Langhammer GmbH, Germany

Stacking more flexibly

A leading manufacturer completes its portfolio of palletizing systems with a linear robot. An open motion control system combines efficiency and flexibility with user-friendliness, reliability, and global availability.

Langhammer GmbH, based in Eisenberg, Germany, is a globally operating manufacturer of high-performance transport and palletizing systems. With the LR03, the German company now also offers a rugged and flexible linear robot that is compact and capable of six to seven handling operations per minute. At an equipment height of only 3,600 mm, stack heights of up to 2,800 mm are possible. The basic design of the LR03 has three linear axes, one rotation axis, and a clamp gripper that can also be programmed as a NC axis. A wide variety of products can be handled, from bakery baskets to foil-wrapped packs to packages, and even entire pallet layers can be safely shifted using the “wave band” mechanism.

The LR03 linear robot is automated in a compact, continuous, and flexible manner with control, drive, and HMI technology from one source.

Open automation with standard software

The control and drive systems are completely new. “We were looking for an open solution with a high degree of both flexibility and performance and that is available worldwide and accepted in all sectors,” explains Friedrich Mährlein, product manager at Langhammer. “We also wanted a sustainable and expandable control system.” And with the Simotion D435 motion control system, drives from the modular Sinamics S120 family, and Simotics S-1FK7 servomotors, this is exactly what Langhammer got from a single source.

Many PLC functions are integrated into the Simotion system, so an additional PLC was not necessary. Conve-
Convenient software tools simplify and accelerate the engineering – first and foremost the Simotion Handling Toolbox. In addition to preconfigured, easy-to-parameterize kinematics modules for the most commonly used robotics applications, this tried and tested function library includes a free transformation interface to integrate customized kinematics. It was thus possible to quickly generate and implement a model for the five axes of the linear robot. Based on this model, the motion control system is able to automatically turn every move of the palletized goods into an axis movement. The standardized software components of the Handling Toolbox calculate and program the motion path to control the robot axes. This significantly simplifies operation, especially if the high-end handling functions of the standard Simotion Toploading application are also used, as is the case at Langhammer.

**Implementing executable projects faster**

The company essentially generated the project automatically using the Simotion Easy Project project generator. This generator quickly and easily integrates basic functions into a project and ensures a consistent project set-up with standardized modules. It also integrates the libraries and program modules and allocates the program to the process levels. In this way, an executable basic project is generated without any programming effort. Because all the components came from one source, the project generator also saved the customer from having to manually program status and error messages for the visualization with Simatic WinCC flexible. Langhammer applied this to the convenient operator interface on a Simatic MP377 Touch (12”) Multi Panel, which can store up to 150 palletizing rules. The operator links these rules with the current product dimensions, and the system automatically creates the corresponding program. Consistency also enables efficient remote maintenance all the way to the drive level. In this way, errors can be diagnosed and, ideally, remedied immediately via a secure VPN connection from the factory in Eisenberg.

**Modular path to custom-made drive solutions**

The Simotion control unit is integrated into the modular Sinamics S120 drive system, which, in addition to a feed-in or recovery module, comprises a motor module custom fit to the performance of each axis. The DriveCliq digital drive bus, through which all Sinamics components are connected via plugs, saves configuration effort. The Simotion control unit recognizes the motors through their electronic type plates and applies the data. The linear robot is compelling. The first units are already being successfully used in well-known companies, some of which are in the food industry.