Case note
Machinery drives help meet dairy process hygiene standards

ABB drives are bringing high reliability to Valio's CIP system.

Valio, Finland's leading dairy producer, has two ABB machinery drives installed in the cleaning-in-place (CIP) system within one of its cheese dairies. For efficient and reliable cleaning of the process pipelines, it is essential that all components belonging to the CIP system operate trouble-free.

In the dairy industry, as in all food and drinks processing, meeting the strict hygiene standards is a primary concern. For example, the process tanks and pipelines must be efficiently cleaned and sanitized after each production run.

CIP is a method for cleaning the process equipment quickly and efficiently without needing to dismantle the equipment. The cleaning solutions are taken from a storage tank, circulated in the process tanks and pipelines and returned to the storage tank.

The system includes various types of valves and pumps, such as wash pumps for circulating the wash solutions in the piping and scavenge pumps to help return the solutions to the storage tank.

The ABB machinery drives are installed in the CIP10 and CIP11 wash lines for pipes. The drives control the centrifugal pressure wash pumps through a speed reference supplied by the plant automation system as a 4 to 20 mA current signal to the analogue input of the drives.

Matti Salmi, process manager for fresh cheese processes in Joensuu, explains: "The drives installed in these wash lines control the pump speeds to maintain a constant pressure and flow rate in the pipes. It's important that the pressure and flow rate of the cleaning solutions passing through the pipes stay uniform throughout the wash cycle in order to remove all debris and soil completely."

At the Joensuu plant, the ABB machinery drives are integrated with the process automation and programmable logic controllers (PLCs). “The drives and PLCs communicate seamlessly and it was very easy to integrate the drives with the plant automation,” Matti Salmi says.

“Our most important requirement for pumps and drives is, however, 100 percent reliability of operation to ensure full-time availability of the processes. ABB drives have been used in numerous applications at the Joensuu plant since the late 1980s. The ABB machinery drives have been running trouble-free since they were put into service and we are completely satisfied with these drives.”

Problem solved

- An effective system to control the motors driving the pumps in the washing processes was needed.

Solution

- Two 4 kW ABB machinery drives are installed in the CIP10 and CIP11 wash lines for pipes. The drives control the pumps’ speed to maintain the constant pressure and flow rate. A speed reference is supplied by the automation system as a 4 to 20 mA current signal to the analogue input of the drive.

Benefits

- Provide high reliability during operation, thereby ensuring full-time availability of the processes.
- Control the pump speeds to maintain a constant pressure and flow rate in the pipes.
- Allow the speed of the wash pumps to be ramped up smoothly to the required speed thereby preventing damage to numerous bleed valves.
- Drives integrate with the process automation and programmable logic controllers.

The CIP wash solutions are circulated in the pipelines by centrifugal pressure wash pumps, the speed of which is controlled by ABB machinery drives.

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