



Reliable even if  
deep-frozen

User Article: Safe door control  
with SAFEMASTER STS

The industrial production of frozen food often brings the components used to their limits. In addition to the high-pressure cleanings mandatory in the food industry there are huge temperature fluctuations whenever the facilities are “defrosted” for cleaning purposes. A system that meets the expectations under such harsh conditions is the key transfer system SAFEMASTER STS from Dold providing safety for the facilities of Iglo in Reken.

In the early 20<sup>th</sup> century the success story of frozen food started. At that time, new refrigerators allowed to preserve different kinds of food at appr. -20 °C. The benefit: The food remains fresh, important nutrients or vitamins are hardly affected. To preserve the high quality of deep-frozen vegetables - especially green leafy vegetables - it is essential to keep the time between harvest and deep-freezing as short as possible. This is why the plant of Iglo, where deep-frozen spinach is produced, is based in Reken in the Münsterland, in the midst of one of the largest vegetable growing areas in Germany.

### Complete facilities in the deep-freezing area

The processing of vegetables passes through different stages: cleaning, washing, cutting, blanching, packing, freezing and palletizing. A major part of the machines and facilities is located in the refrigerated production area. At the end of the process, the deep-frozen vegetables are transported into the cold storage from where they are forwarded along the logistics chain via distribution centres and retail stores into the deep freezer at home. In the production of Iglo, employee safety has top priority. All machines and facilities whose moving parts could endanger employees are secured by respective measures. “These facilities can be quite big, covering a few hundred square metres”, Jörg Schäfer provides an impression of the size. The state-certified electrical engineer is responsible for the automation and control programming at Iglo. All in all, four employees from his department make sure that the automation of the facilities is going smoothly, and they are also responsible for machine safety. Safety fences closing off the whole area are usually installed around larger facilities.



The facilities for the production of deep-frozen vegetables in Reken are largely installed in the refrigerated area.



The doors are safeguarded with the SAFEMASTER STS system.

Employees have access to the facilities via doors in the security fences to be able to perform cleaning or maintenance work. “A respective safety circuit monitors the doors so that they can only be opened when the facility is at a standstill”, Schäfer says. As Schäfer explains, the very big facilities entail another challenge: “Wherever employees can move behind the fence there is the danger of a colleague accidentally closing the door and putting the facility into operation again.” In order to prevent this danger, the Iglo department has safeguarded the doors with a system of the type SAFEMASTER STS from Dold.

Such a system that is always connected to a safety PLC is located next to the door. If an employee wants to open a door, he first has to request the opening via pressing a button. After that, the safety PLC switches off the facility. As soon as the facility stands still, the employees can remove a key from the SAFEMASTER STS system. A module working in a purely mechanical mode is attached to the door. The employees have to insert the key into this module and then can take out another key. Only then the door lock opens the door. The employees put this second key into their pockets and take it with them when entering the facility. "In this way they are effectively protected from colleagues accidentally closing the door and starting the machine", Schäfer explains: "If the key is not inserted into the STS system, it cannot be locked and the safety PLC prevents the facility from being started."

### Extreme temperature differences as a challenge

All components are faced with a particular challenge by the fact that the facilities are installed in the refrigerated area where production takes place at a temperature of -20 °C. The hygiene requirements in the food industry make it even more difficult. This is why SAFEMASTER STS components made of stainless steel are used in this application. "Our facilities run in three-shift operation from Sunday night to Friday night", Schäfer explains.



In its stainless steel version the SAFEMASTER STS system is also resistant to rough ambient conditions.

After that, the cooling is switched off so that the employees can clean all facilities at temperatures above the freezing point. As usual in the food industry, this cleaning is made not only with cleaning agents but also with high-pressure cleaners. Components used in this area must be able to withstand these rough conditions, in spite of frequent temperature changes. After the cleaning, the whole area needs to be dried before the cooling can be switched on again on Sunday. For this purpose, large ventilators are used to blow away the humidity on all components of the facility. According to Schäfer's experience, this change between very low temperatures, wet cleaning, drying and renewed cooling creates great challenges to all components used in this area: "Even with very well protected electrotechnical components there have always been problems with condensation water." This is why Iglo decided for the SAFEMASTER STS system. The robust and high-quality stainless steel design is perfect for applications in rough environments. The system works reliably in the wide temperature range of -25 °C to 60 °C. Furthermore, the high safety requirements up to PL e according to DIN EN ISO 13849-1 can be fulfilled.

## Robust system easy to install

“Our team has performed the retrofitting of the new system on its own”, the electrical engineer explains: “It took us a few months as we could only work on the installation and start-up during the production breaks.” All in all, the installation was completely without any difficulty. Since the retrofitting was finished the system has been working absolutely reliably. “Faults and failures by condensation water as experienced once and again with other components are now a matter of the past”, Schäfer summarizes his experience.



Jörg Schäfer, who performed the installation and start-up of the safety technology together with his team, is satisfied: “The SAFEMASTER STS system works absolutely reliably.”