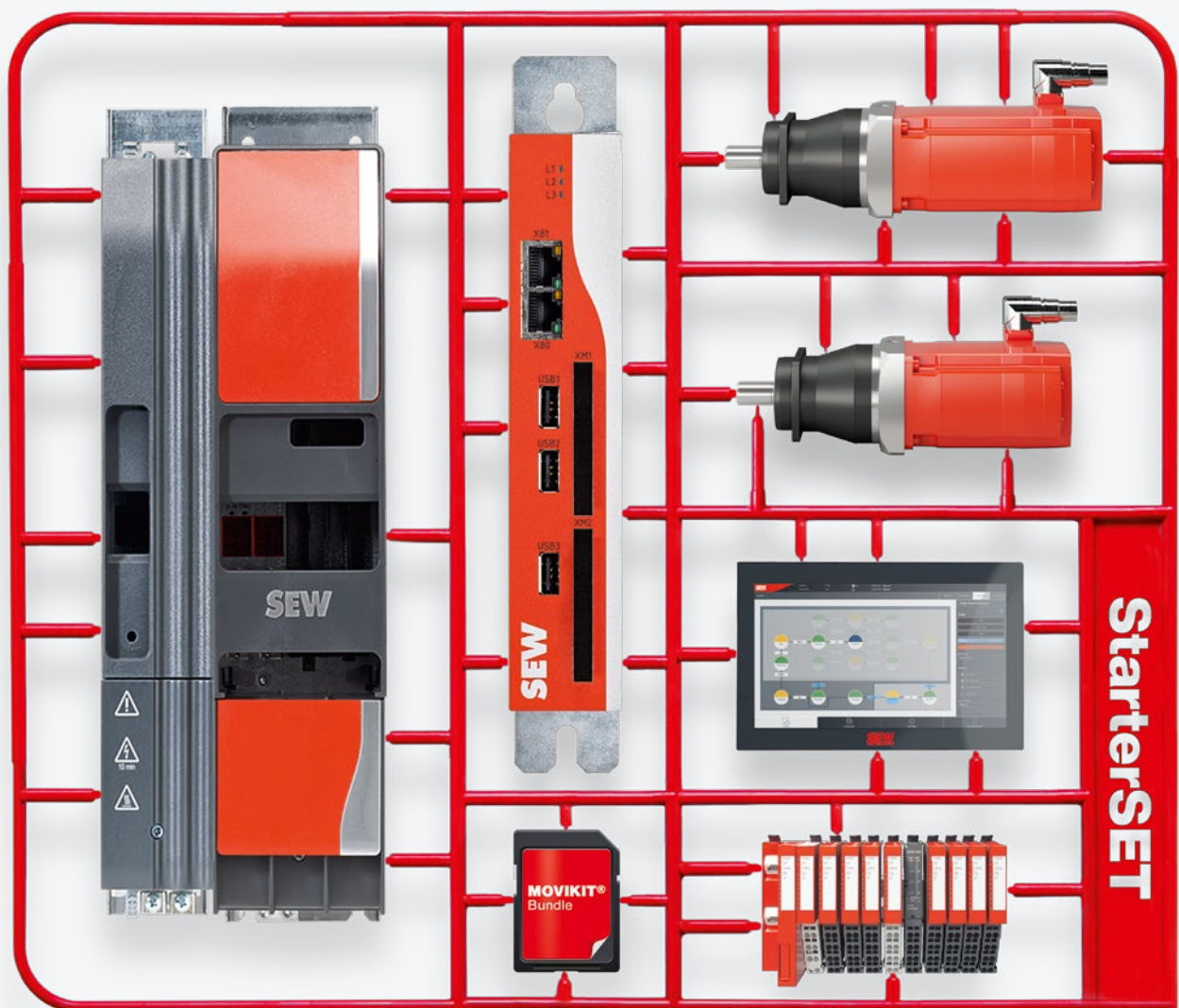# The basic package

Machine automation
from start to end of line

Flexible, modular and scalable.

StarterSETs are base packages, available for several machine types, and can be expanded to suit specific machine requirements. It's flexible, modular and scalable – anything is possible. Regardless of which SEW-EURODRIVE option you choose, it's good to know that all the drive and automation technology needs can be met using SEW-EURODRIVE products, while still ensuring your independence.

