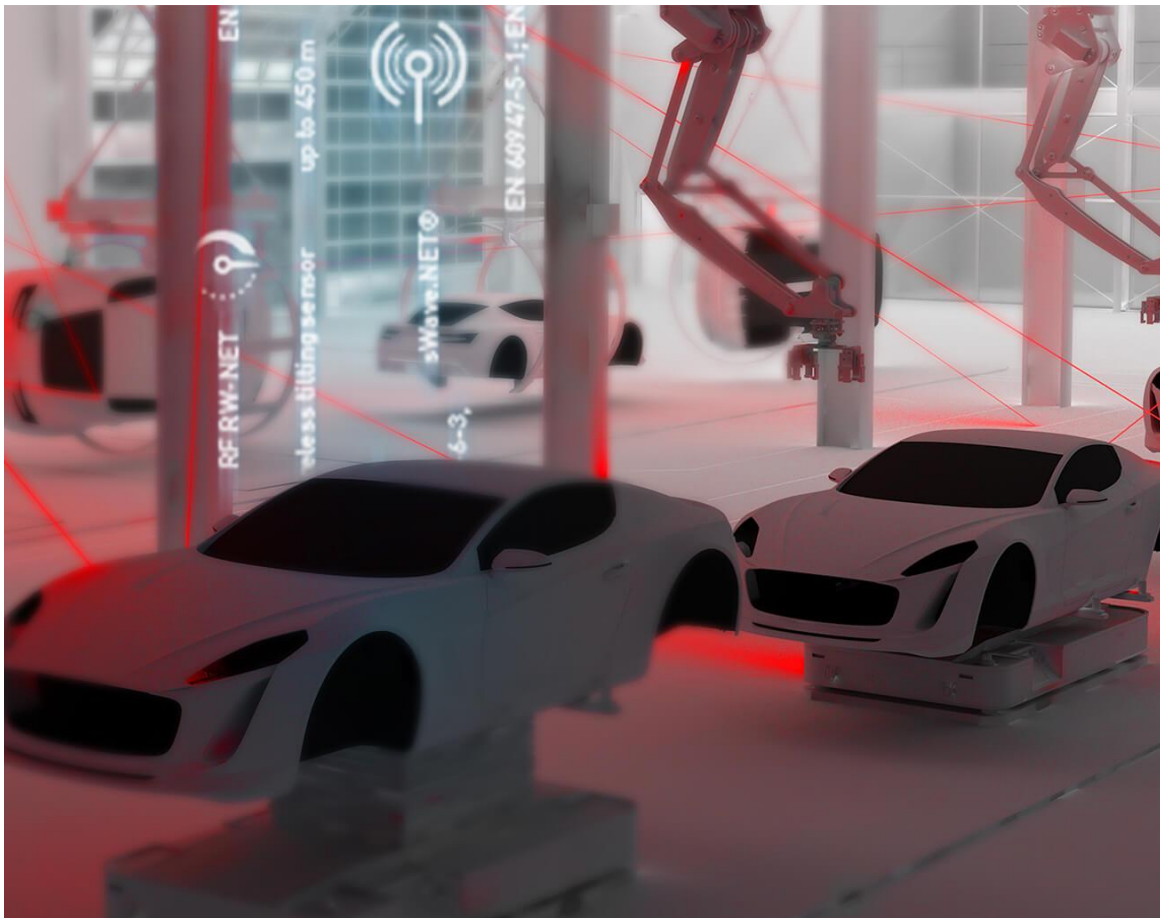


Technical article, published in: MY FACTORY (09/2022)



