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Hygienic design is an absolute must Safety solutions for the food industry

Manufacturing and operating food production machines involves complying not only with norms and guidelines on machine safety, but also with very strict hygiene and design requirements. This is why the Schmersal Group has developed a whole range of Hygienic Design safety products for this sector - from control elements and safety sensors to opto-electronic safety light grids.

The Schmersal Group has developed the N-range specially for the food industry and other hygiene-sensitive applications, with the abbreviation "N" standing for the German for food industry. This product range consists of a wide portfolio of control and signalling devices and a large number of accessories which comply with the principles of Hygienic Design. These include emergency stop buttons, mushroom push-buttons, push buttons, illuminated push-buttons and lamp indicators, selector switches, main switches and much more. Hygiene-compliant design means: The operating devices are designed so that no contamination can settle; as their geometry has no corners and edges, which allows them to be cleaned easily. As well as the aspect of geometry, the colouring of open sealing parts is also relevant. On the one hand, this allows contamination to be seen, while on the other hand, any parts of the seals which break off and get into the flow of food can be easily filtered out. Schmersal covers this requirement using the three colours of black, white and blue for virtually all foodstuffs to be produced.

Based on the strict hygiene standards, especially for parts of food machines and peripherals which come into contact with the products, there are very strict requirements in terms of the degree of protection and cleanability of safety sensors, light grids, command devices and control elements. These ranges are therefore at least IP69K and sometimes even higher. These switchgear devices must withstand a water jet of at least 80 bar and a temperature of 80 °C. The control elements of the N-range are also fitted with a special sealing system which is not only resistant to water jets and high-pressure water in combination with high temperatures, it is also resistant to the particularly aggressive detergents used during the cleaning process.

Schmersal is constantly expanding its N-range. Among the new additions are, for example, the 3-colour LED module ELDE.N, which provides the conditions for displaying three different notifications or control commands with a single standard signalling device. This enabled the designer to reduce the operating unit. The number of surfaces which are potentially at risk of soiling is also reduced. The reduced number of operating and display elements also saves costs and improves the operator's overview.

A completely new development is the hygienic joystick switch of the NK series. The NK-joystick switches offer the machine designer completely new possibilities in machine design and machine operation. A special sealing concept enables the joystick switches to be installed completely open, depending on the application. This means that the joystick switch not only offers the high degree of IP69 protection for the front panel but also offers IP67 protection on the rear side – which makes the complex inner cladding of the switching contacts unnecessary.

The command and signalling devices in the N-range from Schmersal are also suitable for use in clean rooms of air purity class 2 in accordance with ISO 14644-1 and hygienic areas up to GMP class C in accordance with EU GMP Annex 1. They have also been tested by the food and packaging testing and certification office of the DGUV for suitability for hygiene-sensitive applications. This means the control devices can be used, for example, in meat processing machines or machines which process other raw ingredients such as fish, poultry, milk or eggs.

As well as the devices in the N range, Schmersal has prepared other safety components, including safety sensors and



Fig. 1: The N program control elements – in the mushroom push button NDTP30 – were developed for the requirements of the food processing industry.

opto-electronic safety products, for the specialist hygiene requirements of the food industry. These include contactless safety sensors which are easy to clean thanks to the smooth surfaces of the sensor and actuator and can also be fitted on a concealed basis. Depending on the requirements, these safety sensors are also tested and certified in accordance with food technology standards (Ecolab, EHEDG, BG test certificate, FDA, etc.). For example, Schmersal has developed the BNS 40S safety sensors in a stainless steel casing and in degree of protection IP69K specially for monitoring safety doors on food machines. They are particularly suitable for use in hygiene and wet areas. This also applies to the safety light grids in the SLC 420/440/445 range, which are also made to IP69K degree of protection. Opto-electronic safety light curtains and safety light grids are particularly suitable for securing conveyor and feed systems on packaging machines. Numerous additional functions such as muting or blanking enable a differentiation between man and material, which means the material flow is only interrupted if a hazardous situation arises.



Fig. 2: Schmersal also offer ready-to-connect NBG mounting housings for the man-machine interfaces of food machines.



Fig. 2: Special seal: The hygienic joystick switches of the NK series have a special sealing concept.

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