CM3C63S series synchronous servomotor with PxG® planetary servo gear unit

MOVIKIT® bundle on a memory card

MOVI-C® CONTROLLER progressive UHX65

MOVI-PLC® I/O system

The StarterSET completes
your machine faster

Our MOVI-C® modular automation system offers any number of possibilities for quickly automating machines and/or completing automation projects fast. SEW-EURODRIVE is well known for making life easy for our customers. As a reliable partner, we are looking to make things even simpler and go the extra mile for them.

True to our philosophy of being faster, customizable and flexible, our StarterSET offers you complete, perfectly **matched** automation packages for all kinds of machines. It's similar to assembling a model or kit. This not only makes life easier for you, but also cuts the time required for configuration, the project duration and, ultimately, the overall costs (overall equipment effectiveness – OEE). A complete and perfectly **matched** software and hardware package "Made by SEW-EURODRIVE" provides you with a machine solution that is easy to configure for continuous and batch type applications.

MOVISUITE® engineering software
web operator panel (WOP)

MOVI-C®: MOVIDRIVE® modular – inverter
for multi-axis applications

→ **Vertical FFS machine**
fully automated thanks to the Vertical Form Fill
and Seal StarterSET

Machine automation solutions
from start to end of line

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 variations are 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 movements.

Quick switchovers and frequent product changes call for a modular and flexible machine design. However, many application and motion sequences are similar. They may not be identical, but they still offer opportunity to simplify through standardization.

