KOCH Robotersysteme

FRESH START IN SACK PALLETISING

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Thanks to a fully automatic robot sack-palletising and full-pallet packaging system, the Austrian milling company GoodMills has decidedly enhanced its long-term competitiveness. The system designed by KOCH Industrieanlagen delivers high process reliability, productivity and optimum hygienic conditions, and requires little space. It also means that heavy manual work is no longer necessary.

GoodMills has successively switched its production processes to a fully automatic system. Werner Benes, in charge of the robot sack-palletising and full-pallet packaging system in his capacity as project manager, underlines the advantages resulting from the fresh start in sack palletising. "Apart from putting an end to all the physically very demanding work, we benefit from high process reliability and efficiency. Deciding to go for an automated solution was essential so that we can comply with the higher standards today, for example those regarding hygiene."

GoodMills produces many different sizes of sacks, some of them filled with quantities specified by the customer. This means that reaction times need to be as fast as possible in some situations. With this in mind, the company put out feelers in the market for automated solutions. The focus was on comparing layer palletising with robots, wrappers with hood stretchers and also various control and EDP systems. Benes watches the robot as it alternately picks up sacks from two conveyor lines and stacks them parallel on two pallets. "Several firms offered us robot solutions. KOCH understood the best how to develop ideas according to our needs and then to implement them in a system. KOCH fully met our precisely defined criteria and their design has the added advantage that little space is needed for the system. What's more, the cost-effectiveness of the solution is really impressive."

PRODUCTS HANDLED WITH GREAT CARE

Headquartered in Dernbach, the company KOCH Industrieanlagen GmbH as the general contractor supplied the turnkey robot sack-palletising and full-pallet packaging system, which gets the valved sacks with various types of bran and flour ready for dispatch. The sacks go on roller conveyors and via separate feeder conveyors from two sack-filling machines for flour and bran installed on the first floor to the central robot cell located on the ground floor. Needing little space under the ceiling and therefore not getting in the way of the fork-lift trucks, the conveyor system then takes the sacks via two lines to the robot. Before the robot grips them, the sacks pass through a sack compactor on both lines to spread the product evenly in the sacks and get them in a uniform shape. To avoid any damage being done to the sacks during these operations, the roller conveyors are designed with recesses at their transfer positions, into which the robot's time-tested KOCH sliding-fork gripper disappears. The clamping system integrated into the gripper prevents the sacks slipping out when they are being handled.

The robot takes individual sacks and puts them on to the load carriers according to the specified layer patterns, including precision positioning, stored in GoodMills' ERP system for each article. Empty pallets stand waiting in dispensers for roller conveyors to take them to the palletising stations, where they are automatically centred, aligned and, because of the space, raised by a lifting table by approximately 400 millimetres so that later on the last layer can be accurately laid. Before the robot palletises the bottom layer, it lays a protective sheet on the load carrier, gripping it with special suction modules.

The stacking height of the KOCH system is up to 2,000 millimetres. The height of the sacks and thus the number of layers depends on the product. GoodMills mainly uses 30-kilogram sacks, which the robot stacks in triple tiering in ten layers.

Benes keeps an eye on operations. "The robot handles our products with great care and this has the distinct advantage that the goods don't suffer any damage when they are palletised. It means there's greater potential for the future as well in that we'll be able to optimise the packaging material requirements. This gentle handling also has a positive effect on keeping the system nice and clean and on the outside of the packaging, which then still looks in perfect condition after the goods have been dispatched."

The robot cell achieves maximum palletising speeds of 320 sacks per hour in the flour and 160 in the bran line. This is equivalent to around 18 pallets. The cell transfers palletised load carriers to the conveyor system, which transports them to the stretch wrapper.

BAG PALLETISER IN ADDITION TO THE ROBOT CELL

GoodMills uses a bag palletiser in addition to the robot cell. A side-shifter, likewise supplied by KOCH, transports the load carriers guided from the cell on a roller conveyor and carrying individual bags or ones in packets to the feeder line of the stretch wrapper. As the drives of the carriers are frequency controlled, smooth starts and stops are guaranteed. The bag palletising system is designed to achieve hourly speeds of 14 Euro-pallets or 28 Düsseldorf pallets, which it palletises in pairs. Düsseldorf pallets, whose dimensions are half those of Euro-pallets, are handled in pairs by the side-shifter too, which transfers them to the feeder line leading to the stretch wrapper, where they meet up with the load carriers from the robot cell.

Before they are wrapped, half pallets are transported individually and then in pairs via a bypass to the wrapper again. Thanks to product-dependent parameters which the master SPC sends to the SPC of the stretch wrapper, different wrapping cycles can be set, for example for sack and half pallets and for packet pallets from the hand-feed station, which operates at a speed of four load carriers per hour. After the wrapper, which is designed for a maximum of 64 pallets an hour, the system labels the packed pallets. The load carriers run on an accumulating conveyor, which acts as a buffer before the storage area from where the goods can be taken.

GoodMills' production departments set job orders in motion using the company's ERP system, which communicates with the SPC of the robot cell. This link-up enables the ERP system to record and manage any stock received. Benes stands at the control panel of the system. "Working with the robot cell is beautifully straightforward. To guard against any inadvertent changes or incorrect operator input, access is authorised for the personnel at the various levels by means of passwords."

FORGING AHEAD FOR YEARS TO COME

According to GoodMills, the aim of investing in the robot sack-palletising and full-pallet packaging system engineered by KOCH and, in fact, in the whole project was not to reduce costs. The driving force was to replace obsolete methods and to gain an edge over rival firms in as many areas as possible. Being a company in a traditional sector of industry, GoodMills also wanted to meet the expectations the customers have today – an aspiration which thanks to the modernisation has been turned into reality.

GoodMills also says that system availability was already at over 95 per cent just a few months after commissioning in June 2015, an aspect which the high level of expertise and the good support service of the KOCH employees had contributed to.

Due to the complexity of the system, the process reliability is nevertheless further increased by remote maintenance and an on-call service, which is available when the production machines are running.

Benes cannot hide his satisfaction. "Every time we have an audit or visitors come it's a real pleasure to present the new systems. We really appreciate the encouraging feedback from our customers. And then there's the extremely positive reaction of our employees too, which has an advantageous effect on our quality. Productivity has risen as well, of course. With the system running like clockwork and requiring little maintenance, we are confident that we can forge ahead into the future for the next 20 years."

YOUR ADVANTAGES AT A GLANCE:

- the system requires little space
- strengthens your competitive position
- KOCH sliding-fork gripper for careful and precise handling
- layer patterns can be changed swiftly and easily thanks to optimum integration into the ERP system
- improved hygiene standards
- high process reliability and efficiency

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