Case note
Sugar production increases 20 percent with ABB drives

Red Sugar uses ABB general purpose drives to control the speed of the centrifuges that it assembles for the Russian sugar industry.

Red Sugar assembles machinery, such as centrifuges, for the Russian sugar industry at its plant in St Petersburg. It uses mechanical parts made by sugar machinery manufacturers in Europe and North America. The company also refurbishes existing sugar processing equipment and provides servicing as well as consultancy to the Russian sugar industry.

AC drives help separate crystals from liquid

Sugar centrifuges process massecuite, a thick concentrated compound of sugar crystals and syrup, at high speed. Red Sugar uses a 250 kW ABB general purpose drive to control the speed of the centrifuge, which starts at 50 rpm and accelerates to 1100 rpm before settling back to 50 rpm. During this process, the sugar crystals are separated from the liquid. The cycle takes about three minutes.

The sugar crystals produced in this process are known as A-strike sugar. This is discharged for drying and eventually packaged as refined sugar. The process also produces molasses, which can either be fed back to an earlier stage and processed again, or used as a lower-grade sugar product.

Accurate speed control reduces production time

The accurate speed control of the ABB drive reduces the time needed for the separation. Shorter cycle time means higher throughput as more batches can be completed each shift. It also means higher yield, as it prevents sugar from dissolving into the molasses by suspending the crystals in the liquid for a shorter time.

Red Sugar can help its customers increase production by as much as 20 percent, just by improving centrifuge efficiency.

Reducing maintenance and improving process reliability

Russian sugar refineries are continuously exploring ways to make their processes more efficient and to lower maintenance costs. One solution being explored by Red Sugar is the use of ABB low voltage AC drives.

"In the past, many sugar refineries preferred using basic equipment because it was easy to repair," says sales manager Denis Kuharenko. "This attitude is now beginning to change. It is better to have machinery that doesn't break down in the first place, than to make provisions for frequent failures and expected repair work. Improved uptime increases productivity and is an easy way to raise the output of the plant, far easier than investing in more capacity."

Rapid modernization

There are about 80 sugar refineries in Russia, mainly located in the central and southern parts of the country. The Russian sugar industry is currently undergoing rapid transformation and modernization.

Red Sugar has chosen to work with ABB drives due to the good technical support provided by ABB. Through the use of ABB drives, Red Sugar helps its customers to maximize uptime and minimize the batch cycle time by accurately controlling centrifuge speed, providing rapid acceleration and deceleration. With the help of Red Sugar, the number of AC drive users in the Russian sugar industry is now increasing rapidly.

Challenge

- Low reliability of existing sugar centrifuge installation
- Costly to raise output by increasing plant capacity

Solution

- The ABB general purpose drive enables accurate control of centrifuge acceleration and decleration, resulting in shorter cycle time

Benefits

- Centrifuge breakdowns eliminated
- Improved process accuracy and sugar yield
- Increased output without investment in additional plant
- Better centrifuge efficiency improves productivity by up to 20 percent
- Using AC drive and motors reduces maintenance costs, cuts downtime and improves plant availability

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