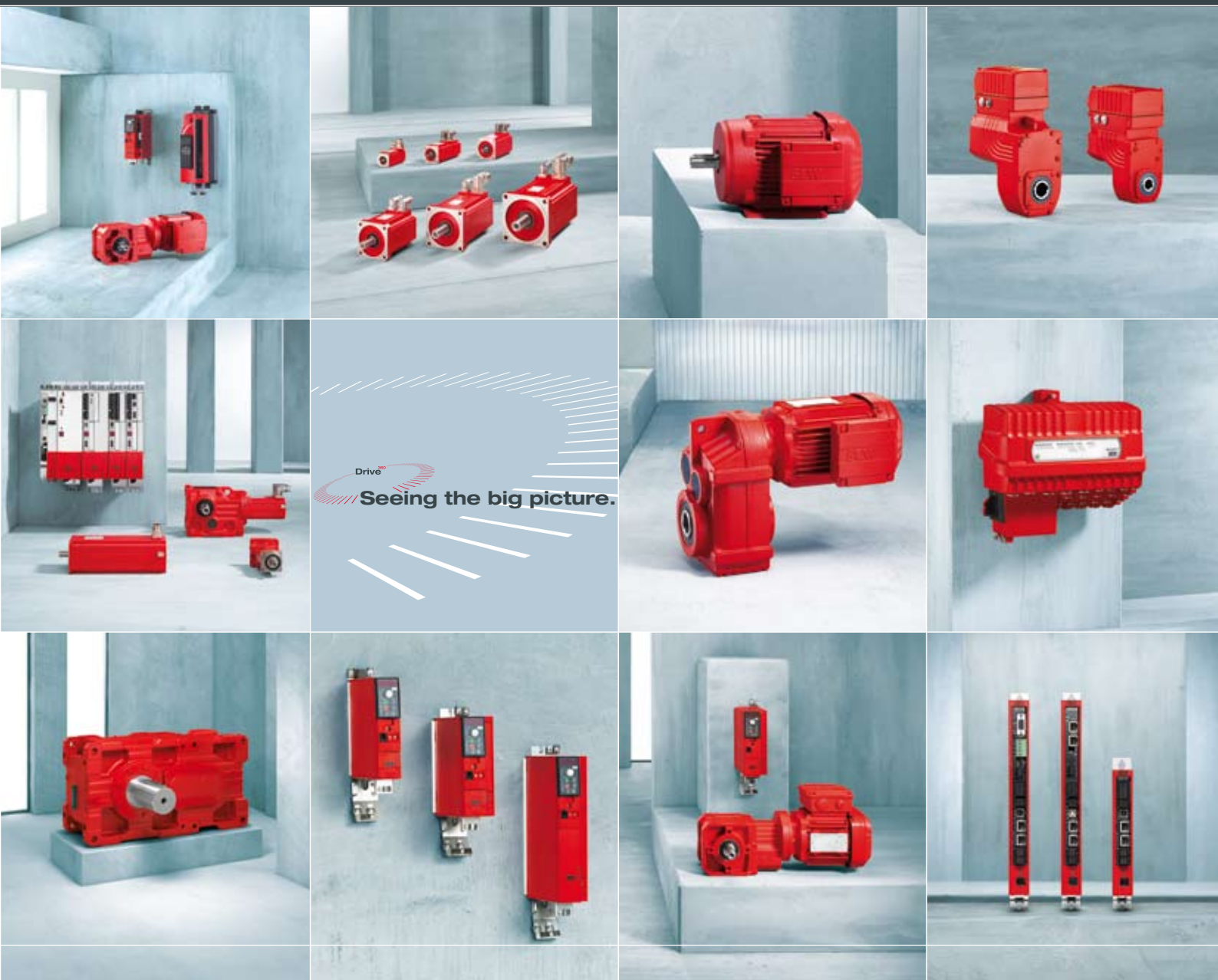
SEW EURODRIVE

Products and Innovations

Spring 2009



Products and Innovations Spring 2009

SEW-Eurodrive—Driving the world

Seeing the big picture

Services

Innovations Spring 2009

Not all the products listed here are available worldwide. If you have any questions on the terms and conditions for delivery, please contact your SEW-EURODRIVE country representative.

CLASSIC

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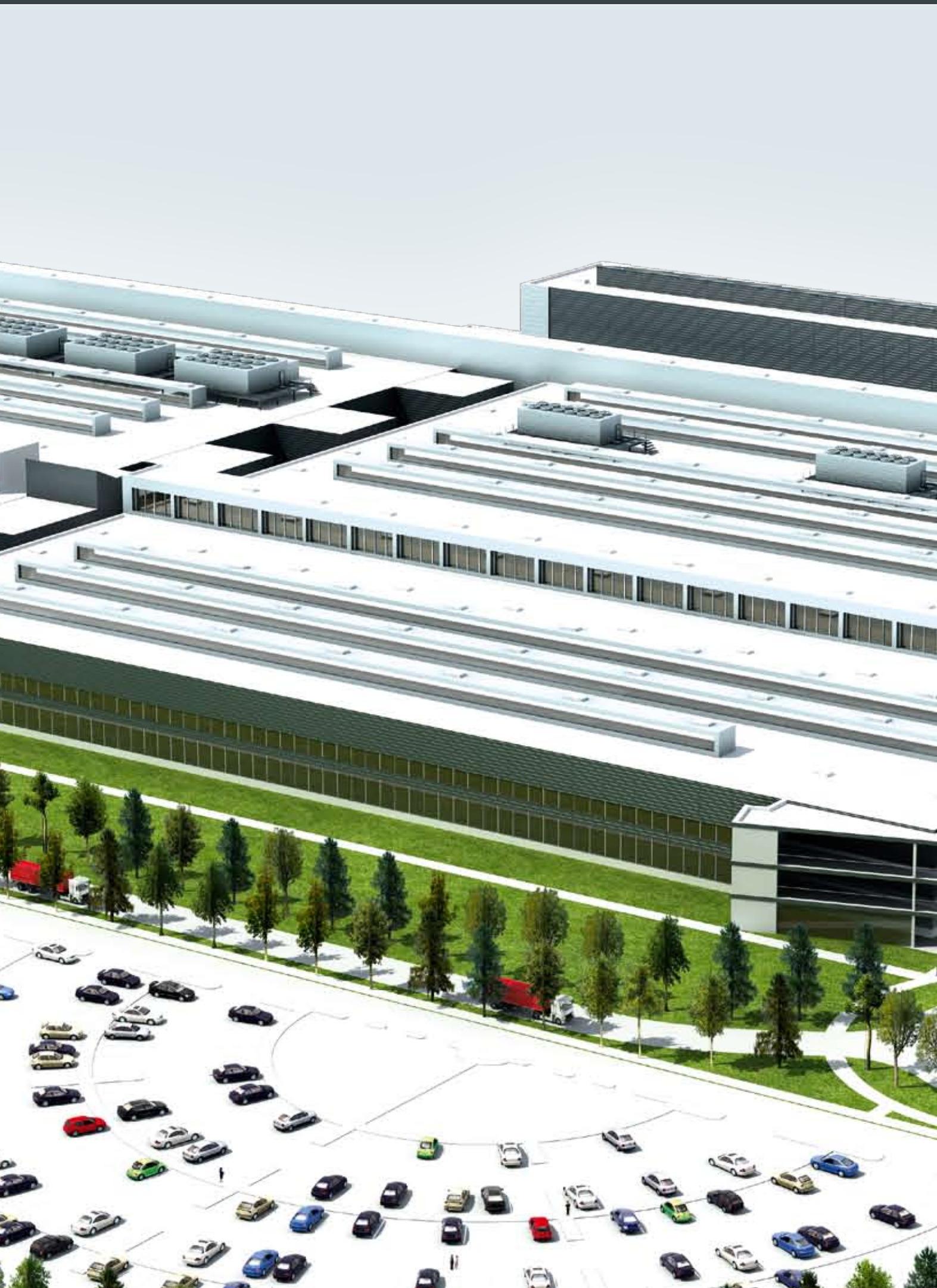
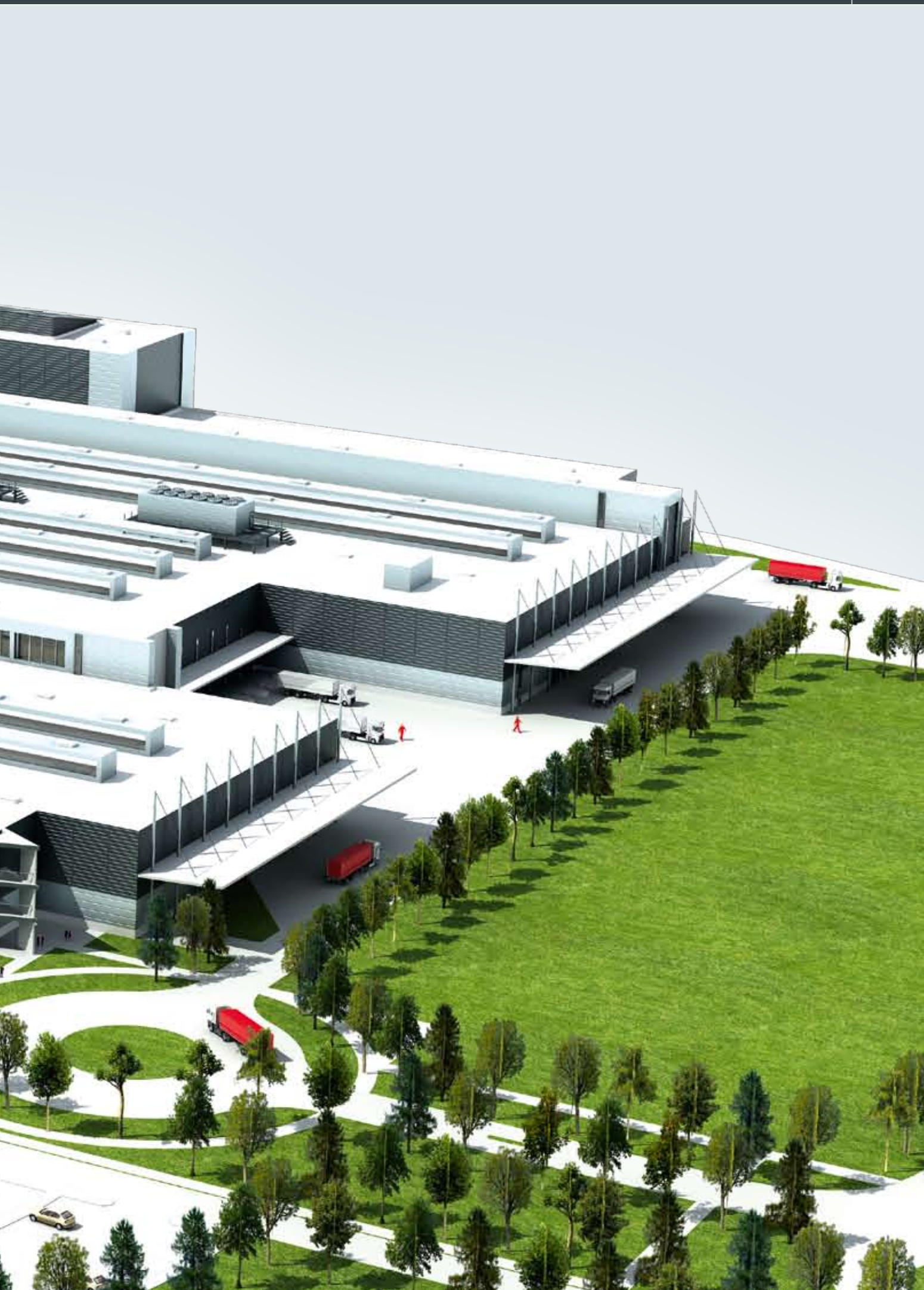
Incredible production power
XXL production for XXL industrial gear units





The new XXL production for XXL industrial gear units gives SEW-EURODRIVE an enormous competitive edge and makes it well equipped for the challenges of the future.

XXL in all areas

- **State-of-the-art production technology**
- **Precise production processes**
- **Enormous capacities**
- **Unique expertise**
- **Perfect location solution**
- **Fastest logistics**

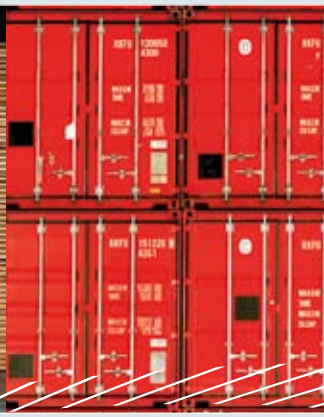
Seeing the big picture

Drive technology from SEW-EURODRIVE stands for product variety and quality, reliability and innovative strength. Features that all our products of the comprehensive modular system, the **CLASSIC** drive technology, have in common and have made SEW-EURODRIVE one of the leading manufacturers of drive technology worldwide.

CLASSIC – a perfect basis also for all the challenges of the future. In order to "see the big picture" and to implement all the solutions, SEW-EURODRIVE has been continuously developing its range of products and services: For example with the new, industry-oriented **VARIOLUTION®** packages and **MAXOLUTION®** system solutions to meet the specific applications required by the customer. Or with the range of services to support our customers, for example with internal process optimizations.

SEW-EURODRIVE is undergoing a change – the change to a drive technology expert: We create and implement solutions today for the tasks of tomorrow – worldwide.

This is what we call Drive 360° – Seeing the big picture: We see our expertise and problem solving competence, our drive technology and services as part of a whole: Your solution for highest machine and system availability, low operating costs, and optimum energy efficiency.



Drive 360

Focus on the details: Product-independent and industry-specific solutions – worldwide

Ensure smooth and reliable plant operation, minimize the maintenance effort, and maximize the added value for our customers – these are the objectives of SEW-EURODRIVE when talking about industry-specific solutions. We want to make sure that you operate your machines and systems in a safe and efficient manner at any time so that unproductive downtimes can be avoided.

Products and systems from SEW-EURODRIVE are therefore used all over the world: In industries such as automotive, building and building materials, food and consumer goods, metal processing or wood processing, transportation and logistics, in ports or airports, and many more. The decision to use drive technology “made by SEW-EURODRIVE” means reliability for function and investment.

SEW-EURODRIVE supports and ensures all this by its global presence: Twelve production plants and 66 assembly plants in 46 countries provide for worldwide availability, short delivery times, and comprehensive service, which we view as integrative service concept we consistently implement in customer orientation.

All these components together in their entirety make SEW-EURODRIVE one of the top drive technology suppliers worldwide. And even more, they make SEW-EURODRIVE a global partner that solves problems and provides an answer to any challenge. Seeing the big picture: go to www.drive360.de for more details

CLASSIC:
Variety and quality from the modular system

CLASSIC drive components from SEW-EURODRIVE have become firmly established in the international machine and plant engineering industry. The SEW-EURODRIVE modular concept offers millions of combinations and, as a result, provides the perfect condition for choosing the drive that optimally suits the specific application.

No matter whether the components are mechanical, electronic, or mechatronic ones, they are used depending on the speed and torque range, space, and ambient conditions required by the specific application. CLASSIC drive technology from SEW-EURODRIVE implements an infinite number of customized drive solutions matching the specific requirement profiles.

Gearmotors and frequency inverters

Our gear units and gearmotors offer an unmatched fine graduation of power ranges and excellent economical requirements for use in many machines and systems. Our electronic components, the MOVITRAC® frequency inverters and MOVIDRIVE® drive inverters, supplement our gearmotors and blend perfectly with the systems offered by SEW-EURODRIVE. As in the case for mechanical systems, the development, production and assembly is also carried out completely by SEW-EURODRIVE. In combination with our drive electronics, these drives provide the utmost in flexibility.

Servo drive systems

Products of the servo drive system from SEW-EURODRIVE convince by their precision and dynamics. Low-backlash servo gear units, compact servomotors, electric cylinders, and MOVIAXIS® multi-axis servo inverters provide exact movements for any system architecture. From single-axis or multi-axis applications all the way to synchronized process sequences, servo drive systems from SEW-EURODRIVE offer flexible and customized solutions.

Decentralized drive technology

SEW-EURODRIVE provides control cabinet independent components from its decentralized drive system for economical, decentralized installation. For example, MOVIFIT®, the decentralized drive controller, MOVIMOT®, the gearmotor with integrated frequency inverter, or MOVI-SWITCH®, the gearmotor with integrated switching and protection function. And with the hybrid cables specifically designed by SEW-EURODRIVE, we ensure cost-effective solutions, independent of system philosophy or size.

Latest developments of SEW-EURODRIVE: MOVITRANS®, system components for contactless energy transfer, and MOVIPRO®, the decentralized drive and positioning controller.

Industrial gear units

Power, quality, and sturdy design combined in one standard product: Industrial gear units from SEW-EURODRIVE combine all requirements of modern industrial gear units. Standardized but always flexible due to the modular concept, industrial gear units from SEW-EURODRIVE can even be operated under difficult conditions and provide movement wherever high torque ratings and maximum reliability are required.

