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AUTOMATED REPLENISHMENTS FOR ASSEMBLY PROCESSES

WIRELESS NETWORK OPTIMISES INTRALOGISTICS

How to guarantee that replenishments are supplied to production and assembly reliably and down to the last metre – even for non-inventory-managed (small) parts? A wireless sensor network which is being presented at the LogiMAT has the answer. Different interfaces enable integration in the relevant IT infrastructure, creating an uninterrupted and thus always current digital twin of the material flow.

The problem is familiar, for example in assembly processes at automotive suppliers. Key components are individually inventory-managed and transported to the installation point on target, often just in time or in sequence. With non-inventory-managed goods, however, for example fastening elements, this can lead in practice to an over- or undersupply at the assembly point. Many companies are now calling for such parts also to be integrated in an automated requisition system. This wish can be fulfilled – with the sWave.NET® wireless

01 A wireless-based real-time stock management "down to the last metre" increases the efficiency of assembly processes

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network developed for this and other use cases by steute business division Leantec.

REPLENISHMENT OF NON-INVENTORY-MANAGED PARTS

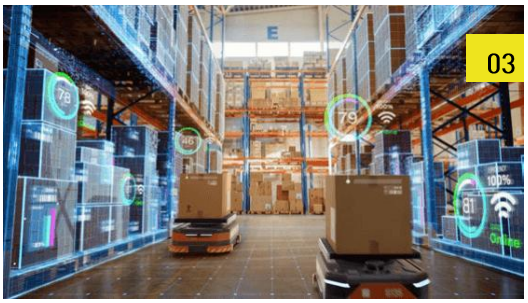
The wireless network comprises terminal devices, such as sensors, switches, indicator lamps, etc., which communicate with an Access Point via an integrated or external radio module. This module forwards the signals to a Sensor Bridge, which in turn passes them on via standard interfaces to the relevant ERP system, PPS or WMS.

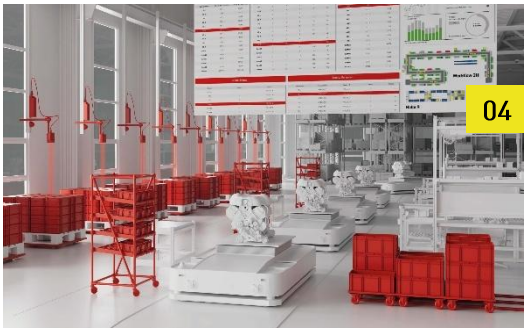
The wireless sensors capture requirements by detecting e.g. empty parking areas for pallets, fill levels in large containers, or the occupancy of flow racks in eKanban systems. Wireless transmission has the additional benefit that mobile vehicles and the load carriers they transport can also be integrated in the information flow. For example, sWave.NET® can assign parking slots to the AGV which deliver replenishments. Tugger trains and dollies can also be integrated, as well as transfer points between stationary and mobile conveyors. The result is uninterrupted material tracking in real time.

ALSO FOR DISPOSAL TASKS AT ASSEMBLY POINTS

This sWave.NET® application, for which a pre-configured software exists, has become a firm favourite with automotive suppliers, for example. A more recent addition is the integration of disposal tasks, for example removing empty trays or packaging material, with first use cases in medical and pharmaceuticals production.

To one side of the (automated or manual) assembly station, pallets or





02 Element of the replenishment process: laser sensors monitor e.g. pallet levels or the fill levels of palleted goods

03 Heterogeneous AGV fleets can also be integrated in the wireless network

04 Transparency in intralogistics: through sensor-based wireless replenishment management

05 For eKanban applications: wireless sensors capture boxes in flow racks and send their signals via a Sensor Bridge to the ERP system, WMS or PPS

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boxes containing components for assembly, e.g. insulin pens, are stacked on arrival; to the other side, an increasing stack of empty boxes and packaging material waits to be removed. Wall- or ceiling-mounted wireless laser sensors monitor parking areas, e.g. for pallets, from a distance of up to five metres. On the arrival side they send a requisition note if a pallet is missing, and on the departure side they send a notification if empty boxes or packaging material require disposal.

Depending on the application, logisticians or other persons are informed, who then manage the replenishments. Or the information is passed directly to the AGV system via a VDA 5050-compatible interface. In parallel, this information can also by displayed on dashboards, Andon systems, etc. This creates uninterrupted real-time monitoring of to-dos at assembly points – with the result that the components for assembly are always available in sufficient numbers, and that empty boxes and packaging material are always removed from the shop floor. steute has already completed and installed wireless network projects of this type, for example in pharmaceuticals production.

OTHER APPLICATIONS: EKANBAN AND DOLLY STATIONS

Other applications for which steute has developed special software show just how flexible this system is. In the assembly of electrical and traction components, sWave.NET® wireless sensors developed specifically for this task monitor the occupancy of eKanban flow racks. And in the supermarkets and consignment hubs of the automotive industry, fleets of rolling transport wagons (dollies) are managed via application-specific and very robust wireless sensors in the monorail tracks.

ONE NETWORK – MULTIPLE FUNCTIONS

The applications described here, and others besides, can be operated within one and the same wireless network. The sensors and actors in the field, as well as the interface parameters, are in each case assigned to the appropriate "client", i.e. application, only. In this way, a conflict-free parallel operation of different applications and authorised tasks within one production area is guaranteed through a single, uniform infrastructure with increasing cost-effectiveness.

NEW AGV INTERFACES & IMPROVED CYBERSECURITY

At the LogiMAT (Hall 1, Booth L 25), steute will be presenting new functions and features of the sWave.NET® wireless network – including new interfaces for the connection of sWave.NET® to heterogeneous AGV/AMR fleets on the basis of VDA 5050. The latest sWave.NET® platform also provides a higher safety standard, resulting in part from the high requirements of sWave.NET® users in medical device and pharmaceuticals production. New cybersecurity measures make the wireless network fit for future demands such as the Cyber Resilience Act.

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