, AG Port, Macon and Mektec.

Borgestad Industries has a turnover of about 700 MSEK and is part of Borgestad ASA listed on Olso Stock Exchange. Borgestad Industries operational headquarters are located in Bjuv, Sweden.



## When only the best is good enough

Are you looking for the best monolithic products? Try the new generation monolithics from Höganäs Bjuf. A unique bonding method makes them both significantly faster to mix and dry than traditional monolithic products, saving time and money. With four product families, plus the well-known monolithics from Borgestad, we cover all your needs.

But to manufacture the best monolithics you need to do right from the very start. That is why we recently inaugurated the world's most modern plant for monolithic products in Bjuy, Sweden.

This initiative shows our ambition to offer our customers a total solution, which in addition to a broad product range includes design, engineering, logistics, supervision and installation.

For more information, visit www.hoganasbjuf.com





Setting new standards

### BEDESCHI EXPERIENCE WITH THE COAL LIFE CYCLE:FROM QUARRY TO CEMENT PLANT

By: Marco Bertorelle – Sales Manager Bedeschi Spa

Coal, used as fuel in the industrial processes, is always more a strategic resource also for the Middle East and North Africa countries' economies.

Bedeschi presentation is focused on the coal life cycle, from mine to ports, until the final use as fuel for cement plants mills.

### **Coal Industry**

The coal delivered from mines that reports to the **Coal Preparation Plant** (CPP), is called **Run-of-mine** (**ROM**) coal. This is the raw material for the a.m. CPP, that's a facility to wash coal of soil and rock, preparing it for transport to market.

ROM consists of coal, rocks, middling minerals and contaminations. Contaminations are usually introduced by the mining process and may include machine parts, used consumables and parts of ground engaging tools.

ROM coal can have a large variability of moisture and maximum particle size.

Therefore, coal needs to be stored at various stages of the preparation process, and conveyed around the CPP facilities. **Coal handling** is part of the larger field of bulk material handling, and is a complex and vital part of the CPP.

**Crushing:** an important aspect to consider is the grain size of coal that is not always able to satisfy the granulometry's features required to use it as fuel inside the mills. Often a crushing treatment became necessary.

This crushing process could be done during the prestacking phase, may be directly at the mine, processing the ROM coal, with heavy-duty crushers or during post-stacking phase, using smaller crusher able to correctly feed the mills.

The selection of a primary crushing system rather than a secondary type depends on the type of material, hardness, humidity and abrasiveness. Very hard coal and low moisture requires an impact machine, a gyratory crushers or a jaw crusher. However, when dealing with a high degree of moisture and sticky material, a double roller crusher sizer is required, as this is the only type of machine that can deal with sticky material, thanks to its rotors geometric configuration and cleaning scrapers that prevent clogging.



The use of a double roller crusher to size coal can have particular benefits in terms of reducing fines compared with impact or jaw crushers. This is important when preparing coal for vertical mills, as these work at best efficiency when fed with materials containing a low percentage of fines. Double roller crushers can be installed either at the mine to crush the ROM coal before the preparation and the transportation or at its destination, as a sizer.



Key characteristics of the double roller crusher include:

- The generation of a low quantity of fines and high quantity of grain material during the crushing process; the grain size that is produced depend on:
- o The gap between the two rollers, that's easily adjustable according to proces requirements, even after it has been installed;
- o The size, thickness, shape and number of teeth.
- The ability to work with moist and sticky material, such as soil-polluted lignite with low calorific value;
- The ability to run with low-power electric motors, resulting in low energy consumption thanks to their low revolution speed (1.5-3.0 m/sec). Many applications and tests confirm an average power consumption of 0.2 0.4 kWh/ton of coal and lignite. As revolution speed is also proportional to the wear rate, this low speed also reduces the rate of ware.

