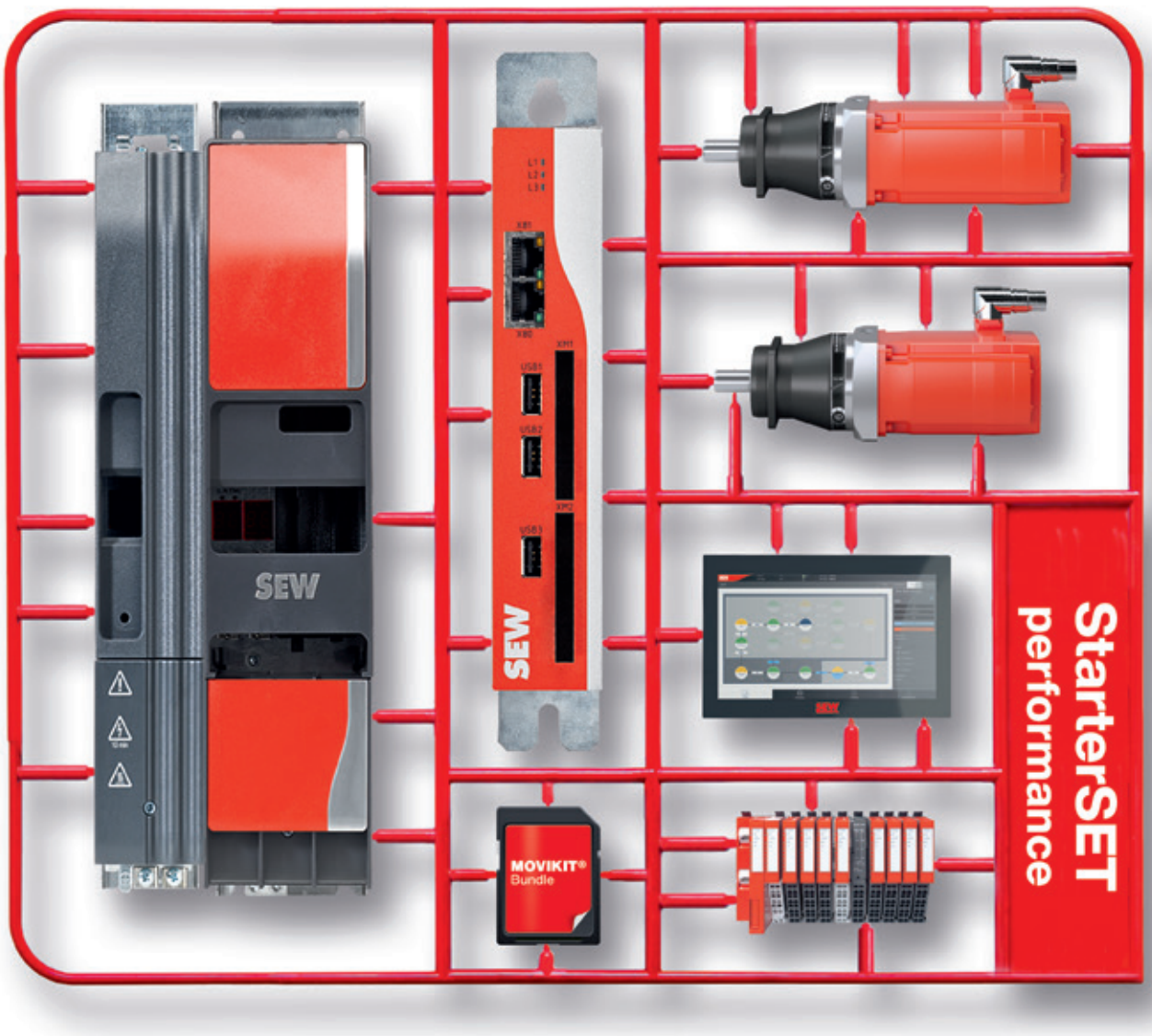
SEW EURODRIVE

StarterSET performance

Machine automation
from the start to the end of the line



Flexible, modular, and independent.

The StarterSET is the basic package and can be expanded to suit specific machine requirements. It's flexible, modular, and independent – anything is possible and nothing is a must. Regardless of which SEW-EURODRIVE option you choose, it's good to know that drive and automation technology can be fully realized with SEW-EURODRIVE products without sacrificing independence.

CM3C63S series
synchronous servomotor with
PxG® precision planetary
gear unit

MOVIDYN® performance –
decentralized drive unit

MOVI-C® CONTROLLER
type UHX65A

MOVIKIT® Bundle on
a memory card

The StarterSET is the faster route to your finished machine

True to our philosophy of being **faster, more customized, and more flexible**, our StarterSET offers you complete, perfectly coordinated automation packages from our MOVI-C® modular automation system for all kinds of machines and is similarly straightforward to a model kit.

The StarterSET not only makes implementation easier, but also cuts the time required for configuration, the project duration, and, ultimately, the overall costs (overall equipment effectiveness – OEE).

The StarterSET is available in two different variants:

The StarterSET performance for complex applications with up to 32 axes and the **StarterSET compact** for applications with up to six axes. Both variants offer you perfectly coordinated software and hardware components "Made by SEW-EURODRIVE" that you can configure with ease for use in processes that run continuously or in cycles.

MOVI-PLC® I/O system C

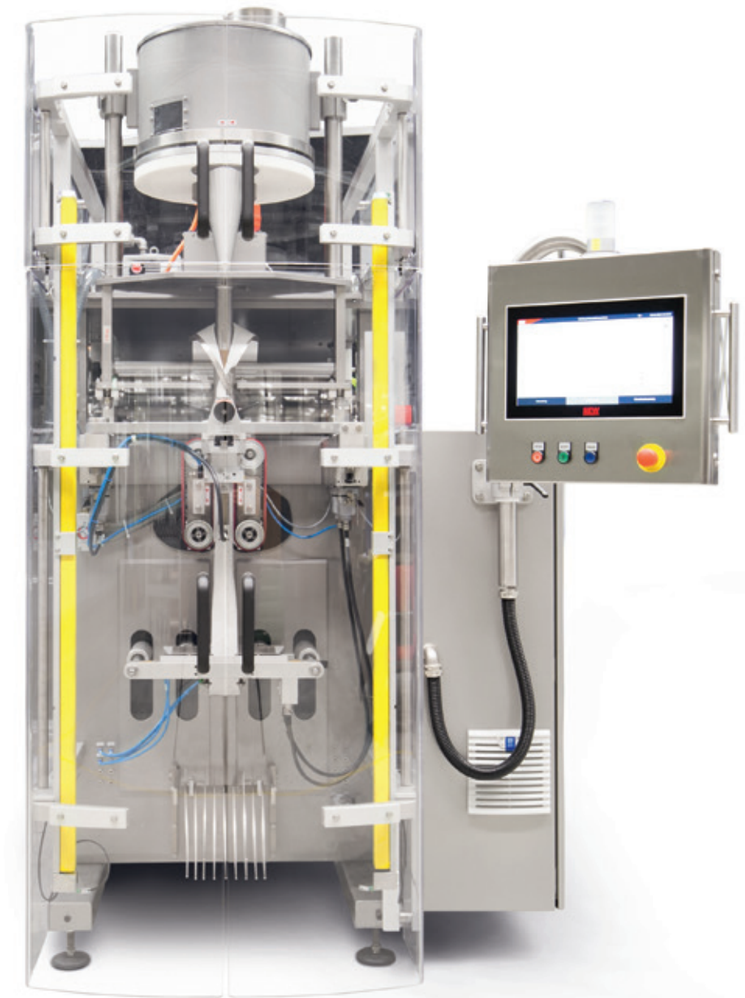
Web operator panel (WOP)

MOVITRAC® advanced –
compact inverter for single-axis applications

MOVIDRIVE® modular –
inverter for multi-axis applications

Machine automation solutions

from the start to the end of the line



→ **Vertical FFS machine**
fully automated thanks to the Vertical Form Fill and Seal StarterSET performance and customized add-ons

Every day, billions of goods, food items, and commodities are packaged, transported, unloaded, repackaged, mixed, stored, recycled, sorted, separated, divided into portions, and distributed – whether we're talking about primary, secondary, or other types of packaging, the variety is simply endless. That makes packaging machinery indispensable.

The packaging size, pack weight, product properties, and product volume are the decisive factors when it comes to automating packaging machines, their functions, and their motions.

Quick switchovers and frequent product changes call for a modular and flexible machine design. However, many application and motion sequences are the same. They may not be absolutely identical, but they still offer possibilities for simplifying things through standardization.

SEW-EURODRIVE developed the StarterSET performance for this very purpose. It consists of preselected basic hardware and software components for specific machine types. This StarterSET can be used as is, as a basic package, but there are also flexible adaptation options and countless customized add-ons.

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2 Vertical form, fill, and seal machines → Page 10

3 Sideloader/toploader multipackers → Page 12

4 Gantry palletizers / palletizing robots → Page 14

5 Horizontal fill and seal machines → Page 16

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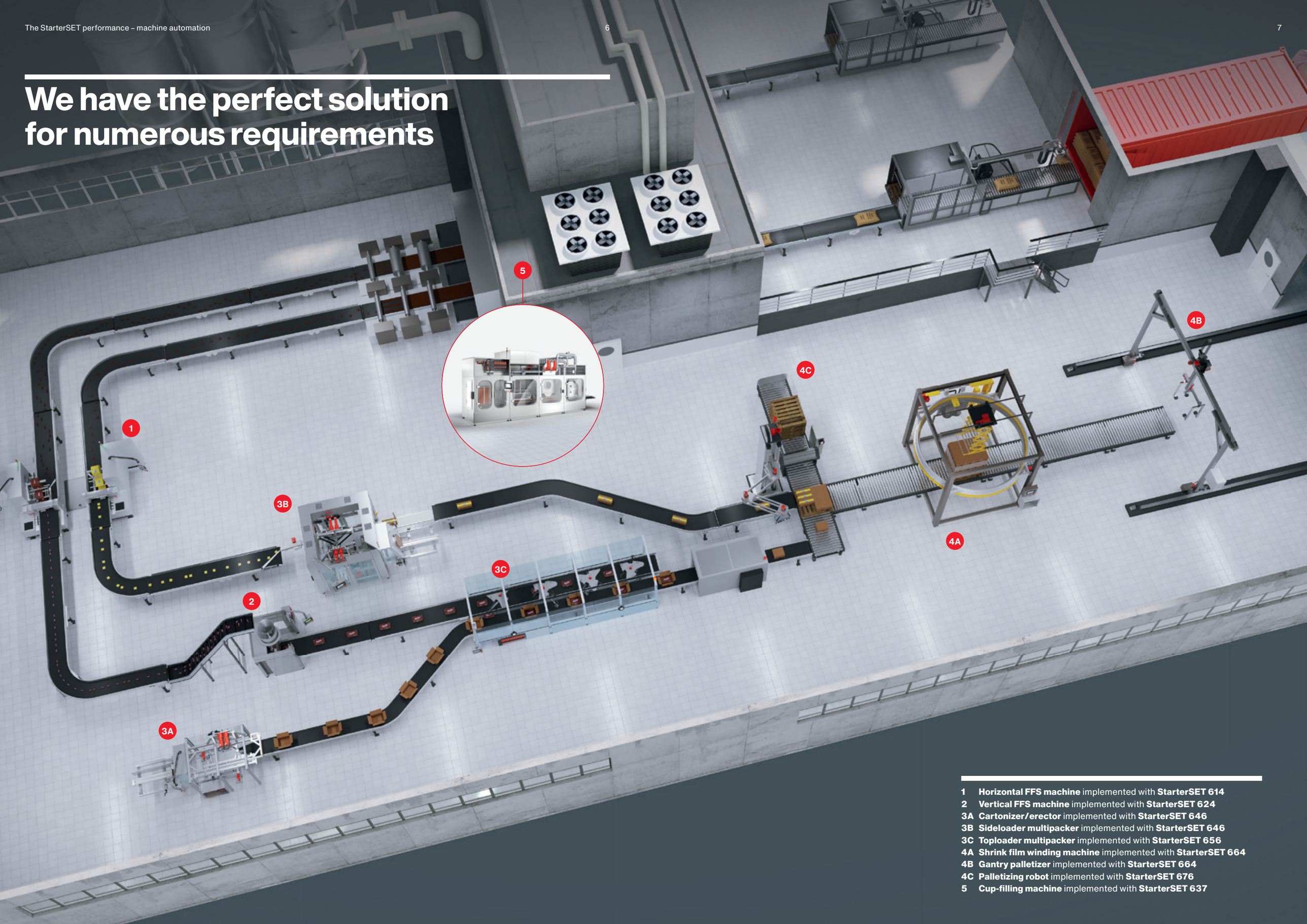
We have the perfect solution for numerous requirements



