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Wireless not cabled – a sure thing

Forster Haustechnik uses swing-folding machine with innovative control

A manufacturer of metal façade elements uses a hydraulic swing-folding machine for its metalwork controlled by a wireless safety foot switch. Doing away with a conventional cabled switch improves ergonomic comfort and increases the availability of the system because it cannot fail due to cable damage.

Forster Haustechnik AG uses a modern swing-folding machine to create façades. (image: Carl Geisser AG)

With around twenty employees, Forster Haustechnik AG in Berneck/ Switzerland offers a wide range of specialist services in the areas of heating, plumbing and metalwork. The company was founded in 1905 and is managed todayby Markus und Alexandra Forster, the 4thgeneration of the family. Its specialist fields include the cladding of building façades with steel, chromium steel and aluminiumelements. Forster produces standard and custom-made profiles for façade design, as well as window sills; and for industrial customers also flat profile duct systems. A wide variety of state-of-the-art machinery is on hand for the various processing techniques involved, such as welding, punching, bending and creasing, as well as cutting.

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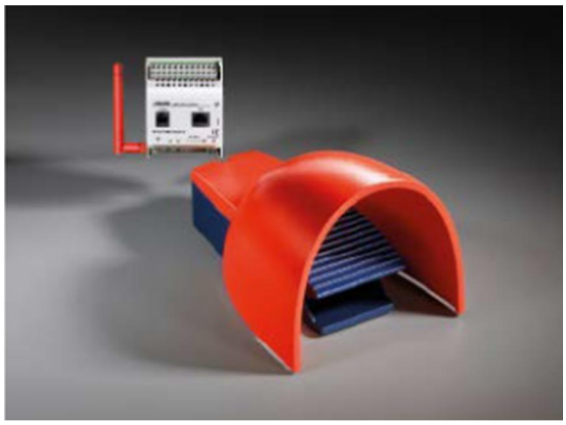

Wireless foot controls – also available in safe variants – improve ergonomic comfort, safety and availability, not least in adverse environments (image: steute Schaltgeräte GmbH & Co. KG)

Precision bending – reliable wireless control

Forster relies on Swiss precision for its bending processes, purchasing a ZR swing-folding machine from Thalmann Maschinenbau AG. This robust and fully hydraulic machine was developed especially for metalworking companies and can be adapted to different requirements using a variety of accessories.

These optional accessories include a wireless foot control for activating the various functions of the bending machine. This foot control is made by steute Schaltgeräte GmbH & Co. KG and communicates with the receiver in the control cabinet via a safe wireless protocol.

Wireless protocol for safety applications

The foot control uses the safe "sWave 2.4 Ghz-safe" wireless protocol, developed by steute and based on the physical layer of the IEEE 802.15.1 standard. It is particularly suited for use in rough industrial environments due to its high reliability, guaranteed by the Frequency Hopping Spread Spectrum over 79 channels and the adaptive Frequency Hopping process, as well as its very good coexistence with other wireless systems. As one would expect from safe applications, the overall transmitter/receiver system is fundamentally designed with two channels. Foot controls and receiver units can be clearly assigned to one another, meaning that several safe foot controls can work in parallel within one wireless zone. This feature is important at Forster, where a very long functional distance of the machine means that it is always operated by one of two foot controls.

The foot controls are battery-powered, facilitating a highly available bidirectional wireless connection. The system, comprising the wireless foot control and the receiver unit, is EC type-examination tested and categorised according to ISO EN 13849-1 in performance level (PL) d, as well as safety integrated level (SIL) 2 according to IEC 62061.

The receivers and evaluation units of the two wireless foot controls are installed inside the control cabinet (image: Carl Geisser AG)

"Misappropriation" for new technology

Originally, the wireless safe foot controls were developed for special operating modes like "set up" and "process observation". These modes enable machines to be operated according to

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standards with opened guard doors and reduced speed, as long as the user actuates the foot pedal or keeps it depressed in the mid-position.

Since then, however, it has become clear that wireless foot controls such as these can also be advantageous in other applications. A foundry (also in Switzerland), for example, uses wireless safe foot controls in order to avoid failure of cables through casting splashes – a problem well known in many foundries and other fields involving hot fluids, and one which can be solved by using wireless communication.

The wireless connection between foot control and receiver unit is maintained as long as the operator is actuating the foot control. Evaluation of the wireless signals is performed by a compact combination of wireless receiver and safety relay module installed inside the control cabinet. The assigned short antenna is mounted on top of the control cabinet.

Real benefits for users

At Forster Haustechnik AG, both managers and workers clearly see the benefits provided by wireless foot controls. Reto Forster, responsible for the areas metalwork/ sheet metal forming: "The wireless system functions perfectly, and the operators of the system have quickly got used to positioning the foot control wherever it feels most comfortable, without having to worry about tripping over any cables. This means that they can monitor processes optimally at all times." One additional feature of the steute foot controls is a low pedal height. This is an important prerequisite for simple and non-tiring actuation. And they are extremely stable on the ground, facilitating both ergonomic and intuitive operation. Their metal housings can withstand high levels of wear and tear, which together with the high quality of their switching inserts means a long life even in adverse environments. Safety foot switches from steute have been proving this in very different applications of machine safety for decades.

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