The selection of a fixed, semi-mobile or mobile crushing unit is based on the position of the crushing unit, on the lay out of the plant and whether its positioning will be the same or it will change during its life-time. There can be therefore different configuration: cement hopper, lined with steel sheets; steel hopper of various dimensions; fixed crushing units, assembled on skids; surface feeding units, which allow the reduction of the hopper volume.



<u>Coal Receiving Operation:</u> therefore, we are introducing the second main arguments on the coal handling that is the Coal Receiving Operation.

The coal coming from mines could be carried by:

- Trucks
- Trains
- Ships

As first option, using **trucks**, coal can be collected into hoppers.

The best feeder to the crusher is a hopper and an apron

or a surface feeder, continuously feeding the crusher. The hopper must be of a suitable size for the flow of material discharged by the trucks and it advisable to grant a buffer suitable to contain one or two trucks of material. With modern dump trucks, it is useful to have a hopper of 100 - 150 cubic meter. The hopper shape must be suitable for the correct material down flow, especially in the case of moisture sticky material and of material that may freeze: the wrong sizing or shape can adversely affect the flow of the material and cause stoppage.

As second option, receiving coal by trains, it's needed to install railcars receiving equipment and railcars unloading system as a rotary railcar dumper or wagon tippler.

This mechanism is used for unloading certain railroad cars such as hoppers car, gondolas or lorries. It holds the rail car to a section of track and rotates the track and car together to dump out the coal. Used with gondola cars, it is making open hopper cars obsolete. Because hopper cars require sloped chutes in order to direct the contents to the bottom dump doors (hatches) for unloading, gondola cars allow cars to be shorter, thus lowering their center of gravity, while carrying the same gross rail load.

Alternatives to the rotary dump cars are bottom dump cars with bottom doors, and back end hoes which unload gondola cars. The former has the disadvantage that any imperfection in the seals of the doors allows material to spill onto the track.

As third alternative, in case of coal shipping, there are two different possibilities.

There is often the need to transport raw materials and combustible solid material from one continent to another by use of the sea. The ships that do that are becoming bigger, so the modern port has to be equipped with all kinds of machines like shiploaders, shipunloaders, cranes, conveyors, etc. to be able to complete the vessel's loading/unloading process in the minimum time.

The increasing ship sizes has influenced Bedeschi production in two different ways:

- In new ports that are designed to accommodate for larger ships, Bedeschi has created machines with a higher capacity able to fulfill the new loading and unloading needs.

In this case, for import unloading operation, different type of unloading equipment can be utilized (grab shipunloader, continuos shipunloader,...), as for example movable hopper on rails, loaded by mobile harbor cranes (single jib or double jib) or continuous ship unloader;



Instead for export loading operation, mobile shiploader on rails or movable shiploader on wheels.



- In the existing ports, which are not able to accommodate for larger ships, the loading and unloading process must be done outside of the port. For this reason, Bedeschi created a new set of transhippers for offshore loading (in case of export) or unloading (in case of import) of dry bulk cargo, mainly coal as in the case of Princesse Chloe where the most efficient floating terminal ever built is in operation in East Kalimantan, Indonesia.



During transhipping operation the shuttle vessel (in this case barges) carrying coal remains anchored near the ship that has to be loaded and the Bedeschi slewing and luffing shiploader load the OGV. The transhipper is equipped with a Bedeschi conveyor system and slewing and luffing shiploader with a design capacity of 2,500 tph which amounts to a daily rate in excess of 40,000 tons of coal, and an annual capacity exceeding 9.5 million of tons.



Considering the fact that port's infrastructures which consists of the land and space necessary for operations is expensive, Bedeschi is able to help the client by providing compact, functional, and ecofriendly machines that are able to adapt to a smaller space but are still able to create the high stocking volume requested by the client.

### Belt conveyors, overland, pipe (ONT & MID WEST CONVEYOR)

**Stockpiles** provide surge capacity to various parts of the CPP.

Once coal has been reduced to the appropriate size, a storage area is required.

