



more than automation
safe automation

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APPLICATION STORY

Non-contact safety switches prove exceptionally reliable

Pilz PSEnmag non-contact safety switches have proved to be exceptionally reliable on Kaby Engineers Ltd's induction hardening machine, where they are subjected to heat, aggressive steam, and strong magnetic fields.



Manufacturing businesses clearly have to give machinery safety a high priority, but without losing sight of the fact that the company exists to make profits. Machinery safety components - from relays and emergency stop switches to light curtains and gate switches - must therefore be specified with care, as products with a lower initial purchase cost may not prove to be the most cost-effective in the long run.

For example, if a magnetic gate switch fails, it should 'fail safe' so that its final act is to fulfil its safety function and prevent the machine from operating. Until the switch can be replaced, however, the machine will be idle, which could be very expensive in terms of lost production. For some applications, there could be other implications in the event of a safety switch failing to a safe condition - such as damage to electrical equipment as a result of a circuit breaker tripping.

Because of this relationship between safety, reliability and availability - and, ultimately, profitability - many specifiers are moving away from tongue-operated mechanical gate switches to non-contact magnetic switches for guards that have to be opened frequently, as

non-contact switches have no mechanical parts that can wear. And for machinery with greater hazards, coded non-contact switches (typically using the same technology as RFID devices) are virtually impossible to defeat.

Nonetheless, simply specifying a non-contact switch does not guarantee long-term reliability, especially when the switch is located in a harsh environment. When Pilz launched its PSENmag non-contact safety switches a few years ago, the intention was that they would, indeed, be robust, long-lasting and suitable for use in aggressive industrial environments. One application in the UK that demonstrates the switches' reliability is at Kaby Engineers Ltd in Leicester, a sub-contract precision engineering company with the capability to produce large volumes of hardened and ground shafts in a wide range of diameters.

Kaby specified Pilz PSEN 2.1p11 switches to replace tongue-operated switches and non-magnetic switches from alternative suppliers, none of which had survived the frequent operation and harsh environment on an induction hardening machine. After three months the engineers at Kaby were satisfied that the Pilz switches were more reliable than anything they had tried before. Now, some three years later, they still have no doubts.

To give an indication of what the switches are achieving, the induction hardening machine on which they are installed runs 24 hours per day, seven days per week, and the guards are typically opened ten times per day. The switches are mounted approximately 250mm from the induction coil and are subjected to magnetic flux and heat radiated from the workpiece, as well as steam from the quench (the quench medium contains a highly aggressive polymer additive that attacks many plastics).

The switches were recommended by a distributor, Controls and Drives Ltd (CDL), whose Lee Clarke comments: "In all this time, the switches have only been changed once - and that was just as a precaution when the machine was down for routine maintenance. As the switches use plugged connections rather than flying leads, it really was very quick and easy to swap the switches without disturbing the wiring."

CDL has supplied switches from the Pilz PSENmag range to a number of other customers and has had no negative feedback whatsoever. Lee Clarke says: "These switches are incredibly tough and reliable. They are also compact, so they can be easily installed on bespoke machines or used to replace other switches that are suffering reliability problems. I have not heard of any Pilz magnetic switches failing and, given the extreme conditions on the Kaby

machine, I would have thought that if the switches can survive on there, they will survive anywhere."

Please contact Pilz to request more information about non-contact magnetic and coded safety switches, or visit the website at www.pilz.co.uk.

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Note to editors

Pilz Automation Technology develops, manufactures and supplies process and automation control products for use wherever there is a requirement to ensure the safety of plant, personnel or the environment. Included in the range are: safety relays; configurable safety controllers; programmable safety systems (safety PLCs) for use with or without the SafetyBUS p safe, open industrial fieldbus network; mechanically actuated and non-contact guard switches; safety light curtains; 3D vision-based safety sensors; emergency stop switches; conventional and touchscreen operator interfaces; plus control and monitoring relays for non-safety applications.

In addition, Pilz provides safety-related services, such as training, engineering and consultancy. For 20 years Pilz has taken a leading role in educating the market with regard to safety legislation. This has been through seminars on legislation, software packages that assist with standards compliance and product selection, and publications. Pilz has produced six editions of the Guide to Machinery Safety, a Guide to Programmable Safety Systems, and publishes a free monthly email newsletter

Pilz Automation Technology is a wholly owned subsidiary of Pilz GmbH & Co KG, a family-owned German company with global operations. Since its foundation in 1948, Pilz has remained at the forefront of safety technology, launching the first safety relay the first programmable safety system, the first safe, open fieldbus system (SafetyBUS p), the first solid-state safety 'relay', the first software-configurable modular safety controller, and the first safe camera system for monitoring three-dimensional zones. Future developments will see safety technology being integrated more closely with standard control, such as in servo drives with safety functionality.

Editors should contact Pilz if they would prefer to receive future press releases electronically or by post.

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