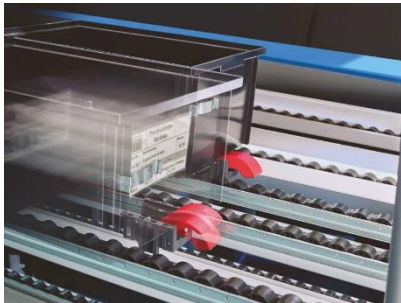


Remote-controlled eKanban

Application example of a wireless network for intralogistics

One way of achieving more flexibility when replenishing materials in the factory is mobile eKanban racks: a typical application for network-compatible wireless switching devices and sensors. Eliminating cables is also beneficial for non-mobile eKanban systems, however.



Wireless sensors developed especially for eKanban systems manage materials replenishment in state-of-the-art production plants.



Access Points receive wireless signals from the individual switches and sensors and pass them on to the user IT infrastructure, e.g. by WiFi or Ethernet.



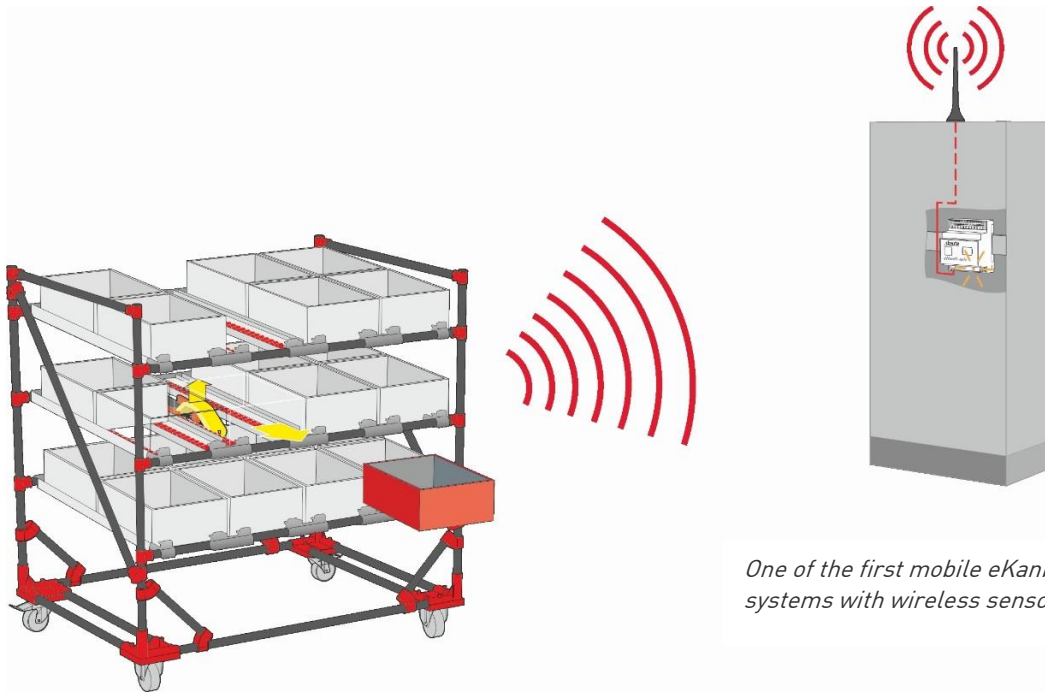
For rapid-moving items, several wireless sensors per shelf permit needs-based control of replenishment, for example at assembly workstations.

"Pull not push": this is the basic idea behind the Kanban principle, invented more than 70 years ago. It made so much sense that Kanban systems are still used today in very different branches of manufacturing.

In 1947, Toyota manager Taiichi Ohno attached cardboard cards to containers in the warehouse and instructed his factory staff to remove the card and place it in a Kanban box as soon as the container in question was empty. In this way, factory planners had a continual feedback about which articles needed to be re-ordered or produced, and they were able to reduce the

warehouse stock to a minimum without any danger of running out completely. Today cards are no longer used for this information flow because the "container empty" message is sent electronically – as a digital request for replenishment according to the "pull" principle, in short: eKanban. The messages are triggered manually via a hand-held remote control or automatically via switches and sensors which monitor the occupancy of the individual Kanban slots at all times.

A very new development is the trend towards mobile eKanban racks. They bring additional flexibility to in-house materials



One of the first mobile eKanban systems with wireless sensors

supplies and also facilitate completely new production concepts. Several automotive manufacturers are currently testing this trend in their "smart factories": cars are produced on top of automated guided vehicles (AGV) which drive to different assembly points depending on the car model and extras. The materials used at the assembly points are likewise brought by (smaller) AGV.

Communication between systems by remote control

The flow of information between mobile eKanban systems is reliant on radio communication. But the elimination of cables can also be advantageous in non-mobile eKanban systems because they can then be adapted more flexibly to changing requirements. In addition, there is no cost or effort for cable installation and no cable damage. Such solutions were initially realised using conventional wireless switches and sensors which communicated

with a receiver via point-to-point connections. Then steute Technologies GmbH & Co. KG developed its "sWave.NET" wireless technology enabling the integration of several hundred switches and/or sensors within one network. The eKanban principle is exceptionally well suited to wireless communication because a large number of rack shelves or slots need to be monitored simultaneously.

Moving towards a standardised solution

Two further development steps were required in order to achieve the technology of today. First steute developed a wireless sensor especially for such applications. It detects via a rocker whether a container or box is removed from a rack and sends a corresponding (radio) signal to a nearby Access Point. The latter is responsible for collecting field data and passing it on to the warehouse management or ERP software – for example per Ethernet – and, if required, also per web services to other locations.

With the latest "sWave.NET" generation it is now relatively easy to establish such a wireless network because a Sensor Bridge acts as a service manager, passing on data to the user IT infrastructure, making individual programming unnecessary.

At the LogiMAT 2019 in Hall 5, Booth D45, steute will for the first time ever be presenting an automated systems solution which further simplifies the wireless organisation of the materials replenishment process – from the Kanban rack to the administration system to automatic booking in the ERP. This is possible thanks to a 'plug and play' application especially for eKanban processes. Via this software the eKanban system can be adapted to individual requirements very simply. Users can configure, amongst other things, whether one sensor should be installed per rack shelf or whether a multiple Kanban system for fast-moving items is preferred. eKanban systems with manual remote controls can be configured very easily. In each case an overview of all eKanban slots is visualised using a state-of-the-art dashboard.

Users are thus provided with a complete solution for the management of eKanban systems which is easy to configure without any programming, and which thus only requires a very short initial operation

phase. Afterwards, users profit long-term from the advantages of the wireless system: no signal cables, uninterrupted communication, robust data transmission, simple adaptation to changing conditions (for example integration of further Kanban shelves/sensors).

From a component manufacturer to a service provider

In the next step steute will present further software modules for defined applications. The aim here is to provide intralogistics customers with complete solutions for the integration of plants and partial systems in their superordinate IT infrastructure. steute is thus developing from a manufacturer of components to a provider of solutions, advising companies in the planning of wireless networks for production and logistics.

Communication between system components takes place via "sWave.NET". In addition to Kanban racks, typical applications also include AGV fleets. At the LogiMAT 2019, steute will be demonstrating various material flow "sWave.NET" applications using a 3D model involving mobile AGV. The functions of the new software will also be presented in a demonstration environment.

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Images: steute Technologies GmbH & Co. KG