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

1
Horizontal FFS machines
→ Page 8

2
Vertical FFS machines
→ Page 10
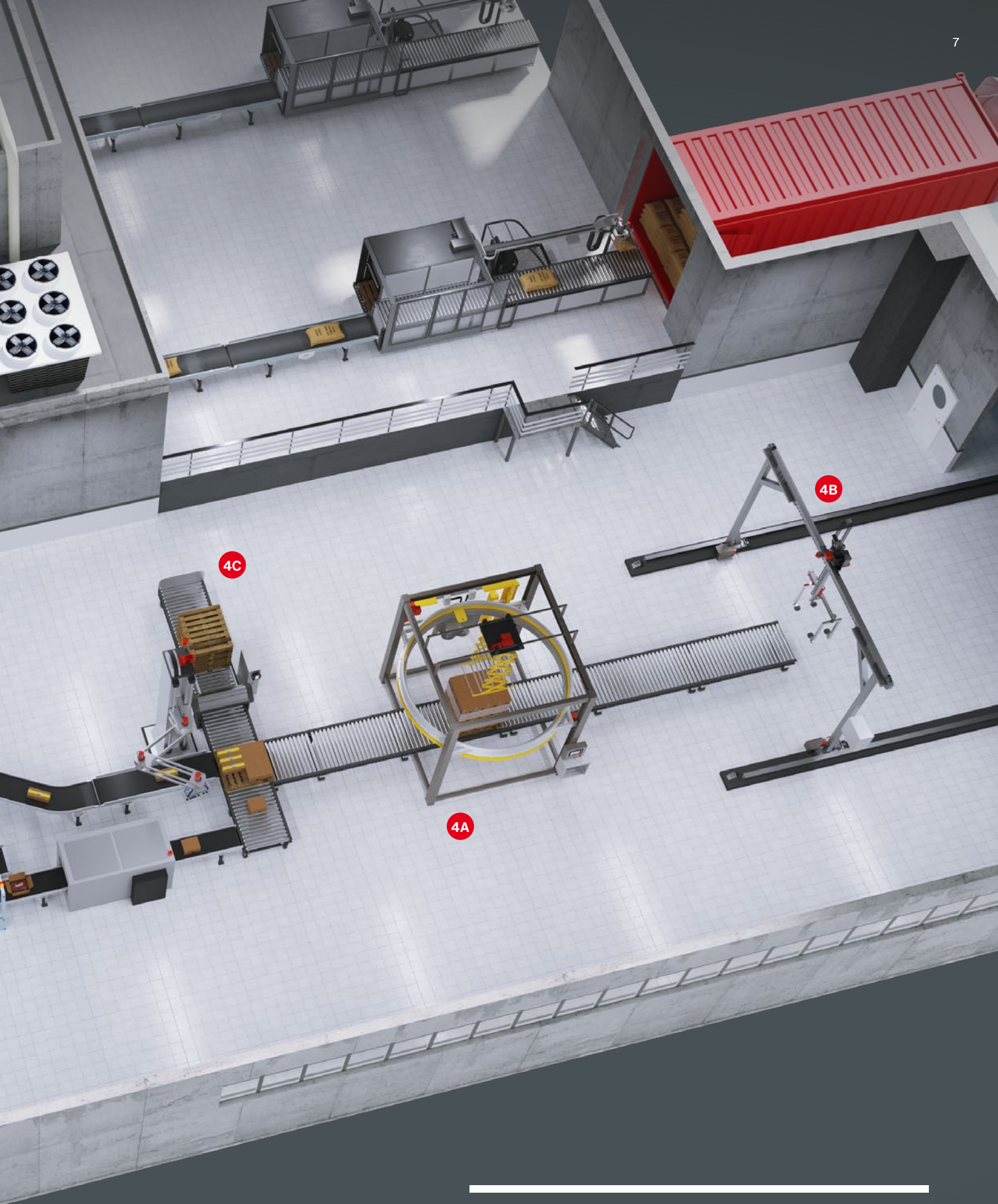
3
Sideloader/toploader casepackers
→ Page 12

4
Gantry palletizers / palletizing robots
→ Page 14

1

2

3

4

→ **SEW-EURODRIVE**
the right solution for a variety of machine types

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 casepacker** implemented with **StarterSET 646**
3C	**Toploader casepacker** 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**

1 Horizontal FFS machines

MOVIKIT®
Bundle inside

Horizontal FFS machines are ideal for individually packaged goods such as chocolate bars and cookies, but they're not limited to 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 MOVIKIT® AutomationFramework software modules can be used for high-precision adjustment and monitoring of such control processes with high disturbance variables. In combination with the MOVIKIT® MultiMotion Camming software module ensures the film print image is perfectly synchronized with the package sealing. Here, too, the software modules contained in the StarterSET support quick and easy automation.

For a truly compact horizontal FFS machine with just two synchronous servo axes, look not further than the Horizontal Form Fill and Seal "standard" StarterSET 612. For up to six synchronized servo drives, additional automation and visualization tasks, the Horizontal Form Fill and Seal "advanced" StarterSET 614 is the appropriate package. Regardless of the controller performance required, both include the FormFillSeal MOVIKIT® bundle with 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.

Package contents
Basic configuration

StarterSET		612	614
Type		Horizontal Form Fill and Seal	Horizontal Form Fill and Seal
Performance		**standard,** recommended for 2 interpolated axes	**advanced,** recommended for 6 interpolated axes
MOVI-C® CONTROLLER	1 ×	UHX25 standard with MOVIRUN® flexible, runtime on SD card, EtherCAT® master and PROFINET	UHX45 advanced 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 Comprising software licenses for application-specific implementation of typical horizontal or vertical FFS machines. 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® planetary servo 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	

2 Vertical FFS machines

MOVIKIT®
Bundle inside

Vertical bag forming, filling and sealing machines (VFFS) 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 movements. 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 synchronized volumetric filling in real time – using a worm, for example. This is accomplished using simple parameterization of filling variants and synchronous clock control of actuators.

Almost all VFFS machines of this kind have comprehensive drive and control functions, yet there scope and performance vary. 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 Vertical Form Fill and Seal "advanced" StarterSET (624) as the basic package. If further synchronized drives and complex automation tasks are to be added, the Vertical Form Fill and Seal "progressive" 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.

Package contents
Basic configuration

StarterSET		624	626
Type		Vertical Form Fill and Seal	Vertical Form Fill and Seal
Performance		**advanced,** recommended for 8 interpolated axes	**progressive,** recommended for 12 interpolated axes
MOVI-C® CONTROLLER	1 ×	UHX45 advanced (1-core CPU) with MOVIRUN® flexible, runtime on SD card, EtherCAT® master and PROFINET	UHX65 progressive (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® planetary servo 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	

3 Sideloader/ toploader casepackers

MOVIKIT®
Bundle inside

In a sideloader or toploader casepacker, the time and effort required to process a wide variety of product formats needs to be minimized. This calls for automation with highly flexible program execution – an ideal application for our MOVI-C® modular automation system.

Secondary packaging in a toploader casepacker is used 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 transfered.

