

## DIGITALISATION IN INTRALOGISTICS

### Sensor system for Vetter injection pen assembly

# All-seeing wireless-based material replenishment



A compact product line, automated assembly processes with manual material feeds, disposal of empty containers and packaging: how to manage both staff capacity and material flow in such a way that assembly cells are always sufficiently – yet not excessively – supplied? Pharmaceutical service provider Vetter has found an answer.

One of the advances made by pharmaceuticals and medicine is that the active agents in medication no longer necessarily have to travel via the stomach, but can now often be

injected directly – either by the physician or, in the case of chronic diseases like diabetes, by the patients themselves. The active agent then enters the body precisely where it is needed. Vetter is an international specialist manufacturing such 'parenterally' administered medication. The company has its headquarters in Ravensburg and production sites worldwide. Its business is the aseptic filling, assembly and packaging of pre-filled injection systems, such as syringes, cartridges and vials. This is performed to order as a Contract Development and Manufacturing Organisation. In its planning of production, assembly and packaging lines, Vetter

has extensive resources at its disposal. These resources are needed because the company is growing all the time, and the projects often differ significantly.



## Logistics and assembly in perfect harmony

When planning a new assembly line, for example for injection pens, new communication routes to assembly staff become necessary. Two logisticians per shift have to ensure the supply of individual robot stations with all the components required for the assembly – seven different articles in each case. For hygiene reasons, there are larger quantities of packaging materials, as well as empty containers and trays – due to the constantly high production rate – which need to be collected and removed from the assembly line. The assembly line is very compact, meaning that the logisticians do not have an unrestricted view over all stations and parking areas, and speaking is difficult because of the noise level caused by the machines. The project managers therefore had the following problem: how to notify the

logisticians of which stations require replenishment and which areas require disposal of empty containers and packaging?

## Wireless sensors for parking areas

This question was put by the planning team to Fabian Mildenerger, Head of Electrical Engineering at Vetter. Various concepts were debated on a walk around the factory. Fabian Mildenerger: "Our wish was for a system capable of visualising the information, and in real time. It should also be able to adapt flexibly to layout changes on our shop floor or simple relocations of pallet stacks." During his search for an appropriate solution, Mildenerger came across the sWave.NET® system from steute.

This wireless network captures material stock levels using sensors, transfers the information remotely to a Sensor Bridge, which in turn communicates with a superordinate platform – for example from Agilox. This boded well because Vetter was already using this platform, and also the hardware of this AGV system, for its assembly line. Fabian Mildenerger: "Following intensive research, as well as comparisons with other wireless technologies, we opted to go with this system."

## Laser sensors detect requirements and send notifications

This wireless system is now in operation. A total of 16 ceiling-mounted wireless laser sensors detect the presence and fill levels of pallets and containers from a distance of up to five metres. When a predefined minimum or maximum value is reached,

they send a signal first to the wireless network and then, via the Sensor Bridge, to the linked AGV fleet manager. The message is clear: here is a requirement. Replenishments must be supplied to, or empty containers removed from, the assembly line.

## Dashboards for tablets

When selecting the display system for the logisticians, the Vetter team also looked at various possibilities. Anna-Lisa Sauter, Team Leader SCM Processes & Logistics Systems, told us: "We opted for a user-friendly visualisation platform. It depicts the assembly line with all its stations, shows every parking area for pallets or containers, and as soon as a requirement occurs, an indicator jumps from green to red – in real time. The logisticians receive this information on their tablets and can react immediately. When the sensor detects that the order has been completed, the indicator switches back to green."

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Vetter had at its disposal skilled workers of its own, not only for the planning phase, but also for assembly and installation. Fabian Mildenerger: "We constructed a ceiling bracket for the wireless laser sensors ourselves, printed in 3D and fulfilling the highest hygiene standards." The terminal devices within the wireless network are thus 'pharmaceutically compliant'.

## A look at the assembly line

The wireless laser sensors now provide a complete overview of the components to be assembled along the production line, as well as the packaging and empty containers to be removed from the production line. These 'to dos' are visualised for the logisticians on their tablets, clearly and in real time. The manufacturer has thus achieved his goal of controlling incoming and outgoing material flow reliably all along the assembly line – at a reasonable cost and on the basis of an existing platform.

Images: steute Technologies GmbH & Co. KG