NEW: MOVI-C®
Modular automation system

The future of automation – in central and decentralized installations
MOVI-C® is the all-in-one solution for automation tasks. Whether you want to implement standards-based single-axis or multi-axis applications, or customized and/or particularly complex motion control applications or automation solutions, MOVI-C® can help you do all that and give you the scope to achieve optimum automation for new projects.

Your benefits: MOVI-C® is the all-in-one modular automation system from SEW-EURODRIVE. This end-to-end solution from a single manufacturer covers all your needs – planning, commissioning, operation and diagnostics software, electronic control and monitoring devices, mechanical drives and gearmotors. There is only one place you have to go to for all the automation components you need. Naturally, all components can be fully integrated into all automation concepts, fieldbus topologies and network standards. You have complete freedom when it comes to the communication topology, as MOVI-C® harnesses all communication advantages – from PROFIBUS and Industrial Ethernet to Modbus and, in the future, OPC-UA.

NEW: MOVI-C®, the modular automation system for all-in-one solutions from a single source

MOVI-C® offers automation and a whole range of benefits from a single source – specifically, a company that is both an automation specialist and a manufacturer.

The four components are:
1. Engineering software
2. Control technology
3. Central and decentralized inverter technology
4. Drive technology

Together, these components form one complete, end-to-end modular automation system made up of devices and field units that you can combine to suit your requirements and bus topology perfectly.

www.sew-eurodrive.de/en/movi-c
MOVI-C®, the all-rounder for any topology

1 Topology for single-axis automation

The MOVIDRIVE® technology application inverter and the MOVIGEAR® performance and MOVIMOT® flexible mechatronic drive system are connected directly to the higher-level master via fieldbus interfaces. Predefined MOVIKIT® software modules ensure the drive function can be quickly and reliably implemented using graphical editors. Each axis is controlled individually via the network. Data is stored via a data exchange function on a memory card in the application inverters and in the decentralized units.

Typical application: Material transportation.

2 Topology for motion control

The MOVIDRIVE® modular and MOVIDRIVE® system application inverters and decentralized peripherals such as the MOVIGEAR® performance mechatronic drive system and MOVIMOT® flexible have a real-time-capable connection to the MOVI-C® CONTROLLER via EtherCAT®/SBusPLUS. The MOVI-C® CONTROLLER receives setpoints for single-axis motions or coordinated motions from the higher-level master via the fieldbus. The MOVI-C® CONTROLLER determines the setpoints for the connected application inverters, thereby taking care of tasks such as phase-synchronous operation, electronic cam function or kinematics. Predefined MOVIKIT® software modules are used to implement the motion control drive function quickly and reliably with the aid of graphical editors. Thanks to more than 50 kinematic models, a large number of mechanical configurations are already covered. New functions for kinematic models can be custom-made by SEW-EURODRIVE. Data is stored via a data exchange function on a memory card in the MOVI-C® CONTROLLER.

Typical application: Multiple column hoists, tripod mechanics, robots, including auxiliary axes.
3 Topology for module automation

All drive functions of the motion control topology are available in the module automation topology. In addition to the graphical editors for the drive functions, automation tasks associated with the higher-level master controller can also be implemented in part or in full in a straightforward and flexible approach using the programming system (IEC 61131) in the MOVI-C® CONTROLLER. To support automation, any EtherCAT® devices can be integrated centrally or decentralized in addition to the MOVI-C® application inverters and drives.

Typical application: Packaging machines, processing machines, complex transportation tasks.

4 Topology for EtherCAT® motion slave

The CiA402 profile for controlling inverters has established itself in plants with highly specific motion control applications that are calculated in the higher-level master controller. To support control via CiA402, the application inverter MOVISERVE® modular, MOVISERVE® system and the mechatronic drive system MOVIGEAR® performance and MOVIMOT® flexible can be connected directly to the controller via the integrated EtherCAT® interface. This means integration into the higher-level controller can be achieved particularly quickly and easily, and does not require extensive conversion work. More sophisticated safety functions can be triggered via FSoE directly from the safety control system.

