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Foot contact welcome

Wireless foot controls for ergonomic and safe machine operation

In casting and forming plants, a foot control is an important element of the human-machine interface – also and especially regarding the triggering of safety-related functions. Now wireless safety foot controls are available for this task, providing users with improved ergonomic comfort and greater freedom of movement.

Operating a machine or device by foot control leaves both hands free for working. This holds true for activities such as bending and forming sheet metal, but also for more delicate and complex tasks: in hospital operating rooms, for example, foot controls assume many different functions and can be custom made to suit the device in question. In comparison, foot switches for industrial applications tend to be less complicated in their design, but in turn are far more robust. And – something which they do have in common with foot controls for medical equipment – they are increasingly radio-controlled. Eliminating the connecting cable between the actuator and the machine has several advantages. The switches can be positioned more freely, which improves ergonomic comfort. There is no cable lying around on the floor, which increases occupational safety. Particularly in rough industrial environments, the risk of a cable being damaged, for example by flying sparks, is also eliminated.

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This increases machine availability and saves money.

The basis: a safe wireless protocol

The wireless safety foot switches transmit their signals using the sWave 2.4 Ghz-safe wireless protocol developed especially by steute. This protocol achieves performance level 3 to EN ISO 13849 and SIL 3 to IEC 61508. It is based on the physical layer of the IEEE 802.15.1 standard. Its high level of reliability due to FHSS (Frequency Hopping Spread Spectrum) on 79 channels and its good coexistence with other wireless systems make it particularly suited to rough industrial environments. The overall transmitter/receiver system – as is only to be expected for safety-related applications – is fundamentally a two-channel system. A further safety feature is an integrated sensor: the foot switch can only be actuated when it makes flat contact with the floor. In addition, foot switch and receiver can be clearly assigned to one another, meaning that several safe foot switches can work in parallel within one wireless zone.

Sleep mode for a longer battery life

The foot controls are powered by battery, a prerequisite for a highly available bidirectional wireless connection. Intelligent operating modes guarantee a long battery life. If the foot switch is not being used, no safe wireless connection needs to be maintained. The system falls into a kind of sleep mode, but when required can restore its safe wireless connection within milliseconds. A fast connection and a high transmission reliability can be achieved even in unfavourable ambient conditions. The system, comprising the wireless foot control and its receiver unit, has an ec type examination certificate and is classified at performance level (PL) d to ISO EN 13849-1, as well as Safety Integrated Level (SIL) 2 to IEC 62061.

Variant: standards-approved enabling switch for presses

In press brakes, foot controls with special switching inserts, called enabling switches, are used. They are described in the DIN EN 60947-5-8 standard. Characteristic for these switches is their three-step operation. The enabling function is activated in the middle position. As soon as the operator moves the enabling switch to one of its end positions, either by pressing the pedal further or by letting it go, the machine or its hazardous movement is immediately stopped. This guarantees that the enabling function is only activated when the operator consciously triggers it, for example when setting up the machine or when performing trial strokes after a machine has been restarted. For this application safety-related wireless foot controls in one- and two-pedal versions are also available. The series meets all the relevant standards, including not only DIN EN 60947-5-8, but also DIN EN 12622. It is also DGUV-approved.

Flexible positioning: wireless safety foot controls

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The contact system incorporated in these foot controls permits soft switching and prevents the device from jerking, for example when releasing the switch from its fully depressed end position.

Improved energy management

steute is currently working on the development of its third generation of wireless enabling foot switches. They feature, amongst other things, super-improved energy management and thus an even longer battery life. This also permits additional functions, such as an emergency-stop button (mounted on a carrying handle), to be integrated. Such (wireless) foot switches cannot only be used on presses, of course, but also for example on machine tools or other types of machine with special modes such as a set-up mode or an observation mode. The machines can then be operated in compliance with the standards even with the guard door open and the speed reduced, as long as the operator presses the pedal and keeps it in its middle position. This is true of the standard, cabled enabling foot switches, as well as for the new wireless foot controls.

Robust construction, fatigue-free operation

Independently of the type of signal transmission and the function or application, the steute foot controls feature a low pedal height – an important prerequisite for simple and fatigue-free operation. They are also stable, which in this type of switch is important for ergonomic and intuitive operation. The metal housings can withstand high mechanical wear and tear, and there are no cables so they are also durable in rough ambient conditions.

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