

Remote supply replenishment

Integration of AGV, dollies and eKanban racks

Why is an automated requisition system necessary if you already have an ERP or WMS? A good question. It is necessary if stock levels are to be managed not approximately, but precisely.

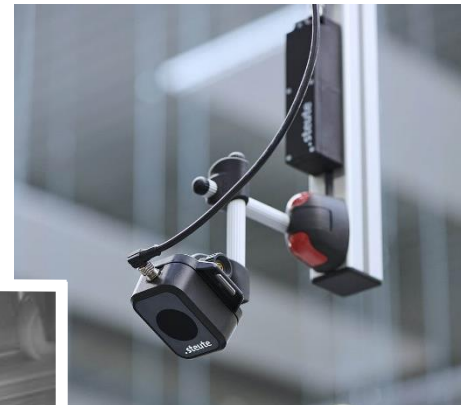
How can logistics managers automate the material supply process in their production

halls and reduce downtimes without having to purchase complex IT infrastructures or a new ERP system? And without electrical installations for sensors costing a great deal of time and money?

This is not a theoretical question, but a pain point in many companies, for example the



In many areas of industry – for example automotive final assembly – wireless-based real-time stock management is a huge benefit.



Detection from above: laser sensors can detect the existence of palletized goods or containers, and also the occupancy of large load carriers.



Robust wireless sensors ensure transparency in the stock at dolly stations.

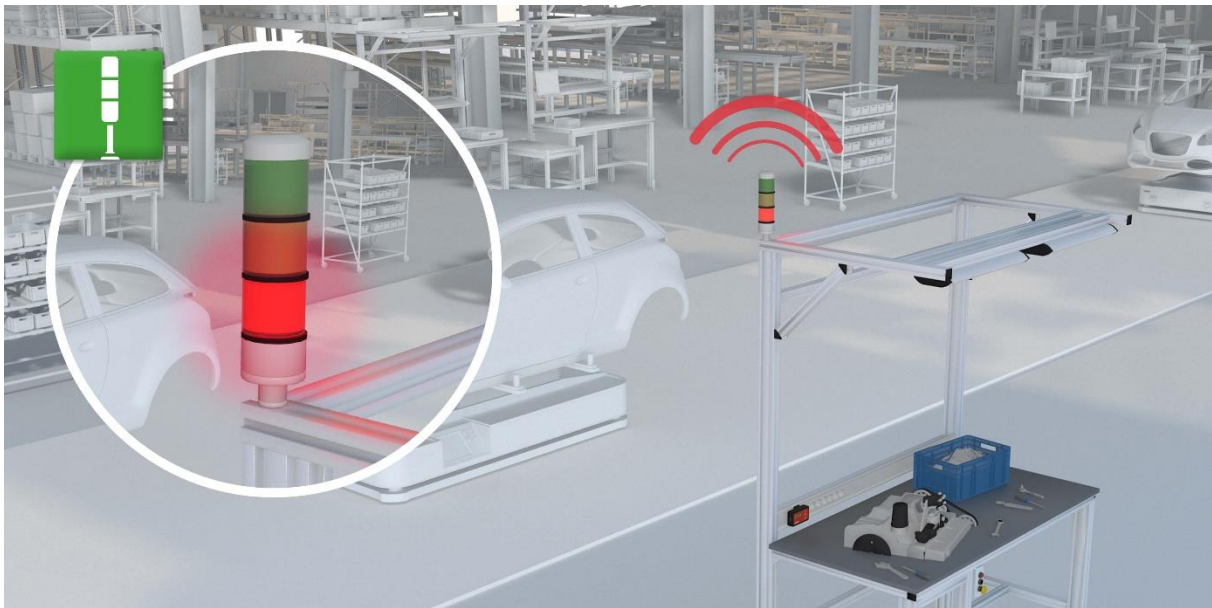
automotive industry or mechanical engineering. It arises when storage areas in materials stations or "supermarkets" become too large and confusing, or when the replenishment of B and C parts keeps stalling or "overflowing". In such cases, what is required is a holistic monitoring system for small and large load carriers which also incorporates mobile units such as AGV, dollies or eKanban racks.

Remote stock monitoring

The "nexy" system from steute provides just such a remote material flow and stock monitoring system. It spans a wireless network across the assembly or production hall, and then signals from wireless sensors at the shop floor level are received by Access Points and

passed on to a Sensor Bridge, the interface to a superordinate ERP, WMS or PPS system. This guarantees that "nexy" is completely integrated in the material flow at the IT level and can fully fulfil the function of an automated requisition system.

