

MACHINE SAFETY IN THE PHARMACEUTICAL AND FOOD INDUSTRY

CUTTING FROZEN PRODUCTS – BUT SAFELY

Food manufacturers around the world use Magurit freeze cutters. The company sets standards in terms of quality, productivity and machine safety. It therefore goes without saying that the components installed, such as safety switchgear, must also fulfil the high standards. Added to this are requirements such as tamper protection and hygienic design. In the following article, you will find out what is important and what solutions are available.



Slices, strips, cubes, pieces: Whatever form the food manufacturer wants to cut their (frozen or fresh) preliminary and end products, for example meat, fish or fruit concentrates, Magurit Gefrierschneider GmbH supplies the machines to do it.

The company, based near Cologne, is in many ways typical for the German engineering industry. It can look back on a long tradition (founded in 1859) and continuity (family-run in the fifth generation). And Magurit is the only company in the world to specialise in the manufacture of machines for cutting frozen raw materials in the food industry. This explains the “hidden champion’s” export ratio of around 80%. At the same time, Magurit is constantly developing new applications and technologies. The most striking example is probably the development and production of freeze cutters for the pharmaceutical industry, more specifically for frozen blood

plasma, which serves as a valuable basis for many medicines. Here, Magurit designs and builds sophisticated, customer-specific systems that are subject to the complex rules and regulations of pharmaceutical production and even stricter hygiene regulations than in food processing.

Machine safety: continuity and innovation

When it comes to machine safety, the company also relies on a combination of continuity and innovation. Continuity applies to the cooperation with Schmersal, which has now lasted for several decades. And innovation applies to the selection of safety switching devices and the associated signal evaluation. This is demonstrated, for example, by the fact that the Protect Select OEM compact safety controller from the Schmersal range is used across all series.

Customised and compact: the safety controller

With the Protect Select series, Schmersal has closed the gap between the standard safety monitoring modules on the market and a “full-blown” safety controller. It was developed for manageable applications, i.e. for up to five safety functions, and the user does not have to do any programming. Instead, he selects one of several preconfigured application programmes and defines the desired parameters (input assignment, debounce and drop-out delay times, etc.) via menu navigation and plain text display.



Fig. 1: Developed for machines in the food industry: the hygiene-compliant operating and control devices in the N programme



Fig. 2: Depending on the application – here on a system for pharmaceutical production – non-concealed, coded safety sensors are also used



Fig. 3: A conversation in the Magurit production facility: Anton Ivanov, Schmersal Food and Packaging Sector Manager, Dipl.-Ing. Uwe Stollenwerk from Schmersal sales partner Büro Stollenwerk and Dipl.-Ing. Dino Vieth, Managing Director of Magurit (from left to right).

Safety compact control unit in customised version

Magurit has already been using a customised version of the safety modules for around 25 years and is maintaining this strategy for the compact safety controller. With the Protect Select OEM, Schmersal offers customers the option of specifying the desired functions. A fully programmed control unit is then supplied.

The advantages offered by this concept of safety-related signal evaluation are manifold. Dipl.-Ing. Dino Vieth, Managing Director of Magurit: "We now use a standard safety controller across the series according to the 'one for all' principle, in which we can activate the required functions in each case. This control system is validated and we simply select which features are required. This is easier than using different combinations of safety modules as before." And the system remains flexible too: a stop 1 function is currently being added to the programme selection.

Smooth changeover

According to Dino Vieth, the changeover from the relay modules to the customised compact safety controller went smoothly: "The safety experts from Schmersal provided us with good support and were able to understand our requirements. We have also worked well with Stollenwerk as Schmersal's representative for many years."

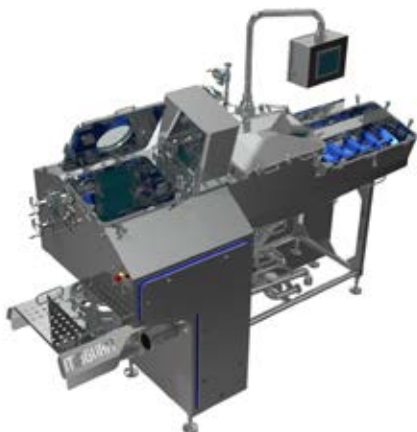


Fig. 4: System for cutting frozen blood plasma

In addition to the technical advantages, there is also a commercial benefit. Dipl.-Ing. Uwe Stollenwerk, Technisches Büro Stollenwerk GmbH: "If a Protect Select replaces two or more relay modules – and this is often the case with Magurit machines – the user also saves costs."

Safety sensors: The art of "hidden installation"

A well-thought-out solution is also used to monitor the position of the safety doors and protective hoods that safeguard the danger zone of the cutting unit. As the hygiene requirements for freeze cutting are very high, Magurit uses non-contact safety magnetic sensors. These sensors are concealed behind a stainless steel cover and the associated uncoded actuating magnets are hidden in the stop buffer of the protective cover. In practice, this effectively prevents the risk of tampering (with the aim of bypassing the safety guard or rendering it ineffective).

Uncoded magnets are used here because safety sensors with coded magnets have such a small switching distance that strong vibrations – which cannot be avoided during freeze cutting – can cause the machine to switch off. If this risk can be ruled out, Magurit also uses open-mounted safety sensors with coded magnets.

Operating elements with a high standard of hygiene

High hygiene requirements also apply to the man-machine interface of the freezer slicers. They can be met with the N programme from Schmersal. These command and operating devices are constructed according to the principles of "hygienic design". They are optimally sealed, can be cleaned easily and are also free of dead zones in which product residues or liquids could settle. And the programme is so large that all operating functions can be mapped easily and hygienically. Dino Vieth: "We use this programme for the simpler machines that don't require a touch panel, or as a supplement to the touch panel – and of course for the obligatory emergency stop button."

A change is imminent: Schmersal has introduced a completely new series of operating and command devices, the H series, which will replace the N series after more than 25 years and which Magurit will use in future. The advantage of the new H series is that it meets the requirements of DIN EN ISO 14159 and the new version of EN 1672-2 as well as the new regulation 10/2011/EU. In addition, the H-Series has a modular design and is therefore very flexible.

MULTIFUNCTIONAL

More versatile and flexible than safety modules: the parameterisable Protect Select compact safety controller in an OEM version. It is used in all Magurit series and, with its numerous programme selection functions, allows flexible adaptation to the application.



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