1 **Horizontal FFS machine** implemented with **StarterSET 614**
2 **Vertical FFS machine** implemented with **StarterSET 624**
3A **Cartonizer/erector** implemented with **StarterSET 646**
3B **Sideloader multipacker** implemented with **StarterSET 646**
3C **Toploader multipacker** implemented with **StarterSET 656**
4A **Shrink film winding machine** implemented with **StarterSET 664**
4B **Gantry palletizer** implemented with **StarterSET 664**
4C **Palletizing robot** implemented with **StarterSET 676**
5 **Cup-filling machine** implemented with **StarterSET 637**

1 Horizontal form, fill, and seal machines

Equipment

MOVI-C® CONTROLLER type UHX65A

MOVIDRIVE® modular – high-performance inverter

CMP50S series synchronous servomotor with PxG® precision planetary gear unit

MOVI-PLC® I/O system C

Web operator panel (WOP)

Horizontal FFS machines are ideal for packaging individual goods such as chocolate bars and cookies – not just in the food industry. These machines package the products individually and separately.

SEW-EURODRIVE automation enables quick and easy automatic format changes for this application. It means manufacturers can handle different products and bag sizes perfectly using just one packaging machine.

Stable temperature control is crucial to the quality of the seal on the bags, while the material and the speed of the packaging machine have a direct impact on control. The software modules in the MOVIKIT® AutomationFramework provide a high-precision means of adjusting and monitoring such control processes using major disturbance variables. In combination with the MOVIKIT® MultiMotion Camming software module, the film print image can be perfectly synchronized with sealing. Here, too, the software modules contained in the StarterSET support quick and easy automation.

Package contents
Basic configuration

StarterSET		614	616
Type		Horizontal Form Fill and Seal	Horizontal Form Fill and Seal
Performance		**advanced,** recommended for 6 interpolating axes	**progressive,** recommended for 10 interpolating axes
MOVI-C® CONTROLLER	1 ×	Type UHX45A with MOVIRUN® flexible, runtime on SD card, EtherCAT® master, and PROFINET	Type UHX65A (2-core CPU) with MOVIRUN® flexible, runtime on SD card, EtherCAT® master, and PROFINET
HMI WOP visualization	1 ×	7" HMI web operator panel, capacitive touchscreen, web visualization	
MOVIKIT® Bundle software 	1 ×	FormFillSeal – license bundle for form, fill, and seal (FFS) machines, consisting of software licenses for the application-specific implementation of typical horizontal or vertical FFS machines. The main components of the MOVIKIT® Bundle are licenses for the AutomationFramework programming template, web visualization, OPC UA data server, electronic cams, support of fieldbus master, and other machine-typical functions (winding, cutting, and sealing)	
MOVIDRIVE® MDP power supply module	1 ×	MOVIDRIVE® modular, 10 kW, with braking resistor and line filter	
MOVIDRIVE® MDS switched-mode power supply	1 ×	DC 24 V with AC and DC supply, 0.54 kW nominal power	
MOVIDRIVE® MDD double-axis module	1 ×	MOVIDRIVE® modular, double-axis module, controller for 2 servo axes, each with 2 A nominal current	
CMP50S servomotor	2 ×	1.3 Nm standstill torque, single-cable technology, and DDI encoder	
PxG® precision planetary gear unit	2 ×	Single-stage with i = 10, including adapter and mounting	
MOVI-C® DDI motor cable	2 ×	5 m, highly flexible hybrid cable, single-cable technology	
MOVI-PLC® I/O bus coupler	1 ×	EtherCAT® coupler, including end terminal, preconfigured with: – DC 24 V power supply module – 32 × digital inputs / 24 × digital outputs, DC 24 V – 8 × analog inputs, DC ± 10 V, Pt1000 – Terminal modules with terminal block	

For a truly compact horizontal FFS machine with up to six synchronous servo axes, look no further than the “advanced” Horizontal Form Fill and Seal StarterSET (614) as a basic package. For up to ten synchronized servo drives with further automation and visualization tasks, the “progressive” Horizontal Form Fill and Seal StarterSET (616) is the appropriate basic package. Regardless of the controller performance required, both include MOVIKIT® Bundle FormFillSeal, which has an extensive library of machine-typical functions. Perfectly coordinated, with a great deal of scope for customized programming and high degrees of freedom, the StarterSET is the ideal introduction to SEW-EURODRIVE’s world of automation.

2 Vertical FFS machines

Equipment

MOVI-C® CONTROLLER type UHX65A

MOVIDRIVE® modular – power supply and double-axis module

CMP50M series synchronous servomotor with PxG® precision planetary gear unit

MOVI-PLC® I/O system C

Web operator panel (WOP)

Vertical form, fill, and seal (VFFS) machines are ideal for bulk materials such as nuts or candy. Bag size, pack weight, and product properties are decisive factors for the automation of machine functions and motions. The function libraries contained in the StarterSET include specially developed print mark correction functions for precisely monitoring the print image of the film to be processed.

The MOVIKIT® MultiMotion Camming software module contained in the StarterSET ensures volumetric filling that is synchronized in real time – using a worm, for example. This is made possible by the simple parameterization of filling variants and the simultaneous clock-synchronous control of the relevant actuators.

Package contents
Basic configuration

StarterSET		624	626
Type		Vertical Form Fill and Seal	Vertical Form Fill and Seal
Performance		**advanced,** recommended for 8 interpolating axes	**progressive,** recommended for 12 interpolating axes
MOVI-C® CONTROLLER	1 ×	Type UHX45A (1-core CPU) with MOVIRUN® flexible, runtime on SD card, EtherCAT® master, and PROFINET	Type UHX65A (2-core CPU) with MOVIRUN® flexible, runtime on SD card, EtherCAT® master, and PROFINET
HMI WOP visualization	1 ×	10" HMI web operator panel, capacitive touchscreen, web visualization	
MOVIKIT® Bundle software 	1 ×	FormFillSeal – license bundle for form, fill, and seal (FFS) machines, consisting of software licenses for the application-specific implementation of typical horizontal or vertical FFS machines. The main components of the MOVIKIT® Bundle are licenses for the AutomationFramework programming template, web visualization, OPC UA data server, electronic cam functionality, support of fieldbus master, and other machine-typical functions (winding, cutting, and sealing)	
MOVIDRIVE® MDP power supply module	1 ×	MOVIDRIVE® modular, 10 kW, with braking resistor and line filter	
MOVIDRIVE® MDS switched-mode power supply	1 ×	DC 24 V with AC and DC supply, 0.54 kW nominal power	
MOVIDRIVE® MDD double-axis module	1 ×	MOVIDRIVE® modular, double-axis module, controller for 2 servo axes, each with 4 A nominal current	
CMP50M servomotor	2 ×	2.4 Nm standstill torque, single-cable technology, and DDI encoder	
PxG® precision planetary gear unit	2 ×	Single-stage with i = 10, including adapter and mounting	
MOVI-C® DDI motor cable	2 ×	7 m, highly flexible hybrid cable, single-cable technology	
MOVI-PLC® I/O bus coupler	1 ×	EtherCAT® coupler, including end terminal, preconfigured with: – DC 24 V power supply module – 32 × digital inputs / 24 × digital outputs, DC 24 V – 8 × analog inputs, DC ± 10 V, Pt1000 – Terminal modules with terminal block	

VFFS machines of this kind incorporate comprehensive drive and control functions almost from end to end and differ in terms of scale and performance. Accordingly, SEW-EURODRIVE offers two StarterSET levels for these different performance classes. On average, there are six synchronized servo axes in an FFS machine. These are automated as appropriate using the “advanced” Vertical Form Fill and Seal StarterSET (624) as the basic package. If further synchronized drives and complex automation tasks are to be added, the “progressive” Vertical Form Fill and Seal StarterSET (626) is recommended. Regardless of how many axes are to be driven and the machine’s ultimate level of performance, our modular StarterSET always offers the appropriate basic configuration for the complete solution.

3 Sideloader/toploader multipackers

Equipment

MOVI-C® CONTROLLER type UHX65A

MOVIDRIVE® modular – power supply and double-axis module

CMP50M series synchronous servomotor with PxG® precision planetary gear unit

MOVI-PLC® I/O system C

Web operator panel (WOP)

In a sideloader or toploader multipacker, a wide variety of product formats need to be processed as quickly as possible and with as little effort as possible. This calls for automation with highly flexible program execution – an ideal application for our MOVI-C® modular automation system.

Toploader multipackers are used in secondary packaging for products that cannot be stacked or accumulated. The prepared cartons and trays are automatically erected and glued. One or more kinematic models place the products from above into the carton, which is then closed and transported away. The sideloader design without robot kinematic models uses curve-based synchronization of products and carton.