The sideloader design without robot kinematic model 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 no time at all using the appropriate StarterSET with the applicable MOVIKIT® software modules from the MOVI-C® modular automation system. The CasePacker "progressive" StarterSET (646) provides functions such as the electronic cam for synchronized axis movements and position-dependent valve control in real time for this purpose. The CasePacker Robotics "progressive" StarterSET (656) is perfectly suited 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 interpolated axes	**progressive,** recommended for 16 interpolated axes
MOVI-C® CONTROLLER	1 ×	UHX65 progressive (2-core CPU) with MOVIRUN® flexible, runtime on SD card, EtherCAT® master and PROFINET	UHX65 progressive (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 multi-packers (CP-SL) for the application-specific implementation of typical carton erectors and casepackers in sideloader design. Automation-Framework programming template, web visualization, OPC UA data server, electronic cams, machine-typical functions (cutting, gluing and cam control)	CasePacker Robotics – license bundle for casepackers with robot kinematic model (CP-TL) for the application-specific implementation of typical casepackers in toploader design with kinematic model. Auto-mationFramework programming template, web visualization, OPC UA data server, electronic cams, robot kinematic model, 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	
CMP50M servomotor	2 ×	2.4 Nm standstill torque, single-cable technology and DDI encoder	
PxG® planetary servo 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

Palletizers and palletizing robots are process automation systems for automatically combining packs on load carriers. There are four basic 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 movements.

Our End-of-Line StarterSET always offers the right solution for this application. The End-of-Line "advanced" StarterSET (664) is the perfect choice for gantry and linear robots with or without a two-axis kinematic model, while the End-of-Line Robotics "progressive" 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 EndofLine and EndofLine Robotics MOVIKIT® bundles contained in the StarterSET. It's a versatile software solution providing 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 interpolated axes	**progressive,** recommended for 16 interpolated axes
MOVI-C® CONTROLLER	1 ×	UHX45 advanced with MOVIRUN® flexible, runtime on SD card, EtherCAT® master and PROFINET	UHX65 progressive (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 model. AutomationFramework programming template, web visualization, OPC UA data server, electronic cams, 2D robot kinematic model, 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 model. AutomationFramework programming template, web visualization, OPC UA data server, electronic cams, robot kinematic model, 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® planetary servo 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

MOVIKIT® bundle overview
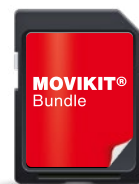
MOVIKIT® software	MOVIKIT® Bundle Typ License ID	FormFillSeal FFS SMB0001*	FillSeal FS SMB0002*
Web Visualisation	SMK1504*	1	1
AutomationFramework	SMK2001*	1	1
PowerMode PES	SMK1402*		
EnergyMode PES	SMK1403*		
CamSwitch	SMK0014-000		
MultiMotion Camming	SMK0001*	1	1
PositionController add-on	SMK0006*	1	1
Interpolation add-on	SMK0012*	1	1
AntiSlosh add-on	SMK0013*		1
CombinedEncoderEvaluation add-on	SMK0007*	1	1
Robotics	SMK1101-000		
MediumModels add-on	SMK1102-000		
TouchProbe add-on	SMK1107-000		
ConveyorTracking add-on	SMK1110-000		
Circle add-on	SMK1105-000		
PreControl add-on	SMK1108-000		
CollisionDetection add-on	SMK1109-000		
Gearing	SMK1709*		
Winder	SMK1710*	1	1
FilmFeeder	SMK1720-000	1	1
FlyingSaw	SMK1730-000	1	1
RotaryKnife	SMK1740-000	1	1
Torque	SMK1201-000	1	1
OPC UA	SMK1501*	1	1
PROFINET IO controller	SMK1502-000	1	1
EtherNet/IP scanner	SMK1503-000	1	1

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

CasePacker CP-SL	CasePacker Robotics CP-TL	EndOfLine EoL	EndOfLine Robotics EoL ROB
SMB0003*	SMB0004*	SMB0005*	SMB0006*
1	1	1	1
1	1	1	1
			1
			1
1	1		
1	1	1	1
1	1	1	1
1	1		
		1	1
	2	1	2
	2		2
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	2		2
		1	1
		1	1
1	1		
1	1		1
1	1	1	1
1	1	1	1
1	1	1	1

MOVIKIT®-Software Functional description

|	
Web Visualisation	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 and mode manager, including linear positioning, module positioning, conveyor, rotary knife, flying saw, pick & place and torque winder machine modules and much more besides.
PowerMode PES	Function library for MDP92A power supply module or MDE90A energy converter and energy storage units for creating highly efficient power supply solutions.
EnergyMode PES	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 for 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 support from 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 to control robots with three or four joint axes and support 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) movements 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 space.
PreControl add-on	Add-on robotics function for drive precontrol to reduce path deviations, vibration and thus cycle time.
CollisionDetection add-on	Add-on robotics function for kinematic collision detection 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 synchronized film feed with optional print mark recognition / positioning advance and retard using 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 using 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™.