Typical application: Series machines with numerous axes, kinematic calculation in the higher-level PLC.

In all topologies, the higher-level master controller uses safe communication to activate safety functions that are executed in the MOVISAFE® CS...A safety card in the application inverter and also in the mechatronic drive system MOVIGEAR® performance and in the MOVIMOT® flexible.
Is there one software package that can handle every aspect of machine and plant automation? A software that can be used for planning, commissioning, operation and diagnostics and also speed things up and reduce costs for users while improving usability, even during the software engineering process? Yes there is – MOVISUITE® from SEW-EURODRIVE.

**Engineering software:**
**MOVISUITE®**
Save time and money

Allow us to introduce the multi-talented MOVISUITE®

MOVISUITE® sets new standards for engineering software in drive technology. In addition to marked savings in terms of time and cost thanks to accelerated engineering, the software is especially convincing for its unique usability: Planning, startup, operation and diagnostics are quicker and easier than before.

**Features of MOVISUITE® standard**
- End-to-end engineering for all components in the MOVI-C® modular automation system, from inverters to customer-specific drive technology
- Rapid engineering thanks to unique usability and optimized workflows
- User-friendly operation with a modern look and feel, and state-of-the-art GUI technology
- Simple accessibility thanks to homogenized engineering interfaces
- Commissioning and parameter setting of the MOVIDRIVE® modular and system application inverters
- State-of-the-art interactive design ensures users can familiarize themselves with the software quickly and easily
- Optimized workflows for professional and occasional users
- Intuitive handling of inverter functions such as manual mode and drive train commissioning
- Configuration and creation of IEC programs for MOVI-C® CONTROLLER
- Parameter setting and diagnostics of the MOVIKIT® modules
- Efficient data management
- Integrated project management
- Network scan and device display
- Scope function
- Electronic catalog for SEW-EURODRIVE products
- Extensive context-sensitive help for users
MOVI-C® CONTROLLER
Cut complexity

The MOVI-C® CONTROLLER provides added flexibility for parameterization and reduces programming outlay. It’s all thanks to the ready-standardized MOVIKIT® modules and MOVIRUN® software platform – and the end results are lower costs and less complexity.

Enjoy more flexibility
Our control technology and software also give you the option of writing your own programming. Would you prefer to create your own bespoke programs for your application, such as PLC functions or specific rules, so you can stand out from your competitors? If so, then our software platform has exactly what you need.

The control technology is available in four different performance classes – power, progressive, advanced and standard. You also benefit from simple data storage and an auto-reload function for axis replacement. MOVI-C® CONTROLLER units can be connected to all standard control systems.

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Performance class</th>
<th>Performance class</th>
<th>Performance class</th>
<th>Performance class</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOVI-C® CONTROLLER</td>
<td>standard</td>
<td>advanced</td>
<td>progressive</td>
<td>power</td>
</tr>
<tr>
<td>Features and equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>− Straightforward and centralized data management</td>
<td>− Can be connected to all standard control systems</td>
<td>− High performance and user-friendly</td>
<td>− Auto-reload function for axis replacement</td>
<td>− Startup – MOVIRUN® software platform – module for parameterization and programming</td>
</tr>
<tr>
<td>− Operation – MOVIKIT® modular software system with function blocks for easy speed control, positioning, robotics, electronic cam, mechanically coupled axes, and much more besides.</td>
<td>− Routing from PROFIsafe to the axis modules</td>
<td>− 1x ETHERNET (10/100 BaseT) for engineering or TCP/IP and UDP via IEC 61131-3</td>
<td>− 1x EtherCAT®/SBusPLUS Master</td>
<td></td>
</tr>
<tr>
<td>− Status display for PLC and fieldbus</td>
<td>− Status display for PLC and fieldbus</td>
<td>− Optional: installation in a master module; can be added to MOVIRUN® modular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>− 1x CAN</td>
<td>− 2 CAN</td>
<td>− 2 CAN, 1 electrically isolated</td>
<td>− PROFINET slave, EtherCAT® slave, Modbus TCP/IP slave</td>
<td></td>
</tr>
<tr>
<td>− PROFINET slave, EtherCAT® slave, Modbus TCP/IP slave</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>− Modbus TCP/IP slave</td>
<td>− Status display for PLC and fieldbus</td>
<td>− SD memory card</td>
<td>− ≤ 2 interpolating axes</td>
<td></td>
</tr>
<tr>
<td>− Status display for PLC and fieldbus</td>
<td>− Optional: installation in a master module; can be added to MOVIRUN® modular</td>
<td>− ≤ 6 auxiliary axes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>− SD memory card</td>
<td>− ≤ 8 interpolating axes</td>
<td>− ≤ 8 auxiliary axes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>− ≤ 2 interpolating axes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>− ≤ 6 auxiliary axes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>− Optional: installation in a master module; can be added to MOVIRUN® modular</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>− ≤ 8 interpolating axes</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>− ≤ 8 auxiliary axes</td>
<td></td>
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</tr>
</tbody>
</table>
Control technology software: MOVIRUN® and MOVIKIT®