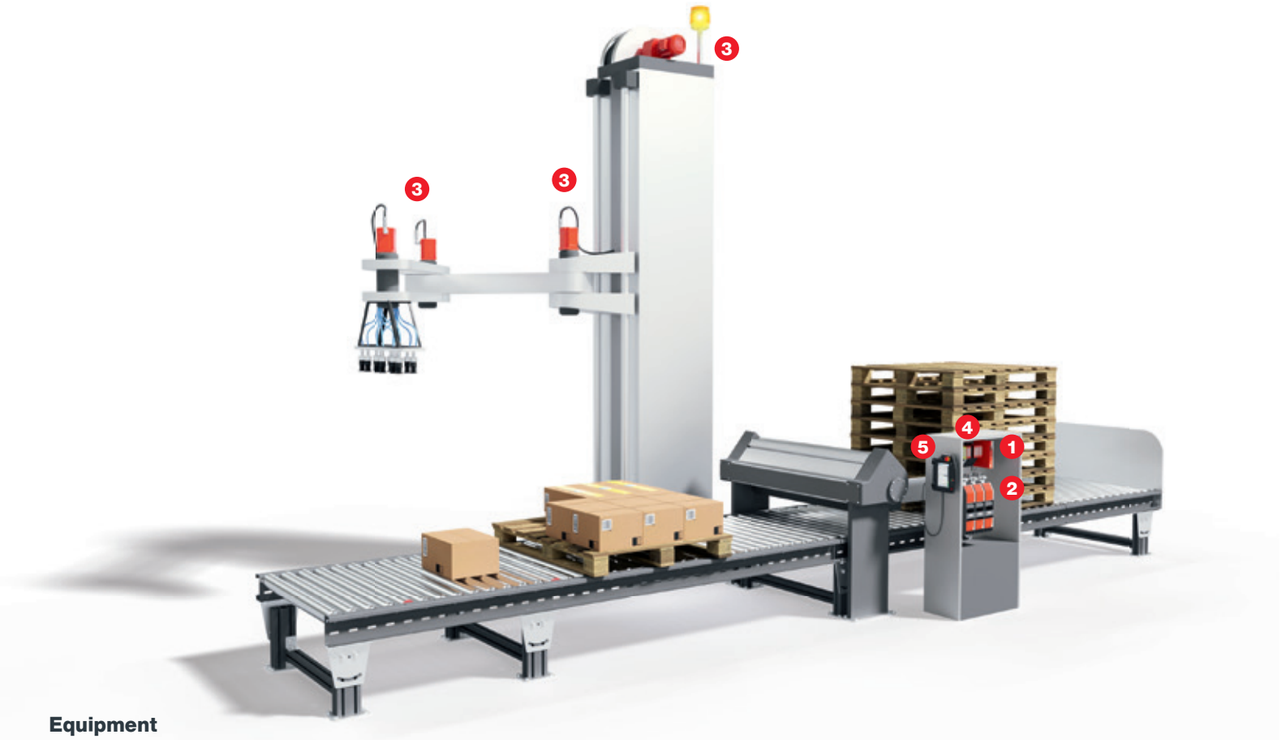
Pulling, gluing, forming, filling, and closing – thanks to straightforward parameterization, the modular design of a toploader or sideloader multipacker can be described and implemented in a short space of time using the correct StarterSET with the appropriate MOVIKIT® software modules from the MOVI-C® modular automation system.

The “progressive” CasePacker StarterSET (646) provides functions such as the electronic cam for synchronized axis motions and position-dependent valve control in real time for this purpose. The “progressive” CasePacker Robotics StarterSET (656) is perfectly coordinated for the toploader version thanks to the additionally integrated robot functionality.

Package contents
Basic configuration

StarterSET		646	656
Type		Case Packer (Side Load)	Case Packer Robotics (Top Load)
Performance		**progressive,** recommended for 12 interpolating axes	**progressive,** recommended for 16 interpolating axes
MOVI-C® CONTROLLER	1 ×	Type UHX65A (2-core CPU) with MOVIRUN® flexible, runtime on SD card, EtherCAT® master, and PROFINET	Type UHX65A (4-core CPU) with MOVIRUN® flexible, runtime on SD card, EtherCAT® master, and PROFINET
HMI WOP visualization	1 ×	10" HMI web operator panel, capacitive touchscreen, web visualization	15" HMI web operator panel, capacitive touchscreen, web visualization
MOVIKIT® Bundle software 	1 ×	CasePacker – license bundle for curve-based erectors and multipackers (CP-SL) for the application-specific implementation of typical carton erectors and multipackers in side-loader design. AutomationFramework programming template, web visualization, OPC UA data server, electronic cams, machine-typical functions (cutting, gluing, and cam control)	CasePacker Robotics – license bundle for multipackers with robot kinematic models (CP-TL) for the application-specific implementation of typical multipackers in toploader design with kinematic model. AutomationFramework programming template, web visualization, OPC UA data server, electronic cams, robot kinematic models, machine-typical functions (product tracking, gluing, and cam control)
MOVIDRIVE® MDP power supply module	1 ×	MOVIDRIVE® modular, 10 kW, with braking resistor and line filter	
MOVIDRIVE® MDS switched-mode power supply	1 ×	DC 24 V with AC and DC supply, 0.54 kW nominal power	
MOVIDRIVE® MDD double-axis module	1 ×	MOVIDRIVE® modular, double-axis module, controller for 2 servo axes, each with 4 A nominal current	
Servomotor CMP50M	2 ×	2.4 Nm standstill torque, single-cable technology, and DDI encoder	
PxG® precision planetary gear unit	2 ×	Single-stage with i = 10, including adapter and mounting	
MOVI-C® DDI motor cable	2 ×	7 m, highly flexible hybrid cable, single-cable technology	10 m, highly flexible hybrid cable, single-cable technology
MOVI-PLC® I/O bus coupler	1 ×	EtherCAT® coupler, including end terminal, preconfigured with: – DC 24 V power supply module – 24 × digital inputs / 16 × digital outputs, DC 24 V – Terminal modules with terminal block	EtherCAT® coupler, including end terminal, preconfigured with: – DC 24 V power supply module – 32 × digital inputs / 24 × digital outputs, DC 24 V – Terminal modules with terminal block

4 Gantry palletizers / palletizing robots



Equipment

MOVI-C® CONTROLLER type UHX65A

MOVIDRIVE® modular – power supply and double-axis module

CM3C63M series synchronous servomotor with PxG® precision planetary gear unit

MOVI-PLC® I/O system C

Web operator panel (WOP)

Palletizers and palletizing robots are process automation systems for automatically combining packs on load carriers. There are basically four different types of palletizer – articulated arm robots, layer palletizers, linear robots, and gantry palletizers. Pack size, pack weight, and, in particular, the work envelope are key factors when it comes to machine functions and motions.

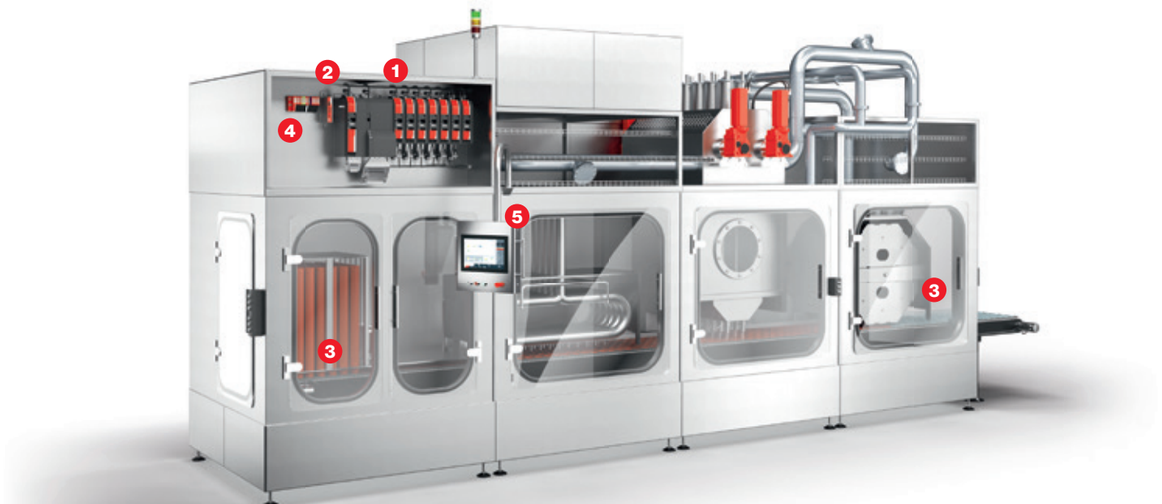
Our End-of-Line StarterSET always offers the right solution for this application. The “advanced” End-of-Line StarterSET (664) is the perfect choice for gantry and linear robots with or without two-axis kinematic models, while the “progressive” End-of-Line Robotics StarterSET (676) provides the perfect basic package for complex articulated arm robots or kinematic models with four axes.

Thanks to the StarterSET’s excellent flexibility and modularity, you can carry out any automation task quickly when palletizing and depalletizing. Besides speed and reliability, the comprehensive range of functions geared specifically to palletizers in the MOVIKIT® Bundles EndOfLine and EndOfLine Robotics, which are included in the StarterSET, ensure a versatile software solution and perfect control of the robot axes for extremely gentle container handling and optimum stacking quality.

Package contents
Basic configuration

StarterSET		664	676
Type		End-of-Line	End-of-Line Robotics
Performance		**advanced,** recommended for 6 interpolating axes	**progressive,** recommended for 16 interpolating axes
MOVI-C® CONTROLLER	1 ×	Type UHX45A with MOVIRUN® flexible, runtime on SD card, EtherCAT® master, and PROFINET	Type UHX65A (4-core CPU) with MOVIRUN® flexible, runtime on SD card, EtherCAT® master, and PROFINET
HMI WOP visualization	1 ×	10" HMI web operator panel, capacitive touchscreen, web visualization	15" HMI web operator panel, capacitive touchscreen, web visualization
HMI handheld DOP visualization	1 ×	–	7" mobile keypad for robot operation
MOVIKIT® Bundle software	1 ×	EndOfLine – license bundle for palletizers and XY gantry robots (EoL), for application-specific implementation of typical palletizers and gantries with 2D kinematic models. AutomationFramework programming template, web visualization, OPC UA data server, electronic cams, 2D robot kinematic models, machine-typical functions (gantry and winding)	EndOfLine Robotics – license bundle for palletizing robots (EoL ROB), for application-specific implementation of typical palletizing robots with 4-axis kinematic models. AutomationFramework programming template, web visualization, OPC UA data server, electronic cams, robot kinematic models, machine-typical functions (product tracking, position detection, collision detection)
MOVIDRIVE® MDP power supply module	1 ×	MOVIDRIVE® modular, 25 kW, with braking resistor and line filter	
MOVIDRIVE® MDS switched-mode power supply	1 ×	DC 24 V with AC and DC supply, 0.54 kW nominal power	
MOVIDRIVE® MDD double-axis module	1 ×	MOVIDRIVE® modular, double-axis module, controller for 2 servo axes, each with 4 A nominal current	
CM3C63M servomotor	2 ×	4.9 Nm standstill torque, single-cable technology, brake, and DDI encoder	
PxG® precision planetary gear unit	2 ×	Single-stage with i = 10, including adapter and mounting	
MOVI-C® DDI motor cable	2 ×	10 m, highly flexible hybrid cable, single-cable technology	
MOVI-PLC® I/O bus coupler	1 ×	EtherCAT® coupler, including end terminal, preconfigured with: – DC 24 V power supply module – 24 × digital inputs / 16 × digital outputs, DC 24 V – Terminal modules with terminal block	EtherCAT® coupler, including end terminal, preconfigured with: – DC 24 V power supply module – 32 × digital inputs / 24 × digital outputs, DC 24 V – Terminal modules with terminal block

5 Horizontal fill and seal machines



Equipment

MOVI-C® CONTROLLER type UHX65A

MOVIDRIVE® modular – power supply and double-axis module

CM3C63M series synchronous servomotor with PxG® precision planetary gear unit

MOVI-PLC® I/O system C

Web operator panel (WOP)

Horizontal fill and seal machines are used for filling yogurt, pudding, and drinks into pots, tubs, and jars. The containers fed into the machine are separated, sterilized, filled, closed, sealed, inspected, and, finally, conveyed out. The work steps are automated and need to be very precisely synchronized so as to ensure a high throughput.

