SIMOTION Top Loading

Optimized handling functions for packaging machines

Short product changeover times, quick format changes and the continuously increasing diversity of packaging materials are just some of the challenges faced by the manufacturers of packaging machines. As a result, there is a growing tendency to use handling robots directly in the process. With SIMOTION® Top Loading, we are offering you a standard application for motion tasks that occur frequently in handling processes, allowing you to create innovative machine concepts.

A better performance all round
SIMOTION Top Loading delivers a standardized software library which significantly simplifies engineering, programming and operation while increasing the performance of the machine. The software library enables you to program and configure Top Loading cells that have different kinematics. Moreover, the tool meets all the requirements for a continuous packaging line, including product feed, tubular bag solutions, cartoning and palletizing. The programming and engineering complexity required by such applications is therefore substantially reduced.

Flexible handling
With its wide range of functions, such as the easy integration of vision systems, conveyor tracking, belt and kinematics calibration or product tracking, SIMOTION Top Loading can be used in almost all handling applications. The tool supports a large number of kinematics which can be controlled by the Motion Control System using preprogrammed and tested software modules.

Suitable for all SIMOTION platforms
The Top Loading library is platform-independent and can run on any SIMOTION system, whether controller-, drive- or PC-based. Modular architectures with multiple control systems are also possible.
Optimized Path
The path can be traversed at either constant or variable speed. The variable path speed is calculated by the Top Loading library which also monitors and limits the dynamics of the physical axes, the geometry axes X, Y and Z (TCP) and the path axes. All these functions make it much easier now for the user to program the motion paths. Gantry, scara, articulated arm, roller and delta kinematics are already integrated. Thanks to the standardized parameterization of transformations, the rest of the software remains unchanged.

Easy programming
Thanks to the sample applications, integrated error handling and uniform diagnostic structures that are delivered with the software, it is easy to integrate the motion tasks of the Top Loading module cell into the main project. The motion program is extremely easy to configure using the extensive set of motion, jump and control commands. The software library even provides single-axis and coupling commands for additional synchronized or infeed axes. The definition of work areas and barred zones, report zones or product zones is also supported three-dimensionally.

The toolbox for standardized applications
The SIMOTION Top Loading technology package is one of several applications for the automation of packaging machines and is an integral component of the Optimized Packaging Line toolbox. This toolbox offers standard solutions for widely used machine types and common tasks – based on the SINAMICS drive system and the SIMOTION motion control system. With Optimized Packaging Line, we have developed a concept to automate the entire packaging line based on a uniform automation and communication standard.

Advantages offered by the SIMOTION Top Loading standard application
- Easy configuring of different kinematics (gantry, SCARA, articulated arm, roller, delta and specialized kinematics)
- Standardized Top Loading application for all SIMOTION platforms
- Integrated automation of the whole machine with a single control system
- Preconfigured interfaces for the integration of product detection vision systems
- No training in robot programming languages required thanks to uniform, IEC 61131-3-compliant programming methods

The motion path is defined independently of the machine kinematics. All kinematic principles typical of handling modules are supported.