

Case note

Reduced maintenance costs and energy savings for conveyor belt systems using ABB industrial drives



ABB industrial drives control conveyor belts.

Electric Power Industry of Serbia (EPS) uses lignite (brown coal) for its power plants in Kostolac, Republic of Serbia. The primary supply of lignite is the nearby Drmno open pit mine, where the overburden and coal are removed by a rotary bucket-wheel excavator and then carried away on a belt conveyor system.

EPS engaged mining systems integrator GOŠA FOM A.D. to develop a new conveyor system to reduce wear on the mechanical components and save energy. The old conveyor system used 6 kV slip ring motors to run conveyors at constant speed, no matter the quantity of material loaded on the conveyor belts. This caused wasted energy and needless wear on mechanical components. In addition, uncontrolled start-up caused an excessive drain on the site's supply network.

ABB industrial drives minimize energy consumption and maintenance costs

GOŠA FOM A.D. developed a system of five conveyors with belts 2 m wide, and a total length of 7,950 m. One belt conveyor station has four 1000 kW asynchronous motors that turn the conveyor's drive drum. An ABB industrial drive controls the speed of each motor.

The ABB industrial drives respond to the amount of material loaded onto each conveyor and control its speed accordingly. Smooth starting and stopping of the motors eliminate belt slippage and minimize belt stretching and breaking. This results in longer belt life and increased reliability.

ABB Industrial drives control the belt speed in response to the amount of material placed on the belt. The result is savings in multiple areas such as reduced energy usage, peak power draw and maintenance. According to Andreja Arsenijevic, project manager for GOSA FOM A.D., "We expected to achieve significant savings from electric usage and improved onsite power network reliability. In addition, however, we have found that correct speed control reduces wear on the conveyors' mechanical components, including the 15,000 rollers that support the conveyor belts. This has decreased the mine's maintenance costs."

Challenge

- Control the speed based on the amount of material placed on the conveyor
- Excessive maintenance and repair costs for the conveyor system
- More efficient use of energy

Solution

- ABB industrial drives to control asynchronous motors of conveyor belts
- Control of conveyor start, stop and speed
- Conveyor speed matched to the demand

Benefits

- Improved reliability of the conveyor system
- Reduced energy and maintenance cost due to intelligent control of conveyor start, stop and speed
- Easy connection to plant automation systems via fieldbus adapters



15,000 rollers support the conveyor belts.

For more information please contact:

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