Automation with our hardware and software solutions makes it possible to implement these types of machine, even when very stringent hygiene requirements apply.

The comprehensive range of solutions offers manufacturers of fill and seal machines exactly the product they need to be able to package goods hygienically in line with their requirements and expectations.

Depending on the setup and requirements for cleaning the machine, and the specific design of the machine itself, a whole range of different drive and automation components are used. Consequently, the StarterSET for horizontal fill and seal machines is available as a basic package in two designs.

Package contents
Basic configuration

StarterSET		636	637
Type		Fill and Seal	Fill and Seal Hygienic
Performance		**progressive,** recommended for 16 interpolating axes	
MOVI-C® CONTROLLER	1 ×	Type UHX65A (4-core CPU) with MOVIRUN® flexible, runtime on SD card, EtherCAT® master, and PROFINET	
HMI WOP visualization	1 ×	15" HMI web operator panel, capacitive touchscreen, web visualization	
MOVIKIT® Bundle software 	1 ×	FillSeal – license bundle for fill and seal (FS) machines for the application-specific implementation of typical horizontal fill and seal machines for liquids. The main components of the MOVIKIT® Bundle are licenses for the AutomationFramework programming template, web visualization, OPC UA data server, electronic cam functionality, vibration-free motion profiles, support of fieldbus master, and other machine-typical functions (winding, cutting, and sealing).	
MOVIDRIVE® MDP power supply module	1 ×	MOVIDRIVE® modular, 25 kW, with braking resistor and line filter	
MOVIDRIVE® MDS switched-mode power supply	1 ×	DC 24 V with AC and DC supply, 0.54 kW nominal power	
MOVIDRIVE® MDD double-axis module	1 ×	MOVIDRIVE® modular, double-axis module, controller for 2 servo axes, each with 4 A nominal current	
CM3C63S/CM2H62M servomotor	2 ×	CM3C.. servomotor, 2.7 Nm standstill torque, single-cable technology, DDI encoder	CM2H.. stainless steel servomotor (hygienic), 3.1 Nm standstill torque, absolute encoder, 2 m
PxG®/PSH.. precision planetary gear unit	2 ×	Single-stage with i = 10, including adapter and mounting	Stainless steel gear unit (hygienic) Single-stage with i = 10, mounted
MOVI-C® DDI motor cable	2 ×	10 m, highly flexible hybrid cable, single-cable technology	10 m, highly flexible cable, double-cable technology
MOVI-PLC® I/O bus coupler	1 ×	EtherCAT® coupler, including end terminal, preconfigured with: – DC 24 V power supply module – 24 × digital inputs / 16 × digital outputs, DC 24 V – 8 × analog inputs, DC +/- 10 V, Pt1000 – Terminal modules with terminal block	

The Horizontal Fill and Seal “progressive” – Hygienic StarterSET(637) is ideal for machines with drives that come into contact with food. Stainless steel CM2H.. servo gearmotors are used in this case.

The “progressive” Horizontal Fill and Seal StarterSET (636) contains servo gearmotors from the CM3C.. series in the standard design (degree of protection IP65), which can be used in applications where there is no contact with food.

Special software functions have also been developed specifically for this type of machine. Both versions of the StarterSET contain the award-winning MOVIKIT® AntiSlosh software module. This module reduces the sloshing behavior of liquids considerably by adjusting the travel profile accordingly. This reduces the settling time for liquids that have been moved. These vibration-reducing motion calculations are a core element of MOVIKIT® Bundle FillSeal.

MOVIKIT® software modules Functional description

MOVIKIT® offers ready-to-use software modules for everything from simple drive functions to complex motion control functions.

Web Visualization
Browser-enabled visualization for Windows-based visualization devices with ready-made templates for machine functions.

AutomationFramework
Programming template for machine automation based on PackML-compliant state manager and mode manager, including linear positioning, module positioning, conveyor, rotary knife, flying saw, pick & place, and torque winder machine modules and much more besides.

PowerAndEnergySolution – PowerMode
Function library for MDP92A power supply module or MDE90A energy converter and energy storage units for creating highly efficient power supply solutions.

PowerAndEnergySolution – EnergyMode
Function library for highly efficient energy supply solutions with the energy storage unit decoupled from the DC link and simple supply via an MDE90A energy converter.

CamSwitch
Software module for position-dependent switching of digital outputs with dead-time compensation to support several software tracks and cams per track.

MultiMotion Camming
Software modules used to implement universal motion control functions for interpolating axes, including position-based synchronous operation and electronic cam functionalities. An IEC interface can be used to activate and, for example, overlay the motion profiles.

PositionController add-on
Additional controller-based closed-loop controller modules for an external drive controller, for centralized position control and conventional encoder evaluation.

Interpolation add-on
Add-on function for generating electronic cams on the target system without a development environment, based on the interpolation of curve point tables within the target system.

AntiSlosh add-on
Add-on function for generating travel profiles to reduce vibration, for slosh-free positioning of liquids, including parameterization and analysis functions.

CombinedEncoderEvaluation add-on
Add-on function for optimized encoder evaluation by combining distance and motor encoder for enhanced dynamics.

Robotics
Basic software for controlling a robot with two joint axes and supporting 2D kinematic models. Includes SRL programming language as a programming interface and interpreter for creating robot user programs.

MediumModels add-on
Add-on robotics function for controling robots with three or four joint axes and supporting the relevant kinematic models.

TouchProbe add-on
Add-on robotics function for precise measurement of path points and sensor-based positioning.

ConveyorTracking add-on
Add-on robotics function for synchronizing kinematic (pick & place) motions with a conveyor belt application.
Can be used directly without programming thanks to easy parameterization for typical pick & place applications with product tracking.

Circle add-on
Add-on robotics function for circular kinematic interpolation in three dimensions.

PreControl add-on
Add-on robotics function for drive precontrol to reduce path deviations, vibrations, and thus also cycle time.

CollisionDetection add-on
Add-on robotics function for collision detection in kinematic models to ensure mechanical and material protection.

Gearing
Software module for electric gear unit mode, for applications with synchronous operation using a predefined fieldbus interface and parameterization.

Winder
Function library with function blocks for implementing winding applications with tension control or controlled via the speed.

FilmFeeder
Software module for implementing synchronized film feed with optional print mark recognition / positioning advance and retard via a predefined fieldbus interface and parameterization.

FlyingSaw
Software module for implementing a synchronized flying saw using a predefined fieldbus interface, with parameterizable and automatic electronic cam generation.

RotaryKnife
Software module for implementing a rotary knife using a predefined fieldbus interface, with parameterizable and automatic electronic cam generation.

Torque
Software module to control two drives acting on a common mass and their loading.

OPC UA
Provision of an OPC UA data server on the MOVI-C® CONTROLLER, as a standardized communication interface for the connection of field units and for general data access.

PROFINET IO controller
Provision of a PROFINET IO controller on SEW-EURODRIVE controllers with integrated multi-master option and possibility of connecting decentralized field units by means of PROFINET IO.

EtherNet/IP scanner
Provision of an EtherNet/IP scanner on SEW-EURODRIVE controllers with integrated multi-master option and possibility of connecting decentralized field units using EtherNet/IP™.

Web operator panel (WOP) with web visualization

Mobile operator panel (DOP) with robot monitor

MOVIKIT® Bundle software modules

All-in-one solution

The software makes the difference

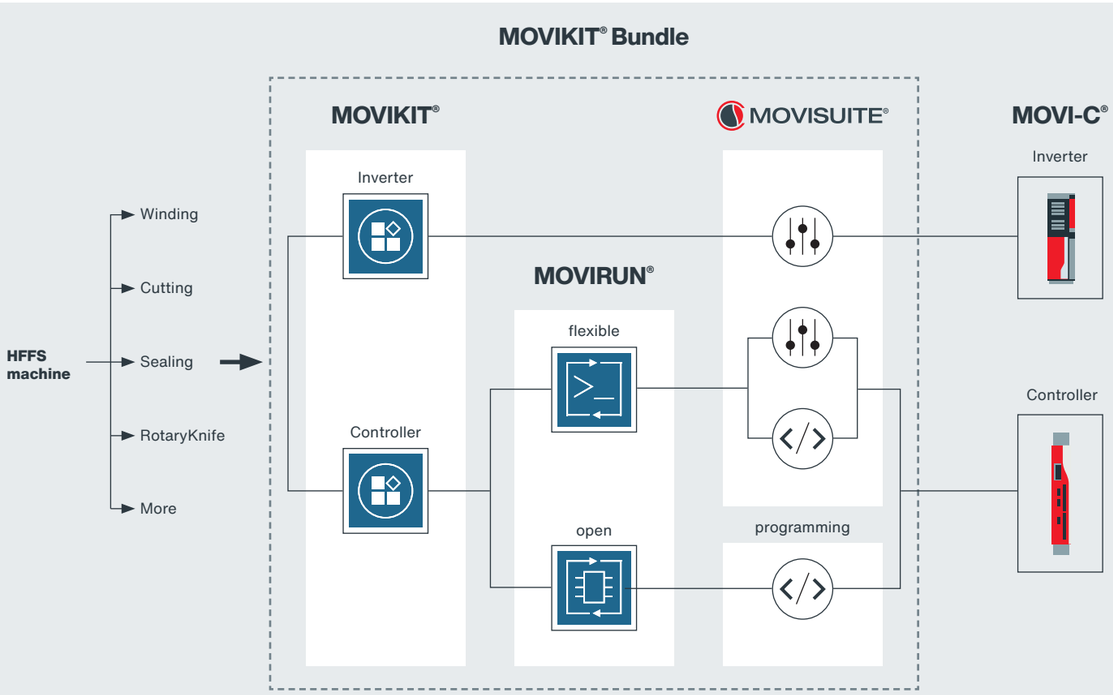
As part of the MOVI-C® modular automation system from SEW-EURODRIVE, the MOVIKIT® software modules offer application-specific software functionalities for parameterizing and operating your drive technology. The MOVIKIT® software modules provide application-specific functionalities.