TOWARDS THE DIGITAL SHOP FLOOR

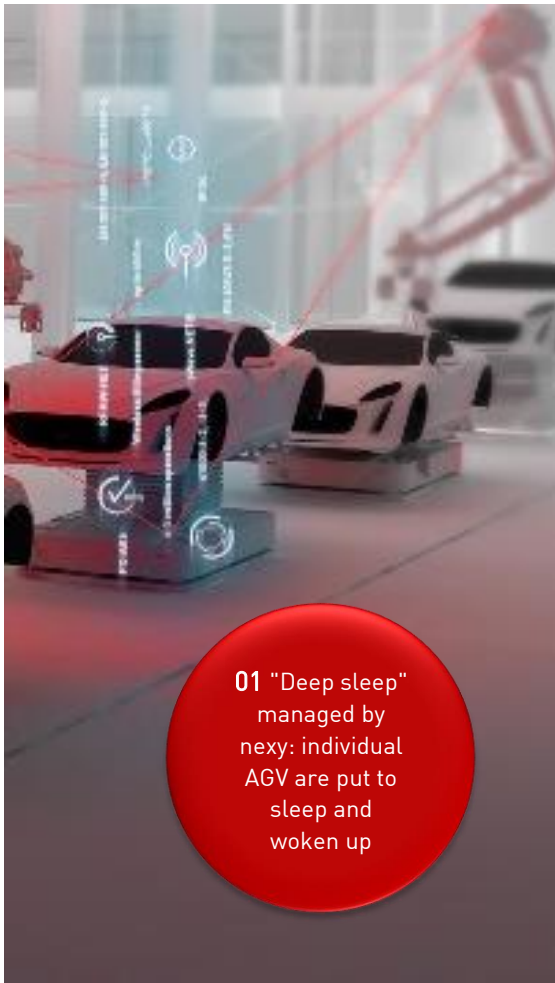
## REMOTELY CONTROLLED TRANSPARENCY

When optimising in-house processes, a remotely controlled shop floor information system can be the solution to improving inventory management, e.g. of assembly components. It enables the complete inventory within eKanban systems and the "supermarkets" supplying the factory to be digitally visualised. The system is very versatile, not least due to its wide variety of available wireless sensors.

**T**ake a Sensor Bridge, some Access Points, some wireless sensors to taste, and then season with a flexible pre-configured software: and there

you have, briefly speaking, the "recipe" for optimised in-house material flow. It is also an outline of the next system from steute: a tool which is as effective as it is easy to

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install, which introduces transparency to intralogistics, and which integrates mobile storage and transport devices.

This system was originally developed for automated guided vehicle (AGV) systems. Regardless of where they happen to be, individual vehicles can be put into a "deep sleep" mode via remote control and then "woken up" again. This means that they do not have to keep driving to charging stations, the vehicle batteries have a much longer lifetime, and operators have far more flexibility.

AGV operators were fast to implement this concept, and the steute engineers then

asked themselves what other tasks could be assumed by such an industry-compatible and easy-to implement wireless system. Once the wireless sensor network has been installed – and this is one clear advantage of this system – it can be used for multiple and totally different applications.

## MANAGEMENT OF E-KANBAN PROCESSES

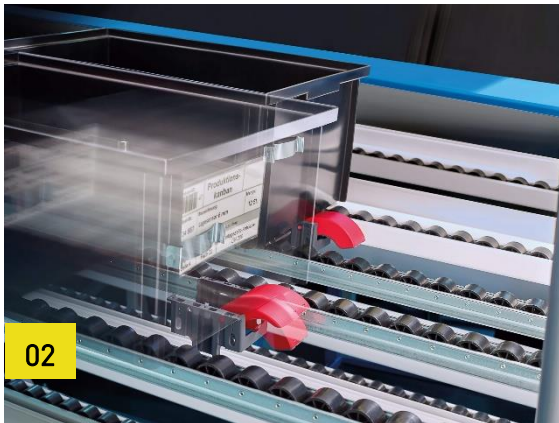
Since remote control is the only viable option for applications on the move, it was clear that this field would be the focus – for example, mobile eKanban systems. Here, wireless sensors developed specifically for this application monitor the occupancy of eKanban racks. Users have a real-time overview of stock levels and receive replenishments via the wireless network. Or operators can request materials manually: the nexy system also includes wireless push buttons. This solution has been widely implemented in practice – on many different scales. There exist smaller eKanban systems and larger versions, e.g.