VARIOLUTION® – Functionality for all industries

With the experience of a leading manufacturer of drive technology, SEW-EURODRIVE continuously develops new drive concepts for future challenges in mechanical and plant engineering. We place special emphasis on the fast and simple integration of these solutions into existing process chains of system manufacturers and end customers.

Our VARIOLUTION® packages		
Automotive	– Electrified monorail system for light loads – Electrified monorail system for heavy loads – Automated guided vehicle system – Skillet conveyor system – Skid conveyor technology – Welding tongs – Scissor lift table	
Food + Beverage	– Item transport – Packaging unit transport – Packer and unpacker – FFS machine – Flighted chain	
Transport + Logistics	– Stationary vertical conveyor – Roller conveyer – Corner transfer unit – Storage and retrieval system – High-level palletizer	

The VARIOLUTION® packages are the latest result of our development:

- Proven drive and automation technology
- Function-oriented software modules
- Optimized order and delivery processes
- Application-specific documentation

Added value for industry-specific drive solutions:

- Scalable modularity
- High variability
- Planning safety
- Easy cost reduction

We have succeeded in creating the optimal combination of industry standardy and industry-specific requirements, of our application expertise and concepts for faster processes and production reliability. VARIOLUTION® packages are scalable drive solutions which incorporate our expertise and competence and ensure fast and economical solutions in mechanical and plant engineering applications:

Components of the VARIOLUTION® packages			
Standard	– Drives – Frequency inverters – Controller – Software module – Cables	– Sensor technology – Project planning – Documentation – Warranty of proper function	
Optional	– Service – Customization – Logistics options – Safety technology		
Package specific	– Energy efficiency – Operator terminals – Visualization software – Hygienic design – Communication	– Contactless energy transfer	

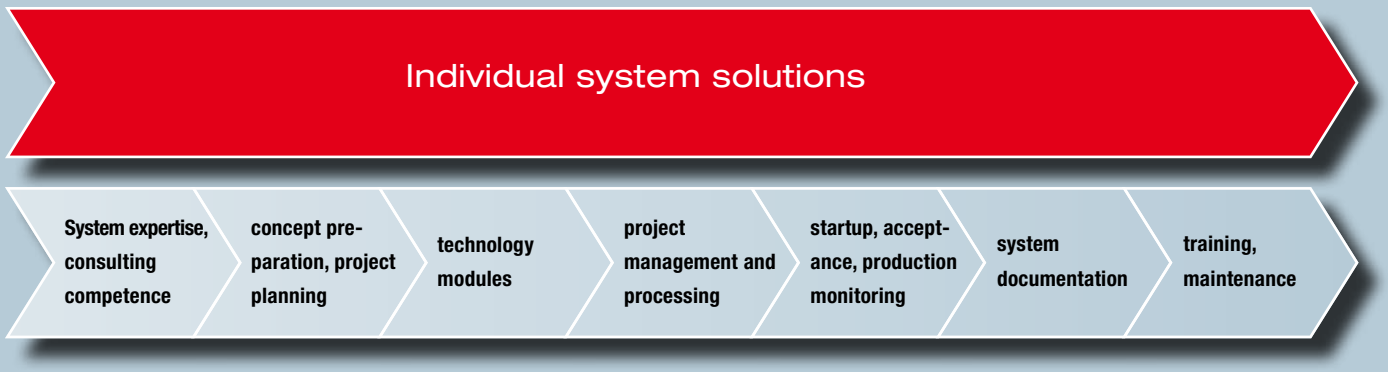
The optional and package-specific services of VARIOLUTION® packages make for reduced effort and cost savings.

MAXOLUTION®
Individual system solutions for every movement

MAXOLUTION® systems provide future-oriented, new standards: Individual system solutions by SEW-EURODRIVE with guarantee for success. MAXOLUTION® systems offer all the components needed to implement customer-specific solutions for systems and machines. These components range from electromechanical drives and the controller to communication and visualization to contactless energy transfer.

From planning to maintenance – everything from one source:

System specialists with industry-specific expertise make up a core team that cooperates closely with the sales and service staff you know. In this way we guarantee optimum support and technical advice from project planning to maintenance — competent, fast, straightforward and comprehensive.



Based on our CLASSIC components and the VARIOLUTION® packages, such as AGV or EMS, we offer individual, customized solutions for systems and machines in all areas of system automation. The resulting standardization and optimum matching of all components make for fewer interfaces and less maintenance storage.

As a consequence, the costs incurred throughout the entire product life cycle decrease significantly. At the same time, the performance and flexibility of your machines is improved and power consumption is reduced.

effiDRIVE® Energy-saving concepts

Dwindling resources and rising energy costs prompt all companies worldwide to analyze and evaluate the energy efficiency of their systems as well as the amount of follow-up costs involved.

The answer of SEW-EURODRIVE to this requirement is effiDRIVE®: Energy-saving concepts which implement the best possible energy-efficient solution for the specific application.

1. Modular energy-saving system

effiDRIVE® energy-saving concepts use the components of the modular energy-saving system. Each of these components has great energy-saving potential. Their meaningful combination will achieve best possible energy efficiency.

2. Energy consulting

effiDRIVE® energy-saving concepts include energy consulting that includes a comprehensive review and the consequent implementation of all relevant energy-saving factors.

3. Energy-efficient solutions

effiDRIVE® energy-saving concepts implement the most energy-efficient solution in every industry, machine, and system and will result in permanently low energy expenses.

effiDRIVE®

1 Modular energy-saving system

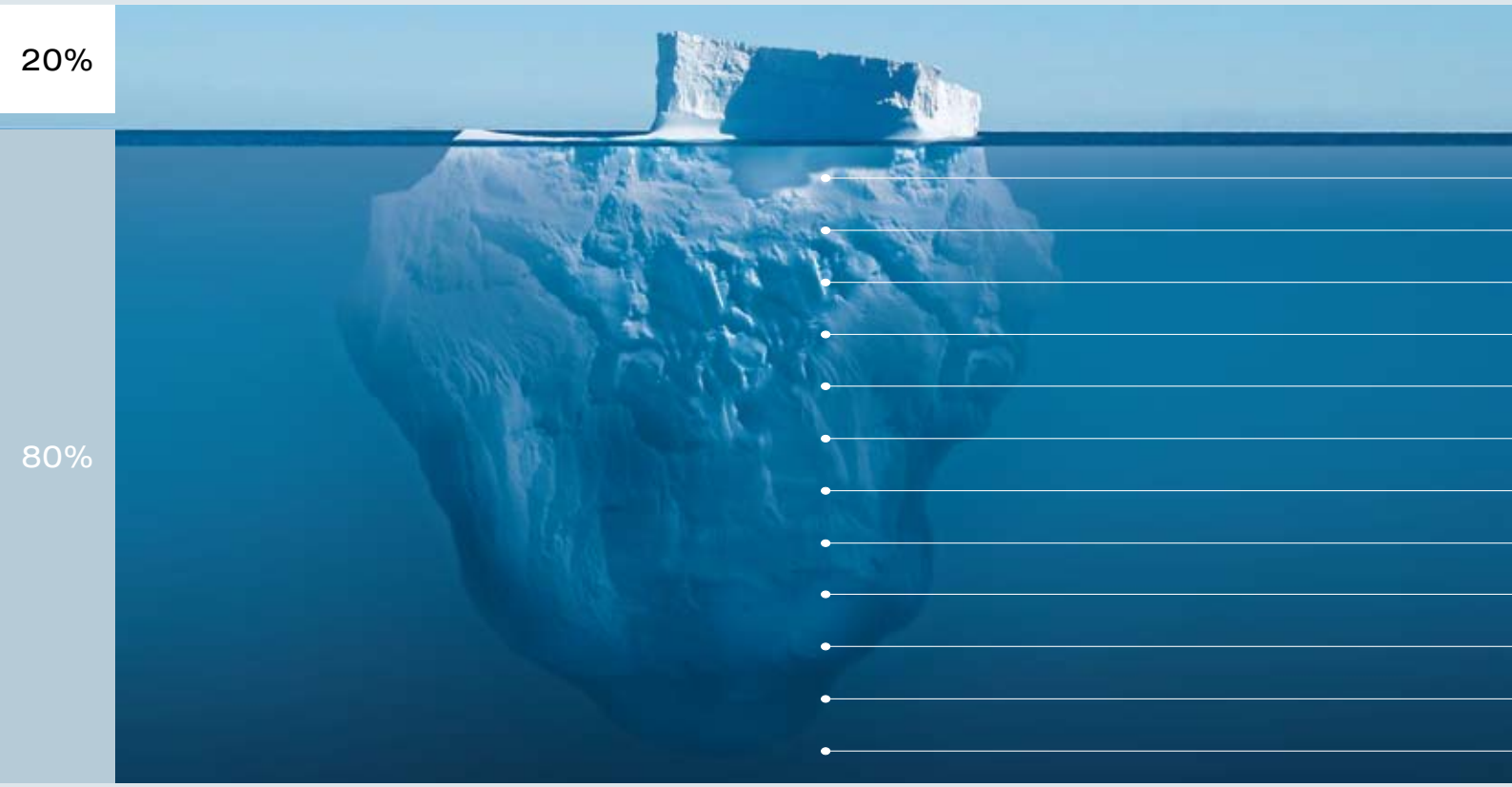
2 Energy consulting

3 Energy-efficient solutions

Solutions for reducing the total cost of ownership

The decision to buy a product in the global competition is increasingly being influenced by the follow-up costs arising from the purchase, utilization, and disposal of the product. These follow-up costs are, among others, also influenced by the drive-relevant components installed in a machine or system, such as

– operating functionality and effectiveness,
– maintenance effort, and
– costs resulting from planned and unplanned downtimes



Detect and minimize hidden costs

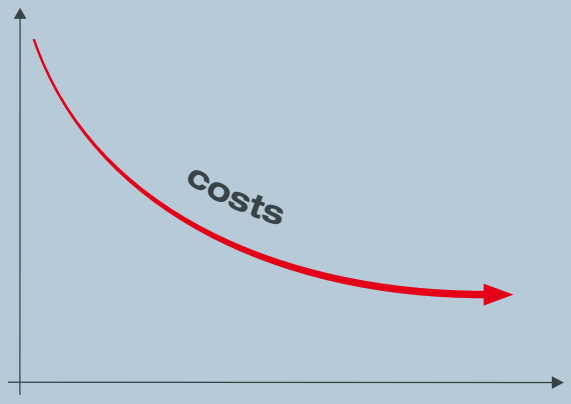
TCO solutions by SEW-EURODRIVE let you achieve cost transparency and act in a future-oriented manner.

Investment costs

Total Cost of Ownership (TCO)

- Startup
- Training
- Additional accessories
- Spare parts
- Maintenance/service
- Personnel
- Tax
- Insurance
- Energy
- Replacement system procurement
- Retrofitting
- Disposal

Reducing follow-up costs:



Reducing energy costs

More than 95 % of a motor's life cycle costs are energy costs. The highly efficient energy-saving motors from SEW-EURODRIVE are equipped with copper die-cast rotors. These rotors have a high electric conductance and minimized heat and additional losses resulting in great energy-saving potential when it comes to energy consumption.

Reducing maintenance effort

For example with MOVITRANS® contactless energy transfer. This technology is based on the principle of induction allowing for contactless energy transfer. Its application is simple and robust, and it is free of wear and soiling. Result: longer maintenance intervals and higher system availability.

Reducing overall costs

The MOVIGEAR® mechatronic drive system combines motor, gear unit and electronics in a compact housing with the result that energy is reduced by up to 50 %. Installation, startup, and integration can be carried out quickly thanks to the networking capability of the components. Result: reduction of overall costs.

TCO solution by SEW-EURODRIVE increase the efficiency of your processes and make a sustainable contribution to the reduction of CO_2 emissions.

NEW: Stainless steel gear units for use in areas subject to frequent cleaning

Stainless steel gearmotors from SEW-EURODRIVE keep things moving wherever machines and systems are subject to particularly intensive cleaning. Regardless of whether the gear units are used for materials handling, intralogistics or hygienic applications, their hygienic properties, long operating life and maintenance friendliness make them optimally suited to the specific production conditions in the food and beverage industry, pharmaceutical industry, and in permanently wet environments.

The efficiency optimized KESA37 helical-bevel gear units are characterized by their special housing design and the use of high-quality stainless steel: their surface is easy to clean and highly resistant against acids and alkalis. Recesses where dirt and liquid might accumulate were eliminated as far as possible. All seals and connections are available up to degree of protection IP69K. The complete stainless steel version prevents any corrosion efficiently.

Technical data		
Type	**Max. output torque [Nm]**	**Gear unit reduction ratio [i]**
KESA37	200	3.98 … 106.38

NEW: MOVIDRIVE®
for power ratings up to 315 kW

The new and particularly powerful inverters of the MOVIDRIVE® series cover the upper power range up to 315 kW. The structure of the inverter follows the convincing concept and includes the prominent product features of the proven product series.

These features will convince you:

- Full integration into the MOVIDRIVE® product series, from startup through to the modular design
- Great energy saving potential due to adjustment to the processes with full functionality
- Unrestricted use of all option cards of the MOVIDRIVE® product series
- Extreme flexibility, specifically when it comes to installation in commercially available control cabinet systems
- Specifically surface-treated printed circuits boards as standard
- Separate line chokes are not required
- Extremely service friendly due to the modular design
- Use of proven, preconfigured control programs (application modules)

Proven technology – Maximum power

The same MOVIDRIVE® control unit and unrestricted use of options make MOVIDRIVE® inverters powerful up to 315 kW: they are extremely reliable, provide for smooth plant operation, and are particularly service friendly due to their modular design.

Technical data:			
Supply voltage V_{AC}:	**3 x 380 – 500**		
Mains frequency Hz:	**50 – 60**		
Motor control mode:	**VFC, CFC**		
MOVIDRIVE® B BG 7	Power range [kW] – with overload reserve 1,5 x I_N – without overload reserve	Rated output current [A] – with overload reserve – without overload reserve	Dimensions in mm W x H x D
MDX61B **1600-503-4-0T/L**	160 200	300 380	700 x 1490 x 470
MDX61B **2000-503-4-0T/L**	200 250	380 475	
MDX61B **2500-503-4-0T/L**	250 315	475 590	

NEW: CMP synchronous servomotor series extended by sizes 71 – 100

Labeling or sealing applications in the food and beverage industry with 1,200 cycles or stacking heavy loads weighing 1,200 kg in the construction, automotive or timber industry – almost always, there is a CMP servomotor from SEW-EURODRIVE behind it.

The newly developed sizes 71, 80 and 100 now also open up the range up to 179 Nm peak torque. They combine all advantages of the known CMP servomotors with those of the proven DS/CM motors.

Overview of benefits

- Quick and reliable project planning for all system components with SEW Workbench
- Motor mounted to the gear unit and prefabricated cables for quick installation
- Electronic nameplate for quick and simple startup
- Low-inertia rotor of the CMP minimizes the percentage of energy required for motor acceleration
- Powerful rotor of the CMPZ controls even extreme loads stiffly, safely and accurately
- Finely scaled and stepped motor range with 17 levels
- Powerful spring-loaded brake with working capacity suitable for hoist axes
- Can be used worldwide thanks to CSA- and UL®
- Quick support by global assembly centers

Technical data

Type	Speed category [1/min]	M_0 [Nm]	M_{pK} [Nm]	CMP J_{mot} [kgcm²]	CMPZ J_{mot} [kgcm²]
CMP71S / CMPZ71S	3000 / 4500 /6000	6.4	19.2	3.04	11.02
CMP71M / CMPZ71M	3000 / 4500 / 6000	9.4	30.8	4.08	12.07
CMP71L / CMPZ71L	3000 / 4500 / 6000	13.1	46.9	6.18	14.17
CMP80S / CMPZ80S	3000 / 4500 / 6000	13.4	42.1	8.78	30.88
CMP80M / CMPZ80M	3000 / 4500 / 6000	18.7	62.6	11.9	34
CMP80L / CMPZ80L	3000 / 4500 / 6000	27.5	107	18.1	40.21
CMP100S / CMPZ100S	3000 / 4500	25.5	68.3	19.59	84.99
CMP100M / CMPZ100M	3000 / 4500	31	108	26.49	91.9
CMP100L / CMPZ100L	3000 / 4500	47	178.8	40.24	105.65

NEW: Servo drive technology for potentially explosive atmospheres

Many areas of industry are subject to the European Directive 1999/92/EC (ATEX 137). This directive and the standards and regulations based on it must be observed in the chemical industry, the timber industry, or the food and beverage industry, for example. Some less obvious sectors such as the printing industry and the pharmaceutical industry are also affected by this directive.

Safe drives are required for sectors where potentially explosive air/gas or air/dust mixtures develop or can develop only occasionally (zone 1/zone 21), or rarely or briefly (zone 2/zone 22). Especially for these tasks and in order to be able to use servo drive technology in these areas as well, SEW-EURODRIVE has qualified servo gear units and servomotors according to the 94/9/EC Directive.