Besides motion profiles, standardized communication solutions and visualization of machine-relevant data can also be provided.

A MOVIKIT® Bundle comprises extensive predefined software elements containing multiple MOVIKIT® software modules. The bundles are specifically and perfectly coordinated for the programming implementation of functions that are typical of the target machine.

These preselected software modules provide you with all the functions you need, thus making the selection and implementation processes much easier.
The cost-optimized license package is provided already activated on a memory card together with the relevant UHX controller and can be flexibly extended by additional software modules if required.

Schematic representation of a MOVIKIT® Bundle, based on the example of a horizontal FFS (HFFS) machine

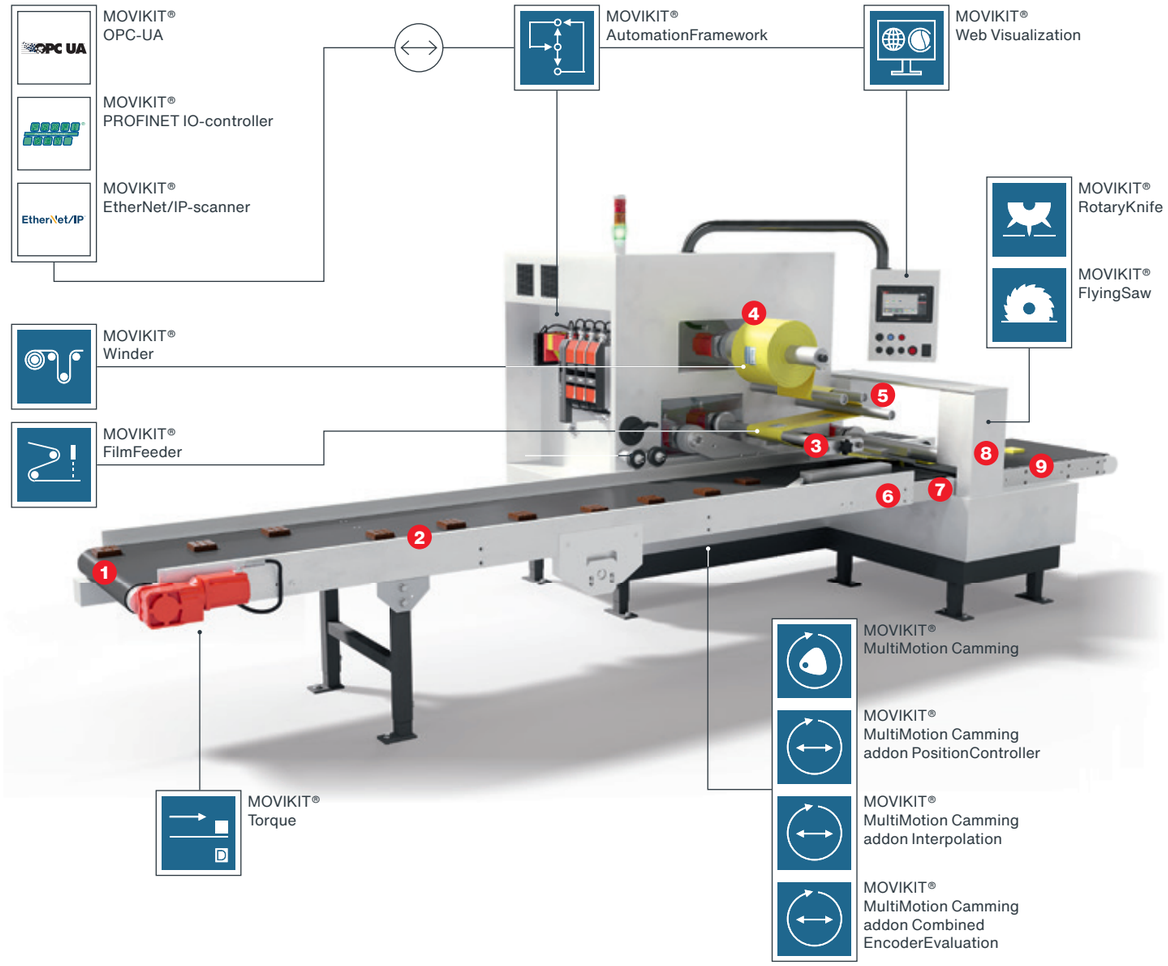


MOVIKIT® Bundle FormFillSeal (FFS)

The license bundle for form, fill, and seal (FFS) machines consists of software licenses for the application-specific implementation of typical horizontal or vertical FFS machines.

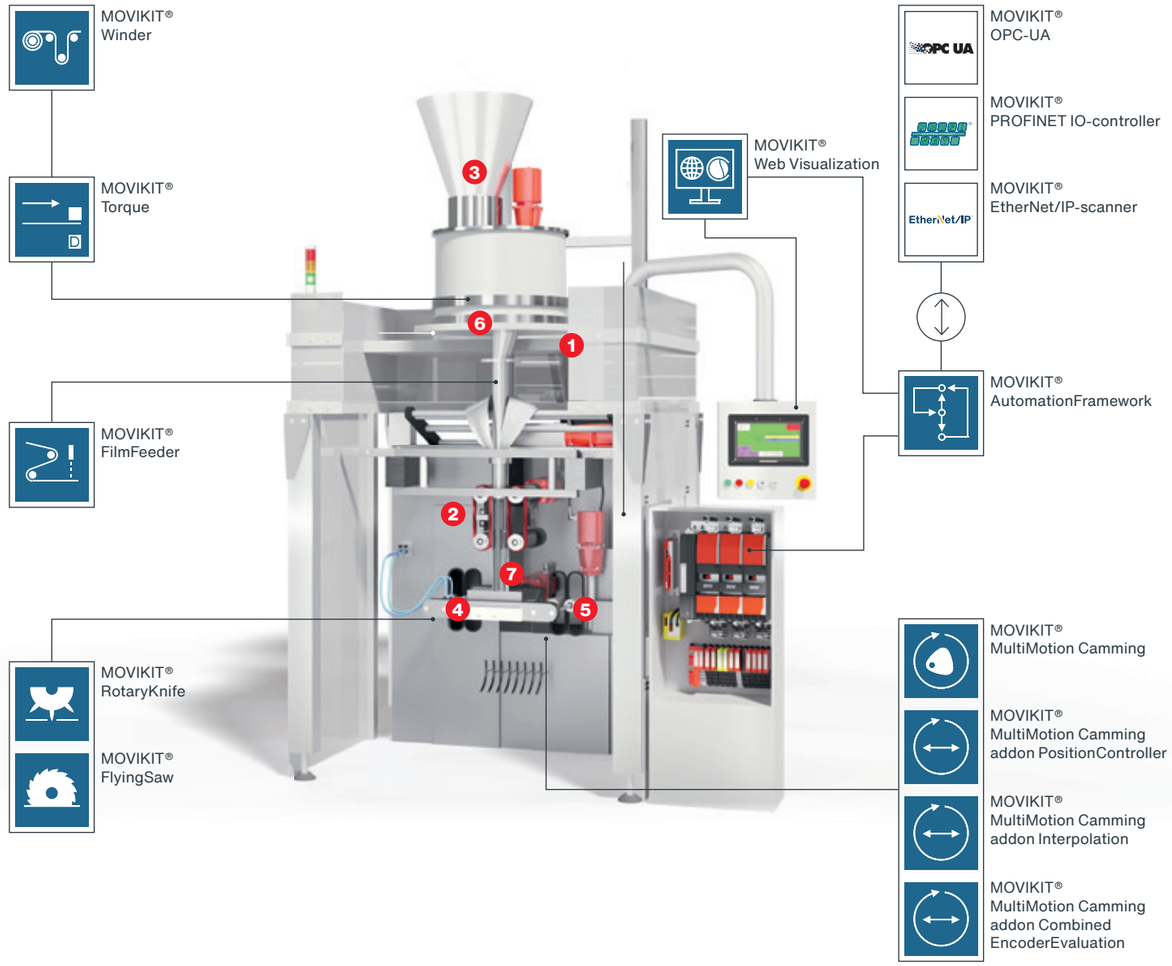
It contains the AutomationFramework programming template, web visualization, OPC UA data server, electronic cams, support of fieldbus master, and other machine-typical functions (winding, cutting, and sealing).

Example application: horizontal FFS (HFFS) machine



1 Detecting products	2 Separating products	3 Synchronizing the conveyor belt
4 Film unrolling	5 Detecting the print mark	6 Longitudinal sealing
7 Film transportation	8 Cross-sealing and separating	9 Removal

Example application: vertical FFS (VFFS) machine



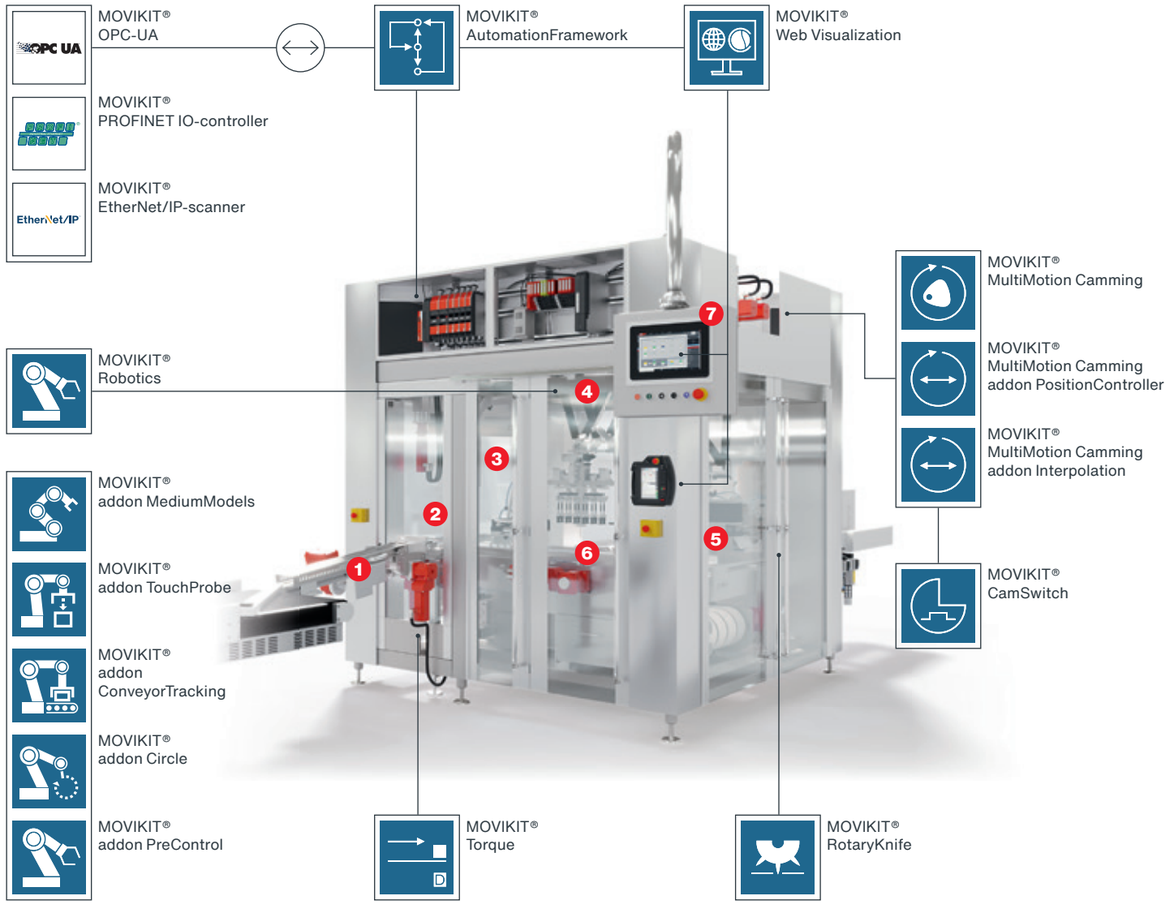
1 Film unrolling	2 Film transportation	3 Dosing
4 Sealing bar	5 Sealing tongs or jaws	6 Monitoring of print mark
7 Sealing		

MOVIKIT® Bundle CasePacker Robotics (CP-TL)

The license bundle for multipackers with robot kinematic models (CP-TL) for the application-specific implementation of typical multipackers in toploader design with kinematic models.

