

**Application solutions for the handling industry:  
Servo drive systems from SEW-EURODRIVE for  
Multi-axis handling system**



## A Perfect Package



It goes without saying that all types of goods have to be provided with protective or transportation packaging, for example, a covering. In this process, the goods have to be handled, transported, packaged and sealed! However, coordinating the process steps required to carry out this procedure is very complex. This is particularly the case when a very high throughput and maximum flexibility is demanded so that one system can package as many products as possible. Such packaging systems not only require an intelligent and precise control system, but also one that is flexible despite the high requirements!

### Application description

PET preforms are taken from a plastic injection molding machine and placed on a conveyor belt (for bottling). With the help of a handling system with five axes.

First, the PET preforms are forced out of the injection molding machine by compressed air and into a holder. They are then moved vertically upwards (Y-axis). A removal frame takes over the 96 preforms. While one removal frame moves backwards to the position where the preforms are set down on the conveyor belt (X-axis), the Z-axis moves the second removal frame to remove the next set of preforms from the plastic injection molding machine. The frame is rotated by 90° before the preforms are placed on the conveyor belt to be transported to the next stage.



### Criteria

- Time-critical unloading of a plastic injection molding machine
- Collisions are prevented thanks to time control of the removal axes
- Extremely high availability required
- X, Y, Z, C motion in one handling system

### Objective

The critical movement is carried out by the removal frame. In the X direction, there is a distance of approximately 3.2 m to cover, and the removal frame must have turned 1 m after the handover. To attain the fastest possible throughput, the sequence of motion for the travel and turning axes must be superimposed; this step leads to a coordinated, simultaneous movement of both axes. The X-axis acts as the master and the C-axis follows it in direct dependency using the electronic cam function.



### Technological requirements

- Highest travel speed on a 3.2 m unloading line
- Coordinated turning-feeding movement on the unloading line
- Complete turning movement with “removal” of the frame without vibrations



**MOVIDRIVE®** drive inverter with integrated IPOS<sup>plus</sup>® positioning and sequence control system controls all motion sequences precisely and dynamically, regardless of the number of positions and directions included in the motion.

## SEW-EURODRIVE solution

In the past, all axes used for handling moved individually and separately from one another. The movement was carried out using the appropriate commands via a PROFIBUS. The disadvantages were:

- Lack of axis coordination
- Time delays (productivity)
- Central PLC used excessively

In the future, intelligent MOVIDRIVE® drive inverters from SEW-EURODRIVE will carry out such complex motion sequences safely, quickly and reliably. The complex control programs are made possible by the application modules “extended b. p. viabus” and “electronic cam”; these modules are easy to operate and offer convenient parameter setting.

## Components

- Parameters replace programming
- Productivity is increased thanks to decentralized motion control
- MOVIDRIVE® offers pre-configured, standardized application modules
- Integrated IPOS<sup>plus</sup>® positioning and sequence control system for decentralized I/O processing.

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