Overview of benefits

Category II 2 G/D c, k T4 120 °C with degree of protection IP65

– Gear units of the (reduced backlash) R, RX, F, K, S and W37 series

Category II 2 G/D c, k T3 150 °C with degree of protection IP65

– Low-backlash PF.F servo gear units
– Low-backlash BS.F right-angle servo gear units
– For adapter or direct mounting with CMP synchronous servomotors in conjunction with SEW-EURODRIVE frequency inverters. Available for G/D with resolver; for D also with absolute encoder and holding brake

Categories II 3 G Ex nA II T3 X
II 3 D Ex tD A 22 IP6X T 150 °C X
CMP synchronous servomotors with frequency inverters from SEW-EURODRIVE.

For more information on servo drive technology from SEW-EURODRIVE for potentially explosive atmospheres, please refer to page 76 and 87.

CLASSIC –
Gearmotors and frequency inverters

The SEW-EURODRIVE modular concept offers millions of combinations and, as a result, provides any user the perfect prerequisite for choosing the drive that optimally suits the specific machine or system and for operating it according to the specific conditions:

– Individually depending on the required speed and torque range
– According to the space and type of mounting
– Adjusted to the ambient conditions

The modular concept stands for:
Variety and quality – power density and reduced length

To solve your drive task, our gearmotors are available in an unrivaled number of sizes and reduction ratios, either in axially parallel design or with angle-shaped power flow.
Torque and permissible overhung loads are incomparably high in relation to the structural volume of the motor. This was made possible by the compact and extremely rigid housing with its low weight and optimum magnetic flux. The sealing surfaces are not subject to any load pressure as the force flows through the single-piece housing. Our gearmotors are especially short since the motor shaft is part of the first gear unit stage. As a result, SEW-EURODRIVE gear units and gearmotors require little space, which is a real plus when it comes to designing systems.

Our gear units and gearmotors offer more than just a wide variety and high power density. They are also reliable, have a high overload capacity and a long service life. These features are the result of our serial production proficiency and uncompromising high-quality work. Oil seals, flexible surface gaskets and optimized housing design prevent leaks and increase service life.

Our drives enable maximum flexibility in combination with our drive electronics. The drive electronics perfectly matches the mechanics and optimally blends into the systems offered by SEW-EURODRIVE. Just like the mechanical components, the entire drive electronics is developed, produced and assembled at SEW-EURODRIVE.

Standard gear units / standard gearmotors

Helical gear units / helical gearmotors

The six single-stage and fourteen two- and three-stage sizes of SEW-EURODRIVE helical gearmotors ensure an optimum balance between power and space requirements. The tried and proven modular system together with our stringent quality criteria make it possible for SEW-EURODRIVE to supply torques and gear ratios that are incomparably closely spaced and diverse. This exceptional design diversity sets new standards in this field of drive engineering.

All our gear units and gearmotors offer a finely tuned performance range and therefore provide excellent economic prerequisites for every application.

Available designs:

- Single-stage or multi-stage
- Foot- or flange-mounted
- Foot- and flange-mounted
- Flange-mounted with extended bearing hub

RX series (single-stage)

For high output speeds, the exclusively single-stage gear units RX57 to RX107 offer compact solutions for your system design.

Technical data		
Gear unit reduction ratio	[i]	1.30 ... 8.65
Output torque	[Nm]	36 ... 830
Motor power range	[kW]	0.12 ... 45

R series (two- and three-stage)

The complete program of helical gearmotors provides the optimum size and power solution for every drive task. And for operators with a "weight-watching" issue, our multi-stage gear units provide a particularly special solution. Thanks to their die-cast aluminum design, the models R07, R17 and R27 are three particularly efficient lightweights – ideal as satellite drives and for use in light machine constructions. Reduced backlash helical gear units are also available for particularly precise requirements.

Technical data		
Gear unit reduction ratio	[i]	3.21 ... 289.74
Multi-stage gear unit reduction ratio	[i]	90 ... 27001
Output torque	[Nm]	31 ... 18000
Motor power range	[kW]	0.09 ... 160

RM series

RM gearmotors with extended output bearing hub are a special type of helical gear unit. They are specifically designed for agitating applications and can be used in applications subject to high overhung and axial loads as well as flexural torque. The data below applies for standard helical gearmotors.

Technical data		
Gear unit reduction ratio	[i]	4.29 ... 289.74
Multi-stage gear unit reduction ratio	[i]	134 ... 27001
Output torque	[Nm]	270 ... 18000
Motor power range	[kW]	0.12 ... 160

Standard gear units / standard gearmotors

Parallel shaft helical gear units and gearmotors

F series (two- and three-stage)

Our extra-slim parallel shaft helical gearmotors are the perfect solution when space is limited. The many different sizes and designs ensure that the gearmotors can be used in a wide variety of applications even under the most unfavorable conditions. Parallel shaft helical gearmotors are typically used in conveyor and materials processing applications. They are available as foot-, flange- or shaft-mounted versions. Reduced backlash parallel shaft helical gear units are also available on request for precise positioning tasks.

Available designs:
- Foot- or flange-mounted
- B5 or B14 flange-mounted
- Solid or hollow shaft
- Hollow shaft with keyed connection, shrink disk, splined hollow shaft or TorqLOC®

Technical data		
Gear unit reduction ratio	[i]	3.77 ... 281.71
Multi-stage gear unit reduction ratio	[i]	87 ... 31434
Output torque	[Nm]	87 ... 18000 (also in reduced backlash version)
Motor power range	[kW]	0.12 ... 200

Helical-bevel gear units and gearmotors

K series (three-stage)

Our helical-bevel gear units provide a high degree of efficiency of over 96 % in both torque directions and at all input speeds. High-endurance gearing enables high-torque, wear-free drive. The remarkably high level of efficiency makes the helical-bevel gearmotors energy-saving angular gear drives. As they also have a long maintenance-free service life, they can be used with AC asynchronous motors, asynchronous and synchronous servomotors in every application. A reduced backlash version is available for precise positioning tasks.

Available designs:
- Foot- or flange-mounted
- B5 or B14 flange-mounted
- Solid or hollow shaft
- Hollow shaft with keyed connection, shrink disk, splined hollow shaft or TorqLOC®

Technical data		
Gear unit reduction ratio	[i]	3.98 ... 197.37
Multi-stage gear unit reduction ratio	[i]	94 ... 32625
Output torque	[Nm]	125 ... 50000 (also in reduced backlash version)
Motor power range	[kW]	0.12 ... 200

Helical-worm gear untis and gearmotors

S series

Our helical-worm gear units are helical gear/worm combinations that are significantly more efficient than straightforward worm gear units. Due to their excellent economic efficiency, these drives can be used in every branch of industry – tailored individually to torque and speed requirements. The gear ratios afforded by the worm gear stage and the low noise levels during operation make these gearmotors ideal low-cost solutions for simple applications.

Available designs:
- Foot- or flange-mounted
- B5 or B14 flange-mounted
- Solid or hollow shaft
- Hollow shaft with keyed connection, shrink disks, splining or TorqLOC®

Technical data		
Gear unit reduction ratio	[i]	6.80 ... 288.00
Multi-stage gear unit reduction ratio	[i]	110 ... 33818
Output torque	[Nm]	43 ... 4000
Motor power range	[kW]	0.12 ... 22

SPIROPLAN® right-angle gearmotors

W series

W series gearmotors are robust, single-stage right-angle gearmotors with SPIROPLAN® gearing. They distinguish themselves from helical-worm gear units by the material combination used in the gearing (steel/steel), the special tooth meshing ratios and the aluminum housing. SPIROPLAN® right-angle gearmotors are wear-free, very quiet-running and lightweight. Due to their extremely short design and aluminum housing, these gearmotors enable compact and lightweight drive solutions. The wear-free gearing and lubrication that lasts the entire service life of the gearmotor permit long maintenance-free operation. Oil filling is independent of the mounting position, which allows SPIROPLAN® right-angle gearmotors to be installed in any mounting position without altering the quantity of oil. The identical hole distances in the foot and face as well as the identical shaft centers between the foot and face make for a wide range of mounting options.

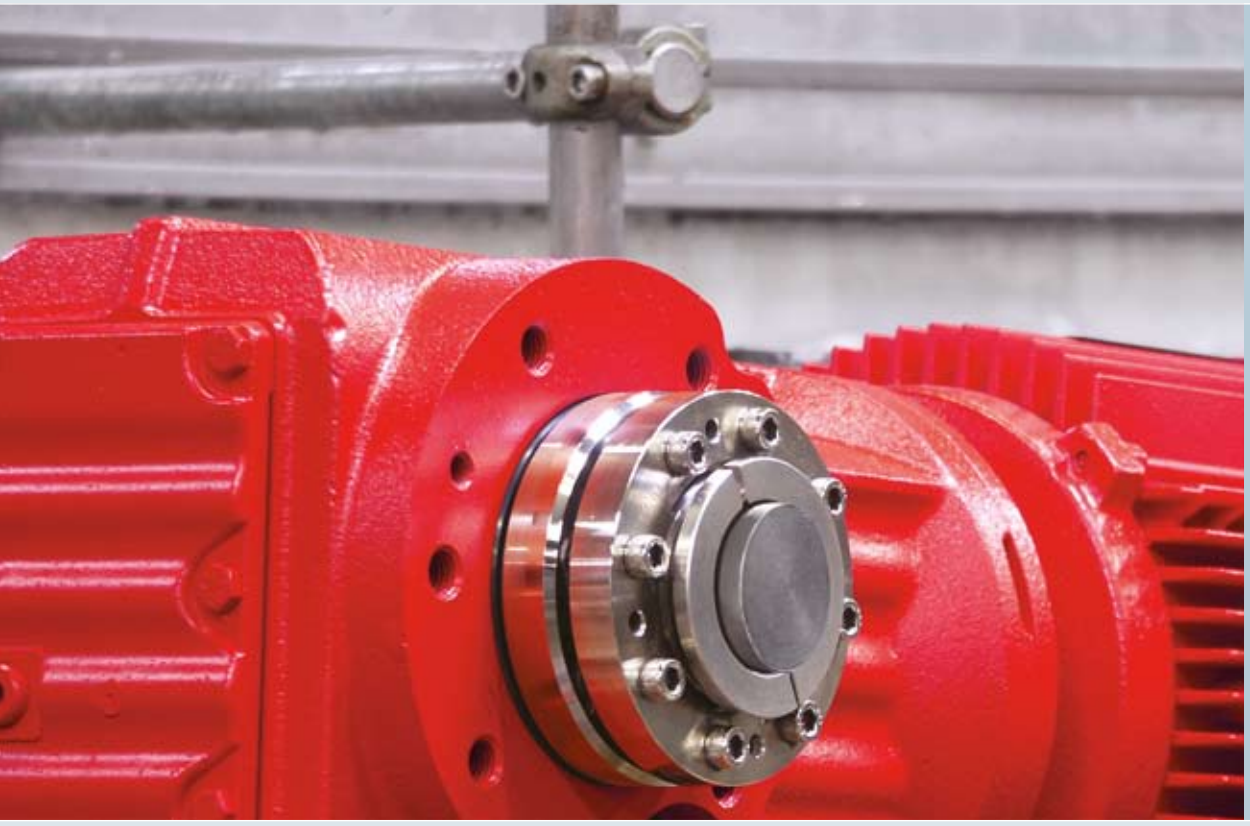
Available designs:
- Foot- or flange-mounted
- B5 or B14 flange-mounted

Technical data		
Gear unit reduction ratio	[i]	3.20 ... 75.00
Output torque	[Nm]	12 ... 180
Motor power range	[kW]	0.09 ... 3.0

Accessories and options

TorqLOC® hollow shaft mounting system

Optional for parallel shaft helical, helical-bevel and helical-worm gear units. The TorqLOC® hollow shaft mounting system is used for achieving a non-positive connection between the customer's shaft and the hollow shaft in the gear unit. As a result, the TorqLOC® hollow shaft mounting system is an alternative to the existing hollow shaft with shrink disk, hollow shaft with key and the splined hollow shaft. The TorqLOC® hollow shaft mounting system provides the advantages of easy installation and de-installation, and saving costs.



Simple

The new design of the TorqLOC® hollow shaft mounting system makes for simple assembly and significantly improves removal of the drive even after lengthy periods of operation. SEW-EURODRIVE will deliver the drive with the matching bushing. The operator will install the stop ring on the customer shaft and the drive can be simply mounted and fixed.

Economical

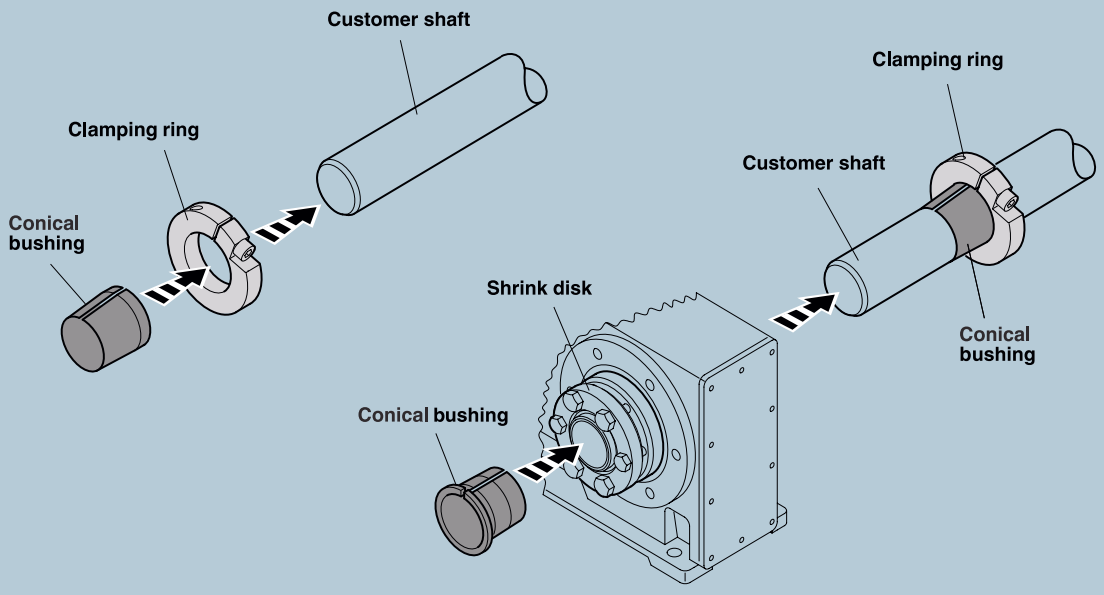
The TorqLOC® hollow shaft mounting system makes it possible to use drawn, unprocessed material all the way to quality level h11 for customer shafts reducing costs even further! No additional machining of the customer shaft is required!

Flexible

A well thought-out product down to the smallest detail: Up to four different rated diameters can be adapted with one hollow shaft reducer.

Awards

The trade journal "Plant Engineering" has awarded the prize "Product of the Year 2002." The award recognizes innovative products that will result in improvements on the production level. SEW-EURODRIVE received the "Silver Award" for its TorqLOC® in the category "Power Transmission". The "Silver Award" was handed out at the National Plant Engineering Show in Chicago in early March 2003.



Overhead trolley drives

Overhead trolley drives are an variable and efficient means of transport used in many industries. The decisive factors for the performance, conveying speed and load carrying capacity of these drives are the transport material and the application. Drives for overhead trolley systems from SEW-EURODRIVE are therefore divided into light-load and heavy-load.

Light load range, drives of the HW30 / HS40 series

Light load drives are quiet and comply with C1 guideline standards (VDI guideline 3643). They work with a reliable disengageable coupling and provide the following advantages:

- Low-maintenance for a high level of availability and productivity
- Smooth running for operation without vibration
- Low-noise for use in manual work stations
- Compact for space-saving installation

Technical data

Type	Maximum torque [Nm]	Permitted wheel load [N]	Force application x [mm]	Speed with carrying wheel Ø 125 mm [m/min]	Gear ratio	Shaft d x l [mm]
HW 30	70	5600	13	7.3 ... 67	8.2 ... 75	20 x 35 25 x 35
HS 40	130	6500	13	2.7 ... 75	7.28 ... 201	20 x 35 25 x 35

Heavy load range, drives of the HS / HK series

The heavy load range in particular has seen a clear trend toward increasing permitted work loads. SEW-EURODRIVE has expanded the HK series due to the improved efficiency of helical-bevel gear units over helical-worm gear units. Overhead trolley drives with helical-bevel gear units (HK series) can now be used for wheel loads up to 40,000 N. Power consumption is reduced, particularly when the MOVITRANS® system for contactless energy transfer is also used. As a result, systems operate with greater economic efficiency.