The main criteria when deciding on the type of storage

are: the moisture of material and therefore its stikness; and pre-blending requirements.

ROM coal is delivered with large variations in production rate of tones per hour (tph). A ROM stockpile is used to allow the wash plant to be fed coal at lower, constant rate.

A simple stockpile is formed by machinery dumping coal into a pile, either from dump trucks, pushed into heaps with bulldozers or from conveyor booms. More controlled stockpiles are formed using stackers to form piles along the length of a conveyor, and reclaimers to retrieve the coal when required for product loading, etc.



Taller and wider stockpiles reduce the land area required to store a set tonnage of coal. Larger coal stockpiles have a reduced rate of heat loss, leading to a higher risk of spontaneous combustion. Regarding the storage, it is necessary to consider the space available and the volumes of the material to be treat. Also the prehomogenization is fundamental during the reclaiming phase. Indeed, if the coal is not uniform it is necessary a frontal type reclaimer using a bridge type reclaimer as for example PAL T model. since they both have traditional stacker (rotating or running) and a frontal rake reclaimer.

### **SELECTION CRITERIA:**

- Available space: circular storage needs at least 30% less space than longitudinal storage, so the shad can be much smaller;
- Pre-blending and throughput constancy: longitudinal storage is highly discontinuous in the cones at the beginning and ending of pile.
- Possibility of future expansion: longitudinal storage can possibly be extended in the future, while circular storage cannot.
- Idle time during pile exchange: once circular storage has performed the first pile, it goes on with a continuous working process, which is technically endless, followed by the reclaimer.

A separate mention is for the Circular storage being the combination of a rotating stacker and a frontal rake reclaimer or a lateral cantilever or portal reclaimer.





The selection is mainly oriented towards longitudinal or circular storage: both type of machines are very similar

Otherwise, if the coal is uniform, using a lateral reclaiming system like portal or semi-portal reclaimer could be enough (example case study Crowder and Posco).



Stacker is performed with a traditional lateral stacker or with a tripper. The reclaimer can be selected among

### FUELS

a lateral cantilever boom reclaimer, a portal or a semi portal one. The process is absolutely equivalent; the different choice is due only to the plant design reasons and to the costs of the civil work.

With a boom length bigger than 2530-mt it is more economical to use a portal reclaimer.



A very long cantilever boom requires a very heavy counterweight with relevant overall dimensions and suitably elevated loading on the foundations.

Thanks to the experience in coal handling in the cement plants where it is not necessary to store and reclaim big volume of material, Bedeschi is able to support with its great know how end users operating in different industrial sectors where the volumes are wide, like steel or power plants.



Bedeschi is able to minimize environmental problems due to dust emission by stocking material in an enclosed warehouse. In addition, all of the machines have dust filters created by the Bedeschi affiliate company CTP, therefore Bedeschi Group may propose totally dust free environmental friendly solutions. Bag filters have to be reliable and low energy consumption equipment in order to satisfy the most different market needs.

Electrostatic precipitator is a particulate collection equipment that removes particles from a flowing flue



gas using the force of an induced electrostatic charge. SWAP (Sonic Wave Acceleration Pulse is a unique bag cleaning technology at low pressure, designed to remove dust from bags up to 10mt length.

Cyclones vertical or horizontal sparks arrestor and multi-cyclones are equipment mainly used for applications with high dust concentrations or for sparks separation or in case pre-filtration, upstream the filter is needed.

To optimize their raw material handling operations, cement plants must choose the correct type of equipment in every part of the raw material process. Efficiency and sustainability are key components of Bedeschi's design vision, developed during the past 100 years, to bing products to market that deliver on customer's expectations.

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SK Automatic Big Bag Filling Station With Lifting System

# Soft landing after a rough flight Flexco's EZIB impact beds are an effective means of preventing material loss

High-energy impacts in the loading zone are a frequent cause of material loss in conveyor systems used in coal mines, underground mines and gravel quarries. Flexco impact beds prevent this by slowing down the material that falls onto the conveyor. The EZIB systems are an efficient example. Users can easily modify and fit them thanks to the adjustable trough angle.

