

Wireless network for flexible serial production

Car building by remote control

The automotive industry is currently testing car production without production lines. Instead, automated guided vehicles (AGV) transport car bodies and even complete cars through the assembly area in all directions. A wireless network ensures that the AGV run smoothly and assumes additional tasks such as the control of eKanban systems.

► In 1918, Ford introduced mass production to car manufacturing, achieving a huge leap forward in productivity.



Production is becoming increasingly flexible. And this trend means a gradual end to the classic principles of mass serial production. The most striking example is production lines in the automotive industry – conveyor belts attached to the floor, or hanging systems attached to the ceiling, or power-and-free conveyors. This concept was first introduced by Henry Ford around 100 years ago, and will soon be replaced by AGV. Car manufacturers are currently trying out serial production without production lines in pilot projects at various test sites, while Porsche has already implemented such a

system for its Taycan production in Stuttgart-Zuffenhausen. Both the car body and the complete car (following the marriage of body, chassis and battery) are transported by AGV from one assembly point to another. The workers can even hitch a ride on the platform and continue assembly work as they go. In other words, even the transport time is used for value-added tasks. The assembly parts required are provided by smaller supply AGV. The benefits of this assembly concept are obvious: the manufacturer can do away with expensive, built-in conveyor systems which need to be scrapped or extensively



► One example of a nexy wireless network is for the Vision E AGV made by dpm.

rebuilt every time a new model is produced. The manufacturing process thus becomes much more flexible, and different models can be built in parallel. The AGV do not even need to take the same route through the assembly hall every time. For complicated special editions, for example, they can take a detour and then rejoin the flow at a later stage. AGV manufacturers are understandably busy right now. This is also true for Daum & Partner Maschinenbau (dpm). This company has developed a special safety and personal protection system which enables workers to ride on the AGV platforms. The company uses the steute nexy wireless system to control its vehicles efficiently.

Remote wake-up calls for AGV

With this system, dpm is able to facilitate energy-efficient battery management: during downtimes of up to 3 weeks, the entire AGV fleet - or a single AGV - falls into a sleep mode in which the power supply is completely switched off and the energy consumption of the vehicles is zero. One of

the benefits of this system is that the AGV do not need to return to a central charging station, but can just remain parked wherever they happen to be at the time. Only a buffer battery is in operation, powering a wireless receiver. The receiver causes the AGV in question to start up again after it has received a corresponding remote wake-up call. The nexy system is a dedicated wireless solution for intra-logistics applications, featuring a sleep mode with very short wake-up times. The system transmits on the 868 MHz band as a Low Power Wide Area Network (LPWAN) via a proprietary wireless protocol. Despite its low power requirement, it achieves an extensive range, even in adverse environments, as well as high transmission reliability. The wireless connection to the AGV is made via Access Points distributed throughout the shopfloor area. If an AGV is standing still in its energy-saving sleep mode and is required to participate actively in the material flow once more, it receives a wake-up signal from the Access Point assigned to that part of the shopfloor.

Unless overridden for any reason, the order is given by the fleet management system.

Simple installation and configuration

A nexy solution is configured using a central dashboard, simplifying both installation and operation. In addition, several applications – e.g. AGV fleets, eKanban and Andon systems – can be operated within a single network. Users can integrate a wide variety of wireless switches and sensors on one platform – even devices not from the steute range. The steute development and application team is continually driving the market launch of new functions. Latest innovations include an OPC UA interface for cross-platform data exchange. Also new is the possibility to operate the Sensor Bridge on an IPC and thus to increase the reaction



and processing speeds of data from the field. The Gateway variant is intended for operation of the wireless system with a high number of sensors in the field, making high demands on both availability and reaction speed. The latest version of the Sensor Bridge also incorporates a universal SAP connector.

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