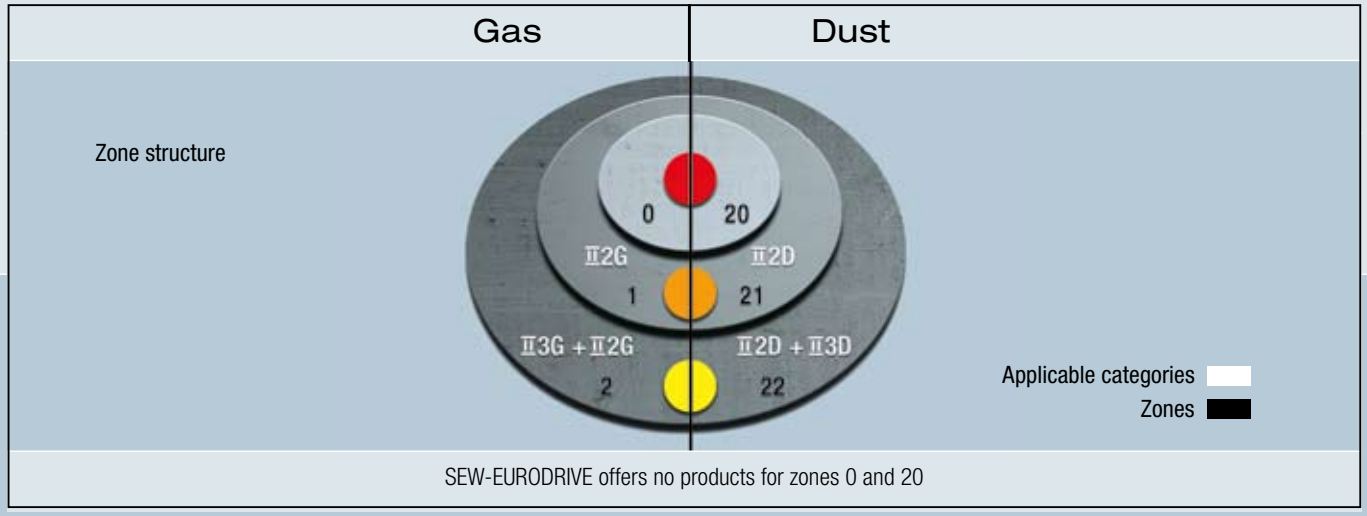
Technical data

Type	Maximum torque [Nm]	Permitted wheel load [N]	Force application x [mm]	Speed with carrying wheel Ø 200 mm [m/min]	Ø 250 mm [m/min]	Ø 300 mm [m/min]	Gear ratio	Shaft d x l [mm]
HS 41	185	10000	13	4.4 ... 120	–	–	7.28 ... 201	25 x 35
HS 50	300	15000	18 28	4.4 ... 120	5.4 ... 151	–	7.28 ... 201	30 x 60 35 x 70
HS 60	600	25000	28	4.0 ... 116	5.1 ... 145	6.1 ... 175	7.56 ... 217.41	45 x 90
HK 30	200	10000	13	8.3 ... 68	–	–	13.1 ... 106.38	25 x 35
HK 40	400	18500	18 28	6.7 ... 72	8.3 ... 90	–	12.2 ... 131.87	30 x 60 35 x 70
HK 50	600	25000	28	6.1 ... 66	7.6 ... 83	9.1 ... 100	13.25 ... 145.14	45 x 90
HK 60	820	40000	32	6.1 ... 66	7.6 ... 83	9.1 ... 100	13.22 ... 144.79	55 x 110

Explosion-proof drives

Explosion protection in compliance with ATEX

Directive 94/9/EC or ATEX lays down new regulations for explosion protection in all types of devices for the European market. This directive applies to gearmotors and motors. As of July 1, 2003, Directive 94/9/EC applies without restrictions to the use of gearmotors and motors within the European Union. Other European countries, such as Switzerland, have since come into line with this regulation. SEW-EURODRIVE offers gearmotors and motors for operation in potentially explosive atmosphere only in accordance with the relevant ATEX regulation. This also applies to options and accessories in explosion-proof design.



SEW-EURODRIVE offers no products for zones 0 and 20

For innovations in SEW-EURODRIVE's servo drive technology for potentially explosive atmospheres, please refer to pages 27/28

Explosion-proof drives

Operating systems and machines in areas with potentially explosive air / gas or air / dust mixtures requires special. Appropriate regulations and standards regulate the use of tools and fixtures in danger zones. They also prescribe the quality prerequisites that must be met by drive manufacturers.

Technical data

Category / zone	Type	Power range [kW]
II3D / II3GD	II3D / II3GD R..D../II3... Helical gearmotors F..D../II3... Parallel shaft helical gearmotors K..D../II3... Helical-bevel gearmotors	0.12 ... 75
	W..D../II3... SPIROPLAN® gearmotors	0.12 ... 0.75
	S..D../II3... Helical-worm gearmotors	0.12 ... 22
II2D	II2D R..D../II2D Helical gearmotors F..D../II2D Parallel shaft helical gearmotors K..D../II2D Helical-bevel gearmotors	0.37 ... 22
	S..D../II2D Helical-worm gearmotors	0.37 ... 0.75
	W..D../II2D SPIROPLAN® gearmotors	0.37 ... 22
II2G	II2G R..D../II2G Helical gearmotors F..D../II2G Parallel shaft helical gearmotors K..DG/II2D Helical-bevel gearmotors	0.15 ... 16
	W..D../II2G SPIROPLAN® gearmotors	0.15 ... 0.75
	S..D../II2G Helical-worm gearmotors	0.15 ... 16
II2G_T4	II2G_T4 R..D../II2G_T4 Helical gearmotors F..D../II2G_T4 Parallel shaft helical gearmotors K..D../II2G_T4 Helical-bevel gearmotors	0.15 ... 1.5
	W..D../II2G_T4 SPIROPLAN® gearmotors	0.15 ... 0.55
	S..D../II2G_T4 Helical-worm gearmotors	0.15 ... 1.5

Explosion-proof AC asynchronous motors in combination with SEW frequency inverters

It is important to observe and comply with guidelines particularly in areas containing potentially-explosive air/gas and gas/dust mixtures. Thanks to many years of experience and competence in this area, SEW-EURODRIVE ensures that the relevant guidelines are observed. Furthermore, the company's expertise is continually being expanded to include new and further developments. This can be seen, for example, in the explosion-proof AC asynchronous motors in category 2 (94/9 EC) in combination with SEW-EURODRIVE frequency inverters.

Overview of the advantages this combination offers compared to an AC asynchronous motor in explosion protection "d" (EN 60079-1; flameproof enclosure):

- High efficiency
- Lighter weight
- Shortest possible delivery times, high availability
- Certified for operation with frequency inverters from SEW-EURODRIVE
- Suitable for pump and fan drives
- Supplied by one source, from a manufacturer that offers both components itself

ATEX

This basic type of approval was implemented for all 4-pole motors of category 2 from SEW-EURODRIVE and certificates of all eDT and eDV motors are now available. These new approvals for the motors were performed according to the new European standards applicable to explosion protection:
Gas (EN 60079-0; EN 60079-7)
and dust (EN 61241-0; EN 61241-1).
These motors meet the requirements for equipment intended for use in potentially explosive areas of category 2 as defined in directive 94/9/EC (ATEX 95). A device for direct temperature monitoring in combination with the defined operating parameters of the frequency inverter offers the best possible protection against excessive heating caused by overload.

Technical data

eDT/eDV motors in 15 sizes

P_{supply} [kW]	M_{supply} [Nm]	M_{FI} [Nm]	$I_{rated-FI}$ bei 400 V / 50 Hz [A]
0.37… 16.0	2.6 … 103.9	2.2 … 85.3	1.04… 26.8

Compared to the rated supply torque, the permitted load value for operation with a frequency inverter was reduced to the shown values to ensure thermally safe operation; current values for 400 V / 50 Hz voltage in star connection; the current values for delta connection 230 V / 50 Hz (or 400 V / 87 Hz) must be converted with factor $\sqrt{3}$.

A chain is only as strong as its weakest link. This also applies to production, sales and logistics. As a leading drive technology specialist, we help you to keep your systems running – with drive solutions that guarantee the highest degree of system availability and ensure that your business is successful. This is what we call Drive 360° – Seeing the big picture: From system availability to problem-solving competence, from low operating costs over energy efficiency to the complete system that handles all your tasks.

www.sew-eurodrive.com

SEW EURODRIVE

Aseptic gearmotors

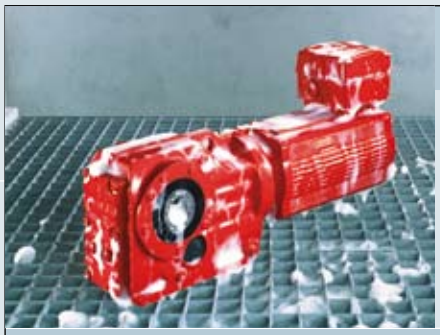
Particularly high requirements are placed on hygiene in the beverage and food industry as well as in the chemical and pharmaceutical industry. The necessary cleaning processes and the use of aggressive cleansing and disinfectant agents can considerably affect the drive solutions in such environments.

DAS series

Solutions for dry hygienic areas:
Aseptic gearmotors of the DAS series for drive solutions without fans and smooth surfaces:
- Motors with degree of protection IP66 (brakemotors IP65)
- Motor corrosion protection: KS internal treatment
- OS2 to OS4 surface protection (see also page 44)
- Motor protection thermistor in thermal class F, TH thermostat relay as option
- IS plug connector

Technical data

Type	Power [kW] in operating mode			
	S1 = Continuous duty	S3 = Intermittent duty		
		60 %	40 %	25 %
DAS80K4	0.25	0.3	0.37	0.55
DAS80N4	0.37	0.45	0.55	0.75
DAS90S4	0.55	0.75	0.9	1.1
DAS90L4	0.75	0.95	1.1	1.5
DAS100M4	1.1	1.35	1.7	2.2
DAS100L4	1.5	1.85	2.3	3.0



ASEPTIC^{plus} drive package

Standard motors are not the first choice for hygienic production areas because they usually come equipped with cooling fins and fans where dirt can accumulate and germs and bacteria can be distributed by air swirls.

SEW-EURODRIVE offers the perfect solution also for such areas of application: DAS series aseptic motors with ASEPTIC^{plus} drive package.

Solutions for hygienic production areas:

- Motors with degree of protection IP69K (brakemotors IP65)
- OS4 surface protection
- Contour recesses with sprayed-on rubber
- Double oil seals (if technically feasible) at output made of Viton (FKM)
- Stainless steel breather valve
- Pressure compensation membrane
- Cable entry with screw plugs made of stainless steel
- Gear unit output shaft made of stainless steel as solid shaft, hollow shaft with key or TorqLOC for gear unit types: R17-97, F37-97, K37-97, S37-97 and W30
- All retaining parts at the output shaft, such as screws, keys, shrink disk, etc., made of steel

KS corrosion protection and OS surface protection for all standard motors and gear units

SEW-EURODRIVE offers corrosion and surface protection for operating motors and gear units under special ambient conditions. The combination of these protection measures ensures the optimum protection for motors and gear units.

KS corrosion protection

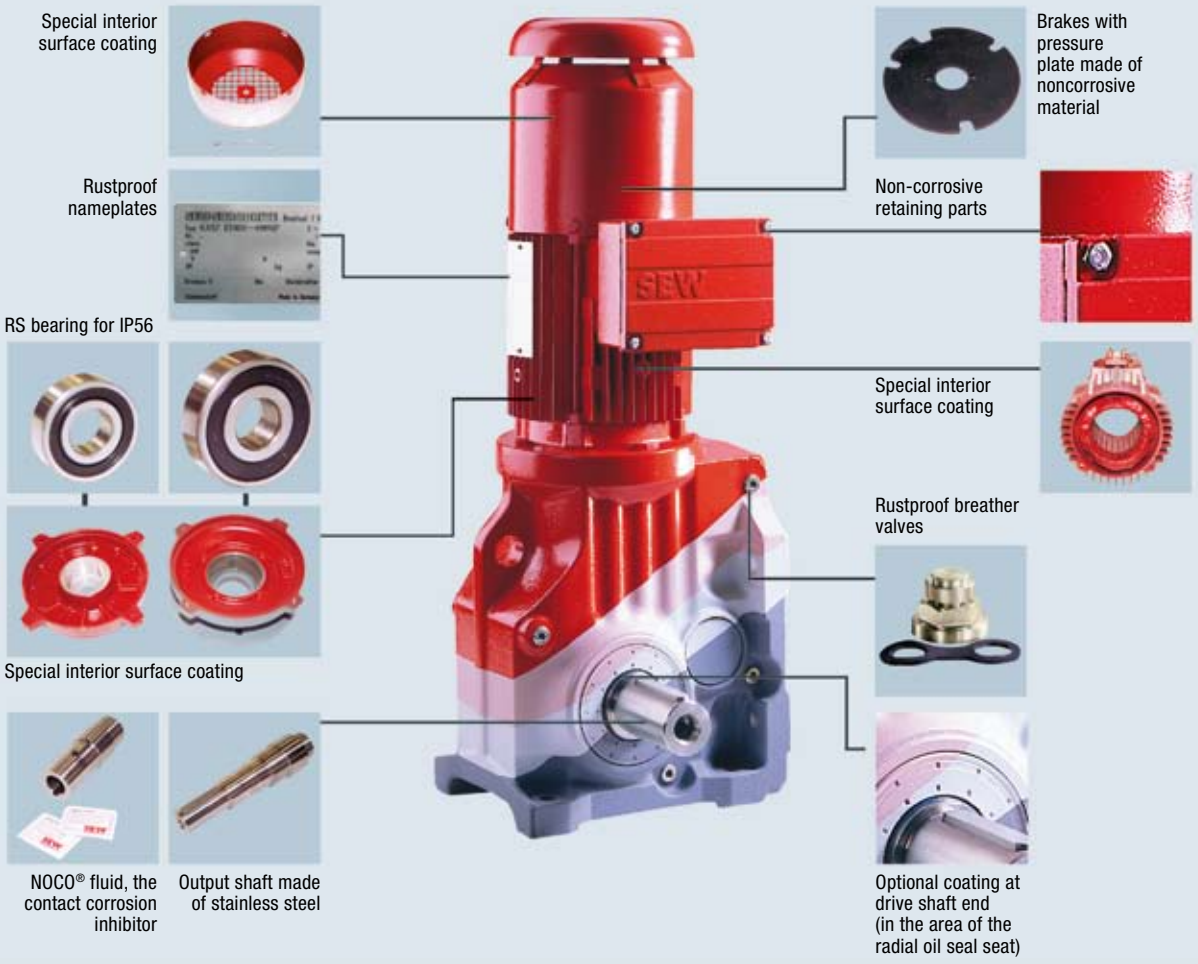
KS corrosion protection for motors comprises the following measures:

- All retaining screws that are loosened during operation are made of stainless steel.
- The nameplates are made of stainless steel. Various motor parts are coated with a top coat.
- Flange contact surfaces and shaft ends are treated with a temporary anti-corrosion agent.
- Additional measures for brakemotors.

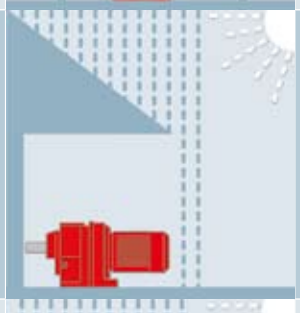
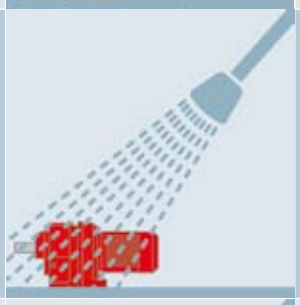
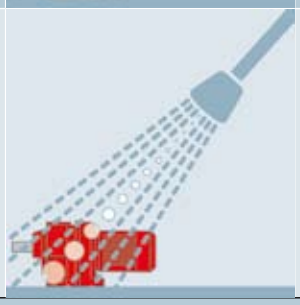
OS surface protection

In addition to standard surface protection, motors and gear units also have the option of surface protection OS1, OS2, OS3 or OS4 making the gearmotors well equipped for operation under various ambient conditions.