Control applications more easily

<table>
<thead>
<tr>
<th>Software</th>
<th>MOVIRUN®</th>
<th>MOVIKIT®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features and equipment</td>
<td>The software platform for MOVI-C® CONTROLLER</td>
<td>The software modules for MOVI-C® CONTROLLER</td>
</tr>
<tr>
<td>Start up with MOVIRUN® flexible, the flexible and open platform:</td>
<td>Operation with MOVIKIT®</td>
<td>For everything from simple drive functions to challenging motion control functions</td>
</tr>
<tr>
<td>– Automation with MOVI-C® and third-party components</td>
<td>– Graphical configuration and diagnostics</td>
<td></td>
</tr>
<tr>
<td>– Interpolated operating modes for demanding motion control applications</td>
<td>– Available for MOVIRUN® technology. MOVIRUN® smart as a purely parameterizable solution with a fieldbus connection, and MOVIRUN® flexible for integration into the IEC program with a user-friendly IEC interface</td>
<td></td>
</tr>
<tr>
<td>– State-of-the-art programming system (IEC 61131)</td>
<td>Modules:</td>
<td></td>
</tr>
<tr>
<td>– Ready-made MOVIKIT® software modules can be integrated into the user program</td>
<td>– MOVIKIT® Velocity, Positioning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– MOVIKIT® MultiMotion, MultiMotion Camming</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– MOVIKIT® MultiAxisController</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– MOVIKIT® Robotics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– And many more</td>
<td></td>
</tr>
</tbody>
</table>

Advantages

– High functionality and user-friendly graphical interface
– Choose between parameter setting and programming
– Parameter setting instead of programming:
  - Speed up commissioning by using standardized software modules
  - Only parameters that are relevant to the application need to be entered
  - Guided parameter setting instead of complex programming
  - No drawn-out process of familiarization, which means fast project planning and commissioning

MOVIRUN®

Software platform

MOVIKIT®

Software modules

flexible

smart

and many others
Inverter technology: **MOVIDRIVE®**
Control any motor

The MOVIDRIVE® application inverters control and monitor synchronous, asynchronous and linear motors (linear direct drives), with and without encoders. They are available as a modular multi-axis system with single-axis and double-axis modules up to a rated current of 180 A, and as a single-axis application inverter with power supply connection up to a rated output of 315 kW. Even the basic unit incorporates the safety function STO in PLe.

Safety option cards extend functionality with more than 15 safety functions. In addition to extremely straightforward initial startup and exceptionally energy-efficient operation, applications can also be quickly and easily implemented using MOVICT® modules. The advantage is that you get everything from a single source.