## » NEXY CAN BE INTEGRATED IN DIFFERENT IT INFRASTRUCTURES USING A VARIETY OF ADAPTERS AND INTERFACES

in the manufacturing of electronics, with several thousand wireless nexy sensors.

## DOLLY MONITORING IN MATERIALS SUPERMARKETS

A relatively new field is the monitoring of dollies and other mobile transport units in materials stations and supermarkets, especially in the automotive supply industry. Here, too, sensors which have been



**02** Wireless sensors monitor lane occupancy in the flow racks of (mobile or stationary) eKanban systems

**03** Robust wireless sensors developed especially for this application guarantee transparency of material flow in dolly stations

**04** Detection from above: wireless laser sensors monitor the status of palletized goods or containers, as well as the occupancy of large load carriers

**05** The wireless system can assume additional tasks in parallel, for example the control of indicator lamps



developed specifically for the application detect when dollies drive onto or off the monorail tracks and send a notification in real time. Once again, a digital visualisation of the stock is created and requisition notes generated according to pre-configured criteria.



**MONITORING OF LARGE LOAD CARRIERS**  
What works for small load carriers (SLC) and dollies – monitoring of actual stock levels in real time using wireless sensors plus software and interface – works just as well for large load carriers (LLC) and their parking bays. Here, a wireless laser sensor is used from a "bird's eye" perspective, providing non-contact monitoring of parking areas. This facilitates a more precise coordination of all LLC transport and transfer processes.



**IMPROVED TRANSPARENCY**  
Again as with dollies and SLC, here the wireless system closes gaps in inventory management which can often lead in practice to under- or oversupplying. With nexy, the actual stock levels are transparent – at all times, and even when things are moving fast. This permits much

more precisely organised material flow and minimises safety stock. Automated requisition notes increase production reliability, while "blind spots" in inventory management are revealed.

## INCORPORATION OF STACK LIGHTS AND ANDON BUTTONS

In addition to real-time monitoring of material flow, nexy is also well suited to other application fields, providing not only the right hardware, i.e. sensors, but also pre-configured software. Stack lights can be controlled by remote control, for example, enabling a request for assistance to be sent fast in the event of a problem. Notifications are visualised in real time, thanks to the wireless connection between the stack lights and the IT system. And the notifications are triggered – the next application – via wireless push buttons with or without a display, for example as Andon buttons. Operators can use these buttons, and thus the nexy wireless network, to e.g. acknowledge a consignment or request the next order.

## FROM THE SHOP FLOOR TO THE SUPERORDINATE IT

A nexy wireless network is always planned individually. The abovementioned Access Points "bundle" the signals from the wireless sensors and transmit them to a Sensor Bridge, the interface to a superordinate WMS, PPS or ERP system. This

guarantees that nexy is fully integrated and managing the material flow at the company IT level. It is possible to integrate nexy in different IT infrastructures thanks to a variety of adapters and available interfaces.

## MULTIPLE SENSORS – ONE WIRELESS NETWORK

The wireless system has been engineered for the special requirements of industrial production. And it still functions and transmits extremely reliably in adverse conditions (e.g. radiation, other wireless networks, a high number of sensors within one network...). The system is continually undergoing further development and enhancement; one example is the inclusion of a nexy wireless module which permits the integration of third-party sensors.

For applications such as AGV (with their "wake-up" signals) and eKanban, numerous industrial applications already exist, including some wireless networks with several thousand sensors and others used for multiple applications. All applications and all sensors assigned to them are easy to install via the Sensor Bridge, where modifications can also be made, should changing circumstances require them. And regarding the return on investment, steute has thought of that, too. A wireless network of this kind – even one with "only" a single application – will pay for itself within just a few months.

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Images: steute Technologies GmbH & Co. KG