Measures for internal treatment and standard parts



Surface protection

Surface protection		Ambient conditions/sample applications
Standard		Suitable for machines and systems in buildings and rooms indoors with neutral atmospheres. Similar to corrosion category*: C1 (negligible) **Sample applications** – Machines and systems in the automobile industry – Conveyor systems in logistics areas – Conveyor belts at airports
OS1		Suitable for environments with condensation, and atmospheres with low humidity or contamination level, such as outdoors applications under roof or with protection. Similar to corrosion category*: C2 (low) **Sample applications** – Systems in saw mills – Hall gates – Agitators and mixers
OS2		Suitable for environments with high humidity or mean atmospheric contamination, such as outdoors applications subject to direct weathering. Similar to corrosion category*: C3 (moderate) **Sample applications** – Applications in amusement parks – Funiculars and chair-lifts – Applications in gravel plants – Systems in nuclear power plants
OS3		Suitable for environments with high humidity and occasionally severe atmospheric and chemical contamination. Occasionally acidic or caustic wet cleaning. Also for applications in coastal areas with moderate salt load. Similar to corrosion category*: C4 (high) **Sample applications** – Sewage treatment plants – Port cranes – Mining applications
OS4		Suitable for environments with permanent humidity and severe atmospheric or chemical contamination. Regular acidic or caustic wet cleaning also with chemical cleaning agents. Similar to corrosion category*: C5-I (very high) **Sample applications** – Drives in malting plants – Wet areas in the beverage industry – Conveyor belts in the food industry

Surface protection		Ambient conditions/sample applications
DAS series aseptic motors OS2-OS4 as option		Suitable for dry or humid hygienic areas with mean atmospheric contamination. Also suitable for particularly dusty environments. Similar to corrosion category*: C3 (moderate) **Sample applications** – Applications in clean rooms – Machines in the cosmetic and pharmaceutical industry – Systems for processing cereal and flour (without Ex protection) – Conveyor belts in cement plants
DAS series aseptic motors with ASEPTIC^{plus} drive package OS4		Suitable for hygienic areas in the food and beverage industry with permanent humidity and regular acidic and wet cleaning with chemical cleaning agents. Cleaning with compressive stress up to 80 bar. Similar to corrosion category*: C5-I (very high) **Sample applications** – Hygienic and aseptic conveyors in the beverage industry – Systems in cheese dairies and butcher shops – “Splash zones” in the food industry

* according to DIN EN ISO 12944-2

Standard and energy efficient motors: DRS / DRE / DRP

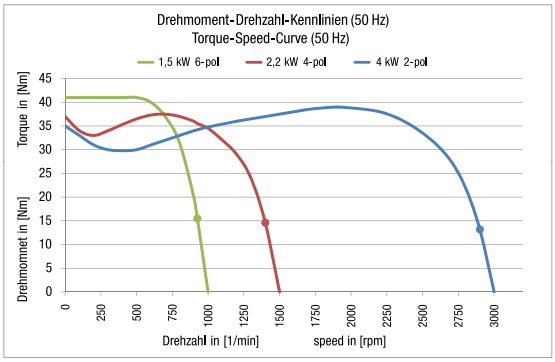
Modular DR motor system

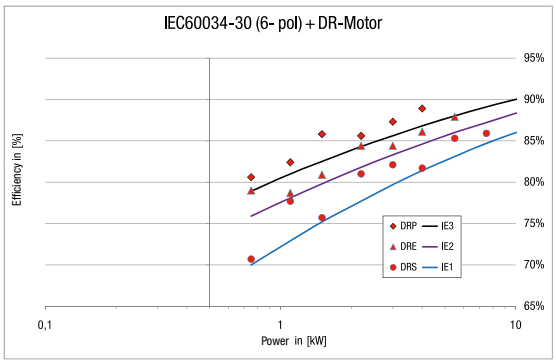
The new modular system of asynchronous AC motors from SEW-EURODRIVE is a development based on the established motor series. The new DR series AC motors combine the entire range of required motor efficiency levels as well as energy efficient motors making it a future-proof innovation of the highest quality.

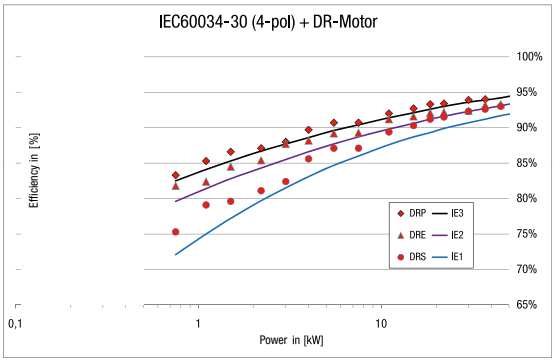
In the development of energy efficient motors, SEW-EURODRIVE became the first company in the world to succeed in using die-cast copper technology in industrial high-volume series production in 2002. The modular DR motor system from SEW-EURODRIVE offers three different brake sizes per motor size and cost-optimized encoders integrated in the motor.

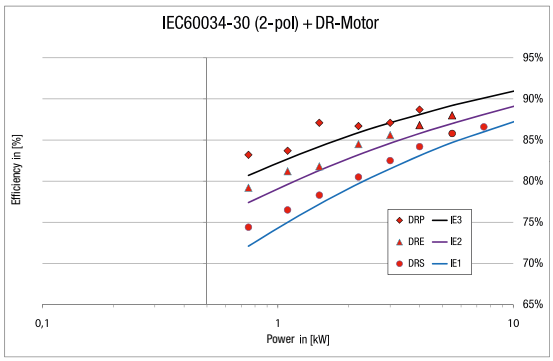
All other additional features of the new DR series are available in all energy efficiency levels. The DR motor supports any energy efficiency standard worldwide and even already meets the upcoming IEC standard. They bring a whole range of unique benefits to planners and users. **One single series for millions of drive combinations.**

One motor series meets all efficiency levels:









DR motor series DRS, DRE, and DRP exceed the specifications of IEC IEC 60034-30 and belong to classes IE1, IE2, and IE3.

AC motors of energy efficiency classes IE

	DRS series	DRE series	DRP series
	The **DRS** motor in the modular DR motor system is a motor that meets the **standard efficiency level**. The motors are marked with IE1 according to IEC 60034 T30.	The **DRE** motor in the modular DR motor system is a motor that meets **High Efficency** requirements. The motors are marked with IE2 according to IEC 60034 T30.	The **DRP** motor in the modular DR motor system is a motor that meets **Premium Efficency** requirements. The motors are marked with IE3 according to IEC 60034 T30.
Technical data			
Sizes	71 … 225 315	80 … 225 315	90 … 225 315
Lengths	K, S, M, MC, L, LC		
Power 4-pole [kW]	0.37 … 55 110 … 200	0.75 … 45 110 … 200	0.75 … 37 90 … 160
Frequenzy [Hz]	50, 60 und 50/60		
Efficiency logo	International: IE1	International: IE2, North America[1]:	International: IE3, North America[1]:

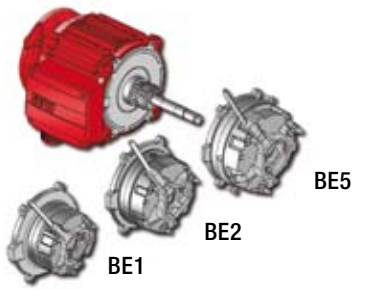
[1] North America in preparation

Modular brake system

The BE brake is based on the extremely successful BM(G) brake, but was further developed in many aspects. The brake size has so far been unalterably linked to the motor size. "Less" brake is only possible by reducing the braking torque with a modified brake spring.

The new combination options of DR motors with BE brakes are no longer subject to this unalterability. The DR motor can be combined with two or three different BE brake sizes.

The brake of your choice – extract from the brake combination options:



Brake combinations

Depending on the braking torque or braking work required, the DR motor can be combined with the ideal BE brake. Brake mounting to motors size 90 and larger offers another special feature. The brake itself is mounted on a friction plate, which only has to be attached to the endshield. Without opening the motor, the unit can now be demounted and replaced – also by a larger or smaller brake.

Technical data

Motor type	Bake type	W_{tot} [10^6 J]	Braking torque grading [Nm]							
…	…	…	…							
DR.90	BE1	120	5	7	10					
	BE2	165		7	10	14	20			
	BE5	260				14	20	28	40	
DR.100	BE2	165			10	14	20			
	BE5	260				14	20	28	40	55
…	…	…								

Built-in encoders

Built-in encoders

The new built-in encoders are unique in the modular DR motor system. Instead of an external encoder mounted to the fan guard of the non-drive end, the encoder can now be installed between the endshield and the fan. This means that any extra length caused by mounted encoders is avoided.

Technical data					
Built-in encoders		EI7C, EI76, EI72, EI71			
Signal type		HTL (push-pull)			
Periods per revolution	A, B	24	6	2	1
	C	0	0	0	0
DR motor sizes		71… 132			
Connection		Terminal strip in the terminal box or 8-pin M12 connector			

Additional features

The additional features of the DR motor and DR brakemotor are diverse and extensive. To provide a better overview, they were combined in groups.

Other options	Description	
Mechanical attachments	All versions that can be mounted to the DR motor using additional elements:	
	BE..	Brake with brake size, scaled in steps of 10 Nm
	HF, HR	Manual brake release, lockable or automatic disengaging
	/RS	Backstop instead of a brake
	/MSW	MOVI-SWITCH®, integrated switching and protection function
	/MM..	MOVIMOT®, integrated frequency inverter
Temperature sensor, temperature detection	All versions that are offered with additional elements in the winding:	
	/TF	3 temperature sensors (positive coefficient thermistor or PTC resistor) connected in series
	/TH	3 thermostats (bimetallic switches) in series
	/KY	1 temperature sensor KTY84-130
	/PT	1 or 3 temperature sensors PT100
Ventilation	All versions in conjunction with cooling/ventilation on the DR motor:	
	/V	Forced cooling fan, IP66, AC voltage range or DC
	/Z	Additional flywheel mass (flywheel fan)
	/AL	Metal fan
	/U	Non-ventilated (only without fan)
	/OL	Non-ventilated (closed B side)
	/LF	Air filter
	/C	Protective cover
Bearings	All DR315 motors in conjunction with the bearing function:	
	/NS	Lubrication device
	/ERF	Reinforced bearing for high overhung loads (only with NS)
	/NIB	Insulated bearing (B-side)
Connection	All designs in conjunction with connection alternatives	
	/IS	Integrated plug connector
	/AS.. etc.	Installed plug connectors of all kinds
	/KCC	Terminal strip with cage clamps
	/KC1	C1-compliant connection of electrified monorail system (VDI RL 3643)
Encoder	All designs in conjunction with mounted encoders of various electrical interfaces:	
	/ES7.	Mount-on encoder DR71 ... 132
	/EG7.	Mount-on encoder DR160 ... 225
	/XV..	Mounting or encoder adapter of encoders not included in the SEW portfolio
Encoder	All designs in conjunction with condition monitoring	
	/DUB	Brake monitoring for function and/or wear
	/DUV	Vibration monitoring
Other	Other designs	
	/DH	Condensation drain hole
	/2W	Second shaft end on the motor/brakemotor
	/RI	Reinforced winding insulation for frequency inverter operation > AC 500 V

DRL / DRM / DRK series AC motors

DRL motor	
The **DRL** motor in the modular DR motor system is a motor that meets the standard efficiency level. The motors are marked with IE1 according to IEC 60034 T30. This motor is suited for **high dynamic loads** in addition to the high overload capacity of DR motors. This means the DRL motor fulfills all properties of an asynchronous servomotor.	
D1: Standard pinion shaft end: approx. 200 % M_N D2: Reinforced pinion shaft end: approx. 300 % M_N D3: IEC shaft end: approx. 350 % M_N (max. M_{brake})	
Technical data	
Dynamic 1 **Dynamic 2** **Dynamic 3**	~ 200 % M_{dyn} / M_N ~ 300 % M_{dyn} / M_N ~ 350 % M_{dyn} / M_N
Torques M_N [Nm]	2.5 … 350
Sizes **Lengths**	71 … 225 S, M, MC, L, LC
Speed classes [rpm]	1200, 1700, 2300, 3000

DRK motor	
The **DRK** motor in the modular DR motor system is a **single-phase motor** that can be operated on a single-phase power supply (instead on the usual three-phase power supply). The DRK motor comes equipped with perating capacitor CB.	
Technical data	
Sizes **Lengths**	71 … 100 S, M, L
Power 4-pole [kW] **Frequency [Hz]**	0.25 …. 1.5 50

DRM motor	
The **DRM** motor in the modular DR motor system is a 12-pole motor that allows for thermally safe operation on a 3-phase mains supply, even if the rotor is blocked. The usual product designation **"torque motor"** is also maintained for the DRM motor. Every torque motor is available with 2 rated torques. Rating 2 can be three times the torque of rating 1 but either only in S3/15 % cdf or in S1 continuous duty with forced cooling fan only.	
Technical data	
Sizes **Lengths**	71 … 160 S, M, L
Rating 1 **Rating 2**	S1 S3/15 % or S1 with forced cooling fan
Rating 1 [Nm] **Rating 2 [Nm]**	0.4 … 3 1.2 … 9

MOVITRAC® B frequency inverter: Compact and versatile

When choosing a suitable application-specific frequency inverter, “unit modularity” and “smaller dimensions” are among the most important criteria. SEW-EURODRIVE offers an economical and compact solution: MOVITRAC® B, the lastest frequency inverter generation. The versatile unit concept and extensive expansion options allow for selecting exactly those inverter functions that match the individual requirements of the specific application.

MOVITRAC® B

Compact and inexpensive frequency inverter for a power range from 0.25 ... 75 kW

1-phase and 3-phase mains connection for AC 230 V and 3-phase mains connection for AC 400 … 500 V.

Technical data	
Power supply connection	Power range [kW]
230 V / 1-phase	0.25 ... 2.2
230 V / 3-phase	0.25 ... 30
400/500 V / 3-phase	0.25 ... 75

Options	
FBG11B	Easy to use plug-in keypad
UBP11A	Parameter module
DBG60B	Plain text keypad
FSC11B	Communication module for connecting MOVITRAC® B via SBus or RS-485 and for diagnostics and parameter setting via PC
FIO11B	Analog module with setpoint input, analog output and RS-485 interface
FIO12B	Digital module with 7 binary inputs and SBus connection
MBG11A	Speed control module
UFI11A	Fieldbus gateways for INTERBUS
UWS11A / UWS21B / USB11A	Interface adapter
DFP21B / DFE24B / DFE32B / DFE33B / DFD11B	Fieldbus interfaces integrated or in separate gateway housings: PROFIBUS / EtherCAT / PROFINET IO/ EtherNet/IP / DeviceNet (CANopen integrated in the basic unit)
MOVI-PLC®	Motion control programmable in IEC 61331 with powerful libraries
Technology version with IPOS$^{plus®}$ programming	
Safe stop according to category 3 for 3 AC 230 V/400 V inverters from 0.55 ... 75 kW	

MOVIDRIVE® MDX 60/61B drive inverter

Drive inverters of the MOVIDRIVE® MDX60/61B series from SEW-EURODRIVE stand for modern, digital inverter technology with comprehensive basic functions for a power range from 0.55 to 315 kW, large overload capacity and modular unit concept. With MOVIDRIVE®, AC motors can be used without limitations.

The levels of dynamic performance and control quality that can now be achieved with MOVIDRIVE® for asynchronous AC motors were previously only possible using servo drives or DC motors. The integrated control functions and the possibility of upgrading the system with technology and communication options results in drive systems that are designed for particularly high levels of efficiency in terms of their broad range of applications, project planning, startup and operation.

MOVIDRIVE® MDX 60/61B

High-performance inverter for dynamic drives in the power range from 0.55 ... 315 kW. Great diversity of applications due to extensive expansion options with technology and communication options. 3-phase mains connection for AC 230 V and AC 400 ... 500 V.

Technical data	
Power supply connection	Power range [kW]
200/240 V / 3-phase	1.5 ... 37
400/500 V / 3-phase	0.55 ... 315
Standard design	The units are equipped with the integrated IPOS$^{plus®}$ positioning and sequence control system as standard. They can be expanded withthe available options. The standard also includes protection against restart according to EN 954-1, safety category 3. The standard design is identified by the digits “00” at the end of the unit designation.
Application version with application modules	In addition to the features of the standard version, these units include the electronic cam and internal synchronous operation technology functions. You can use all the application modules available in the MOVITOOLS® MotionStudio software package with the application versions. The application version is indicated by “0T” following the type designation. SEW offers various standardized control programs specifically for ”positioning“, ”winding“ and ”controlling“ applications. These programs are called application modules. The application modules are part of the MOVITOOLS® MotionStudio operating software and can be used with units in application version. **The benefits at a glance:** – Wide range of functions and user-friendly user interface – You only have to enter the parameters needed for the application – User-friendly application programs guide you through the process of setting parameters, so there is no need for complicated programming – No lengthy training, therefore quick project planning and startup – Control of all movement functions is performed directly in MOVIDRIVE® – Decentralized concepts can be implemented

Options for MOVIDRIVE® MDX 60/61B

DBG60B	Keypad
DEH11B / DER11B / DEH21B / DIP11B	Encoder and resolver cards for HIPERFACE® / Resolver / Absolute encoder
UWS21B / USB11A	Interface adapter
DIO11B	Input/output card
Feldbusanbindungen DFP21B / DFI11B / DFI21B / DFE11B / DFE12B/32B / DFE13B/33B / DFE24 B / DFD11B / DFC11B	For interfaces for PROFIBUS, INTERBUS, INTERBUS-LWL, Modbus/TCP, PROFINET IO, EtherNet/IP, EtherCAT, DeviceNet, CANopen
DRS11B	Synchronous operation card
DCS21B / DCS31B	Safety monitor
DFS11/12/21/22	Safe fieldbus connections
DHP11B, DHE41B, DHF41B	Controllers

Accessories and options for MOVITRAC® B and MOVIDRIVE® MDX 60/61B

Accessories and options	
MOVITOOLS® MotionStudio operating software	The MOVITOOLS® MotionStudio program package allows you to conveniently startup, parameterize and diagnose MOVITRAC® B frequency inverters and MOVIDRIVE® MDX 60/61B drive inverters.
MDR60A regenerative power supply	The MDR60A regenerative power supply can be used to supply several units with power via a central power supply connection. In regenerative operation, the power is fed back into the supplying power supply. Using MDR60A saves energy and installation work.
Braking resistor type BW	BW series braking resistors are available for operating MOVITRAC® B frequency inverters and MOVIDRIVE® MDX60/61B inverters as generators. With integrated temperature sensor, the resistor can be protected without external monitoring.
Line choke type ND	ND series line chokes increase inverter overvoltage protection. This is an important characteristic in rough industrial power supply systems, especially if the inverter is installed near a supply transformer.
NF...type line filter	NF type line filters are available for EMC compliant installation as specified by EN 61800-3. They suppress interference emissions on the line side of inverters. These line filters ensure that limit value class C1 is maintained on the supply end.
Output choke type HD	HD series output chokes suppress interference emitted from unshielded motor cables. They enable the motor to meet limit value class C1 requirements in accordance with EN 61800-3 in EMC-compliant installations. Output chokes provide an alternative to shielded motor cables in EMC-compliant installations.
Output filter type HF	HF series output filters are sine filters that smooth out inverter output voltage. Output filters are used for group drives to suppress discharge currents in motor cables and for long motor cables to prevent voltage peaks.