### Features and equipment

A frequency inverter family for all motors – they control:
- Synchronous and asynchronous AC motors with/without encoders as well as
- Asynchronous motors with LSPM technology and
- Synchronous and asynchronous linear motors

Available as:
- Modular multi-axis system with single-axis and double-axis modules that have a rated current of up to 180 A and
- Single-axis application inverters with power supply connection up to a rated output of 315 kW

### Practical benefits include

- Extremely straightforward commissioning using the electronic nameplate or electronic catalog
- Simple startup of unrecognized motors using the calibration function
- Energy-saving functions for partial-load operation and standby mode
- A simple and speedy solution – ready-made MOVICT® software modules are available for a whole range of applications

### Design-independent configuration:

- Multi-encoder input in basic unit
- Control of torque, rotational speed and position
- EtherCAT®/SBusPLUS in the basic unit
- State-of-the-art control modes for optimum control performance
- Suitable for use in TN, TT and IT networks
- IP20 protection in all sizes
- Suitable for extended storage without additional measures
- DC link connection for connecting to DC or regenerative power supply
- Simple commissioning using MOVICT® software modules
- Expansion for inputs and outputs, regenerative power supply, braking resistors, line choke, line filter, output choke, output filter

### Compact multi-axis system comprising power supply modules, regenerative power supply modules, single-axis and double-axis modules:

- Up to 30 drives to one power supply module
- Up to 800 m overall motor cable length
- Control via MOVIC® CONTROLLER
- Particularly compact design
- Master module for compact integration of the MOVIC® CONTROLLER
- Available as variant with EtherCAT® CiA402 profile

### Single-axis application inverter with its own power supply connection:

- Perfect addition to the multi-axis system for high outputs or long motor cables
- Up to 1200 m motor cable length
- Control via MOVIC® CONTROLLER
- Available as variant with EtherCAT® CiA402 profile

### Single-axis application inverter with its own power supply connection and direct fieldbus connection via plug-in fieldbus interfaces. In addition to the features of the MOVIDRIVE® system, MOVIDRIVE® technology offers:

- Commissioning via plug-in operating devices or engineering software
- Integrated memory card for backing up device data
- Integrated 24 V DC switched-mode power supply
- Alphanumeric or fully-graphical control unit for commissioning the application inverter and MOVICT® software modules

### Integrated safety technology **MOVISAFE®**
For all information, refer to pages 18+19

### Explosion protection
The application inverters also support the operation of explosion-proof motors
## Inverter technology: MOVIDRIVE®
### Technical data

<table>
<thead>
<tr>
<th></th>
<th>MOVIDRIVE® modular</th>
<th>MOVIDRIVE® system</th>
<th>MOVIDRIVE® technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated supply voltage V</td>
<td>3x AC 380 – 500</td>
<td>3x AC 200 – 240</td>
<td></td>
</tr>
<tr>
<td>Rated output – power supply module kW</td>
<td>10 – 110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated output, regenerative power supply module, block-shaped kW</td>
<td>50 – 75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated output current, single-axis module A</td>
<td>2 – 180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated output kW</td>
<td>–</td>
<td>0.55 – 315</td>
<td></td>
</tr>
<tr>
<td>Rated output current, double-axis module A</td>
<td>2 – 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overload capacity</td>
<td>250%</td>
<td>200%</td>
<td></td>
</tr>
</tbody>
</table>
MOVISAFE®
functional safety
integrated in the inverter technology

Due to the requirements laid down in technical standards and the drive to have humans and machines working hand in hand, the number of plant areas equipped with functional safety technology is constantly growing. As a result, functional safety is an integral part of any application.

By introducing MOVISAFE® CS. A safety cards, SEW-EURODRIVE has made functional safety an integral element of all MOVI-C® application inverters. Even the basic unit in the MOVIDRIVE® series features STO in PL e. All higher-level safety functions are achieved by inserting an option card, including all the necessary connections to the inverter technology – encoder, communication and STO. This helps you reduce costs to only what is necessary to achieve the functions you actually need.

