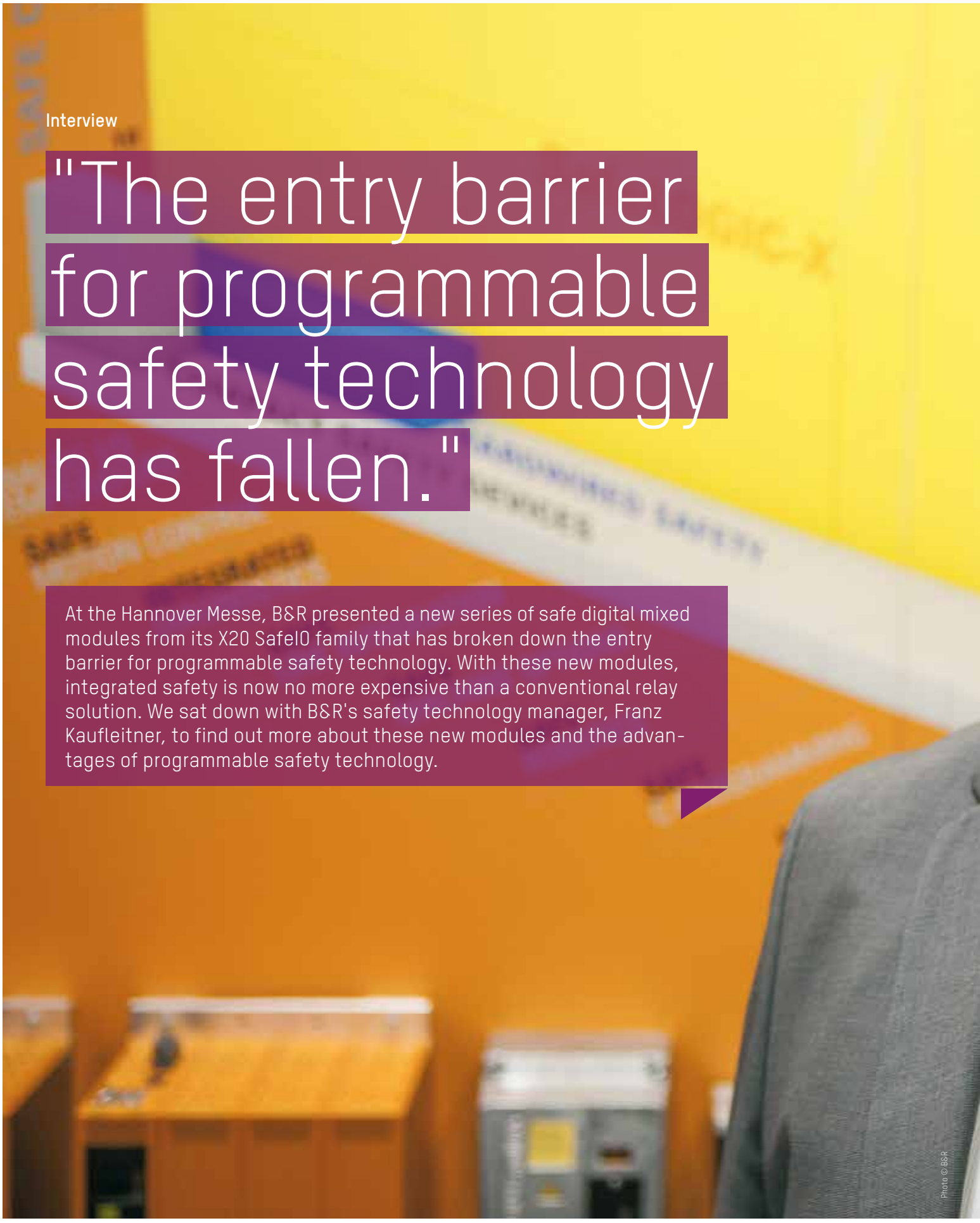
Interview

"The entry barrier for programmable safety technology has fallen."

At the Hannover Messe, B&R presented a new series of safe digital mixed modules from its X20 SafeIO family that has broken down the entry barrier for programmable safety technology. With these new modules, integrated safety is now no more expensive than a conventional relay solution. We sat down with B&R's safety technology manager, Franz Kaufleitner, to find out more about these new modules and the advantages of programmable safety technology.