MOVITRAC® LTE B

The MOVITRAC® LTE B frequency inverter is the optimal combination of price, performance and range of applications. Therefore, it is the perfect choice for implementing simple applications. Designed and developed for controlling the speed of asynchronous motors, this frequency inverter is available in three sizes covering a power range of 0.37 to 11 kW. Materials handling applications, such as in small, modular conveyor lines or in blowers and pumps, can in this way be implemented in a particularly economical manner.

MOVITRAC® LTE B

The standard design for installation in the control cabinet is available in degree of protection IP20. MOVITRAC® LTE B is also available in IP55 / NEMA 12 k making it suitable for special ambient conditions. These frequency inverters operate reliably and flexibly even when exposed to dust or water.

Technical data	
Power supply connection	Power range [kW]
115 V / 1-phase	0.37 ... 1.1
230 V / 1-phase	0.37 ... 2.2
230 V / 3-phase	0.37 ... 4.0
400 V / 3-phase	0.75 ... 7.5 (IP20 up to 11 kW available)
Features	
40 configurable parameters	
Degree of protection: IP20 / NEMA 1 (control cabinet)	
Degree of protection IP55 / NEMA 12k housing (field applications)	
Integrated control panel for simple operation	
Pull-out help card	

Options	
LT BG-B	External control panel for control cabinet installation IP54
DFx../UOH…	Connection to fieldbuses via SEW gateways
LT BP-B	Parameter module for data transfer
BW...	Brake resistors
NF LT...	Line filter
ND LT...	Line choke
HD LT...	Output choke

effiDRIVE® – Energy efficiency of frequency and drive inverters

The optimal drive solution for simple speed control up to dynamic positioning applications:

	Process adjustment	Energy-saving	DC link coupling	Power regeneration	Thermally controlled fans
MOVITRAC® B – compact design with a complete range of functions – economic choice for standard tasks	✔	✔	✔	✔	✔
MOVIDRIVE® – large range of basic functions and a broad spectrum of options – economic choice for sophisticated applications	✔	✔	✔	✔	✔
MOVITRAC® LTE B – Adjusted scope of functions for simple applications	✔	✔			

Process adaption

– Infinitely variable control of speed and torque allows almost every process to be adapted to the actual demand, making it more energy-efficient. Depending on the application, between 50 % and 70 % of energy can be saved.
– Further saving potential can be tapped in drive tasks with cyclical acceleration and deceleration by implementing energy-efficient motion sequences; maximum acceleration, speed and deceleration are not always necessary.

Energy-saving function

– The energy-saving function of MOVITRAC® B and MOVIDRVE® B offers advantages when the application has to be operated in the part-load range and dynamic properties are not a main requirement when load changes occur.
– The dynamic adjustment of the magnetization current enables the motor to be operated with optimum efficiency in every operating point. The energy consumption is reduced by up to 30 % depending on the application.
– The energy-saving function ensures optimum efficiency of the drive especially in conjunction with an energy-efficient motor.

DC link coupling

– By connecting the DC links of several inverters, regenerative energy of one drive can be used directly as energy in another drive.
– This measure can reduce energy consumption from the supply system if the drive sequences are segmented and suitable travel profiles have been selected.
– MOVI-PLC®: Operated in storage and retrieval systems, the decentralized controller ensures the control of travel profiles and in this way provides for optimal energy coupling.

Regenerative power unit

– A regenerative power unit feeds back the regenerative energy of a drive into the supply system.
– The released braking energy is not dissipated via braking resistors but fed back into the supply system, which saves energy.
– Power regeneration is especially suited for hoists and storage and retrieval units.

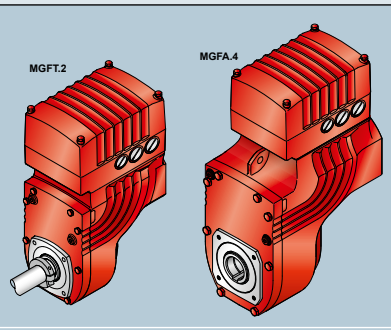
Thermally controlled fan

The fans are only activated when waste heat is actually generated. In this way the energy consumption can be reduced and the service life of the fan is increased.

MOVIGEAR® – The mechatronic drive system

The housing has been optimized specifically for system applications and can easily be integrated in today's conveyor systems. It also allows for new developments from an entirely new perspective. This technology masters high breakaway and acceleration torque after longer system idling time without any limitations. The power required to drive the system can be reduced significantly.

MOVIGEAR® is the next logical step in the development of the economic and technically successful concept of decentralized drive systems. In many industries, such as the automotive, food and beverage industries, airport logistics or general transport logistics, the demands on materials handling systems are becoming both more complex and more specific. At the same time, less installation space is available for meeting these demands. As a result, SEW-EURODRIVE decided to research and develop an optimum application solution to suit these criteria. The result is the mechatronic drive system MOVIGEAR®. It has an advantageous, compact design and is ideal for ensuring that conveyor systems are structured as efficiently as possible.



MGFA.4
MGFT.2
Examples: The following figure shows a MOVIGEAR®
MGFT.2 unit with TorqLOC® hollow shaft mounting system and a MOVIGEAR® MGFA.4 unit with hollow shaft and keyway

MOVIGEAR® drive units

MOVIGEAR® is available in two sizes and two mechanical designs:

- MOVIGEAR® sizes
  - MGF.2 (torque class: 200 Nm)
  - MGF.4 (torque class: 400 Nm)
- MOVIGEAR® designs
  - MOVIGEAR® with hollow shaft and keyway
  - MOVIGEAR® with TorqLOC® hollow shaft mounting system

MOVIGEAR®

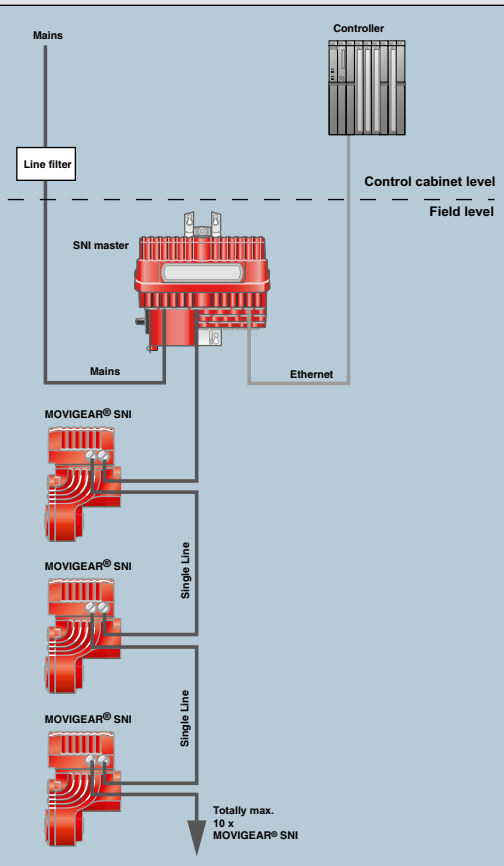
Mechatronic drive system comprising motor, gear unit and electronics.
A systematic development approach was taken right from the design phase. MOVIGEAR® is distinguished by its high level of system efficiency, a significant factor in reducing energy costs. The integration and coordination of all the drive components lead to a long service life and high system availability.

MOVIGEAR® is an intelligent system with its own control concept. Its high-quality networking helps reduce startup time and supports monitoring and maintenance tasks. When combined with a functional user software, drive tasks can be solved as quickly and easily as possible.

Features and advantages

- Compact design: Motor, gear unit and electronics are combined in a single mechatronic drive system
- Sizes
  - MGF2 up to 200 Nm
  - MGF4 up to 400 Nm
- Single line installation principle:
  Only one cable has to be installed for energy and information transfer
- Simplified system planning and design
- Reduced number of versions
- Lower storage costs
- High degree of protection
- Hygienic surface design for applications in hygienic areas
- No air, dirt and germ swirls
- Reduction in energy costs due to high efficiency of all components (gear unit, motor, electronics)
- High degree of reliability due to systematic development of all components
- Reduction of total costs and operating costs of the materials handling system

Installation topology with an SNI master



MOVIGEAR® SNI

Properties

- Single control
- Reduction in the number of components
- Bus lines do not have to be routed in the field
- No risk of hidden faults in the bus cabling
- Reduced startup times
- Shorter project runtimes / lower project costs

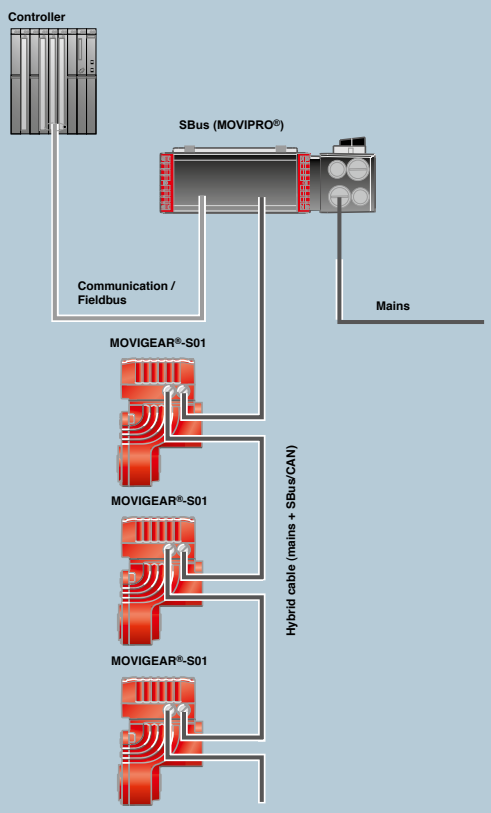
Applications

- As a drive for applications with high breakaway and starting torques
- As a drive for conveyor systems that must be operated at varying speeds
- As a drive for applications that require soft and/or defined start-up behavior
- As a group drive for easier implementation of synchronous operation

Application examples

- Belt conveyors
- Pallet conveyors
- Roller and wheel conveyors
- Screw conveyors
- Container and packaging unit transports
- Chain and drag-chain conveyors

Installation topology with an SEW system bus controller



MOVIGEAR® SEW system bus

High performance and fast bus communication via CAN:

Characteristics

- Line wiring
- Single control
- Integrated communication interface
- Fast communication for short cycle times
- Hybrid cable for minimum installation effort
- System bus controller for control cabinet or fieldbus installation with integrated plc
- High drive dynamics and performance

Application options

- As drive for applications with high breakaway and starting torques
- As a drive for conveyor systems that must be operated dynamically at varying speeds
- Forming intelligent function groups
- Universal application due to large control range of 1:2000

Application examples

- Palette conveyors
- Machine-integrated conveyor belts
- Feeding conveyors
- Synchronized feeder conveyors
- Reversing drives

CLASSIC – Servo drive systems

Dynamic, versatile, and effective

Servo drive systems from SEW-EURODRIVE excel by their dynamic performance, high flexibility, and cost-efficiency. Their design features enable optimum drive solutions for all applications that require an even balance of power and precision.

No matter whether you need a servomotor, servo gearmotor, servo electric cylinder, or servo linear drive – the product portfolio of SEW-EURODRIVE for servo applications provides versatility and dynamics.

MOVIAXIS®

MOVIAXIS® consists of axis modules, master modules, supply modules and optional modules and a comprehensive range of accessories.

MOVIAXIS® offers:

Flexibility:
- in product scalability (hardware and software)
- in communication and networking options
- in drive functionality and automation options
- in engineering, startup, configuration and diagnostics using MOVITOOLS® MotionStudio

Versatility:
- in power range from 10 kW rated supply power up to 187 kW peak power
- in a maximum peak current of 250 A
- in integrated safety technology
- in robust housing design and simple mounting
- in support of all common encoder systems

Solutions:
- with motion control functions from simple, graphically selectable technology functions to powerful 32 bit control systems
- with widely applicable motor/gear unit range
- with tiered motion control from simple positioning to support of customer-specific kinematics

Master modules

Master modules are the “brain” of each axis system. Depending on the variant, the entire axis system is addressed by a non-SEW controller or by a MOVI-PLC® controller from SEW-EURODRIVE.

The MOVIAXIS® master module is available in three variants:
- Fieldbus gateway with data memory
- MOVI-PLC® basic motion network controller
- MOVI-PLC® advanced motion network controller

Axis modules

Axis modules either communicate directly with an external controller via integrated system buses and fieldbus option cards or are controlled centrally via a master module of one of the three variants.

Features:
- Maximum overload of 250 %* for maximum 1 s (max. 250 A; the overload time increases for lower overloads)
- Fast touch probe inputs
- Integrated DC 24 V brake control
- Comprehensive motion control and technology functions
- Multi-encoder interface in the basic unit
- Double 7-segment display for clear messages
- Auto reload of all axis parameters when replacing the unit (in conjunction with master module)

Rated currents 8 kHz / 4 kHz PWM:
- 2/2, 4/4, 8/8, 12/12, 16/16, 24/32, 32/42, 48/64, 64/85, 100/133

Supply modules

The supply modules provide the connected axes with power. They have a high overload capacity and regulate the regenerated power according to the unit variant.

Features:
- 10 kW, 25 kW, 50 kW, 75 kW
- Maximum overload of up to 250 % of the rated power for maximum 1s (max. 187 kW)
- Minimized charging currents for line-friendly harmonic behavior and high effective current percentage
- Automatic addressing of all connected CAN axes for successful startup
- With integrated braking resistor and energy storage (MXP81)
- Sinusoidal regenerative power supply

* Basis 8 kHz rated current values

effiDRIVE®
Saving energy with servo drive technology

Perfect combination

SEW-EURODRIVE servo drives operate more energy-efficient than conventional drive solutions as they use high-quality permanent magnets, planetary gear units, and drive systems with energy feedback. The energy saving potential can even be further increased by combining the drives with the new components from effiDRIVE®, for example the MXR regenerative power module for MOVIAXIS®.

Individual consultation

Extensive customer consultation is a central point of the modular effiDRIVE® energy saving concept for servo applications. SEW-EURODRIVE offers extensive consultation and industry expertise for the project planning of new systems and for retrofitting existing applications.

Advantages:

- Universal modularity
- Can be flexibly used and combined
- Large energy-saving potential
- Fully compatible with all SEW-EURODRIVE servo components
- Compact and powerful
- Grid-compatible cos $\varphi = 1$

MXR regenerative power supply modules

The MXR regenerative power supply module has been developed for complete regeneration of braking energy. It provides a constant, controlled DC link voltage and drive performance regardless of variations in the supply input voltage. Power is taken from the supply system with cos $\varphi = 1$ as standard. It also feeds back excess energy into the supply system sinusoidally, avoiding line harmonics almost completely.

Sensitive electronic components operated on the same supply system are subject to significantly less interference. The MXR offers diverse additional service and operation features, such as information about effective power or an integrated load counter.

MXC storage modules

The optional MXC storage modules were developed for storing energy temporarily. They can be connected to all MXP supply modules. Braking energy is “moved” temporarily and utilized again during the next acceleration process. In this way, the average amount of energy drawn from the supply system is minimized and heating of the control cabinet is reduced or prevented. Costs for cooling and climate control measures are reduced and precious installation space is saved.

MXP81 compact supply modules

For machines with particularly compact design and fast cycle times, the compact supply modules meet demands for minimum installation effort, small housing dimensions, and energy bufferen to prevent or reduce losses and heat dissipation. A braking resistor is integrated in these supply modules in addition to the storage module. Amounts of energy that exceed the storage capacity are dissipated automatically.

Operating conditions and power levels of the energy-saving modules

	Very dynamic applications with fast cycle times	Dynamic application	Lower dynamics
Lower axis output/ smaller loads	**MXP81**	**MXC / MXP81**	**MXR**
Large servo axes/ medium loads		**MXC**	**MXC / MXR**
(Continuously operated) power axes/heavy loads	**MXR**		**MXR**

Synchronous servomotors

CMP series

Precision, dynamics, and power – this is what the compact CMP servomotors stand for.
The length of the motor has been optimized so that you can operate it in applications with very limited space. The highly dynamic servomotors round off the CMP servomotors offered by SEW-EURODRIVE in the lower torque range. Standstill torques from 0.5 Nm to 7.1 Nm are covered by three CMP motor sizes and a total of eight motor steps. The latest in winding and magnet technology gives the CMP servomotors a low mass moment of inertia despite their more powerful performance.

