New Conveyor to increase Production

Portland Cement Manufacturer installs additional Pipe Conveyor

When a Portland cement manufacturer in Üxheim, Germany, decided to buy additional clinker to increase his production he needed to install reception and transfer equipment to get the delivered material into his storage and production premises. For the conveying part he opted for a pipe conveyor due to its operational and environmental benefits.

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Fig. 1: The pipe conveyor is customised to fit perfectly into the local environment.

Portlandzementwerk Wotan H. Schneider, situated in Üxheim-Ahütte in the Volcanic Eifel in Western Germany has acquired a pipe conveyor system manufactured by Beumer Group to transport clinker to its cement mill. The 200-metre-long conveying system is customised to fit perfectly into the local environment. Since the system is completely enclosed, no material can fall on the road or passing vehicles. Additionally, absolutely no dust is released into the air, which greatly benefits the environment. Furthermore, the conveyor is economical in operation, energy-efficient and maintenance-friendly.

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Cement Plant

Around 380 million years ago, huge limestone reserves accumulated in the lime dell of Hillesheim in the Volcanic Eifel region of Germany. Numerous dolomite formations and several basalt and lava cones demonstrate the geological diversity of the area. At the heart of the region lies the small parish of Üxheim-Ahütte. Portlandzementwerk Wotan H. Schneider KG, informally known as Wotan Zement, has had its plant on the outskirts of the village with 180 inhabitants since 1923. The family-owned enterprise has 70 employees and produces nine cement types. According to techni-

cal director Gerd Morenhoven, these include Portland cement, Portland limestone cement, Portland pozzolana cement, blast-furnace cement and Portland slag cement. These are bagged or filled into silo trucks and transported to construction sites, ready-mix plants, concrete component manufacturers and building material traders.

The enterprise mines the necessary raw materials (limestone and marl) in the Üxheim, Nohn, Berndorf and Kerpen quarries that all lie closely together in the lime dell of Hillesheim. For the manufacturing of cement clinker, limestone and marl are crushed and homogenised with additional raw materials. In raw mills, the materials are ground to the necessary grain size and dried. The resulting raw meal is then homogenised and temporarily stored in large silos.

To produce cement clinker, the coarse intermediate product, the raw meal is first transported into the cyclone preheater. There it is preheated and de-acidified at temperatures of over 950 °C. The material then moves into the rotary kiln where it is burned at temperatures of around 1450 °C. "Due to increased demand for Portland cement we currently need to buy additional cement clinker. It is delivered in trucks to a specially built clinker receiving station", explains the technical director. The cement manufacturer needed an efficient solution for transporting the arriving material to the processing site. "We were looking for an eco-friendly and low-maintenance solution", specifies Gerd Morenhoven. The new conveyor had to be optimally adapted to the existing premises; for example, it had to follow the course of the access road and not lose any material during transport, even on uphill and downhill slopes.

At the feeding station, clinker is transferred onto the pipe conveyor.

For accident prevention and safety requirements, the walkway side of the conveyor structure is covered with perforated plates.

Comprehensive Expertise, optimum Support

For the building material manufacturer, Beumer Group was their first choice to contact for the supply optimal conveying equipment. The provider of conveying solutions has been well-established in the building materials industry for almost 80 years.

Beumer has bundled its comprehensive expertise in the industry and established different centers of competence to offer optimal support to building material manufacturers by providing single-source solutions. The pipe conveyor segment is one of Beumer's centers of competence, which are in charge of worldwide project management and sales. This specific project was carried out in close collaboration between the group companies in Austria and the Czech Republic.

Maximum environmental Protection, minimum Maintenance

"Together with the management team in Üxheim-Ahütte, we developed a solution that is tailored exactly to match the customer's requirements", says Josef Amon, project manager at Beumer Group Austria GmbH, who was responsible for the project. It became apparent that a pipe conveyor was the best solution offering environmental protection

Beumer perfectly integrated the pipe conveyor into the existing system.

and requiring only little maintenance. Wotan Zement already utilises a pipe conveyor and the system has stood its test of time. "The conveyor's closed design reliably protects the environment from dust and people or vehicles from falling load", explains Josef Amon.

The conveyors also offer many other advantages. They are able to navigate long distances and tight vertical and horizontal curve radii. The ability to negotiate sharp curves means that far less transfer towers are needed in comparison to troughed belt conveyors — or, depending on conveying length and curve radii, even none at all. Thanks to this, a customer can significantly reduce costs and Beumer can more easily adapt the system to specific requirements.

Beumer Group supplied and installed a system with a pipe diameter of 200 millimetres and a length of 213 metres. It conveys up to 200 tons of material per hour. Another system advantage is the reduced noise emission of the pipe conveyor. Special idlers, low-noise bearings and electric motors work very quietly. "This makes for a more pleasant working environment for our employees. Besides, the people in the vicinity are not disturbed by the noise. It is an important aspect, since the plant is located on the outskirts of the village", notes Gerd Morenhoven.

The take-up device is installed in the feeding area, where the customer is installing a dedusting unit.

The connection of the pipe conveyor to the existing discharging point was a very challenging task.

Smooth Performance from Start to Finish

Besides the supply and installation of the pipe conveyor, Beumer also took care of all the necessary solutions for ensuring flawless operation. Among other things, Beumer equipped the conveying system with a magnetic separator.

The route of the pipe conveyor now runs along the plant's access road and across a weigh-bridge, before it reaches a two-way chute. There, clinker is either transported to the mill via an existing reversible belt conveyor or taken to the existing clinker store.

Constructive Solutions

Beumer Group was in charge of the entire process. Beumer Austria took over the project implementation: its employees created the basic design and included all the systems supplied by the customer, delivered the components and commissioned the pipe conveyor. Beumer Czech Republic a.s. took care of the detailed engineering, the steel structure and the installation. "We designed the frames so that they could take up the pipeline for pneumatic cement transport supplied by the customer", explains Josef Amon. This pneumatic pipe line was part of another project.

The simultaneous use of the pipe conveyor frames as a pipeline bridge allowed for substantial cost savings in the other project. "The challenge was to execute this without additional supporting structures", says Josef Amon. Furthermore, the engineers integrated the pipe conveyor into the existing plant structure. "However, because the system was quite old, there was very little documentation left", he reminisces. That challenge, too, was successfully mastered by Beumer, as pipe conveyors are quite easy to integrate into existing plants.

The complete project implementation lasted around ten months. Since February 2015 the system has been operating successfully. "We are very pleased", says the technical director, Gerd Morenhoven. "The transport from the clinker receiving station to the clinker store or the mill is performed quietly, quickly and without material loss". ■