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>> AGV and robots

Special edition



How AGV systems keep track

INTRALOGISTICS – When a wireless network is developed especially for this purpose, the supply of replenishments by AGV can be managed down to the last metre. Using the latest version, this is even possible for heterogeneous AGV/AMR fleets.

More and more companies are choosing to optimise and automate their in-house material flow with automated guided vehicle (AGV)

systems, sometimes also with autonomous mobile robots (AMR). In many cases, the AGV assume simple fetching and carrying tasks, for example bringing pallets or con-



tainers from a storage area or consignment hub to (manual or automated) work stations on the shop floor. They also assume an important function disposing of e.g. packaging materials and empty containers (pallets, trays, LLC, SLC...) from production or assembly areas.

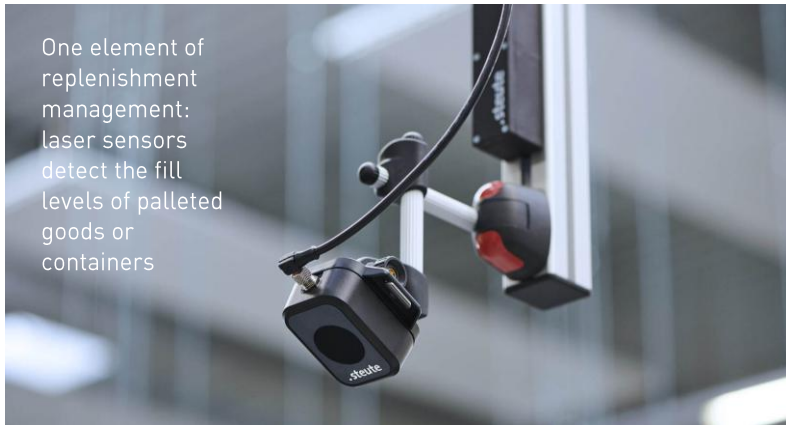
The user or system integrator must determine where the AGV are commanded from. For the transport of inventory-managed components, this is relatively simple: the driverless vehicles can be connected to e.g. ERP systems via the standard interfaces of conventional fleet managers.

Replenishments via AGV

The situation is more complex for non-inventory-managed components, such as

fastening elements or attachment parts. In practice, replenishing without stock level control often leads to under- or oversupply. This is why many automotive manufacturers and suppliers are calling for these components also to be replenished according to actual levels at the point of assembly. This is especially true for AGV-based material supplies and requires monitoring of the storage or supermarket areas by sensor or camera. The data must then be integrated in the replenishment process and, where appropriate, sent to the AGV fleet manager.

This is precisely what sWave.NET®, the automated material requisition system (AMS) developed for this and other tasks by steute business division Leantec, is able to realise. At the field level, it comprises



One element of replenishment management: laser sensors detect the fill levels of palletized goods or containers



Heterogeneous AGV fleets can be integrated in the wireless network via a VDA 5050-compliant interface

sensors which detect low fill levels in containers or free parking areas where material pallets can be stacked. The sensors send a remote notification to an Access Point, which then forwards the information to a central Sensor Bridge. This in turn passes the data to a superordinate IT platform (ERP, WMS, MES...) and requests replenishments, which are brought by AGV to the destination in question. The sensors can also send a notification that pallets containing empty boxes or packaging material need to be collected from the shop floor.

Intralogistics information in real time

This wireless network is thus able to enable automation "down to the last metre", which

is precisely what many modernisation projects within intralogistics aim to optimise. It is also a considerable improvement compared to the previous way of collecting information for such purposes. Here, an AGV detected e.g. a free parking area for pallets on its way through the factory and passed on this information. However, when a few minutes later another AGV arrived with a full pallet, the place had often already been taken. This cannot happen with the wireless network: it delivers information in real time, and a nearby AGV can react immediately.

Also for mixed AGV/AMR fleets

The latest sWave.NET® version enables information to be forwarded to a range of



The data transmitted by sWave.NET® can be visualised, even including eKanban systems

From the field level to the superordinate IT infrastructure: automated replenishment supply architecture using the sWave.NET® wireless network



different fleet managers (Agilox, Hartwall, MHP, Synaos...), as well as to mixed AGV/AMR fleets via a VDA 5050-compliant interface. The information generated by sWave.NET® can then, if so desired, be visualised on the corresponding fleet manager dashboard. In parallel, the data can also be shown on various displays, Andon systems, etc. And operators can, of course, not only use this system for AGV, but also for replenishments via e.g. tugger trains or dollies, as well as to detect the occupancy of flow racks in eKanban systems. An additional application field is the transfer points between stationary conveyors and AGV.

Because the wireless system has multi-client capability and different applications can be used at the same time, the benefits for intralogistics optimisation are manifold. At the field level, numerous switches, sensors and application-specific terminal devices are available (including for the detection of boxes in Kanban racks and the "counting" of dollies at collection points for empties), as well as stack lights and wireless handheld devices. Here, too, the wireless system is extremely flexible. At the hardware level, the Sensor Bridge can be operated on an industrial PC (IPC) with a pre-installed Sensor Bridge, or as a clustered version with three IPC. In addition, a hardware-independent "docker

only" version is available – as an on-premise solution for installation on the IT platform of the customer.

High safety requirements – "CRA-ready"

Features of the new sWave.NET® platform, currently being shown at the LogiMAT, include a higher safety standard which is partly thanks to high requirements voiced by sWave.NET® users in medical device manufacturing and the pharmaceuticals

industry. They demanded, for example, that all material requisitions sent from the shop floor via sWave.NET® to the SAP system be logged. This function was implemented by steute, and now users also have the possibility to feed orders into the system manually. Moreover, the latest sWave.NET® software has integrated cybersecurity measures which make the wireless network fit for future requirements, such as the Cyber Resilience Act (CRA).

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