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Franz Kaufleitner, Safety Technology Manager, B&R

Implementing programmable safety technology in a machine or plant has traditionally been associated with considerable expense. How has B&R managed to change that?
Using just one of our new safe mixed modules, you can implement a solution with all the functions offered by B&R's integrated safety technology at a price comparable to a hardwired relay solution.

B&R's commitment to absolute scalability is nothing new. From entry level to high end – all B&R hardware is fully interchangeable without affecting basic functionality. With our new mixed modules, we've taken scalability one step further at the low end of our safety portfolio.

Why should a machine or plant manufacturer who is accustomed to hardwired safety technology switch to a programmable solution?
There are a number of reasons. Generally, hardwired safety technology has very limited functionality and close to zero flexibility – it really only offers one way to react to any problem: shut down the machine.

This results in downtime, empty runs and time-consuming startup procedures, not to mention the risk of damaging the machine. Which brings us to another problem – one that people don't like to talk about: When an operator knows that by opening a safety door he'll be stopping production for an extended period of time, it's very tempting to bypass the switch on the safety door. Not only is this kind of tampering against the law, it can also result in serious injury.

How can programmable safety technology prevent that from happening?
In many cases it's enough to limit production to a safe speed in response to a safety event. If you take away the hassle of stopping the machine, you take away the motivation to tamper with the safety equipment.

Programmable safety technology allows you to take all types of parameters into consideration, so you can much more accurately determine whether a situation is safety-critical or not. Since B&R's safety technology is fully integrated in the overall control solution, it has access to all sorts of data that can be used to tailor the safety responses to a particular machine or plant.

Where is B&R safety technology used?
Since it was first introduced in 2008, B&R safety technology has been implemented in many thousands of machines. Our products even defy the harsh conditions of offshore wind farms 24 hours a day, 7 days a week. Which brings us to another advantage of integrated safety technology: remote diagnostics.

Safety products with electronic components must be able to periodically test and monitor themselves. These processes generate diagnostic data such as operating temperature and fluctuations in supply voltage – information that can indicate broken or pinched cables or misaligned door switches. With an integrated web server, B&R safety technology allows service technicians to access all of this data via a web browser from anywhere in the world.

Isn't programmable safety technology so complicated to use that it only makes sense for highly complex machines?
The extra effort required pays off quickly, even for a small machine series. The technology is so scalable that a machine builder can equip every variant of a machine with a uniform yet cost-effective safety solution. Consider an injection molding machine, for example. The most basic design for this type of machine typically includes an E-stop button and a safety door switch. All it takes to implement a full-fledged safety application on this type of machine is one of our new mixed modules; a dedicated safety controller is not necessary at all. You only have to program the application once, whereas a hardwired solution would need to be wired and tested separately on each machine built.

For machines that offer optional add-ons, however, programmable safety technology becomes more involved.
The optional add-ons must of course be programmed and tested. Yet unlike a hardwired solution, this only needs to be done once. When installing the machine, the desired add-ons can simply be selected from the list of available options.

B&R's new digital mixed modules break through the cost barrier: Programmable safety technology is now no more expensive than a conventional relay solution.

When you increase the complexity of the electronics, don't you shorten the lifespan and increase the response times?

No, quite the opposite. Our modules use only semiconductor components that are not subject to wear, which gives them a very long service life. The service life of safety products with mechanical components such as relays is always limited by how frequently they are switched. They often have to be replaced after only a few years.

Another advantage of semiconductor-based safety technology is the speed. Programmable safety technology from B&R is significantly faster than relay-based solutions. For particularly time-critical safety applications, you can also use our reACTION technology. With a safety response time of 100 microseconds, B&R offers the fastest programmable safety solution on the market.

Changes to legal regulations are constantly placing new or changed requirements on safety solutions. How does B&R deal with that?

Our customers can rest assured that we always lead the way when it comes to adapting to new legal regulations. With a system that is so integrated and scalable, changes aren't that hard to make. These same qualities benefit machine manufacturers who build multiple versions of a machine. Whether a machine is equipped with a very basic safety solution using just one of our new mixed modules, or whether it features a more in-depth safety solution with a powerful, dedicated safety controller – the application is always developed, controlled and diagnosed using the same software. Once a safety function has been programmed, it can be used over and over again in any configuration of the machine. A decision for B&R safety technology is a decision for a long-lasting, future-proof solution. ←