



Security of supply and flexibility in a milk drying plant

The power makes the difference

Maximum operating safety and flexibility — these were the requirements for the power supply at the new section of the Deutsche Milchkontor GmbH plant in Zeven, Germany. A comprehensive power supply solution with standardized technology from Siemens optimally meets these requirements.

Consumers who buy fromage blanc, coffee cream, or cheese in the supermarket often have a product of Deutsche Milchkontor (DMK) in their hands, because with some 8,900 supplying milk producers, 7,400 employees at 26 locations, and 6.8 billion kilograms of milk processed per year, DMK is Germany's largest milk processor. Especially in growth markets such as China and Russia, dairy products from Germany are in demand, particularly milk powder, which is easy to transport and has a long shelf life. To better serve these markets, a completely new plant section was created at the DMK headquarters in Zeven in Lower Saxony.

The production process here extends from receiving the milk to drying to packaging and storage of the milk powder. At the heart of the system is the 50-meter-high spray tower, where the milk is atomized into a fine mist. The

milk concentrate is sprayed through the atomizer nozzle in a continuous flow into the drying air in order to remove the water from the milk. The result is a long-shelf-life milk powder that is completely soluble in water and that is then further dried and sieved. Approximately 3.2 million kilograms of milk are processed daily at the Zeven site. On average, a new milk truck carrying 25,000 liters arrives every 12 minutes. The company cannot afford production downtime because milk spoils quickly. Operating safety and flexibility were thus paramount for the power supply of the new milk drying plant.

Completely safe

The first challenge in planning the power supply was estimating future consumption. The solution needed to reliably cope with future demand in the new

plant building while at the same time ensuring that with the new capacity other additions could also be supplied with power. The importance placed on security of supply is reflected in the overall design of the system. "The fact that the power supply must be ensured through continuously redundant elements in the form of a ring circuit was something we decided on very early," explains Henry Klie, head of maintenance at DMK Zeven.

The transfer station consists of two infeed points: an existing 20-kV medium-voltage switchgear assembly and the extension through an NXPlus C power distribution board from Siemens. If one of the two systems were to fail, the other would easily take over the entire supply. From the transfer station itself, two independent supply lines run to two medium-voltage switchgear assemblies of type 8DJH via a north and

Everything from a single source

The comprehensive solution with standardized technology from Siemens starts at the transfer station and ends at various subdistribution boards located in the plant. "We chose Siemens because quality and safety were our highest priorities from the beginning," explains Klie. "In addition, we've had positive experiences with Siemens in a variety of previous projects. Through state-of-the-art software solutions for detailed planning of the project, Siemens also provides enormous support before the actual implementation."

At the facility in Zeven, DMK has been relying on Sivacon switchgear assemblies for eight years. "This has been a proven technology that we have now established as the standard," explains Klie. The modular system in particular allows for unrestricted combination of components. In addition, with Sivacon all performance ranges of the technology can be covered. The technology is always the same; only its implementation changes. Specifically, this means that the six currently authorized operators at the plant do not have to be re-trained on new systems — which saves time and reduces costs. It is also easier to procure spare parts. Through pre-



From the transfer station, two independent supply paths lead to two 8DHJ medium-voltage switchgear assemblies separated by a firewall

south cable. These are separated from each other by a firewall. Upstream are nine Geafol cast-resin transformers with a capacity of 1,600 kVA each. To further secure the supply, the planners incorporated redundancy for the transformers as well.

Cast resin instead of oil

To place the transformers and the upstream Sivacon S8 low-voltage power distribution boards close to the main loads, the components had to be lifted into the building shell at heights of 12 and 18 meters. This was the reason, together with the calculated idle capacity, for choosing Geafol, because at this height, performance limitations are not uncommon with oil transformers, for example. Cast-resin transformers can also be shut down for half a year or longer without any problems, which was particularly important for the flexible power supply in the plant. The Geafol models are converter transformers that can better deal with line harmonics than conventional transformers. In addition, 100 percent utilization is possible with them, while ordinary transformers can operate at up to only 60 percent capacity due to the frequency-converter load. Another special feature is that the transformers and the low-voltage main distributor can be switched, which offers improved flexibility and safety.

The eight Sivacon S8 low-voltage main distribution boards (LVMDB) with 40 panels are fitted in the incoming feeder and outgoing feeder units with Sentron PAC3200 and PAC4200 multi-function measuring devices. The data measured by the devices are evaluated centrally. If values deviate from the standard, the operator is automatically informed. The WinCC process visualiza-

tion system also enables monitoring of medium-voltage switchgear, transformers, and low-voltage distribution boards.

The high standards for operational safety are demonstrated also with the control cabinets. In order to troubleshoot individual components quickly and smoothly, DMK relied on draw-out technology from the outset. For example, maintenance work can be carried out without disconnecting the entire system from the voltage. For further distribution to the individual loads, five Sivacon S8 power distribution boards have been installed as subdistribution boards.

“We chose Siemens because quality and safety were our highest priorities from the very beginning.”

Henry Klie, Head of Maintenance, DMK Zeven

cisely coordinated products and systems as well as technical support services in the planning phase, the underlying Totally Integrated Power (TIP) concept from Siemens ensures continuous and thus highly efficient and reliable power distribution — from the medium-voltage infeed to the points of consumption. ■

INFO AND CONTACT

siemens.com/tip-cs
michael.ender@siemens.com