

Case note

Dutch chemical giant selects motor-gearing package for its compact size, high output and reliability



Installed on one of the 17 screw conveyors at the DSM plant, this Dodge Quantis right-angle bevel (RHB) gear reducer and ABB low voltage IEC motor creates a highly reliable drive train package.

An ABB motor and gearing package is selected for use on screw conveyors at a new multi-million euro ammonium sulfate plant in the Netherlands. It was chosen for its high reliability, compact design, competitive price, rapid delivery and dimensional compatibility with competitor brands.

Scope of supply

The ABB package features two styles of Dodge® Quantis gear reducers – an in-line helical bevel (ILH) and a right-angle helical bevel (RHB) – powered by ABB low voltage IEC electric motors, for 17 screw conveyor systems. The conveyors, installed at chemical giant DSM's state-of-the-art plant at

Geleen in The Netherlands, are used to transfer ammonium sulfate; a substance that is mainly used as artificial fertilizer and as a raw material for medicines and foodstuffs. The plant has a capacity of 800,000 tonnes per year.

While ABB's motors were selected by the engineering contractor Tebodin, the choice of gear reducer was left to the screw conveyor's original equipment manufacturer (OEM), Van Beek. The OEM traditionally used a rival gearbox, splitting the mechanical parts with one supplier and the electrical parts with ABB.

"The motor and gear reducer are a big part of our conveyors," says Johan van Drongelen of Van Beek. "A screw conveyor has four key components: the screw, enclosure, motor and gear reducer and bearings and seals. If you make a wrong decision, it has a big impact on the project."

Highly reliable drive train package

However, ABB and its Authorized Value Provider, Peters Electro Motors, demonstrated to Van Beek that, together, they could provide a highly reliable drive train package, including electric motors and gear reducers, in a compact, power-dense design and at a competitive price. Better still, the Dodge reducer had identical overall dimensions of competitive brands, so Van Beek would not have to change its conveyor design.

Greater torque density within compact housing

Quantis gear reducers are engineered with greater torque density in a compact housing, which allows Van Beek to use a smaller gearbox while still providing the power and torque required to drive the screw conveyor. Quantis reducers also feature an exclusive clamp collar connection for use with motors that have standard, IEC B5 flange dimensions, making it easy to mount and dismount.

“For more than 20 years, this design has proven to be effective in eliminating the potential for fretting corrosion that can occur between the motor and the gearbox,” says Léon Benne, ABB’s Dodge product manager in The Netherlands. “As a result, the clamp collar connection provides the end user with a simple and reliable method to quickly change the motor during maintenance procedures, years in the future.”

One contact, one invoice, one service package

ABB also supplied high output motors, something the competitors were unable to provide without having to change their gearbox specifications. According to Arjan Scheffers, Peters Electro Motors’ sales manager, high output motors enable a smaller motor frame size to be chosen, while enabling a greater power output. “This, in turn, brings a smaller connection flange, which, together with the smaller gear reducer and the bigger shaft, further enhances the space saving.” The motors are also fitted with vibration and temperature sensors that measure how well the installation is running and helps predict maintenance needs.

“ABB and Peters supported us throughout the entire process, from commercial through to technical, with a first class, high quality solution,” says van Drongelen. “But equally important is that now we are dealing with only one supplier; we have one contact, one invoice and one service package.”

“We approached this project as a real partnership,” says Benne. “It was critical to our success to help Peters and Van Beek meet DSM’s short delivery target, so we provided engineering support to ensure the correct sizes were selected for the application and we made sure the OEM had all of the CAD files and other technical documents in advance of their 3-D modeling work.”

Quick and efficient delivery

According to the plant’s project manager, Rob Reinartz, the DSM facility has to run as hard as it can, as steady as it can, for as long as it can to make money: “The reason we chose ABB is simple: reliability. This plant needs to run without a



ABB’s low voltage IEC process performance motors, from 3.0 to 22.0 kW, were selected for the screw conveyor project. Here the motor is packaged with a Dodge in-line helical Quantis reducer.

breakdown and we cannot take the risk on testing unproven products. The ABB and Dodge brands are recognized for high-quality and reliability.

“The fact that the Quantis gear reducer is the first in The Netherlands is not a problem for us, as we know it has been tried and tested by others throughout the world. We are only interested in products that deliver performance and long-life.

“Furthermore, in view of the size of the order and the importance for DSM of prompt delivery, we select mature companies that supply good quality equipment and who we have worked with before. Security of supply is absolutely critical for us. We need suppliers that we can trust to deliver quickly and efficiently.”

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