It contains the AutomationFramework programming template, web visualization, OPC UA data server, electronic cams, robot kinematic models, machine-typical functions (product tracking, gluing, and cam control).

Application example: Multipacker



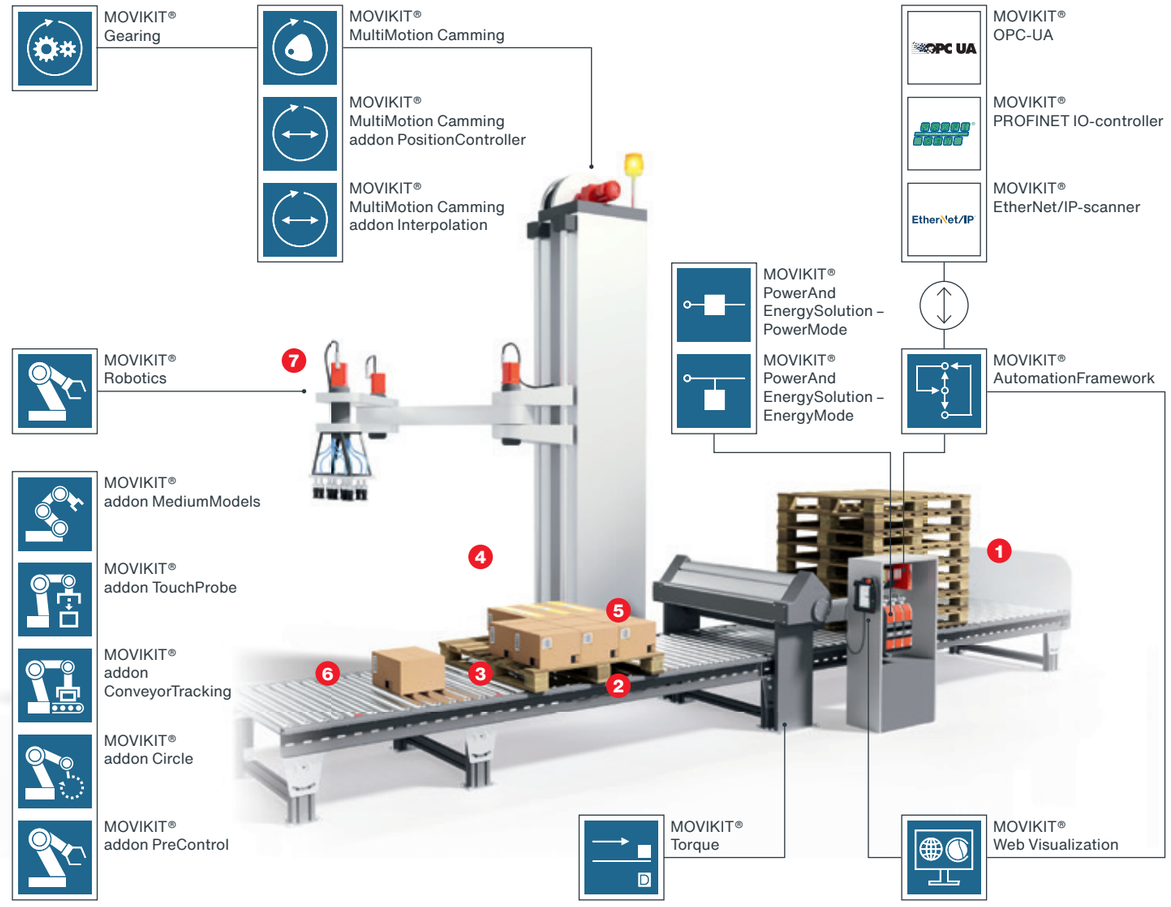
1. Infeed and identification
2. Pre-grouping and inputting into the cycle
3. Carton erection
4. Robot kinematic models
5. Sealing
6. Gluing
7. Visualization (PackML)

MOVIKIT® Bundle EndOfLine Robotics

The license bundle for palletizing robots (EoL ROB), for application-specific implementation of typical palletizing robots with 4-axis kinematic models.

It contains the AutomationFramework programming template, web visualization, OPC UA data server, electronic cams, robot kinematic models, machine-typical functions (product tracking, position detection, collision detection).

Application example: Palletizing robot



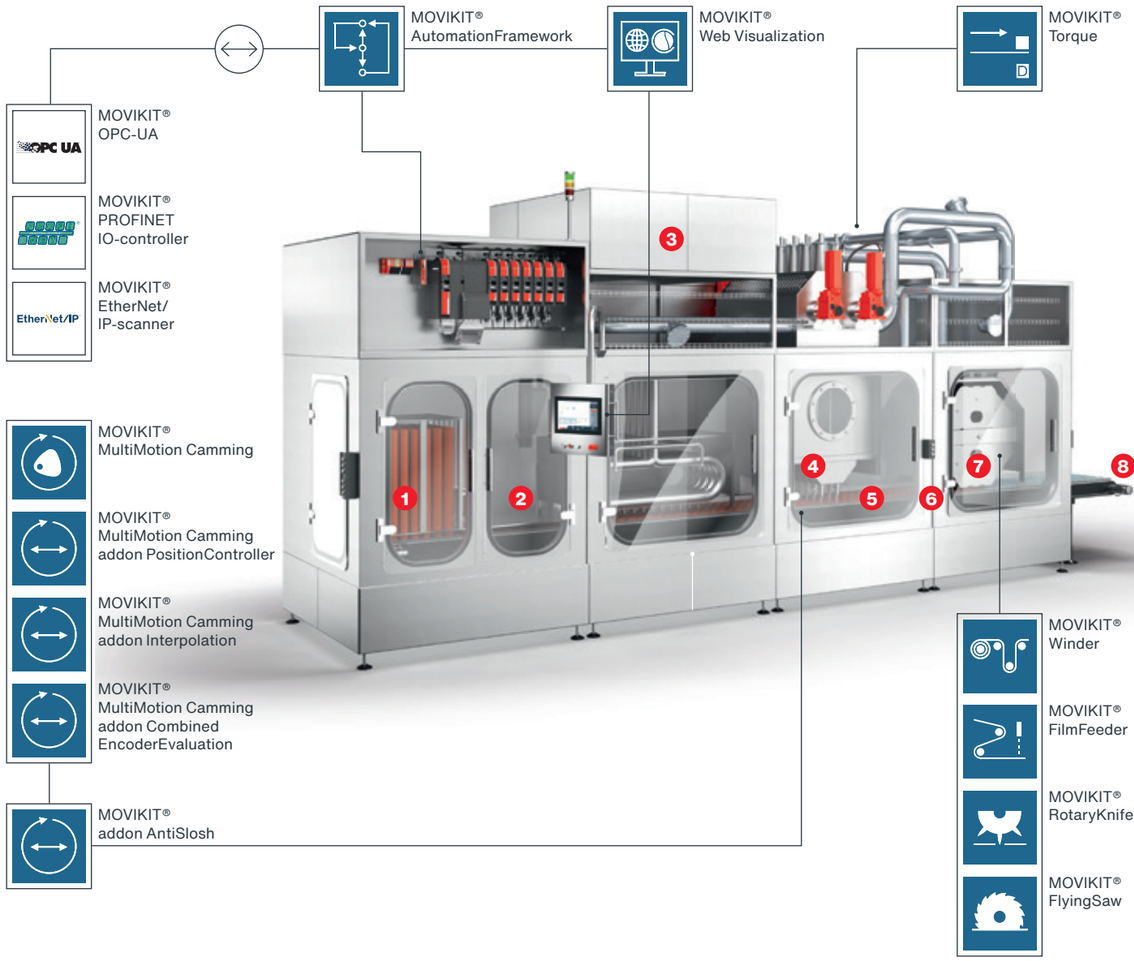
1. Pallet infeed
2. Pre-grouping of packages
3. Layer formation/simulation
4. Stacking/palletizing
5. Intermediate layer
6. Transportation
7. Robot kinematic models

MOVIKIT® Bundle FillSeal

The license bundle for form, fill, and seal (FFS) machines consists of software licenses for the application-specific implementation of typical horizontal or vertical FFS machines.

It contains the AutomationFramework programming template, web visualization, OPC UA data server, electronic cams, support of fieldbus master, and other machine-typical functions (winding, cutting, and sealing).

Application example: Cup-filling machine (HFS)



1 Cup infeed	2 Cleaning	3 Stirring
4 Filling (dispensing)	5 Transportation	6 Cup lift
7 Sealing	8 Inspection	

MOVIKIT® Bundle overview

	MOVIKIT® Bundle type	FormFillSeal FFS	FillSeal FS	CasePacker CP-SL	CasePacker Robotics CP-TL	EndOfLine EoL	EndOfLine Robotics EoL ROB
MOVIKIT® software modules	**License ID**	**SMB0001***	**SMB0002***	**SMB0003***	**SMB0004***	**SMB0005***	**SMB0006***
Web Visualization	SMK1504*	1	1	1	1	1	1
AutomationFramework	SMK2001*	1	1	1	1	1	1
PowerMode PowerAndEnergySolution	SMK1402*						1
EnergyMode PowerAndEnergySolution	SMK1403*						1
CamSwitch	SMK0014-000			1	1		
MultiMotion Camming	SMK0001*	1	1	1	1	1	1
PositionController add-on	SMK0006*	1	1	1	1	1	1
Interpolation add-on	SMK0012*	1	1	1	1		
AntiSlosh add-on	SMK0013*		1				
CombinedEncoderEvaluation add-on	SMK0007*	1	1			1	1
Robotics	SMK1101-000				2	1	2
MediumModels add-on	SMK1102-000				2		2
TouchProbe add-on	SMK1107-000				2		2
ConveyorTracking add-on	SMK1110-000				2		2
Circle add-on	SMK1105-000				2		2
PreControl add-on	SMK1108-000				2		2
CollisionDetection add-on	SMK1109-000				2		2
Gearing	SMK1709*					1	1
Winder	SMK1710*	1	1			1	1
FilmFeeder	SMK1720-000	1	1				
FlyingSaw	SMK1730-000	1	1				
RotaryKnife	SMK1740-000	1	1	1	1		
Torque	SMK1201-000	1	1	1	1		1
OPC UA	SMK1501*	1	1	1	1	1	1
PROFINET IO controller	SMK1502-000	1	1	1	1	1	1
EtherNet/IP scanner	SMK1503-000	1	1	1	1	1	1

* For the relevant performance class, depending on the UHX controller (020, 040, 060, 080).

