

Fully automated Transport

Laser-controlled automated guided vehicle system operates completely independent

result in the loss of identification data for the goods transported. To solve these problems of the “data transport”, a system running in parallel to the already existing one was developed and implemented. Its task is to locally manage the respective information about the product being transported by each individual AGV transport cart. After analyzing the various available technologies and performing a number of pretrials, the technical department of Lavazza decided to carry out the project with a radio frequency identification system (RFID) from Siemens.

At the right place, at the right time

To each transport cart, a rewriteable transponder was mounted. These mobile data storage units are also called “tags”. At each location where pallets are picked up or dropped, an antenna has been positioned, with which the data transponder of the respective AGV cart can be written to or read from. If a transport cart picks up a pallet ready to be packaged from the palletizer, the system – with the help of the antenna – transfers all information concerning the pallet to the transponder of the cart. In other words, the data moves with the pallet on the same transport cart. At the destination, the data can thus be positively and unmistakably assigned to the arrived pallet. The – literally transported – data is read from the transponder by an antenna placed at the roller conveyor of the foil packaging machine. With this data, the control system is able to identify the pallet and determine the goods transported. Once the pallet has been wrapped in foil, the same information is relayed to the labeling machine, which affixes standard labels to the ready-for-shipment pallet.

Picture 1: Mobile data storage unit (transponder) at each AGV contains all pertinent information about the goods transported



At Mokapak, the transport of the pallets from the palletizer to the foil packaging machine is performed by a laser-controlled AGV (automated guided vehicle system). The transport carts are guided along a fixed driving route and move fully automatic and independent. The control system of the transport carts is activated by the palletizer. It reports to the system that a pallet is ready for pickup at a certain location. A free AGV transport cart then collects the pallet and transports it to the foil packaging machine, where the pallet is packaged and labeled. Here at the labeling station, information about the just delivered product is required – however, the AGV transport cart does “not know” what it currently is carrying. Moreover, multiple carts can be transporting pallets with different goods at the same time. Consequently, it may not be absolutely clear, which of the autonomous transport carts with what article has just



Picture 2: SLA81 read/write antenna for reading and acquiring data stored on the transponders

docked at the foil packaging machine. A simple transmission of the product data by network – in parallel to the shipping of the pallets – would therefore be insufficient. Also considered must be that the palletizing, foil packaging and labeling systems come from different manufacturers. All of this made the communication and synchronization of the individual control systems more difficult up to now, which could

RFID systems

Optimization of material flow and logistics

In the automated, industrial production as well as in logistics and sales, the demands made on contactless identification systems are more challenging and include resistance against dirt and



temperature fluctuations as well as larger storage capacities. Data storage units (MDS) are mounted directly to the product, product carrier or packaging. In this way, the information transmitted to the MDS accompanies the product.

Without optical or physical contact to readers/writers, the data storage units are read from and written to by means of radio frequency technology (antennas). The readers/writers (antennas) can be connected serially to an intelligent PLC module or a PC.

Siemens offers a range of RFID systems for the most diverse requirements:

- Moby D and Moby F for applications in logistics, distribution and order picking
- Moby I, Moby E, Moby U and SIMATIC RF 300 for the industrial production and assembly line applications
- Moby R for applications in transport, transport logistics and locating

Successful Pilot Phase

For the pilot project, the RFID system MOBY F from Siemens was employed. At this time, six SLA81 antennas are installed: one at each of the five palletizing stations and another one at the foil packaging machine. The entire system is controlled by a Simatic S7-300 PLC, which besides the operating logic also centralizes the communication between the palletizing, foil packaging and labeling systems. The visualization has been implemented with the SCADA software Simatic WinCC.

Following the success of the pilot project, it was decided to introduce the same technology in other departments as well. This expansion will be completed within the first half of this year. In total, 21 additional SLA81 antennas, an additional S7-300 PLC and two further visualization stations with WinCC (Version 6.0) will be installed.

RFID systems from Siemens meet all major standards. As a result, once a system solution has been developed with this technology, it can be employed worldwide. Worldwide support for RFID systems is ensured by the globally present Siemens Service.

www.siemens.com/simatic-sensors/rf

LAVAZZA

Fully automatic process from the manufacture up to the packaging

The Mokapak plant in Gattinara produces the famous coffee machine paper pods of the type “Espresso Point” for Lavazza. The entire process from the manufacture up to the packaging and palletization runs fully automatic. The system was implemented for Lavazza by BSA Technology di Canelli. With many years of experience, BSA Technology di Canelli specializes in the automation and computer control of production processes and possesses references from customers of the metal-working, textile, food & beverage as well as chemical industry segments.