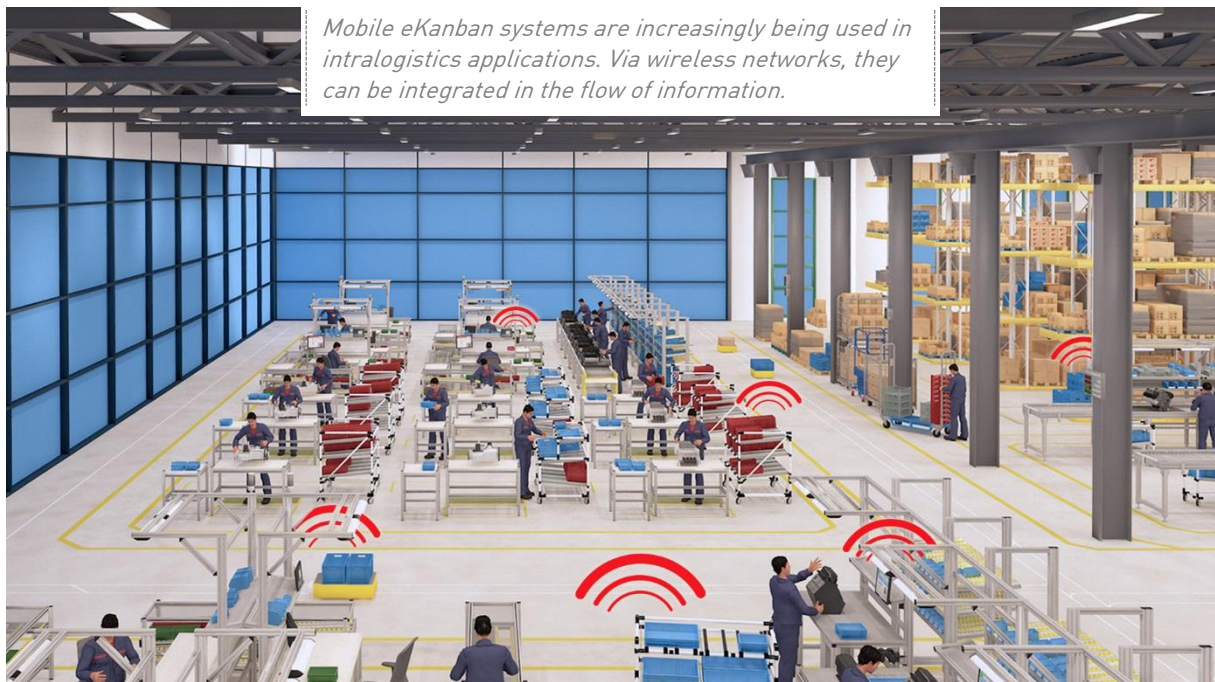# The aim: to monitor and control material flow

Mobile eKanban systems are increasingly being used in intralogistics applications. Via wireless networks, they can be integrated in the flow of information.

AGV are transporting materials, eKanban shelves are replenishing small parts: material flow is becoming more flexible and more mobile. Which means that new information flow solutions are needed. Andreas Schenk, Product Manager Wireless at steute Technologies, has some ideas.

To monitor material flow, steute has developed the wireless network sWave.NET and its corresponding "nexy" apps. The obvious task of an IT intralogistics infrastructure at the shop floor level is to make all processes transparent. This is even more true in light of the fact that company-internal material supplies are increasingly needs-oriented. And: intralogistics and production are continually merging. In car manufacturing, for example, these two fields are no longer really separable.

The goal: all information in real time
The goal of intralogistics experts therefore has to be an up-to-date overview of the warehouse inventory, including all interim and buffer stocks, as well as the positions and occupancy of all transport vehicles, at

all times. If the entirety of this information is available automatically and almost in real time, the production management system can plan in advance the material requirements of machines and assembly stations for the orders in the ERP system.

The wireless systems solution "nexy" was developed for precisely this task. It automatically detects status changes in the flow of materials and parts throughout the warehouse and factory. Sensors, actors and command devices can be integrated in this cable-free network solution, transmitting and receiving data via the wireless standard sWave.NET, also developed by steute. The data are collected by Access Points and transferred to a Sensor Bridge, which communicates to the superordinate IT system of the user – for example an ERP system, a production planning system (PPS) or a warehouse management system (WMS). An uninterrupted flow of communication is thus facilitated from the shop floor to the management level of the company IT or the Internet of Things (IoT). In the best case scenario, i.e. at the most sophisticated level, each logistics process is mirrored by a "digital twin".

Control of eKanban systems

With its individual nexy applications, steute has created a hard and software ecosystem. For eKanban applications, for example, there is a sensor available at the hardware level which can be mounted in a Kanban shelf slot or row. It registers whether the slot or row position is occupied, or whether a container has been removed, and sends a corresponding notification via the wireless network. In some of the nexy eKanban applications realised to date, several hundred wireless sensors are installed within a single network.

At the software level, dedicated configurations are available for different eKanban applications, reducing the level of retrofitting required by the user. For example, users can configure whether just one sensor should be installed per Kanban row, or whether a staggered system for rapid moving articles is required. In this way, nexy digitalises, integrates and automates the Kanban process. A dashboard visualises the status of all eKanban slots at all times.

Increased efficiency for AGV fleets

Besides the integration of eKanban racks, typical nexy application fields also include the control of automated guided vehicles (AGV). Here, too, users profit from uninterrupted information flow in real time – from the sensors via the Access Points

The nexy wireless network is also ideally suited to AGV applications and is already being used by multiple manufacturers.

and the Sensor Bridge to the IT system, in this case the fleet manager.

One of the reasons why multiple renowned AGV manufacturers are now using the nexy wireless network is a special feature of the sWave.NET wireless technology. The wireless system minimises the energy requirement of the AGV. Using the sWave.NET wireless network, AGV which are not in use can be put into a "deep sleep" mode. In this mode they require next to no power. When an AGV is needed again, it is reactivated with a very short reaction time via the nexy network and can then be set to work by the AGV fleet management system. A further benefit for users is that multiple applications – for example AGV and eKanban – can communicate via the same single nexy infrastructure.

New nexy features include an interface to OPC UA for cross-platform data exchange. In addition, the latest version of the Sensor Bridge can also communicate with a customer's SAP system, and the integrated nexy field devices receive their firmware updates "on air". The updates are made available on the Sensor Bridge and then distributed throughout the local network. This guarantees that the software

Access Points receive wireless signals from the individual switching devices and pass them on to the IT infrastructure of the user, for example via WiFi or Ethernet.

on all end devices is always up to date, with a minimum of effort required.

Outlook

The data collected and evaluated within the nexy wireless network facilitate the generation of key operational statistics, permitting continual optimisation of company intralogistics with a focus on efficiency and cost. The large quantity of operational data collected in the wireless network is also of interest for maintenance. These are options not currently in the spotlight, but which are certain to be accessed more intensively in the future.

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