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SAFETY AND RAPID DIAGNOSTICS

A PULL-WIRE EMERGENCY-STOP AS A SAFETY COMPONENT IN BESPOKE CONVEYOR SYSTEMS

'Do it yourself' is the approach taken by a materials handling manufacturer to create a completely new business model. Users can now go online to configure and order conveyor belts designed to meet their individual requirements. Systems are delivered quickly and can then be constructed and commissioned promptly on site. Pull-wire emergency-stops from Schmersal are being used as a protective device in these new modular systems.

Many areas of industry are on the lookout for solutions to the challenges posed by the continuous conveyance of bulky goods – and they are finding them – often in the form of conveyor systems tailored to individual tasks and customer requirements. Westeria Fördertechnik GmbH of Ostbevern, Germany develops and manufactures bespoke systems for use worldwide. Its systems have become renowned for their lengthy service lives, even in harsh environments. Typical customers are recycling plants and cement manufacturers.

Westeria is now keen to demonstrate how digitisation can open up new opportunities in materials handling – not only in production, but at the 'front end' of sales as well. The medium-sized enterprise has recently launched its new business model 'WeKea' to the materials handling industry. Here's how it works: the user goes online and plans out a fully bespoke conveyor system using the modules available. The online configurator is easy to use and offers a menu-guided interface and parameter selection – from dimensions to support system to details such as transfer chutes and covers. In the background, the software determines the design parameters and determines the construction elements.

Plan and calculate conveyor systems faster

This alone is not particularly unusual. But what's special about this new model is the link-up with a calculation program. In other words, the user can always see the fixed price for the system that he is creating. Once he decides to opt for the system, the quote can be printed out immediately. In addition, the system also generates a 3D diagram as a STEP file, which the customer can use for system planning. Where once there would have been a lengthy coordination phase lasting perhaps several weeks, the WeKea configurator cuts this down to a fraction of the time.

Once the order has been placed, the process continues apace. Most parts are available pre-produced and in stock and thanks to the modular system, on-site personnel can assemble the conveyor themselves. In addition, all parts have been carefully designed to save as much space as possible, at the same time saving on freight costs. Managing director Dipl.-Ing. Felix Poth explains, 'Where in the past we might have needed ten containers, we can now get by with just four. This reduces transport costs and helps to increase our competitiveness in many strong growth markets.'

A pull-wire emergency-stop for safety

The concept of the WeKea system revolves around its modular construction. This has necessitated careful consideration of the safety technology, both in terms of the high level of safety required and the modularity and flexibility of the components.

The traditional machine safety solution for conveyor belts is the pull-wire emergency-stop, which functions a little like an 'extended emergency-stop button' – when the user pulls on the wire, which is typically stretched over the entire length of the system, the hazardous movement (in this case the rotating conveyor belt) is safely brought to a halt. The belt can then be restarted only after the switch has been manually reset.

Reliable shutdown along the conveyor belt

The ZQ 900-22 pull-wire emergency-stop from the Schmersal range helps the WeKea modular system to satisfy the relevant safety standards. It also enables reliable shutdown at any point along the conveyor belt. Furthermore, it also satisfies the requirements of product standard EN 620 for continuous handling equipment and the stipulations for emergency-stop devices in accordance with ISO 13850 and IEC 60947-5-5. Alongside defined actuation forces and paths, these requirements also include a wire breakage function – in the event that the wire were to break or lose the required tension, the emergency-stop function would trigger immediately and bring the conveyor system to a halt.

The contact combination with two normally-closed and two normally-open contacts ensures reliable shutdown as well as quick and rapid diagnosis. International approvals also mean that the product can be used worldwide. The large terminal compartment in a die-cast zinc enclosure facilitates straightforward installation, while the external sealing collar and degrees of protection IP65 and IP67 prevent the ingress of contamination into the enclosure.



Fig. 1: Despite standardisation, WeKea conveyor systems are versatile and configurable to individual requirements.



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Fig. 2: The ZQ 900-22 -22 pull-wire emergency-stop from Schmersal is the integrated protective device in the WeKea modular system.

Conveyor belt modules including safety technology

The ZQ 900-22 pull-wire emergency-stop has been tailored to the needs of the WeKea system in close consultation with Westeria, including the fitting of customer-specific type plates and integrated threaded plugs. More important though was the need for the pull-wire emergency-stops to be integrated into the modular WeKea conveyor belt elements. This brings the advantage of a ready-to-use solution for the individual conveyor belt modules which, together with the relevant safety technology, can be combined at will to form an overall system. In addition, there is not just one pull-wire emergency-stop for each module –the length of the wire can be easily adjusted to the size of the system in question.

Safety solutions for conveyor technology

When developing the safety solution for the modular WeKea system, Schmersal was able to fall back on decades of experience in conveyor technology and heavy industry. Schmersal offers users in the industry a comprehensive range of mechanical and electronic system components, including belt misalignment switches, command and signalling devices and belt speed monitoring devices, which are used worldwide in bulky goods processing operations. In addition, the materials handling industry can also rely on Schmersal for complete solutions from a single source as well as global service from the Group's technical service division.



Fig. 3: When the operator pulls on the pull-wire emergency-stop, hazardous movements are safely brought to a halt.