

5.5 CASE STUDY 4 - WHEN VISIONS BECOME A REALITY - A FLEXIBLE MOBILE PRODUCTION ASSISTANT

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When visions become a reality – a flexible mobile production assistant

Mobile robot systems are a popular topic of discussion but rarely found in practice, and they are high on the wish list of many industrial companies. Meanwhile, Stäubli Electrical Connectors is already using them to great effect. Senior management is delighted by the flexibility that mobile robot assistants bring to the assembly line.

Stäubli Electrical Connectors is one of the world's leading manufacturers of electrical connectors for all industrial sectors. The company not only sets the benchmark in terms of product quality but also leads the way in innovative production technologies. In the manufacture of their broad-based product range, the Swiss-based specialists favor hybrid assembly systems that combine fully automated and manual workstations. The downside to this strategy is that, if an operator is absent due to illness, the complete line comes to a standstill. In addition, unmanned night shifts are not possible.

The company now has the optimal solution for such scenarios: the HelMo mobile robot system from Stäubli Robotics. Once trained, HelMo can handle almost any manual job on the various assembly lines. This production assistant navigates to its own workplace, decelerates or stops when human colleagues come too close, and then continues its journey as before.



Figure 5.14: Thanks to an automatic tool changing system HelMo can operate flexibly and perform any other task, if required. ©Stäubli

More of a flexible production assistant than a robot

As soon as HelMo arrives at its workplace, it spends a few minutes preparing itself for the task in hand. The robot positions itself precisely within a tenth of a millimeter by referencing three permanent orientation points at the workstation. HelMo then connects itself to the fixed supply sockets for electricity and compressed air by means of a multi-coupling – also from Stäubli of course – and starts its shift. To enable HelMo to operate flexibly, its designers equipped it with an automatic tool change system from Stäubli Connectors. So, today it could be the placement of connector housings and contact pins, whereas tomorrow it might be some other stage in the assembly process, which HelMo will perform if called upon. In the factory at Allschwil, HelMo is regarded less as a robot and more as an assistant who is flexible enough to help out where needed.



Figure 5.15: HelMo references itself at the workstation and starts loading the rotary table for the manufacturing of pneumatic couplings. ©Stäubli

The intention is not to replace human labor with mobile robots – that would make no sense from either a production or an economic perspective – but to deploy HelMo as a flexible stand-in and thereby increase the availability of hybrid assembly lines or cope with peak demand. Illness-related or other unforeseen absences among the human workforce are no longer a cause for consternation at Allschwil. Thanks to HelMo, the delivery capability of the company has been significantly optimized.

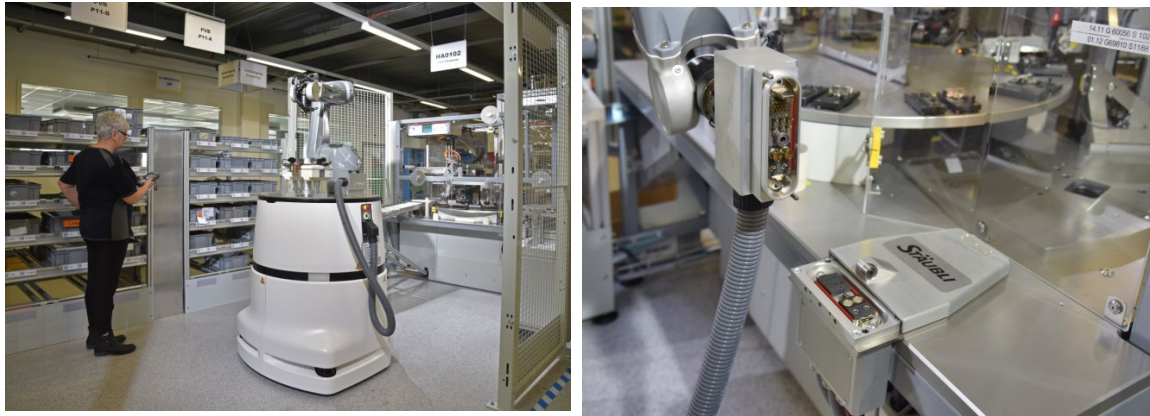


Figure 5.15: The mobile robot system navigates autonomously to its workstation, slows down or stops if people or objects come too close. ©Stäubli

Figure 5.16: Using a Stäubli multi coupling HelMo connects itself to the workstation for transmission of all required media like power, data or pneumatic. ©Stäubli

About HelMo

HelMo is a mobile robot system that is capable of navigating its way around with complete autonomy by permanently monitoring its environment with three integrated laser scanners. HelMo can perform its tasks either fully automatically or in collaboration with humans.

It is built around a six-axis standard TX2-90L robot with a payload of 15 kilos and a reach of 1,200mm. This six-axis machine comes with a sophisticated safety package. All safety functions are certified and fulfill the strict requirements of category SIL3/PLe.