Such wireless networks are always planned individually. The wireless protocol guarantees high transmission reliability, even in the conditions prevailing in industrial environments (multiple wireless networks, radiation...). The range of "nexy" sensors and actors is continually being expanded. Some series have been especially developed for the requirements of different automated requisi-



The wireless system can assume additional tasks in parallel, for example the integration of warning lamps.

tion applications – for example a tilting sensor which detects the presence of boxes in mobile eKanban racks.

On the software side, pre-configured applications are available for the most common uses (eKanban, AGV, dolly monitoring, ...), so that the system can be quickly implemented and "taught in". One of the huge benefits of "nexy" is that multiple applications can be run on a single wireless and hardware infrastructure.

Remote dolly monitoring – an example

The best way to show how "nexy" works in practice is to take an example. One relatively new application is dolly monitoring in materials supermarkets, aimed at guaranteeing permanent control of the stock. The application was born in an individual project for an automotive supplier, but the "ecosystem" for dolly monitoring has since been completed and can now be configured with standard components and software modules.

In this application, sensors developed explicitly for this purpose are installed on the

monorail tracks for the dollies. They detect the removal or addition of dollies or other mobile transport vehicles automatically. More precisely, it is not the position of a dolly in the station which is detected by the sensor, but current occupancy of the rail in question which is ascertained by the logic inside the application software. Notifications are triggered in real time and then forwarded via the Access Points to the Sensor Bridge. In this way, a digital image of the stock is created.

Real-time information in materials supermarkets

Notification of a replenishment requirement occurs completely in line with an automatic material requisition system, using individually configured criteria. This guarantees constant availability of the parts in question, and users always have an overview of the true stock in real time.

The device management of the Sensor Bridge provides complete control over the "nexy" infrastructure. Integration is simplified by different adapters for exchanging sensor

events with back-end or automation systems, including SAP (Idoc, RFC), WebServices (http notification, REST), REST API and Modbus TCP. In addition, the "nexy" Sensor Bridge is so open that it can easily dock onto the architecture of modern ERP and PPS systems.

Crucial question: How are supplies transported to the assembly points?

During the development of an application for stock monitoring in materials supermarkets, attention was paid from the outset to covering as many different use cases as possible. Not all companies use dollies, for example.

Stations can also handle palletized or bulk goods in large load carriers. In such cases, different wireless laser sensor types can be additionally integrated in the network. They can detect the existence of pallets in designated storage areas from a longer distance, or they can register the occupancy of load carriers and trigger replenishments via the "nexy" system. New sensors will be exhibited by steute at the LogiMAT. Other options for

integration are signal and warning lamps for indicating operational status, as well as Andon systems which can be used, for example, for remote consignment.

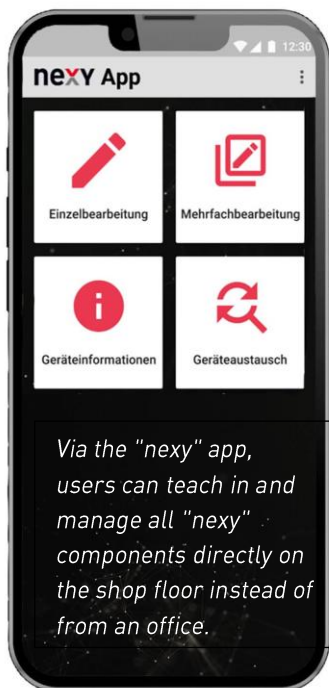
The continual further development of "nexy" includes the human-machine interface and simplification of the configuration and modification of the system. Current examples will be shown by steute at the LogiMAT 2023 using a demonstrator. A configurable dashboard will visualise the current operational status of all sensors in real time, and corresponding overviews can be displayed on any number of monitors. The prerequisite here is merely a standard browser. In addition, logical functions such as "traffic light controls" (red/yellow/green) can be configured and also displayed according to customer wishes.

New at the LogiMAT: management of terminal devices via app

The "nexy" app will be shown in Stuttgart for the first time. It enables all components in the field to be taught in and managed directly on



Signals from wireless sensors at the shop floor level are received by Access Points and passed on to a Sensor Bridge.



site, which makes initial operation far easier, especially for larger nexy installations which include hundreds of field devices. Users only have to scan the ID code of the sensor or actor and then they can parameterise the device in the Sensor Bridge from wherever they are. Users also profit from having all necessary information directly on site during service or retrofitting of the system.

The route which "nexy" is taking is thus clearly mapped out and will be made transparent at the LogiMAT: the automated materials requisition system is continually being expanded to include new components and functions. Achievement of its task – the uninterrupted visualisation, control and monitoring of in-house material flow – is thus improving and growing all the time.

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