Functions in the basic unit

- STO (safe torque off)
- SIL 3 to EN 61800-5-2, EN 61508
- PL e to EN ISO 13849-1
- Can be activated via safe inputs
- Can be activated via safe communication if a CS. A safety card is inserted
- Extremely short response times of 2 ms enable small safety clearances

MOVISAFE® safety card functions

- Five scalable safety cards as appropriate to application requirements
- More than 15 higher-level safety functions can be incorporated by inserting option cards
- Can be inserted retrospectively at any time, no additional internal cables needed
- Also with additional multi-encoder input
- Safe communication via PROFIsafe/PROFINET and FSoE – Fail Safe over EtherCAT®
- Hardware MOVISAFE®
  - CSB21A
  - CSB31A
  - CSS21A
  - CSS31A
  - CSA31A
  - MOVISAFE®
  - CSB21A
  - CSB31A
  - CSS21A
  - CSS31A
  - CSA31A

<table>
<thead>
<tr>
<th>Hardware</th>
<th>MOVISAFE® CSB21A</th>
<th>MOVISAFE® CSB31A</th>
<th>MOVISAFE® CSS21A</th>
<th>MOVISAFE® CSS31A</th>
<th>MOVISAFE® CSA31A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe inputs</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Safe outputs</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Safe stop function</td>
<td>STO, SS1c</td>
<td>STO, SS1c, SBC</td>
<td>STO, SS1c, SBC</td>
<td>STO, SS1c, SBC</td>
<td>STO, SS1c, SBC</td>
</tr>
<tr>
<td>Safe motion function</td>
<td>–</td>
<td>–</td>
<td>SOS, SS1b, SSM</td>
<td>SOS, SS1b, SSM</td>
<td>SOS, SS1b, SSM</td>
</tr>
<tr>
<td>Safe positioning function</td>
<td>–</td>
<td>–</td>
<td>SLL, SDI</td>
<td>SLL, SDI</td>
<td>SLL, SDI, SCA, SLP</td>
</tr>
<tr>
<td>Safe communication</td>
<td>PROFIsafe, FSoE</td>
<td>PROFIsafe, FSoE</td>
<td>PROFIsafe, FSoE</td>
<td>PROFIsafe, FSoE</td>
<td>PROFIsafe, FSoE</td>
</tr>
<tr>
<td>Additional multi-encoder input</td>
<td>–</td>
<td>Yes</td>
<td>–</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
NEW:
Decentralized drives and mechatronic solutions from the MOVI-C® modular automation system

Automation delivered with decentralized drive technology

State-of-the-art drive engineering and automation technology – particularly power electronics – are increasingly melding into each other, with the result that wiring and installation work are eating up more and more time and money. Customers in the mechanical and plant engineering sector need to design machinery, systems and applications that require minimal outlay and materials but can be started up quickly and easily. In many applications and logistics and system concepts, integrated, decentralized drive engineering has the potential to reduce overall costs, which makes it a technically efficient alternative to centralized automation technology.

The MOVI-C® modular automation system offers special components for use in decentralized installations, applications and system topologies, such as the fully integrated mechatronic MOVIGEAR® performance drive system and the pairing of MOVIGEAR® classic with MOVIMOT® flexible electronics, which are installed close to the motor. What’s more, these systems already deliver an efficiency rating of IE5 (to IEC TS 60034-30-2) and boast unsurpassed overall system efficiency. As a result, they combine the advantages of decentralized installation with the benefits of the MOVI-C® modular automation system.
MOVIGEAR® keeps things moving in decentralized drive and automation technology

MOVIGEAR® classic

- Integrated and compact design
- Drive system with gear unit and permanent magnet synchronous motor

MOVIGEAR® classic is available in three torque and four power classes:

<table>
<thead>
<tr>
<th>Model</th>
<th>Torque Class</th>
<th>Rated Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGF.1-DSM-C</td>
<td>100 Nm</td>
<td>up to 0.4 kW</td>
</tr>
<tr>
<td>MGF.2-DSM-C</td>
<td>200 Nm</td>
<td>up to 0.9 kW</td>
</tr>
<tr>
<td>MGF.4-DSM-C</td>
<td>400 Nm</td>
<td>up to 2.1 kW</td>
</tr>
<tr>
<td>In preparation: MGF.4/XT-DSM-C</td>
<td>400 Nm with extended continuous torque;</td>
<td>up to 3 kW</td>
</tr>
</tbody>
</table>

MOVIGEAR® performance

- Fully integrated and compact design
- Permanent magnet motor, gear unit and electronics combined in a single mechatronic drive unit

MOVIGEAR® performance is available in two sizes respectively three power classes:

<table>
<thead>
<tr>
<th>Model</th>
<th>Torque Class</th>
<th>Rated Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGF.2-xxx-C</td>
<td>200 Nm</td>
<td>up to 0.8 kW</td>
</tr>
<tr>
<td>MGF.4-xxx-C</td>
<td>400 Nm</td>
<td>up to 1.5 kW</td>
</tr>
<tr>
<td>In preparation: MGF.4-xxx-C/XT</td>
<td>400 Nm with extended continuous torque;</td>
<td>up to 2.1 kW</td>
</tr>
</tbody>
</table>

Communication/installation types

- DFC – Direct Fieldbus Control (PROFINET, EtherCAT, Modbus TCP)
- In preparation:
  - DFC – Direct Fieldbus Control (POWERLINK)
  - DBC – Direct Binary Communication
  - DAC – Direct AS Interface Communication
  - DSI – Direct System Bus Control (EtherCAT®, SBusPLUS)
  - SNI – Single Line Network Installation

MOVIMOT® flexible

- Decentralized inverter
- For installing the electronics close to the motor

The decentralized inverter MOVIMOT® flexible (MMF..) is available with a nominal current from 2 – 5.5 A for asynchronous motors with a rated output from 0.55 – 2.2 kW.
A digital data cable makes the motor an active part of your data network, providing all motor data – such as encoder data, temperature data, commissioning data, and data from other sensors – to the application inverter and the connected networks at any time. This information can be used to capture detailed operational data and compile maintenance forecasts. As the type designations, serial numbers and logistics data associated with motors are identified and supplied automatically, an inventory of all the drives in a plant can be compiled automatically at the touch of a button. Repairs, exchanges and enhancements can be tracked and traced at any time.

**Digital motor integration**

- Intelligent, digital connection using just one standardized hybrid cable to connect data transmission and power supply lines between the motors (synchronous machine and asynchronous machine) and the application inverters:
  - The data line is linked to the application inverter using a series-standard coaxial connector
  - Plug connector on motor or, alternatively, terminal box connection for on-site assembly

<table>
<thead>
<tr>
<th>Available for motors up to size 315</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Extremely robust, high-performance design for data transmission with coaxial data cable, ideal for especially space-saving installations</td>
</tr>
<tr>
<td>- Also suitable for very long cables measuring up to 200 m</td>
</tr>
<tr>
<td>- Fully integrated digital motor encoder in various designs</td>
</tr>
<tr>
<td>- Data memory in the motor for drive and application data, automatic start-up of the application inverter without engineering tool</td>
</tr>
<tr>
<td>- MOVILINK® DDI digital data interface for transmitting:</td>
</tr>
<tr>
<td>- Information from the electronic nameplate</td>
</tr>
<tr>
<td>- Brake and diagnostic data (e.g. temperature sensor data)</td>
</tr>
<tr>
<td>- Encoder data, safe and non-safe</td>
</tr>
<tr>
<td>- Brake control integrated into the motor for synchronous and asynchronous drive technology:</td>
</tr>
<tr>
<td>- For holding brakes and working brakes</td>
</tr>
<tr>
<td>- No need for brake control device in the control cabinet</td>
</tr>
<tr>
<td>- Continuous electronic detection of switching status and brake wear</td>
</tr>
<tr>
<td>- Transmission of brake diagnostic data via data interface to application inverter</td>
</tr>
<tr>
<td>- Condition-based maintenance intervals, forward planning of maintenance work, wear information, even for difficult-to-access drives</td>
</tr>
</tbody>
</table>
Drive technology

MOVI-C® gets any application moving

Diversity centered around applications – that is what it’s all about. The range includes gear units for standard and servo applications that come in different sizes and with different outputs, speeds, torques, designs and varied finishes, all combined with asynchronous or synchronous AC motors. Linear motors, electric cylinders, brakes, built-in encoders and diagnostic units provide the finishing touch for this wide-ranging portfolio. Naturally, the products have all the necessary worldwide approvals.

The mechanical side of the range is being extended, with NEW elements available from 2018. The first is single-cable technology with a digital encoder for synchronous and asynchronous AC motors.