The product range is equipped with standard components, which makes it both effective and affordable. The impact strips made from tough ultrahigh-molecular-weight polyethylene (PE-UHMW) absorb the impact force of the falling material, while the outer protective strip, which is likewise made of PE-UHMW, seals the loading zone. The system is suitable for light and medium-duty loads. Impact beds are also available in lengths of 600 and 1,200 mm. This solution enables users to significantly increase the life of their systems as they are subjected to considerably less load. Combined with Flexco sliding beds, they can be expanded to form complete loading zone systems. Service engineers can change the trough angle to get easy access to the strips and bolts, permitting quick, reliable maintenance.

EZIB impact beds are suitable for belt speeds of up to five metres per second and operating temperatures from  $-40^{\circ}$  to  $+82^{\circ}$  C.

Flexco provides solutions for light and medium-duty applications. To select the right impact bed, users must determine the weight of the largest material being conveyed and then multiply it by the drop height. This gives the approximate impact energy.

Users of conveyor systems can easily modify and fit the EZIB impact beds thanks to the adjustable trough angle.

### About the Company

Flexible Steel Lacing Company (FLEXCO), headquartered in Downers Grove, Illinois in the USA, is the leading international specialist for mechanical conveyor belt fastener systems, belt cleaners, belt positioners, impact beds and pulley lagging for lightand heavy-duty applications. With the company's innovative solutions, endusers can substantially reduce downtime and increase productivity. FLEXCO Europe GmbH is the German subsidiary of FLEXCO, and is headquartered in Rosenfeld, where the company currently has 60 employees. For more information, see: www.flexco.com.





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# The Best of Both Worlds – SMARTREMOVAL has revolutionized filter hose changing

In the past the choice made by companies purchasing dust filter systems was in general limited by the type of plant they already had: Basically, if the height of the building made filter change possible a Top Removal System was chosen, as such systems always have a lower residual dust content compared to Side Removal Systems. However, if the building was too low, then a Side Removal System was always chosen, although these always meant longer stoppages for changing filter hoses and cleaning. This was seen as the lesser evil compared to the high costs required for modification work to the production facilities.

This dilemma inspired the design engineers at NETZSCH Trockenmahltechnik GmbH to look at the problem of filter hose changing from the customer's point of view. The resulting worldwide innovation, SMARTREMOVAL, was presented for the first time at this year's POWTECH in Nuremberg, Germany and aroused considerable interest in the branch. This new type of filter hose changing system combines the advantages of conventional Top- und Side Removal Systems in one product.

The main conceptual emphasis during the development of the SMARTREMOVAL was first and foremost on enabling an intuitive filter hose change without tools, which could be carried out easily and rapidly. In practice stoppages necessary for changing the filter hoses constitute a major cost factor, which can even be decisive for the profitability of individual campaigns with frequent product change.

A further focus was on reducing the residual dust content down to that of a Top Removal System. In the end, the designers of the SMARTREMOVAL were able to solve both tasks. The well thought out installation technology (patent pending) is constructed in such a way to exclude mounting errors and the mounting of the SMARTREMOVAL is up to 80% quicker than that of previous Side Removal systems. In addition to this its residual dust content is so low that it is comparable to that of conventional Top Removal systems.

In future users and plant builders of dust filter systems no longer only have the limited choice between two systems characterized by obvious weaknesses. On the contrary, now everybody can choose the new optimal solution when building, modifying or modernizing their plant regardless of the height of the building and without having to tolerate high residual dust contents: NETZSCH SMARTREMOVAL.

### www.netzsch-grinding.com



Fig. 1: SMARTREMOVAL was presented for the first time at POWTECH 2016 in Nuremberg, Germany.



**Fig. 2: SMARTREMOVAL as core component of a** dust filter system.



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