.steute

Downhill on 1,100 variants

Wireless Kanban in ski production

In Altenmarkt in Austria, Atomic skis are manufactured using the latest production methods – the factory is considered to be one of the leading firms in Austria for implementation of the Industry of Things. One innovation concerns the provision of components on assembly lines, mastered using a Wireless Kanban system which is fully integrated in the company-wide flow of information. Wireless switches from steute signalise the removal of components to the feedback control system by remote control.

Up to 30 different individual parts are prepared and supplied for the construction of a ski. The main components are the top sheet, wood core, side walls, tip walls, edges, fibreglass composite layers and polyethylene base, as well as diverse small components. And then a modern ski is still far from finished, requiring carefully coordinated sharpening and assembly steps. This process poses true challenges for in-house logistics because the array of variants is growing steadily: slalom and giant slalom, deep powder snow and groomed slopes, relaxed cruising or skiing at top speeds during world championships all require their own models with specific features. The woman in the picture, for example, is downhill skiing on a variant for all-mountain skiing and free-riding.

Managing the vast array of variants

Austrian ski manufacturer Atomic is meeting the different demands of the market and at the same time adapting its production and logistics processes to suit.

Small components needed for the production of skis are provided in mobile Kanban shelves.

Its Altenmark factory located in Pongau in Austria, in other words in the south of the federal state of Salzburg and thus in a well-known skiing region, produces approx. 400,000 pairs of high-quality skis per year, which come in 1,100 different variants and lengths. In order to manage this vast array of variants, the young production team in Altenmarkt has recently reorganised and restructured its manufacturing processes – in line with »lean production« and »Industry of Things« principles. This includes considerable improvements in the replenishment of small parts at the workstations in the pressing section, where the individual composite layers of the skis are pressed together.

Automatic replenishment of small components

In the past, the materials required in the pressing section were stored right there and when workers needed more, they fetched them. Since the path to the central storage area was long, this took a lot of time. A new Kanban system was to ensure the continual flow of information and materials. Now mobile flow racks containing plastic boxes with correctly sorted small components have been installed in the pressing section. Production workers take a container of the components they require. The individual storage lanes within the mobile racks are fitted with steute wireless position switches. When a lane is full, the weight of the container at the front depresses the actuator of the switch. When the last container is removed from a lane, the actuator is released and the switch automatically sends a signal by remote control to an »RF Rx SW 868 TCP/IP« receiver unit. Here an exceptionally stable and yet low-energy wireless protocol on the universally available 868/915-MHz waveband is used.
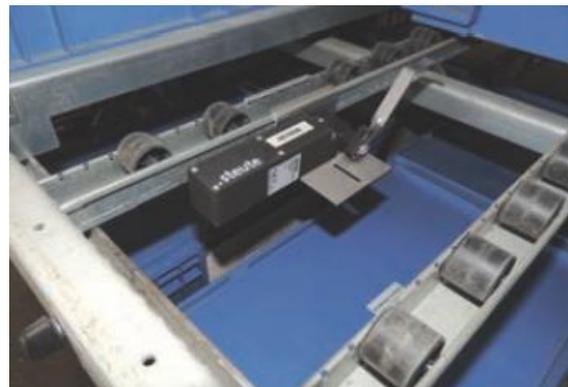
RF 96 D SW868 wireless position switches from steute send a signal when a container is removed.

Wireless connection to ERP system

The receiver then sends the signal to an IP address, where it is processed by the machine data acquisition system Zenon. Zenon is linked to the leading ERP system SAP. The message »container X removed from Kanban shelf Y« is displayed in the company-wide IT. At the Zenon logistics level, replenishment of that particular Kanban shelf is then triggered in the central storage area. At the same time,

the stock of that particular article is updated at the SAP level and, if necessary, re-ordered. Zenon visualises the empty shelf as an »order request« appearing on a screen in the central storage area, as well as on the tablets of the commissioning staff. As a consequence, the corresponding container is supplied and deposited in the Kanban shelf by tugger train. Confirmation is sent via the tablet used by the tugger train driver.

Transparent flow of materials

This Wireless Kanban system has now been tried and tested in practice. It ensures trouble-free replenishment of small components in the pressing section and total transparency in the flow of information – from the shop floor to production planning and purchasing. The system thus helps to reduce stock levels and increase planning reliability in conjunction with the replenishment of materials. Overall project responsibility was given to Corinna Grabner, Project Manager of Operations at Atomic Austria GmbH. Installation and initial operation were performed by the Atomic in-house electrical engineering department headed by Josef Bachler.

Information from the field is passed on by wireless receiver via a TCP/IP connection.

From the shop floor to the office

The interface between wireless switchgear and superordinate IT systems can be realised in different ways. At Atomic, a TCP/IP connection is used. Alternatively, the wireless switchgear manufacturer has recently developed its own »sWave.NET« platform, where signals from the wireless switchgear are first received via access points, then bundled and sent to one or more application servers via e.g. Ethernet or Wi-Fi. This platform also includes a database which collects all field level information and passes it on, either directly or via a middleware, to the customer's IT platform. A complete solution for uninterrupted communication from the individual wireless switching device to the top level of the company IT is thus available.

Product Manager:

Andreas Schenk
Product Manager Wireless
steute Schaltgeräte

Images: Atomic Austria GmbH, steute Schaltgeräte GmbH & Co. KG