MOVI-C® CONTROLLER

Control technology in the control cabinet
From simple to high-end

MOVI-C® CONTROLLERs are specially developed for motion control and machine automation. Whether you are creating a single-axis or multi-axis application based on standards or implementing customized, particularly complex motion control applications, the SEW-EURODRIVE controllers in the control cabinet will do the job.

Special functionalities of the MOVI-C® CONTROLLER

- Various fieldbus variants available
- Safety routing for integrating an external functional safety controller into the overall system
- Fast, open, real-time EtherCAT® bus for controlling drive components and other sensors and actuators
- Rapid replacement of hardware thanks to removable memory cards
- Windows and real-time operating system on a controller with hypervisor concept (available for UHX65A/UHX86A)
- Additional peripheral connections for integrating external devices
- Fast engineering via Ethernet, even over long distances
- Can be combined with the MOVIKIT® MultiAxisController

You can find details of the different technical features of the individual types here:

www.sew-eurodrive.de/en/movi-c-controller

Performance class	UHX25A	UHX45A	UHX65A	UHX86A
Description	Controller for **simple** motion tasks such as positioning tasks or speed mode	Controller for **challenging** motion tasks such as synchronous axes with electronic gear unit or electronic cam	Higher-level controller and controller combined. Process and motion control for **complex** machines	Controller for **high-end** motion control, robotics, and automation tasks such as visualization
Recommended for motion control	●	●	●	●
Recommended for automation control	○	◐	●	●
Recommended for cyber-physical control			○	●
Recommended for edge control			◐	●

○ Can be used ◐ Well suited ● Perfectly suited

I/O modules

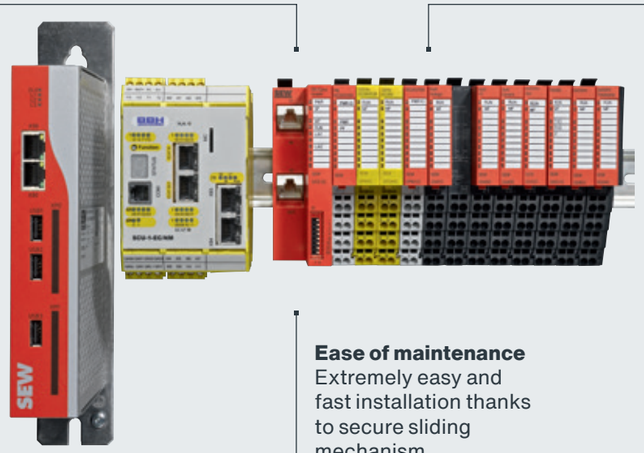
MOVI-PLC® I/O system C
All signals at a glance

The MOVI-PLC® I/O system C combines high performance levels and state-of-the-art functions with a sophisticated mechanical concept in one compact design. You can adapt each individual module to the exact requirements of your application.

The MOVI-PLC® I/O system C portfolio enables the integration of external field units, offering users a high degree of flexibility. The modules can be integrated into the controller's EtherCAT® bus using the bus coupler.

Consistent
Addition of safe I/O terminals and further non-safe function modules to the portfolio, which are operated via the same coupler.

Space-saving
Stepped wiring level with spring-clamp technology



Scalable
With additional power supply modules – up to 64 modules are possible on the backplane bus

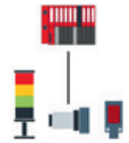
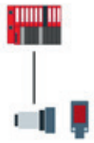
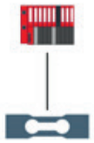
Ease of maintenance
Extremely easy and fast installation thanks to secure sliding mechanism

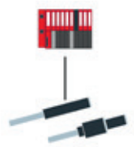
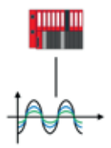
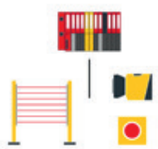
In addition to reading binary and analog signals, function modules for reading SSI encoder signals, energy measurement modules, counter modules, and modules for connecting strain gauges are also available.

To meet requirements for machinery and applications in the field of functional safety, the SEW-EURODRIVE portfolio includes two Safety over EtherCAT® I/O modules, each with four secure inputs and outputs.

For analysis and logical connection, the modules can be connected to a safety controller – e.g. the SCU (which can be ordered from SEW-EURODRIVE) – via the bus coupler.

Overview of the technology

Presence monitoring / reference initiators (binary signals)	Height monitoring / distance measuring (analog signals)	Analysis of encoder signals (counter modules / SSI module)	Load cell / strain gauge	Serial interfaces
ODI..C ODO..C	OAI..C OAO..C	OSM12C OSM13C OSM14C	OSM11C	ORS11C
				
Optoelectronic sensors, ultrasound sensors, inductive/capacitive sensors, laser light sensors, print mark sensors, light columns, and fluid sensors	Optoelectronic distance measuring devices, ultrasound sensors, and inertial sensors	Encoders and rotary encoders	Strain gauges	Laser light sensors, optoelectronic distance measuring devices, optical identification sensors, and RFID

Temperature measurement	Energy measurement	Hazardous point protection with hand and presence detection / functional safety	Stepper motor Motion control
OAI45C	OEM12C	OFI41C OFO41C	OSS21C
			
Pt100, Pt1000, Ni100, and Ni1000 temperature sensors	Three-phase grids	Safety light grid, safety scanner, safety switch, safety locking device, and emergency stop	Control of stepper motors up to 5 A

Find out more about the MOVI-PLC® I/O system C
www.sew-eurodrive.de/en/movi-plc-io-module

Display and visualization

Visualization hardware
Everything under control

When it comes to machine automation, maintaining an overview is vital. The more extensive the functionality of systems and drive technology becomes, the more the requirements in terms of operation, visualization, and diagnostics increase.

The SEW-EURODRIVE visualization hardware has been specifically developed for use in harsh industrial environments immediately next to the machine.

Capacitive touch displays mean it can be operated even when wearing gloves, and safety functions such as key switches, emergency stop systems, and immobility alarms are already integrated.

In addition to an extensive portfolio of visualization solutions, the corresponding accessories, such as prefabricated cables, assembly parts, and the voltage supply, are also available – all from a single source.

Web operator terminal WOP11D-150-0, WOP11D-100-0, and WOP11D-70-0

- Chromium-based HTML5 web browser
- i.MX8 quad-core CPU
- 7" variant with WSVGA resolution (1024 × 600)
- 10.1" variant with WXGA resolution (1280 × 800)
- 15.6" variant with FHD resolution (1920 × 1080)
- Luminance: 450 cd/m²
- Capacitive touchscreen (PCAP)

Operator terminal OPT11D-150-0

- 15.6" monitor
- Resolution: FHD (1920 × 1080)
- Anti-reflective glass cover
- Luminance: 450 cd/m²
- Capacitive touchscreen (PCAP)
- Interfaces: 1 × DVI, 1 × DP, 1 × USB 2.0

Handheld terminal DOP21C-T70

- 7" TFT WSVGA display, WSVGA 600 × 1024 pixels
- Analog resistive touch
- Intel Celeron N2807 2 × 1.58 GHz
- 32 GB SSD Flash, 4 GB DDR3 RAM
- 21 buttons and 4 status LEDs
- Key switch
- Two-channel emergency stop or two-circuit stop button
- Windows 10 IoT Enterprise operating system

Compatible software

- SEW-EURODRIVE RobotMonitor
- MOVIKIT® Visualization flexible
- HMI-Builder.PRO with USB dongle

MOVI-C®: Inverter technology

For future-proof automation
Modular, flexible, and high-performance

Centralized, decentralized, single-axis, or multi-axis systems – the inverters from the MOVI-C® modular automation system ensure precise implementation of control commands.

Simple and intuitive, the inverters can be operated end-to-end with user-friendly MOVISUITE® software. The Power and Energy Solutions can be used to expand handling applications easily and energy-efficiently.

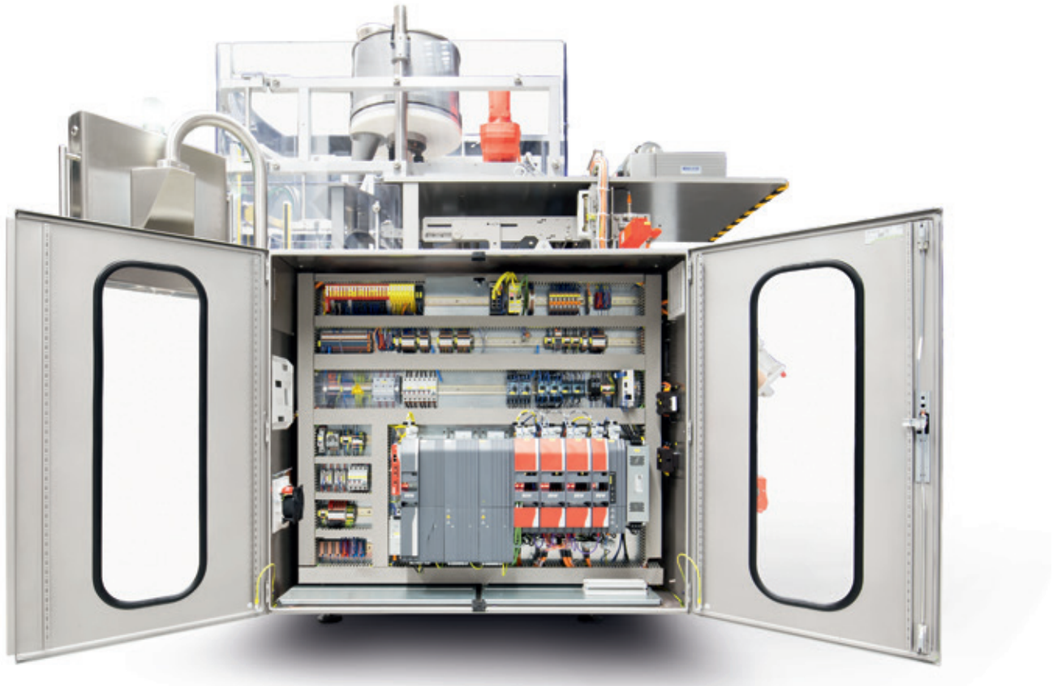
	MOVIDRIVE® modular	MOVIDRIVE® system	MOVIDRIVE® technology
Nominal line voltage V	3 × AC 380 – 500	3 × AC 200 – 240 3 × AC 380 – 500	3 × AC 200 – 240 3 × AC 380 – 500
Rated output – power supply module kW	10 – 110	–	–
Rated output – single-axis unit kW	–	0.55 – 315	0.55 – 315
Nominal output current – single-axis module A	2 – 180	–	–
Nominal output current double-axis module A	2 – 8	–	–
Overload capacity	250%	200%	200%

Power and Energy Solutions

Reduce peaks – act sustainably

Identifying and using opportunities to reduce costs

Reduce power peaks in your supply grid with Power and Energy Solutions – and improve your ROI, too. Using an intelligent power and energy management system boosts your system's energy efficiency and availability. This is achieved through use of MOVIDRIVE® modular application inverters, paired with intelligently connected storage capacitors and a DC link coupling.



