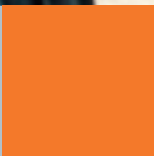


Higher efficiency in conveyor drives.
SIMOVERT MV in a brown coal mine



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Siemens equips a brown coal mine with a variable-speed conveyor belt drive

The speed of variable-speed conveyor belt systems is automatically adapted to the amount of material which has to be transported. This means that they reduce the energy used along with the mechanical wear. SIMOVERT MV medium-voltage drive converters are used to control the speed of the conveyor belts for the brown coal mine of Welzow Süd belonging to the Lausitzer Braunkohle AG.



The four motor/drive converter systems (SIMOVERT MV medium-voltage drive converters and squirrel-cage induction motors) at the drive station power a conveyor belt which is presently 2.6 kilometers long. The overburden removed by the excavator is transported along this belt to the stacker. For a conveyor belt speed, which can be controlled between 3 and 6 m/s, 26,200 tons of material can be transported every hour.

Saves energy and reduces the stressing on the equipment

The operating company selected a variable-speed conveyor belt drive as a result of the energy-saving mode of operation and the fact that it reduces the stressing on all of the associated equipment. When compared to traditional concepts, in brown coal mining, up to 20 % energy can be saved. This of course depends on the specific application. The soft, jerk-free acceleration and braking characteristic of a variable-speed conveyor system, means that mechanical elements such as gearbox, drums, rolls and the belt itself are subject to far less stress. Further, by suppressing belt oscillations, the mechanical stress is also reduced, especially that which is placed on the bearings. The drive is electrically braked down to a speed of approximately 10 % of the rated speed which significantly reduces the natural wear of the mechanical brake pads.

For multi-motor drives, this drive technology also allows the torque to be evenly distributed between the individual motors.

In this particular application, there are four H-Compact three-phase squirrel-induction motors each with an output of 2000 kW.

Higher availability with less service and maintenance

Each motor is fed from a SIMOVERT MV medium-voltage drive converter with an output of 3100 kVA. As a result of its design, this series of drive converters requires little maintenance and has a high availability. The reason for this is that it is the first medium-voltage converter which uses HV-IGBT power semiconductors. Together with the three-level voltage DC link, the HV-IGBT modules permit a clearly structured design – modular, space-saving, extremely reliable – but still with a high degree of service-friendliness. This is not possible in this form when using other power semiconductors, because the HV-JGBT is the only component in its class which can be operated without any snubber circuitry. In conjunction with the gating circuitry, the HV-IGBT modules form intelligent switching units which guarantee optimum drive converter protection. For instance, short-circuit currents are limited and interrupted.

New perspectives

Medium-voltage drive converters are not only used to optimize conveyor belts to remove overburden or transport coal. In fact, in many other applications, they can significantly lower the energy requirement, lower the amount of service and maintenance required and increase the availability.



SIMOVERT MV is the first medium-voltage drive converter equipped with HV-IGBT power semiconductors. When required, it can be equipped with an Active Front End, for example if braking energy is to be fed back into the line supply.



Using the harmonized motor/drive converter systems, the speed of conveyor belt drive stations can be controlled therefore increasing their efficiency.



Rugged H-Compact high-voltage motors also play their role in achieving a high reliability of the complete system.

You will find more information under www.siemens.com/simovert-mv



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