Case note
Substantial energy savings and prolonged lifetime of conveyor belts at Vigier Cement

ABB industrial drives provide smooth control of conveyor belts along the 2,642 m downhill route.

Swiss based Vigier Cement Ltd uses a two-conveyor system to transport limestone from its new deposit some 2,642 meters from the crusher on the hill top to the company's cement plant in the valley below.

Vigier Cement wanted to save energy while using as few conveyors and transfer stations as possible. In addition, Vigier also needed smooth stopping and starting of the conveyor belts.

The two-conveyor system includes a tubular belt conveyor in the first 242 m section of the transport route, and a trough belt conveyor with horizontal curves that would take over from the first conveyor and run through a 2,400 m service and transport access tunnel, into the cement plant.

ABB drives minimize energy consumption and reduce installation costs

The tubular belt conveyor is equipped with one drive pulley, two 160 kW squirrel cage induction motors and two ABB industrial drives. The second, the trough belt, is equipped with three, 160 kW squirrel cage induction motors and three ABB industrial drives.

All five drives are coupled to the same supply unit in a common DC busbar arrangement. This construction simplifies the total installation and saves cabling, reduces line currents, simplifies the braking arrangements and enables energy circulation over the common DC busbar.

The braking power generated by the downhill conveyors is transferred to the mains by means of an energy recovery unit, significantly reducing the energy consumption of the complete system.

Energy generated back into the mains in less than two years has been 521,200 kWh. Using variable speed AC drives on conveyors also protects the belts from stretching, slipping or breaking by offering smooth and accurate control of the motor speed and torque. Smooth control is particularly important at starts and when the loads vary. As a result, the lifetime of conveyors is prolonged.

Challenge

– More efficient use of energy
– Smooth control of the conveyor belts, particularly when starting and stopping the conveyors

Solution

– ABB industrial drives coupled to the same supply unit in a common DC busbar arrangement

Benefits

– 521,200 kWh of electrical energy generated back into the mains, in less than two years, for use by other machines throughout the cement plant
– Smooth starts and stops
– No belt stretching, slipping or breaking – prolonged conveyor lifetime

At Vigier Cement, Switzerland, variable speed control of two limestone conveyors, by means of ABB industrial drives, generated back into the mains over 520,000 kWh of electrical energy in less than two years.

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