Our Power and Energy Solutions offer the following advantages:

- **Reduction of power peaks from the supply system:** Using storage capacitors in the DC link means most of the required peak power is provided from the storage capacitors. This leads to considerable cost savings both in the complete connection cabling and the control cabinet.
- **Uninterrupted system operation in the event of a power failure:** At the same time, the rotational energy combined with the energy in the storage capacitor serves as an uninterruptible power supply (UPS) for the system. The drives, motor brakes, and the 24 V level of the controller are powered in this way, allowing a safe initial position to be reached at any time.
- **Reduced harmonic load in the supply system:** The system achieves a power factor of 0.95. From as low as 20% of the nominal power, the power factor is 0.09. Even under difficult connection conditions, the system does not put the grid under further strain.

Synchronous servomotors CMP.. series

Precision, dynamics, and power

Fast cycle times and precise movement of heavy loads

The compact CMP.. servomotor offers precision, dynamics, and power. Available in seven powerful sizes, it offers peak torque of up to 320 Nm and can be used in even the tightest of spaces.

These adaptable synchronous servomotors of the CMP.. series can be configured for maximum dynamics and heavy loads.

Regardless of whether they are used in the food and beverage industry, construction, the automotive sector, or the wood industry, the CMP.. servomotors offer fast cycle times and precise movement of heavy loads. Thanks to their compact design, they can be used even in confined spaces without any difficulty.

The highly dynamic CMP.. servomotors offer standstill torques from 0.5 Nm to 95 Nm in seven sizes, and 31 graduations in total.

Size	40*	50*	63*	71*	80*	100*	112*
M_0 Nm	0.5 – 0.8	1.3 – 3.3	2.9 – 7.1	6.4 – 13.1	13.4 – 27.5	25.5 – 47	30 – 95
M_{pk} Nm	1.9 – 3.8	5.2 – 15.4	11.1 – 30.4	19.2 – 46.9	42.1 – 107	68.3 – 178.8	88 – 320
Edge dimension in mm	55	73	88	116	138	163	190
Speed in min^{-1}	3 k / 4.5 k / 6 k	3 k / 4.5 k / 6 k	3 k / 4.5 k / 6 k	2 k / 3 k / 4.5 k / 6 k	2 k / 3 k / 4.5 k / 6 k	2 k / 3 k / 4.5 k	2 k / 3 k / 4.5 k

* Each size is available in various lengths.

CMP.. series synchronous servomotors

www.sew-eurodrive.de/synchronous-servomotors-cmp

Synchronous servomotors CM3C.. series

Dynamic, powerful, and a space-saving design
Ideal for applications with high load moments of inertia

The CM3C.. synchronous servomotors combine high external loads with fast acceleration and precise positioning. They are particularly dynamic, precise, and powerful, and yet come in a compact, space-saving design.

The CM3C.. servomotors are ideal for applications with high load moments of inertia, such as automation, handling, and vehicle technology. With their four sizes (63, 71, 80, and 100), they can cover standstill torques from 2.7 to 40 Nm.

Direct motor mounting eliminates the need for adapters and couplings, so less space is needed. The robust surface protection concept and hygiene-friendly design make these servomotors particularly robust and dirt-repellent.

What's more, rotors equipped with permanent magnets ensure a high level of efficiency and energy-efficient operation.

Size	63*	71*	80*	100*
M_0 Nm	2.7 – 6.4	6.5 – 14	10.5 – 22.8	19 – 40
M_{pk} Nm	8.1 – 19.2	19.5 – 42	31.5 – 68.4	57 – 120
Edge dimension in mm	88	116	138	163
Speed in min^{-1}	3 k / 4.5 k / 6 k	2 k / 3 k / 4.5 k / 6 k	2 k / 3 k / 4.5 k / 6 k	2 k / 3 k / 4.5 k

* Each size available in 3 lengths – S, M, and L.

Supported third-party encoders

EnDat 2.2 HIPERFACE DSL DRIVE-CLiQ by Siemens AG

CM3C.. series synchronous servomotors

www.sew-eurodrive.de/synchronous-servomotors-cm3c

PxG® series precision planetary gear units

The optimum solution for every requirement
Flexible configuration, high torque, compact design

Thanks to their scalable modular concept, which offers the optimum solution for every requirement, PxG® precision planetary gear units offer considerable added value. They can be custom configured in terms of service life, precision, and performance, thereby closing the gap between your servomotor and the application.

The modular concept comprises a number of sizes of one-, two-, and three-stage gear units in performance classes P5 to P7. What's more, there are numerous additional options that can be flexibly combined, such as various output bearings, rotational clearance classes, lubricants, and seals.

Thanks to a multitude of adapter designs and geometric compatibility with the market standard, the low-backlash precision planetary gear unit can be combined with a broad range of servomotors without any difficulty.

The compact design of the gear unit offers high torque combined with minimum size, so it can be integrated into your application without taking up much space.

Precision planetary gear unit		P5.G..	P6.G..	P7.G..
Sizes		21, 22, 31, 32, 33, 41, 42, 43, 51, 52, 53, 61, 62, 63, 71, 72, and 73		
Gear ratio	1-stage	3 – 10		4 – 5.5
	2-stage	12 – 100		16 – 55
	3-stage	64 – 1000	On request	64 – 550
Acceleration torque		66 – 4200 Nm	40 – 2000 Nm	80 – 6150 Nm
Rotational clearance		3 – 4 arcmin		1 arcmin
Service life		20 000 hours (cdf 60%)	30 000 hours (cdf 100%)	20 000 hours (cdf 60%)
Output variants		Solid shaft (smooth, key, or splining), flange block shaft with or without index bore		Flange block shaft without index bore
Lubrication for life		GearOil Poly E1 by SEW-EURODRIVE or Grease HL 2 E1 by SEW-EURODRIVE, also in H1 (food grade)		

PSH..CM2H.. stainless steel servo gearmotors

Fast cleaning, compact design, and simple startup

Absence of corners and edges for a hygienic solution

The stainless steel servo gearmotors in the PSH..CM2H.. series meet the strict guidelines of the European Hygienic Engineering Design Group (EHEDG) and the U.S. Food and Drug Administration (FDA). Thanks to their adapted housing design and the use of high-quality stainless steels, our servo drives are ideal for long-term use in damp environments. Boasting a particularly smooth surface with a roughness of less than 0.8 µm and rounded radii in excess of 3 mm, the servo drives are easy to clean, since there are no corners or edges to deal with.

Gear unit type	Gear ratio	Gear unit size	Motor size	Nominal torque M_n Nm	Power range kW	Flange diameter (outer) mm
PSH	3, 5, 7, 10	111	42S 42M 42L	1.0 – 5.7	0.22 – 0.38	73
		211	52S 52M 52L	2.3 – 13.8	0.46 – 0.61	88
		311	62S 62M 62L	3.1 – 27.6	0.68 – 0.97	107
		411	72S 72M 72L	6.0 – 56.1	1.23 – 1.83	138
		511	82S 82M 82L 82H	9.1 – 103.6	1.63 – 2.60	150

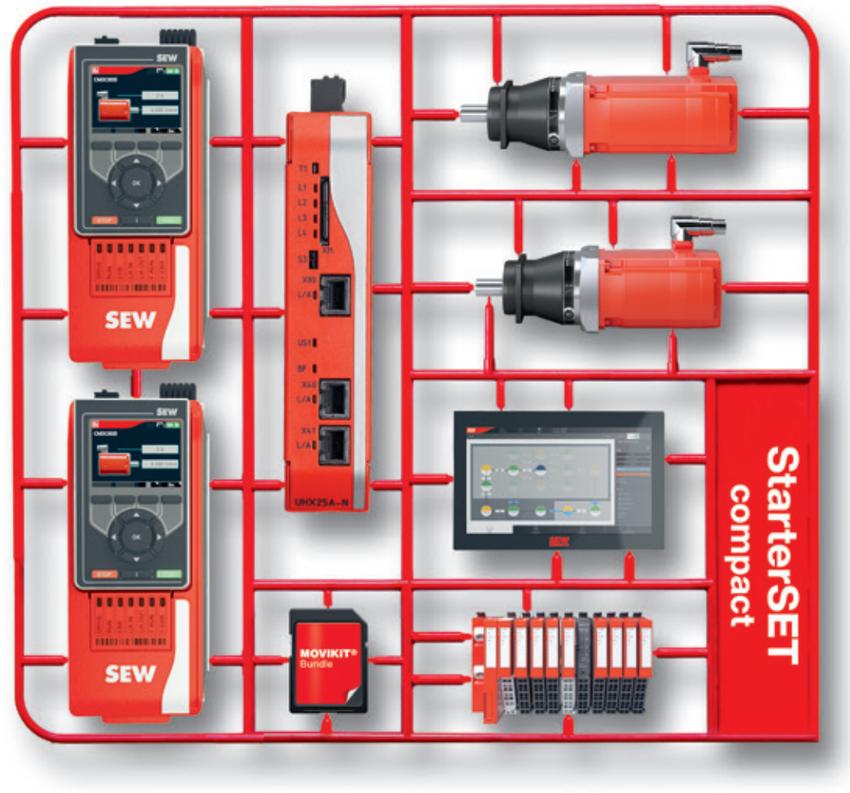
StarterSET compact

Flexible, modular, independent, and compact

Perfectly coordinated basic package

Quick switchovers and frequent product changes call for a modular and flexible machine design. However, many application and motion sequences are the same. They may not be absolutely identical, but there is still an opportunity to simplify things with standardization. SEW-EURODRIVE developed the StarterSET for this very purpose.

The StarterSET compact is the ideal machine automation solution for compact applications with up to six axes. With the fully and perfectly coordinated software and hardware components “Made by SEW-EURODRIVE”, this StarterSet provides you with everything you need for applications with processes that run continuously or in cycles – and all from a single source.



Create your finished machine more quickly – get started straight away! Find out about our StarterSET here!

www.sew-eurodrive.de/en/starterset

Countless add-on options – a simple and faster route to your finished machine!

2268 5510 / 0225

Go to the digital version
Simply scan

www.sew-eurodrive.de/en/starterset-performance

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