



Before developing our wireless handheld operating panel, we thought long and hard.

Interview with Franz Aschl, SIGMATEK

Safety Panel goes Mobile

Mobile machine components need modular Safety technology – especially when machine components should be changed in production. This requires new Safety approaches, such as the Austrian provider of automation technology SIGMATEK presented at the SPS IPC Drives with a safe mobile panel. Innovation Manager Franz Aschl on the backgrounds.

Mr. Aschl, what are your customers main challenges when it comes to Safety?

Franz Aschl: Our customers must build increasingly more Safety installations around a machine since on one side, the regulations are stricter and on the other side, the machines are becoming faster and therewith more dangerous. Of course, no one wants that someone is injured, but everyone wants to have more freedom of movement and work as close to the machine as possible. Scenarios outlined in the media, which show the supposed operation of

a machine via smartphone or tablet, lead to unrealistic ideas. Any type of machine operation without Safety measures within reach

is very far-fetched. I can imagine that the TÜV can only smirk over such pleasant images. When you really think about it, a change to a parameter can also lead to critical conditions and then you have no emergency stop nearby.

Today machine concepts are completely different, modularly constructed and the production strategies much more flexibly designed.

Franz Aschl: Earlier, every danger zone was completely fenced in. Today, operators want to get to the machine more easily; during set-up or to connect new aggregates. Here, fencing is disruptive. And real modularization requires that Safety fencing be eliminated, which in turn, requires flexible Safety solutions. An example: To configure or teach a robot the operator is consciously in the robot's work area.

We increase the operator's freedom of movement.



This requires an emergency stop and panic switch on the operating device with which the operator confirms that he or she is deliberately in the danger zone and wants to control the robot manually. Personnel then want and must be close to the robot or axis.

And can you?

Franz Aschl: Only limited. This is also the reason why we developed a wireless operating panel. Practice shows that a panel is never optimally placed. There are always situations,



where the panel hangs at an inconvenient position. Conversely, simply because of the costs, it makes little sense to install panels where it would be necessary, which are then only used sporadically. However, when I have a wireless panel, I can move around the entire machine. Then I can find an appropriate position to observe the movement or process to control and precisely check.



How does one get a grip on the modularization?

Franz Aschl: From a Safety perspective, that is extremely difficult. Strictly speaking, a new risk assessment must be made for each new configuration. In practice, I see the diverse approaches to randomly combine machine modules and aggregates as infeasible. One can however, provide flexibility using familiar and proven configurations, which is also already a huge step.

So, the individual safe machine components should be linked with automated guided vehicle systems?

Franz Aschl: That is practically the only way, if I want to really modularize machines and operate them automatically. The AGV has the advantage that it breaks up previously rigid production lines. With AGVs, processes can be adapted without having to change the hall layout each time.

Automobile manufacturers are intensely considering for example, making the shell construction more flexible with help from AGVs. De-

pending on the module and variant, the AGVs transport the frame to the individual welding stations. During high capacity periods, multiple robot cells can weld the same chassis type in parallel until backlog has been cleared. Or during a disruption, the AGVs no longer go to the affected cell.

There are many operating panels. What is so special about yours?

Franz Aschl: The combination of properties. In addition to the emergency stop button, a key switch and the dead-man switch are integrated, which is required in several applications. For the HMI, we developed an industrial docking station with a wireless connection to the panel. This provides freedom of movement to the machine operator, who with the wireless panel, can freely move to and within the Safety zone of the machine since the Safety functions are integrated.

And how does the localization work with your wireless HMI?

Franz Aschl: Detecting the position of the operator and the enabling of the operating options derived therefrom cannot be achieved with cameras and markings on the ma-

In the coming years, a lot will change in operating panels.



chine or other measures – this also applies to cable-connected or permanently installed systems. Since if the operator turns around or is distracted and continues to turn a wheel, any localization of the operating unit is obsolete because the robot or dangerous movement occurs behind him, out of view. We ensure however, that the mobile panel is connected with the correct system component. Contrary to a cable, the operator does not immediately see with which unit the handheld operating panel is connected. With our concept, using the robot example, each robot has a number. When the operator uses the panel to switch to the robot, the corresponding number is shown on the display. In addition, a lamp on the robot lights. We discussed this procedure with the TÜV and it has been approved. Anyone who might still be unsure, can always install a docking station anywhere in the system. The device is logged in automatically, the worker only needs to insert the panel to locally operate the system component. The assignment between the machine component and the operating panel is made over a direct bus connection. Once the operator is finished, he simply pulls the HMI out of the docking station and goes to the next section – without interrupting the WLAN communication.

Machine operation with tablets and smartphones without Safety elements is utopic.

Can I actually purchase machines without an operating panel?

Franz Aschl: Yes. The TÜV only requires an emergency stop feature.



You mentioned the TÜV. Your concept is certified?

Franz Aschl: Approved yes, but not yet certified. We are currently in the certification process. I'm assuming that we have the panel ready for series production in the second quarter of 2018. Of course, some customers receive prototypes earlier.

You are very focused on robotics. Do you see that as the main application field?

Franz Aschl: Not at all. All large, complex systems are potential application opportunities. When something must be configured on a large press or an extruder, the shout method is often still used. One person stands in the back, observes the second operator at the console and shouts the commands. That is reality. And because of the costs, installing operating panels everywhere is not an option.

The employee simply pulls the panel from the docking station, goes behind the machine to the corresponding component and makes the changes. Still more: In the future, operators will have their own panel for which they are responsible. During the shift, they take it with them to the machines and at the end of the workday, place it in its spint on the charging station.

Simply put, SIGMATEK has integrated a safe wireless connection, as well as an emergency stop and panic switch into a panel. What prevents this function from being combined with a universal mount for standard tablets or smartphones.

Franz Aschl: We intensively considered an adapter several times. A claw that has an emergency stop on the back, battery etc. and connects with a cell phone via USB would be ideal. We discarded the idea however, because there are no standardized measurements and almost every year, new device generations are introduced to the market. As a systems provider, we are required to provide replacement parts over at least ten years. The second issue is the quality of the wireless transmission between the panel and docking station. After all, we're talking about a machine condition and emergency stop triggering. Here, response times must be kept to guarantee the availability of the machine.

How do you integrate the docking station into your control architecture?

Franz Aschl: It is connected to the power supply and standard Ethernet using an M12 connector plug. The station is then directly connected to the Ethernet port of the control.

Is it possible to loop the docking station directly to one of your I/O stations in the field?

Franz Aschl: Of course, that is also possible. If you want to eliminate the decentral module, simply run an Ethernet cable from the control cabinet of the CPU to the appropriate location. That is less expensive.

What changes in the software with the use of mobile panels?

Franz Aschl: For the user, nothing at all. They see the same view as on a permanently installed display. And the parameter configuration of the Safety circuit is as if the emergency stop and confirmation button were permanently installed in the system.

Can this mobile concept be used outside of the SIGMATEK system world?

Franz Aschl: The minimum would be our Safety control, as this must communicate with the panel via the docking station. The visualization data could theoretically also come from other systems. But as a systems provider, that is not our goal. We want to distinguish ourselves in the market through the total package and create added value.

The interview was conducted by Chief Editor Stefan Kuppinger.

Bus-integrated, programmable Safety systems determine the technological direction.