Technical data

Type	Speed class [rpm]	M_0 [Nm]	M_0/VR [Nm]	M_{max} [Nm]	J_{mot} [kgcm²]
CMP40S	3000 / 4500 / 6000	0.5	–	1.9	0.10
CMP40M		0.8	–	3.8	0.15
CMP50S		1.3	1.7	5.2	0.42
CMP50M		2.4	3.5	10.3	0.67
CMP50L		3.3	4.8	15.4	0.92
CMP63S		2.9	4.0	11.1	1.15
CMP63M		5.3	7.5	21.4	1.92
CMP63L		7.1	10.3	30.4	2.69

For CMP71-100: You find these motors on page 24 under product announcements

Safe servo solutions for explosion-proof applications

The flexibility of servomotors from SEW-EURODRIVE makes them suitable for use in all industries. These industries more and more include applications in sensitive and potentially explosive atmospheres. This is the reason why synchronous CMP servomotors of the 40, 50, and 63 series are also available in ATEX design II 3 GD.
CMP servomotor series 40, 50 and 63 are suitable for:

– II3G Ex nA II T3x
– II3D EX tD A22 II T3 IP6X T150 °CX

For more information on explosion-proof products from SEW-EURODRIVE, please refer to pages 26/27 and 87

DS/CM series

Synchronous servomotors are used in highly dynamic applications. The CM motor series, which is available in three sizes, each with three lengths, covers the 5 ... 68 Nm static torque range. Equipped with high-energy NdFeB magnets, this motor offers high overload behavior of 400 % standstill current as standard. The CM servomotor owes its compact design with high power density to the magnetic circuit layout. The DS series with its three lengths covers the 1 ... 4 Nm static torque range. The acceleration torque of all motor sizes is three to four times the static torque. The motors feature thermal motor protection and resolver feedback for motor control as standard.

Technical data

Static torque [Nm]	Speed class [rpm]	Mass inertia [kgcm^2]	
		J_{mot}	J_{bmot}
5 ... 68	2000	0.48 ... 189	0.83 ... 204
1 ... 68	3000		
1 ... 68	4500		
1 ... 21	6000		

Cables and connection options

SEW-EURODRIVE offers prefabricated plug connector and encoder cable options for all motors and gearmotors. These options are designed in such a way that they optimally support the drive, can be easily connected and are connected reliably with the relevant motor.

Cable connections for CMP servomotors

Motor type	Power connector	Drive electronics
CMP 40-63	Motor: SM1	MOVIDRIVE® inverter
	Brakemotor: SB1	
CMP 71-100	Motor: SM1, SMB	MOVIDRIVE® inverter
	Brakemotor: SB1, SBB	
CMP 40-63	Motor: SM1	MOVIAXIS® servo inverter
	Brakemotor: SB1	
CMP 71-100	Motor: SM1, SMB	MOVIAXIS® servo inverter
	Brakemotor: SB1, SBB	

Motor type	Encoder connector	Drive electronics
CMP 40-100	RH1M resolver	MOVIDRIVE® inverter
CMP 40-63	HIPERFACE® AK0H, EK0H, AS1H, ES1H	MOVIDRIVE® inverter
CMP 71-100	HIPERFACE® AK0H, EK1H, AK1H	MOVIDRIVE® inverter
CMP 40-100	RH1M resolver	MOVIAXIS® servo inverter
CMP 40-63	HIPERFACE® AK0H, EK0H, AS1H, ES1H	MOVIAXIS® servo inverter
CMP 71-100	HIPERFACE® AK0H, EK1H, AK1H	MOVIAXIS® servo inverter

Cable connections for DR series AC motors

Direct connection			
Motor type	**Encoder type**	**Encoder connection**	**Inverter connection**
DR71 – DR132	EI7S, EI76, EI72, EI71	Conductor end sleeves	Conductor end sleeves
		M12 plug connector	MOVIDRIVE® inverter
	ES7S, ES7R, AS7W, AS7Y	Conductor end sleeves	D-Sub plug connector
		Connection cover	MOVIDRIVE® inverter
DR160 – DR225	EG7S, EG7R, AG7W, AG7Y	Conductor end sleeves	
		Connection cover	
DR315	EH7S	M23 plug connector	
	AH7Y	Conductor end sleeves	

Connection via intermediate sockets			
Motor type	**Encoder type**	**Encoder connection**	**Adapter plug**
DR71 – DR132	ES7S, ES7R, AS7W	Conductor end sleeves	M23 plug connector (adapter)
		Connection cover	
DR160 – DR225	EG7S, EG7R, AG7W,	Conductor end sleeves	
		Connection cover	

Intermediate socket		
M23 plug connector (connector)	Extension	M23 plug connector (adapter)

Intermediate socket		Inverter connection
M23 plug connector (connector)	Extension	D-Sub plug connector MOVIDRIVE® inverter

Synchronous linear servomotors

SL2 series

The new SL2 synchronous linear motors from SEW-EURODRIVE are the perfect solution for use in highly dynamic and flexible processing machines, handling technology and pick-and place applications. Generating linear motion and force directly does not require any mechanical transmission elements that are subject to wear, such as spindles, ball bearings or toothed belts. An optimum force-density ratio is achieved by using the latest winding technology and a laminated iron core.
The SL2 synchronous linear motor with convection cooling is practically maintenance-free and offers maximum high control quality, speed and accuracy. SL2 synchronous linear motors are available in three models for speed classes 1, 3 and 6 m/s: SL2 Basic, SL2 Advance System and SL2 Power System. For longer travel distances, secondaries are available in different lengths and can be easily lined up in rows. The performance of the SL2 Power System can be additionally increased by adding a forced cooling fan.

Technical data

Product designs	Rated power range [N]	Rated speed classes [m/s]
SL2 Basic	125 ... 6000	1 / 3 / 6
SL2 Advance System		
SL2 Power System		

Accessories and options for linear servomotors

AL1H length-measuring system

SL2 Advance System and SL2 Power System linear servomotors can be equipped with the optional AL1H absolute length-measuring system. AL1H consists of a linear sensor, which is attached to the motor cooling unit along with the encoder components, and a measuring tape, which is routed along the travel distance. The AL1H length measuring system is dirtresistant and permits high speeds and accele ration. Encoder components that are ready for use allow AL1H to be assembled easily and cost effectively.

SL2 Advance System and SL2 Power System

- Motor design with matching plug connectors
- EMC-compliant connector housing design
- Plug connectors seal the plug on the cable end with a lamellar seal and ensure strain relief in accordance with EN 61884
- Extensive accessories for inverter-specific cable prefabrication
- Feedback cable with connection option for AL 1H
- D-sub EMC connector with pin contacts on the encoder end
- 9 and 15 pole connectors matching the inverter

Electric cylinders

CMS series electric cylinders

Electric cylinders of the CMS series are equipped with permanent magnet rotors and operate particularly accurately, powerfully, and quickly. Combined with drive electronics from SEW-EURODRIVE, they form economical, energy-efficient drive solutions that ensure a high level of process reliability in system operation and are easy to integrate into existing automation systems, e.g. welding equipment and robotic systems.

Electrical data												
Type	**CMS50S**			**CMS63S**				**CMS71L**				
Maximum torque [Nm]	5.2			11.1				31.4				
Static torque [Nm]	1.3			2.9				9.5				
Mechanical data												
Type	**CMS50S**			**CMS63S**				**CMS71L**				
	KGT [1]			KGT [1]		PGT [2]		KGT [1]			PGT [2]	
Rated speed [n_N]	3,000 rpm 4,500 rpm 6,000 rpm			3,000 rpm 4,500 rpm				2,000 rpm 3,000 rpm 4,500 rpm				
Spindle pitch [mm]	5			6		5		10		6		5
Spindle diameter [mm]	16			25		20		32		32		24
Maximum permanent feed thrust [3] [N]	1,300			3,200				4,000		6,000		8,000
Peak feed thrust [4] [N]	5,300			10,500				17,000		20,000		20,000
Rated stroke [mm]	70	150	300	100	200	100	200	200		200	350	200
Maximum speed (mm/s)	375		210	450		375		500		300	200	250

[1] Ball screw
[2] Planetary roller screw
[3] At a speed between 5 and 50 rpm
[4] This is dependent on the maximum amplifier current and the dynamic or static load on the spindle. Contact SEW-EURODRIVE before planning the maximum force.

Drive 360

Seeing the big picture.

Globalization means for us: Being close to the customer in all corners of the world.

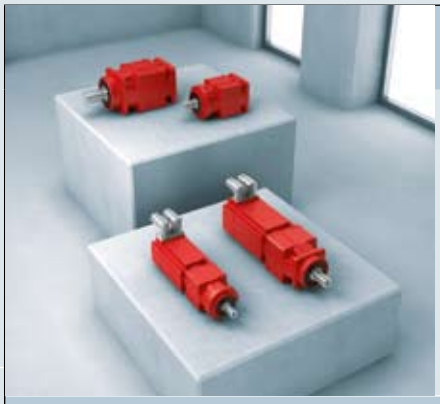
As a leading drive technology specialist, we export reliable drive technology to every corner of the world – and we don't stop at that. With each delivery, our customers also benefit from our range of services and fast troubleshooting solutions. More service, worldwide and 24/7, is in demand everywhere, be it Mumbai or Bruchsal. This is what we call Drive 360° – Seeing the big picture: From system availability to problem-solving competence, from low operating costs over energy efficiency to the complete system that handles all your tasks.

www.sew-eurodrive.com

SEW EURODRIVE

Servo gear units

Planetary servo gear units



PSC series

The low backlash PSC planetary servo gear units are designed for torque classes from 30 to 305 Nm.
They were designed to unite greatest possible flexibility and cost-efficiency because not every application demands machines with maximum performance. These planetary servo gear units form the basis for versatile, dynamic, and above all cost optimized drive solutions. PSC planetary servo gear units are available in the following designs:

- PSC = B5 output, smooth output shaft
- PSKC = B5 output with keyway
- PSCZ = B14 output, smooth output shaft
- PSKCZ = B14 output with keyway

Technical data

Size	Torque class [Nm]	Gear ratios 1-stage [i] [2]	2-stage [i] [3]
220	30	3 / 5 / 7 / 10	15 / 21 / 25 / 30 / 35 / 49 / 50 / 70 / 100
320	65		
520	160		
620	320	5 / 7 / 10	25 / 35 / 49 / 50 / 70 / 100

[2] Circumferential backlash: Less than 10´ for all designs
[3] Circumferential backlash: Less than 15´ for all designs

PSF series

The low backlash PSF planetary servo gear units are designed for torque classes from 25 to 3000 Nm. The permitted acceleration torque ratings are significantly higher than these values.

Three output variants are available:
- PSF: Solid shaft
- PSKF: Solid shaft with key
- PSBF: Flange block shaft according to EN ISO 9409

Technical data

Type	Size	Torque class [Nm]	Gear ratios [4] 1-stage [i]	Gear ratios [4] 2-stage [i]	Circumferential backlash 1-stage [i]	Circumferential backlash 2-stage [i]
PSF	120	25	3 [5] / 4 [6] / 5 / 7 / 10	15 / 16 / 20 / 25 / 28 / 35 / 40 / 49 / 70 / 100	8 / 4 / 2	10 / 6 / 3
PSF / PSBF	220	55			6 [7] / 3 [8] / 1 [9]	8 / 4 / 2
PSF / PSBF	320	110				
PSF / PSBF	520	300				
PSF / PSBF	620	600			4 / 2 / 1	6 / 3 / 1
PSF / PSBF	720	1000				
PSF / PSBF	820	1750				
PSF	920	3000				

[4] Further reduction ratios on request
[5] PSF only
[6] Only PSBF 320/520, other gear ratios on request
[7] Standard
[8] Reduced
[9] Minimized

BSF series

The low backlash BSF helical-bevel servo gear units are designed for torque classes from 40 to 1500 Nm. The permitted acceleration torque ratings are significantly higher than these values. These right-angle servo gear units are avail - able in five output variants as standard:

- BSF: Solid shaft
- BSKF: Solid shaft with key
- BSBF: Flange block shaft (EN ISO 9409)
- BSHF: Hollow shaft with shrink disk
- BSAF: Hollow shaft with keyway (shaft mounted gear unit)

All variants come equipped with a B5 mounting flange, or with torque arm on swing base as an option. This means the drive units can be optimally integrated into the specific application. The input stage with helical gearing and a hypoid bevel gear output stage result in gear ratio ranges that cover those of single-stage helical-bevel and hypoid gear units as well as those of single-stage helical-worm gear units with at the same time a high level of transmission quality. The circumferential backlash remains constantly low over the entire gear unit service life.

Technical data

Size	M_N [Nm]	Gear ratios		Circumferential backlash [']
202	40	2-stage	3 / 4 / 6 / 8 / 10 / 15 / 20 / 25	6 [12] / 3 [13]
302	80		3 / 4 / 6 / 8 / 10 / 15 / 20 / 25 / 30	
402	160			
502	320		3 / 4 / 6 / 8 / 10 / 15 / 20 / 25 / 30 / 35	
602	640		3 / 4 / 6 / 8 / 10 / 15 / 20 / 25 / 30 / 35 / 40	
802	1500			

[12] Standard [13] Reduced

Technical data				
	Ex identification	**Circumferential backlash classes**	**M_{amax} [Nm]**	**M_{apk} [Nm]**
PSF*	II2D c, k T3 / 150 °C	Standard/	18 – 3,000	27 – 4,200
PSKF*	II2GD c, k T3 / 150 °C	Reduced circumferential backlash		
BSF	II2D c, k T3 / 150 °C		40 – 1,310	51 – 1,910
BSAF	II2GD c, k T3 / 150 °C			
BSKF				
BSBF				
R, F, K gear units	II2D c, k T4 / 120 °C		31 – 8,000	46 – 9,090
	II2GD c, k T4 / 120 °C			
S and W gear units	II2D c, k T4 / 120 °C	Standard	43 – 480	60 – 655
	II2GD c, k T4 / 120 °C			

*PSF/PSKF 121-522: Max. n_{epk} 6,000 rpm.

For more information on explosion-proof products from SEW-EURODRIVE, please refer to pages 26/27, 38/39 and 76

Options for servo gear units and servo gearmotors	
Direct motor mounting	Positive direct mounting (without clamping adapter) of CMP, CM and DS series SEW servomotors
Motor adapters	EPH motor adapter for planetary servo gear units and EBH motor adapter for helical-bevel servo gear units EPH motor adapters for PS.F and PS.C planetary servo gear units, ECH motor adapters for PS.C planetary servo gear units, and EBH motor adapters for BS.F helical-bevel servo gear units.
Reduced backlash	Optional for planetary servo gear units and helical-bevel servo gear units with significantly reduced circumferential backlash
Minimized circumferential backlash	Optional for planetary servo gear units with reduced circumferential backlash

System solutions with servo gearmotors

All designs and sizes of the helical, parallel shaft helical, helical-bevel and helical-worm gear units can now also be mounted to the DS, CM and CMP synchronous servomotors and to the CT/CV/DRL asynchronous servomotors from SEW-EURODRIVE. The /R option, i.e. reduced circumferential backlash in conjunction with high efficiency ratings and a high endurance gearing, provides for servotypical advantages for these gear units, such as a high positioning accuracy.

The MOVIDRIVE® inverters, the powerful MOVIAXIS® series and their diverse options provide for functional, scalable and intelligent systems that ensure the maximum utilization of all components. The standard gear units of the 7-series excel by their efficiency, power density and wide range of variants. The synchronous servomotors offer precision, dynamics and torque in a particularly compact design. The combination of these gear units and motors sets global standards.

Helical servo gearmotors

The variety of sizes meets virtually any requirement. The RX57 to RX107 single stage gear units offer space-saving solutions for a high output speed. If every kilogram counts, you may benefit from a solution with multi-stage gear units: Due to their die-cast aluminium design, the R07, R17 and R27 models are three particularly efficient lightweights – ideal as satellite drives and for use in light machine constructions.

Technical data

	Synchronous servo gearmotors CMP		DS/CM		Asynchronous servo gearmotors CT/CV/DRL	
	RX57 ... RX77	R07 ... R77	RX57 ... RX107	R17 ... R107	RX57 ... RX107	R17 ... R167
Gear ratios [i]	1.3 ... 6.41	3.21 ... 199.81	1.3 ... 8.23	3.37 ... 216.28	1.3 ... 8.23	3.37 ... 255.71
Output torque [Nm]	63 ... 215	31 ... 820	63 ... 830	45 ... 4300	63 ... 830	45 ... 18000
Circumferential backlash (/R option) [arc_{min}]	–	5 ... 14	–	5 ... 14	–	5 ... 14

Parallel shaft helical servo gearmotors

A standard drive that not only excels by its power but also by its design characteristics. Parallel shaft helical gearmotors by SEW-EURODRIVE are typically used in materials handling and process engineering applications where they reliably implement all kinds of drive solutions.