<table>
<thead>
<tr>
<th>Standard and servo gear units</th>
<th>Motors</th>
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<tbody>
<tr>
<td><strong>Overview</strong></td>
<td><strong>DR.. and DT56 series AC motors (1 speed), 2-, 4- and 6-pole and Multi-speed DR.. series AC motors (2 speeds):</strong> These cover outputs from 0.09 to 225 kW and satisfy energy efficiency classes from IE1 to IE4 <strong>Also available:</strong> Torque motors, single-phase motors, aseptic motors and motors with explosion protection</td>
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<td><strong>Five standard gear unit series:</strong></td>
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<td>One-, two- and three-stage helical gear units, R series:</td>
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<td>Output torque 50 – 18 000 Nm</td>
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<tr>
<td>Two- and three-stage parallel-shaft helical gear units, F series: Output torque 130 – 18 000 Nm</td>
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<tr>
<td>Two- and three-stage helical-bevel gear units, K series: Output torque 80 – 50 000 Nm</td>
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<td>Two-stage helical-worm gear units, S series: Output torque 92 – 4000 Nm</td>
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<td>One- and two-stage right-angle gear units, W series: Output torque 25 – 180 Nm</td>
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<td>With a few exceptions, the standard gear units are also available as double gear units</td>
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<td><strong>Two servo gear unit series:</strong></td>
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<td>Low-backlash planetary servo units from the PS.F series: Rated torques 25 – 3000 Nm PS.C: Rated torques 30 – 320 Nm</td>
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<tr>
<td>Low-backlash helical-bevel servo units from the BS.F series: Rated torques 40 – 1200 Nm</td>
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<td>Synchronous and asynchronous servomotors for highly dynamic requirements, also available with explosion protection</td>
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<td>And linear motors and electric cylinders round out the modular motor system. Combined with a wide range of brakes, encoders, plug connectors, forced cooling fans, special coatings and surface treatments, the modular system has the ideal drive for your application.</td>
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MOVI-C® in use:

packaging machine with multipacker and top loader

1. Control cabinet:
   Use of a multi-axis system with double-axis inverter – high power density, minimal power loss, and compact enough to fit into even small machine control cabinets.

2. Software system:
   The machine is operated with software based on the SEW-EURODRIVE automation framework. Besides the sequential program, this PackML-compliant framework also offers a standardized user interface, for example.

3. Controller algorithms:
   Thanks to new, universally used controller algorithms, all motors can be controlled using just one type of inverter.

4. MAXOLUTION® parallel-arm kinematics kit:
   A modular automation system for robots that includes controller, drive technology, software – in fact, everything you need to automate a robotic solution.
The following software functions have already been implemented in the automation framework (AFW):

1. **Modes & states**
   A wide range of modes (such as “Production”, “Manual mode”, “Maintenance mode”) can be defined. All 17 PackML-compliant states are available within the individual modes. Depending on the type of machine and the mode being used, either all 17 states can be used or only some of them.

2. **Modular software design and programming**
   The use and structure of SEW-EURODRIVE’s AFW support a modular software structure right from the start, which means that a great deal of code can be reused. The methods set out in the ISA-88 industry standard – one of the most widely used standards in the food industry – have been used to structure the software.

3. **Event (and error) handling**
   Events such as errors, warnings and notifications can be easily initiated and sorted using the integrated and predefined event handling. Thanks to automated information processing, data can be transferred easily and quickly to external visualization systems.

**Advantages: user-friendly technology from a single source**

- **Reduced engineering effort**
  - Thanks to integrated functions and ready-made standard modules
  - Certain aspects of the machine program are parameterized instead of programmed
  - The use of standard modules saves time on programming and helps avoid errors

- **Reduced integration costs**
  - Thanks to the standardized “PackTags” data interface.
  - “PackTags” are used when communicating with other machines or the higher-level controller. They also act as a standardized interface for all incoming and outgoing machine notifications. This ensures the widest range of machines and their manufacturers can share data with each other openly.

- **Increased productivity**
  - Thanks to improved diagnostics options and standardized visualization behavior on various different machines in a production line.
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