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All running smoothly

Inefficient flow of bulk materials causes product loss, avoidable dust emissions and higher cleaning expenditure as well as equipment deterioration and more frequent stoppages, which result in loss of productivity. Solutions that remove build-ups or help to create cleaner and safer bulk handling practices positively impact the cement plant's smooth operation.

■ by Standard Industrie International, France

To ensure the efficient flow of bulk materials in their production facilities, cement producers are supported by a varied range of handling equipment. Air cannons are able to remove current buildups and prevent future occurances while vacuum equipment helps to meet cleaning, pumping and recycling requirements. In addition, conveyor belt optimisation and silo and hopper cleaning services ensure the efficient transport and storage of materials prior to use in the production process or of the finished product.

Removal of build-ups

Standard Industrie provides customised technologies for different types of blockages in the cement production process. These build-ups often cause a loss in productivity and present avoidable risks to maintenance staff.

Clearing preheater blockages

In a 7500tpd cement plant in Mexico, buildups of raw meal in the preheater caused loss of productivity and unnecessary risk to maintenance crews who were sent to unblock the preheater. In addition, there was the potential for more expensive breakdowns when the raw meal conglomerate would fall in the kiln inlet area.







To improve gas flow and avoid combustion as a result of build-ups in the riser duct, this US cement plant installed five MacSys Wireless air cannons, supplied by Standard Industrie International

To solve this issue Standard Industrie International installed 22 AIRCHOC[®] wireless (4in diameter/50l tank) air cannons. They are controlled remotely to regulate the firing sequences. As a result, up to 90 per cent of the blockages were removed and operators benefitted from a safer working environment as cleaning interventions were considerably reduced.

Eliminating riser build-ups

In a 2700tpd cement works in the US, the cement producer was faced with buildups on the riser duct. The accumulations in the smoke box slowed gas velocity and consquesently caused combustion.

To improve gas flow and avoid combustion, five MacSys Wireless (6in dia/200l tank) air cannons were installed. MacSys air cannons have multiple heads connected to the same tank. In this case some 20 heads were connected via a network of fixed pipes and the compensatory sleeves on the smoke box in the preheater by reinforced straight deflectors. The equipment's firing sequence occurs every 10s and 8s are required to fill the 200l tank at six bars, which allows for rapid firing rates.

The new air cannons have led to an improved production rate and the cement producer plans to equip the plant's cooler with MacSys Wireless air cannons. The new air cannons will be driven by the same control panel that enables the plant to manage up to 128 AIRCHOC cannons.

Providing clean, safe and efficient storage and transport Clean and safe storage areas

Following its transit in the coal mill, ground coal is transported by conveyor belts to the fuel storage and feed area. However, coal's explosive nature combined with overflowing conveyors prompted a 1500tpd UK cement plant to install a UMA3000DMC trailer-mounted vacuum machine equipped with explosion vents.

The type of equipment selected by the cement plant provided two key benefits:

The equipment included a large collection capacity (4m³/4805l) without the disadvantages of a truck, which requires an experienced driver.
The vacuum machine was able to operate on a daily basis in line with the





Vacuum equipment such as the UMA3000DMC used at a UK cement works (left) and the CM6000MRUS employed by a US cement work (above) help to provide clean and safe plant areas

plant's cleaning requirements and its safety policy.

Meanwhile, in the US a 2500tpd works needed to vacuum at a rate of 30tph in a desert area and reclaim product for future use by using a blowback option on the selected equipment. The cement plant also required vacuuming operations in the raw and finish mills as well as the packaging section at a rate of over 300tpm.

To meet these needs, Standard Industrie installed a CAM6000MRXUS vacuum machine with blowback option. In addition, the explosion protection on the truck enables the cement plant to safely clean the coal mill area.

In a 6000tpd cement production facility in Belgium the equipment supplier helped avoid clogging in the large concrete silos that hold the plant's finished product. While air cannons can provide a way of clearing such blockages, the cement producer chose the GIRONET to regain the 2500t silo's original storage capacity. Prior to the installation, the silo had lost nearly 50 per cent of this capacity as a result of clogging. The GIRONET is positioned on top of the silo and a motor drives a range of tools to clean the inside of the silo. Within 15 days the silo's full capacity was restored without the need for entry by any personnel, eliminating the risk of accidents.

Clean and efficient transport

In terms of materials transport, product loss at conveyor belts causes increased dust emissions while build-up of material and dirty rollers cause belt stoppages, reducing productivity at the plant.

In a 4000tpd cement plant in Germany, clinker and additives are sent for grinding via a 40m-high conveyor belt. However, the facility suffered significant product loss when some of the conveyor load fell out and caused discharge at the chute. Due to the belt's outdoor location, additional product (particularly ash) was carried away by the wind. The loss of product also caused dirty rollers, leading to equipment degradation.

Therefore, the customer required a

The LIFTUBE[®] helped a cement works in France to contain product during its transport from one area to another



solution which: • optimised productivity by stopping dust emissions • avoided equipment degradation due to product accumulation • eliminated belt cleaning costs • prevented environmental pollution. To meet these needs, 25m of LIFTUBE[®] with a width of 800mm was installed to fit the existing conveyor belt. Lateral curtains and covers were also recommended to ensure a complete seal. This eliminated 95 per cent of product discharge, with the remaining product loss deemed unavoidable as it originated at the loading and unloading points.

Standard Industrie also carried out the fitting of the LIFTUBE® at a 5500tpd cement works in France. The cement producer was facing significant product loss in its raw material section, leading to high cleaning costs. To avoid product loss and reduce the company's environmental footprint and cleaning costs, 13m of 800mm-wide LIFTUBE® was installed around the chute and the product drop point – areas which were particularly vulnerable to material losses.

Following completion of the project, the cement producer now enjoys the benefit of a fully-contained conveyor installation and has seen cleaning costs reduce by 50 per cent.

Improved plant operation

The installation of air cannons in areas vulnerable to build-ups and the sealing of conveyor belts can bring substantial benefits to the operations of a cement plant. This includes reduced product loss, maintenance and cleaning costs, enhanced storage capacity and productivity as well as the creation of a safer working environment for staff due to the reduction of dust emissions and safer cleaning practices. The implementation of such measures contributes to the smoother running of a cement plant.