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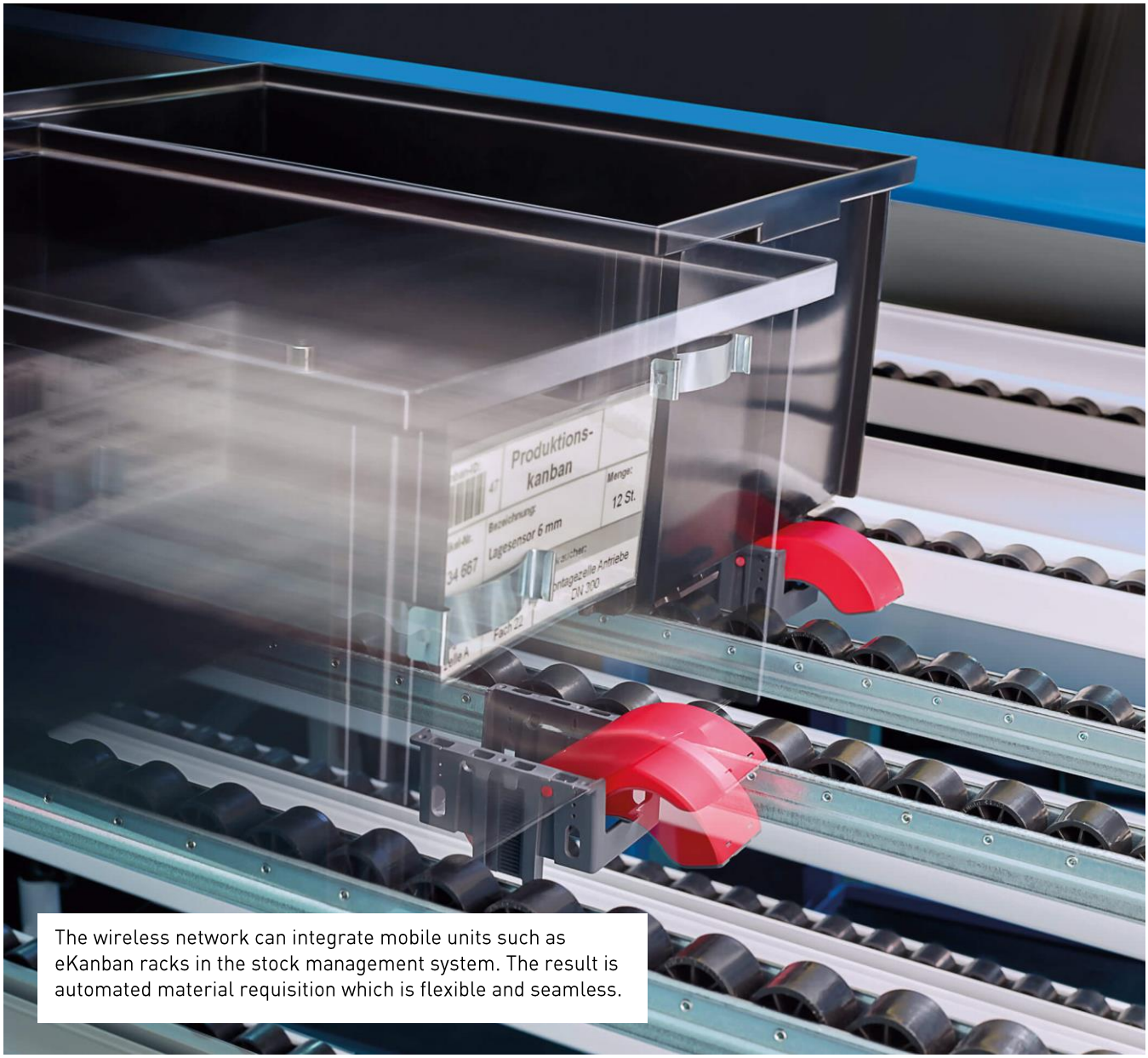
Handling and logistics

Wireless networks for information flow

How are moving components and load carriers to be integrated in the company information flow? A wireless-based automated material requisition system is available for just this task and monitors stock precisely anywhere within the (material) flow.



The wireless network can integrate mobile units such as eKanban racks in the stock management system. The result is automated material requisition which is flexible and seamless.

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Underlying the logistics for production halls is a visualisation of the process data which is as precise as possible. This visualisation – the digital twin of the current material stock and the current material flow – will ideally include every product and every load carrier. In theory, the ERP system already assumes this task. But in practice, this is usually only the case for core components. For small parts, such as fixtures and fittings or assembly aids, stock is only approximated, due in part to a temporal and spatial "information gap". The ERP system does register current inflows and outflows, and it does trigger replenishments accordingly, but several hours can elapse between requisitions. This leads to a high positive stock balance difference. In addition, the ERP system does not register the boxes which are currently being transported by load carrier. In practice this leads to a discrepancy between the actual stock levels and the levels shown by the IT which increases over time. Many companies – especially those with large assembly areas – believe it necessary to close this information gap.

Wireless network for stock management

This is the job description of a wireless-based automated material requisition system developed by the steute business unit Wireless. Called "nexy", the system spans a wireless network across the shop floor which remains stable even in unfavourable industrial conditions (radiation, other wireless networks...). Access Points "collect" signals from wireless sensors as terminal devices which detect the occupancy of containers, boxes and packaging units. They then pass them on to a Sensor Bridge which serves as an interface to the company IT infrastructure – usually the ERP system.

To ensure that the system remains "lean", it is not the individual containers which are subjected to uninterrupted monitoring. Instead, wireless sensors are fitted to the storage locations and channels in the assembly area and/or materials "supermarkets". Wireless laser sensors can also monitor pallet storage sites or detect the occupancy of containers like LLC, triggering replenishments accordingly. Since the sensors transmit their signals remotely, the requisition system can additionally integrate stock which is currently on the move in e.g. tugger trains or mobile eKanban racks. Special sensors are also available for the monitoring of dollies on monorail tracks. The wireless system is adapted to the special requirements of industrial production. It works perfectly and with the highest transmission reliability even in unfavourable conditions.

One system, multiple applications

This wireless-based requisition system is already in use in many different applications, some with several thousand wireless sensors. The many great benefits of the nexy system include its ability to operate multiple applications via a shared wireless platform. In addition to its main task as a requisition system, nexy can also control Andon systems or monitor the automated transfer of goods to AGV. The system can be adapted flexibly should circumstances change, e.g. through the

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quick and easy integration and configuration of additional sensors.

But does a system like this make economic sense? Yes – calculation models to test its economic efficiency revealed an amortisation period of just a few months. One of the reasons why this period is so short is simple implementation of a preconfigured eKanban application. The concrete benefit of a wireless-based requisition system which docks onto an ERP system or PPS lies in the high transparency and improved controllability of the material flow. The wireless sensors capture all processes, also for any mobile units, and facilitate a reaction in real time. This makes it possible to supply materials according to true demand while reducing errors. A stock management system which fits perfectly and visualises reality reduces the cost of capital without increasing the risk of bottlenecks or production downtimes. With nexy, the Kanban concept is reinterpreted according to the principles of IIoT and industry.

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