

Packing and palletizing of Coffee

Case study: Löffbergs Lila

Automation is a requirement in many businesses. The coffee industry is no exception.



Europe's most modern plant

"We are as automated as we can be today," says Lars Andersson, head of maintenance at Kaffehuset i Karlstad AB, a subsidiary of Löffbergs Lila, Sweden's second biggest coffee manufacturer. Kaffehuset i Karlstad operates the roasting, packaging and warehousing operations for the company. It is one of Europe's most modern coffee production plants. Thirty-nine people are employed at the Kaffehuset i Karlstad to watch over the highly automated production to ensure a high-quality coffee of the right flavor. In addition to careful handling at all stages, Löffbergs Lila is a packaging and distribution-intensive business where 16,700 tons of coffee per year are packed into packages varying in weight from 50 grams to six kilograms. These are grouped into boxes and palletized for shipment. Automatic conveyor belts are everywhere throughout the factory.

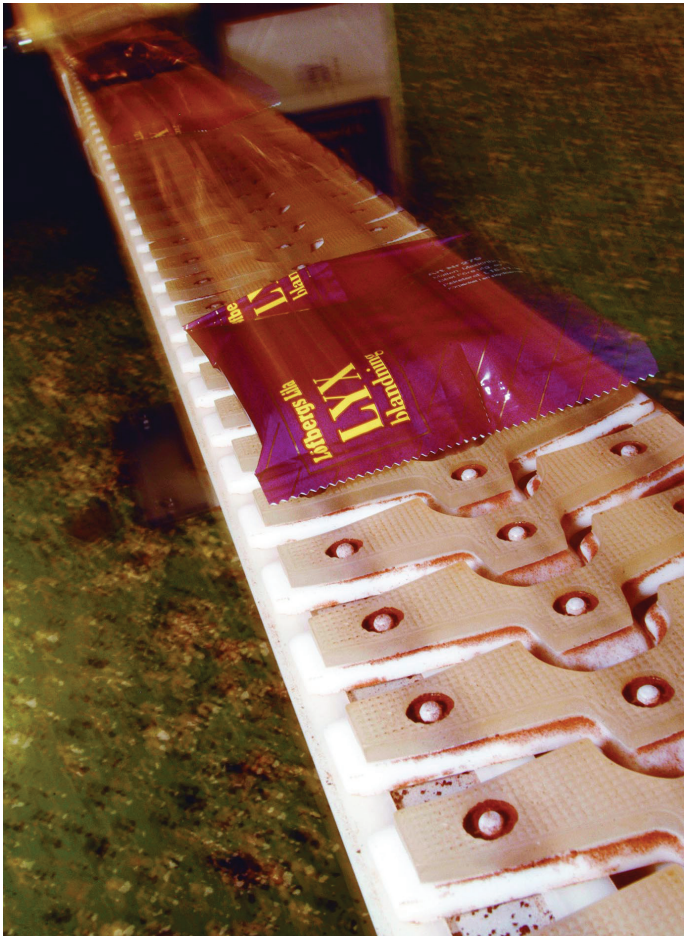
Automation increased flexibility in palletizing

To aid in the process, Löffbergs Lila uses four robots from ABB Robotics. The two IRB 640 robots have articulated arms and move in a very human fashion. Their function is to automatically take cardboard boxes from the end of the line and feed them onto a Euro-pallet until the pallet is full and ready for shipment. They are programmed to perform seven cycles per minute, although they can work faster. The robots also handles the empty pallets.

Both IRB 640 robots were installed in 2000, and they have increased the plant's flexibility in palletizing different types of boxes. They have also drastically decreased the incidence of work-related injuries at the company.

"The big argument for robots is that people no longer get hurt," says Andersson. "And besides, lifting boxes onto pallets is a very monotonous job."

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At Löfbergs Lila in Sweden, coffee makes its way through the production process.

IRB 340 FlexPicker solves packing operation

Another robot, the FlexPicker, was installed in 1999. This robot handles four 250-gram coffee bags at a time. The machine places them lying flat in a cardboard box. This process is repeated two more times before the final four bags are packed standing up for a total of 16 bags in the box. The robot essentially makes maximum use of the space in the box. The boxes, which are erected in the machine, are then whisked away on another belt.

"This is not easy to do with a conventional machine," says Andersson. "But the advantage with the FlexPicker is that it is very flexible in the pattern of its actions. And it is easy to adjust. Originally, we wanted the coffee bags to stand in the box, but that meant we would be shipping a lot of air. But the FlexPicker was able to do three similar motions and complete it with a different one with the bags standing up, thereby minimizing the amount of free space in the box."

ABB's IRB 6650 handles de-palletizing process

The final robot, the IRB 6650, is used in the de-palletizing process. Although some wholesalers want a whole pallet filled with the same type and packaging of coffee, supermarket chains may instead want a mixed pallet, a unique selection of pre-packed boxes filled with different articles and loaded onto a pallet. So what the IRB 6650 does is to dismantle different pallets according to customer wishes or given patterns, and send the boxes on a conveyor belt to the other two IRB 640 palletizing robots.

"We have a service contract with ABB that includes all of our robots," says Andersson. "But we rarely need to use it. The robots just keep on going. They will be cost effective for many years to come."

FACTS

Key advantages

- Flexibility to palletize different types of boxes
- Reduction of work-related injuries
- Flexibility in packing different types of patterns

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