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

→ **Countless add-on options**
completing your machine is easy!

SEW-EURODRIVE
What can we do for you?
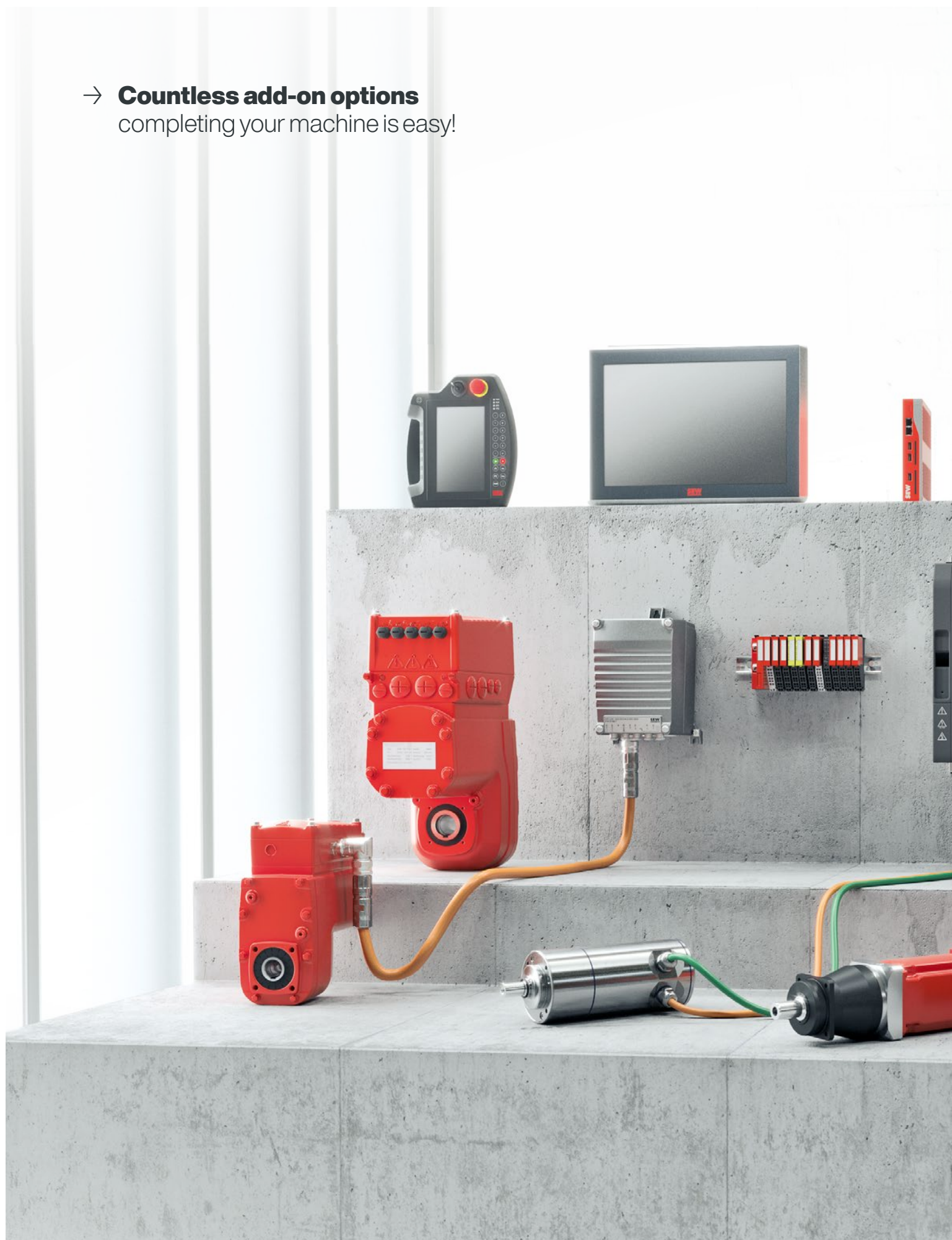
Other areas of the
MOVI-C® modular automation system
that might interest you
Software
Functional safety
Digital motor integration
Energy management

SEW
EURODRIVE