Technical data

	Synchronous servo gearmotors CMP	DS/CM	Asynchronous servo gearmotors CT/CV/DRL
	F27 … F77	F27 ... F107	F27 ... F157
Gear ratios [i]	3.77 ... 228.99	3.77 ... 276.77	3.77 ... 276.77
Output torque [Nm]	87 ... 1500	87 ... 7680	87 ... 18000
Circumferential backlash (/R option) [arc_{min}]	5 ... 12	5 ... 12	5 ... 12

Helical-bevel servo gearmotors

The helical-bevel gear units from SEW-EURODRIVE provide a high degree of efficiency of approx. 95 % in both directions of torque and at any input speed in the long-term. The gearing is designed for high endurance and therefore makes for a high-torque, wear-free drive. The remarkably high efficiency of our helical-bevel gearmotors makes them energyefficient angular drives. As they also have a long maintenance-free service life, they can be used with AC asynchronous motors, asynchronous and synchronous servomotors in every application.

Technical data

	Synchronous servo gearmotors CMP	DS/CM	Asynchronous servo gearmotors CT/CV/DRL
	K37 … K77	K37 ... K107	K37 ... K187
Gear ratios [i]	3.98 ... 154.02	3.98 ... 176.05	3.98 ... 179.86
Output torque [Nm]	125 ... 1550	125 ... 8000	125 ... 50000
Circumferential backlash (/R option) [arc_{min}]	5 ... 13	5 ... 13	5 ... 13

Helical-worm servo gearmotors

They are particularly space saving when installed as angular drive. Their good dampening properties are yet another advantage of the simple, mechanical design. Torque shocks are reduced as the power transmission to the drive shaft is linear. The noise of this type is very low, even when operating at full capacity. The helical-worm gearmotors by SEW-EURODRIVE can therefore even be used for stage lifts.

Technical data

	Synchronous servo gearmotors CMP	DS/CM	Asynchronous servo gearmotors CT/CV/DRL
	S37 ... S67	S37 ... S67	S37 ... S67
Gear ratios [i]	6.80 ... 75.06	6.80 ... 75.06	6.80 ... 75.06
Output torque [Nm]	43 ... 480	43 ... 480	43 ... 480

SPIROPLAN® servo gearmotors

SPIROPLAN® servo gearmotors with directly mounted CMP synchronous servomotors operate at a high level of efficiency while being low-noise at the same time. They offer a great variety of mounting positions to allow for greatest possible flexibility for the customer. The SPIROPLAN® right-angle gear units W37/W47 achieve great velocities at extremely low gear ratios. The wear-free gear components minimize friction losses and optimize the mechanical efficiency. The gearing results in an extremely low-noise performance. The low purchasing and life cycle costs make these drives ideally suited for simple conveyor applications. Gear unit versions:

- Foot/flange-mounted designs
- B5 flange
- B14 flange
- Solid shaft/hollow shaft
- Direct mounting of servo gear unit
- With adapter

Technical data

	Synchronous servo gearmotors CMP
	W37 ... W47
Gear ratios [i]	3.2 ... 69.05
Output torque [Nm]	70 ... 92

CLASSIC
Drive systems for decentralized installation

In many industries and applications, implementing economical automation concepts means utilizing decentralized systems throughout. Long rows of control cabinets with complex wiring, expansive space requirements and long distances between control cabinet and motors are too rigid and not very economical. Only the combination of flexible, versatile, economic and target-oriented modules will provide an efficient solution. This is the reason why system operators opting for decentralized drive systems from SEW-EURODRIVE are always ahead of the game, be it in the automotive, beverage and food industries or in transport logistics and packaged goods handling.

Decentralized implementation of economical automation concepts

All decentralized components from SEW-EURODRIVE fulfill the three most important criteria for use in automation applications: They are modular, flexible and economical.

This renders additional central switching and protection units and electronic control devices obsolete; the required control cabinet space is reduced significantly. Costs for the previously expensive and time-consuming wiring of motors, sensors and actuators are also reduced substantially. Of course, these components can be integrated in any commercial bus system. Decentralized drive systems for fast, economical and flexible decentralized installation.

Decentralized drives

MOVIMOT® gearmotor with integrated frequency inverter

MOVIMOT®, the gearmotor with integrated frequency inverter, is a reliable combination of gearmotor and digital frequency inverter in the 0.37 to 4.0 kW power range. Despite the integrated frequency inverter, MOVIMOT® requires only a minimum of additional space when compared to standard gearmotors and can, of course, be supplied in all standard versions and mounting positions, with and without a brake, for supply voltages of 380 to 500 V and 200 to 240 V.

NEW: MOVIMOT® D can be combined with the new DR motor series for different Efficiency levels as standard.

Technical data

Speed range [rpm]	Voltage [V]	Connection	Power [kW]	Torque [Nm]
280 ... 1400 (1700)	3 x 380 ... 500	⅄	0.37 ... 4.0	2.52 ... 27.3
290 ... 2900	3 x 380 ... 500	△	0.55 ... 4.0	1.81 ... 13.2
280 ... 1700	3 x 200 ... 240	⅄ ⅄	0.37 ... 2.2	2.08 ... 12.4

Enclosure	IP54, optional IP55, IP65 or IP66
Ambient temperature	-30 °C/-20 °C to +40 °C (depending on the motor design)
Control via binary signals	Entry for cw/stop, ccw/stop, setpoint switch mode isolated signal relays 2 fixed setpoints, 1 ramp for acceleration and deceleration
Control via fieldbus communication	In combination with fieldbus interfaces, with and without minicontroller PROFIBUS, PROFIsafe, INTERBUS, INTERBUS LWL, DeviceNet, CANopen, AS-Interface
Use in stand-alone applications	In combination with the options: MLU..1A: Local 24 V_{DC} supply MLG.1A: Local supply with 24 V_{DC} supply MBG11A: Speed control module for setpoint frequency specification and display MWA21A: Setpoint converter for interfacing of analog setpoints (0... 10 V, 0 ... 20 mA, 4 ... 20 mA) and RS-485
Use in decentralized installations	In combination with field distributors: MF.../Z.3. MF.../Z.6. MF.../.../Z.7. MF.../.../Z.8. as well as the corresponding hybrid cables
Diagnostics	3-color LED signals operating status and fault status via diagnostics interface, serial interface RS485 and option MDG11A or PC
Integrated safety technology	An optional SafetyDrive package enables realization of – Safety category 3 according to EN 954-1 – Performance level d according to EN ISO 13849-1 – SIL 2 according to IEC 61 800-5-2
Approval	IEC or c UL us

MOVI-SWITCH® gearmotor with integrated switching and protection function

MOVI-SWITCH® is a particularly efficient solution when it comes to decentralization at power levels up to 3 kW. The switching and protection functions integrated into the motor terminal box mean that this compact and sturdy gearmotor does not require any additional cables, so that MOVI-SWITCH® does not require any additional control cabinet space.

All AC motors and brakemotors can be combined in the MOVI-SWITCH® program with all matching gear units from the SEW-EURODRIVE modular system.

Technical data

Number of poles	**Power range [kW]**	
4	0.37 ... 3.0	
2	0.55 ... 3.0	
6	0.25 ... 1.5	
Type	MSW-1E	MSW-2S
Switching function	On/Off one direction of rotation	On/Off two directions of rotation
Switch element	Contactless star bridge switch	Switch element with contact
Direction of rotation	CW or CCW depending on phase sequence	CW and CCW, independent of phase sequence
Control	– Binary control signals RUN / OK – Connection via 1x M12-plug connector – Optionally with external AS-Interface	– Binary control signals CW / CCW / OK – Connection via 2x M12-plug connectors – Alternatively with integrated AS-Interface
Brake management	Standard with brake rectifier BGW	– integrated brake control system – Electrical manual brake release with optional BGM-rectifier
Motor protection	Direct temperature monitoring with integrated analysis	
Degree of protection	IP54, optional IP55, IP65 or IP66	
Ambient temperature	–25 °C … + 40 °C (… + 60 °C)	

Fieldbus interfaces, field distributor and cable systems

The **fieldbus interfaces** support the communication with the most frequently used fieldbus systems, PROFIBUS, INTERBUS, CANopen, DeviceNet und AS-Interface. The fieldbus interfaces are based on a module terminal box with connecting terminals and a plug-in fieldbus module. These interfaces can be attached directly to the drive, or they can be mounted separately.

The variable speed MOVIMOT® drive is connected to the bus using terminals; additional sensors, actuators or MOVI-SWITCH® gearmotors without closed-loop control can be connected to the bus either by using terminals or M12 plug connectors. Fault diagnosis can easily be conducted via the bus in the event of a malfunction thanks to diagnostic interfaces and LED signals.

Field distributors rationalize the connection of drives with the power supply system, the 24 V_{DC} control voltage and the fieldbus. The units are based on the bus interfaces technology with additional connection technology for supply system distribution. Decentralized installation is made easy by installation of the field distributor close to the motor. The modular plug-in system makes for easy troubleshooting and maintenance, especially in case of a problem or service.

The hybrid cables have been developed in house and are combination cables which carry the power supply, control voltage and communication strands within one cable sheath. They also guarantee optimum EMC shielding and impedance.
The hybrid cable for connecting MOVIMOT® units to field distributors is 3 m (10 ft.) long. It combines the communications interface as well as supply and control voltage connections in one cable and is supplied as a pre-fabricated cable with plug-in connection.

MOVIMOT® drives fitted with hybrid cables can be connected to the field distributor in a matter of seconds – ready to operate. For servicing, the plug can be disconnected without any danger, even by personnel without technical training. The drive can be replaced and the new drive re-connected quickly. The system is ideal for all applications requiring high levels of operating availability.

MF.. fieldbus interface	MQ.. fieldbus interface
– Connection of MOVIMOT® and MOVI-SWITCH® drives to a standardized fieldbus system – Reading sensor signals – Controlling actuators via digital input and output terminals – Degree of protection: IP65 – Option package: - Degree of protection: IP66/IP67 - Stainless steel cable glands - Pressure compensation fitting - M12 metal plug for fieldbus modules with M12 plug connectors	
	Additionally integrated controller with the following functions: – Programmable via IPOS$^{plus®}$ – Simple positioning with EI76 incremental encoder – Integrated I/O preprocessing and timing elements – Protocol modification

Options for MF../MQ.. fieldbus interfaces	
MFG11A keypad	MFG11A keypad The MFG11A keypad is plugged onto any MFZ.. connection module instead of a fieldbus interface for manual control of a MOVIMOT® drive.
DBG60B keypad	The DBG60B keypad enables control of the MOVIMOT® drives in manual mode. Furthermore, the process data words can be displayed in monitor mode. The DBG60B keypad is connected directly to the diagnostic interface of the MF../MQ.. fieldbus interface.

MOVIFIT® decentralized drive controller

Decentralized MOVIFIT® drive controllers meet the three most important criteria of decentralized drive systems: they are modular, flexible, and economical. Three unit types are available, which combine the known advantages of decentralized installation technology from SEW-EURODRIVE with modern, application-oriented drive and communication functions.

Innovative connection technology allows for quick installation and startup as well as ease of diagnostic and maintenance, for example when replacing the electronics. MOVIFIT® is suited for versatile applications and supports new strategies for optimized system topologies. Industry-specific unit variants, such as MOVIFIT® in Hygienic^{Plus}, are available as standard for operation in particular ambient conditions as they occur in the beverage industry, for example.

Function levels of MOVIFIT® decentralized drive controllers	
	The function level indicates the functions included in the software for MOVIFIT® units regarding – operation – system control – diagnostics
Classic - Simple functions	– Control as fieldbus gateway via MOVILINK® – Simple handling and functionality, can be compared with control of SEW field distributors (Z.3, Z.6 etc.)
Technology Free programming (MOVI-PLC®/MOVITOOLS® MotionStudio)	Programming takes place according to IEC 61131 (e.g. in LD, FBD, IL, ST, AS) – MOVITOOLS® MotionStudio with PLC Editor, Application Builder, etc. – Multi-stage library concept (application and program module of the MOVI-PLC® controller series)
System Drive-oriented conveyor functions (MOVIVISION®)	Central data storage and management – Central parameter and diagnostics system with the configurable MOVIVISION® system software – Configurable, drive-oriented conveyor functions – Simple, intuitive operation for system operators
Communication	– Function levels Classic and Technology support all common bus systems: PROFIBUS, PROFINET, PROFISAFE, DeviceNet, Ethernet IP and Modbus/TCP – Function level System supports the PROFIBUS bus system

MOVIFIT®: Variants and features

MOVIFIT® drive controllers have a modular structure, are available in three unit variants, and offer decentralzed installation technology with modern, application-oriented drive and communication functions.

MOVIFIT®-MC

- Up to three MOVIMOT® to be connected via hybrid cable
- Voltage range 3 x 380 – 500 V
- Integrated power distribution and line protection
- Integrated communication interface
- Maintenance switch
- "Safe stop" function
  - Safety category 3 to EN 954-1
  - Stop category 0 according to EN 60204-1
- 12 digital inputs + 4 digital inputs/outputs
- CAN/SBus interface for external components
- Simple and fast parameter setting via DIP switches or fieldbus

MOVIFIT®-SC

- Electronic (contactless) motor starter
  - Connection of two motors (dual motor starter) ➞ one direction of rotation
  - Connection of one motor (reversing starter) ➞ two directions of rotation
- Power range
  - with connection of two motors ➞ 2 x 0.37 to 2.2 kW
  - with connection of one motor ➞ 1 x 0.37 to 4.0 kW
- Adjustable soft startup time
- Voltage range 3 x 380 … 500 V
- Increased safety by switching of three phases
- Integrated energy distribution
- Integrated brake management for SEW three-wire brakes
- Optional maintenance switch
- Integrated communication interface
- Digital inputs/outputs
  - 6 DI + 2 DI/O with Classic function level
  - 12 DI + 4 DI/O with function level Technology or System
- CAN/SBus interface for external components
- Simple and fast parameter setting via DIP switches
- Expanded parameter setting via fieldbus or diagnostics interface

MOVIFIT®-FC

- Configurable (open-loop) frequency inverter
- Power range from 0.37 to 4 kW (in two sizes)
- Voltage range 3 x 380 … 500 V
- Integrated energy distribution
- Integrated brake management for SEW three-wire brakes and additional brake control output for non-SEW brakes
- Optional internal braking resistor (integrated in ABOX)
- Optional external braking resistor
- Optional maintenance switch
- Integrated communication interface
- User-programmable integrated controller (IEC 61131)
- Digital inputs/outputs
  - 6 DI + 2 DI/O with function level Classic
  - 12 DI + 4 DI/O with function level Technology or System for complex applications
- CAN/SBus interface for external components
- “Safe stop” function
  - Safety category 3 to EN 954-1
  - Stop category 0 according to EN 60204-1
- Simple and fast startup via DIP switches
- Expanded parameter setting via fieldbus or diagnostics interface

MOVIPRO®
decentralized drive and position controller

With the new MOVIPRO® SDC decentralized drive and position controller, SEW-EURODRIVE provides you with another system component for decentralized drive solutions in the upper power range up to 15 kW. The proximity of drive and decentralized drive and position controller allows for conveyor system architectures that are superior to comparable, centrally controlled systems. MOVIPRO® SDC lets you install autonomous drive sections that can be networked among one another and can communicate using any common bus system.

MOVIPRO® SDC

MOVIPRO® SDC reduces the system complexity, enables open and flexible system architectures and in this way contributes to sustainably reducing investment and operating costs.
MOVIPRO® SDC unit concept:
- Consistent decentralized installation topology
- Integration of many functions
- Freely configurable processes without programming effort
- Application structure independent of required power
- Drive-based installation in every field
- Compact design

Power	– Inverter of 4 kW up to 15 kW with or without encoder feedback derived from the established MOVIDRIVE® technology – Control of asynchronous and synchronous motors – Support of different brake voltages – Detection of local I/Os
Modularity	– Wide scope of power ratings and functions – High degree of integration of functions to replace complete inverter control cabinets in the field – Compact design with various mounting options to facilitate decentral integration into the system – Separable connection unit for line-type power bus topology
Flexibility	– Communication via all common bus systems to ensure regional independency: PROFIBUS, PROFINET, DeviceNet, EtherNET/IP and MODBUS/TCP – Optional safety communication with PROFIsafe supports the latest system safety concepts. – State-of-the-art connection technology based on plug connectors ensures fault-free installation and ease of maintenance – Parameterizable inverters support a wide range of motors from standard DRS to premium efficiency DRP motors
Integration within the decentralized drive systems from SEW-EURODRIVE	Expansion of the application environment of the MOVIFIT® and MOVIMOT® product series by higher power ratings and positioning functions – Uniform installation concept with other products of the decentralized drive system – Uniform software: MOVITOOLS® Motion Studio for startup, diagnostics, and maintenance – Functions compatible with existing control cabinet applications from SEW-EURODRIVE
Economic efficiency	MOVIPRO® SDC reduces planning, investment and operating costs by: – Standardized drive functions with parameterizable application modules – Modular, decentral concept for re-using functions in systems; if necessary, the system can be expanded quickly and easily – A compact, decentral unit saves the non-productive space of a control cabinet and reduces the complexity of the system structure – Minimized error sources due to system wiring and reduced effort for installation and startup – Simple and fast unit replacement in the productive environment due to pluggable interfaces and memory card – Minimized and simplified stock-keeping of spare parts due to wide and parameterizable scope of functions

MOVITRANS® contactless energy transfer

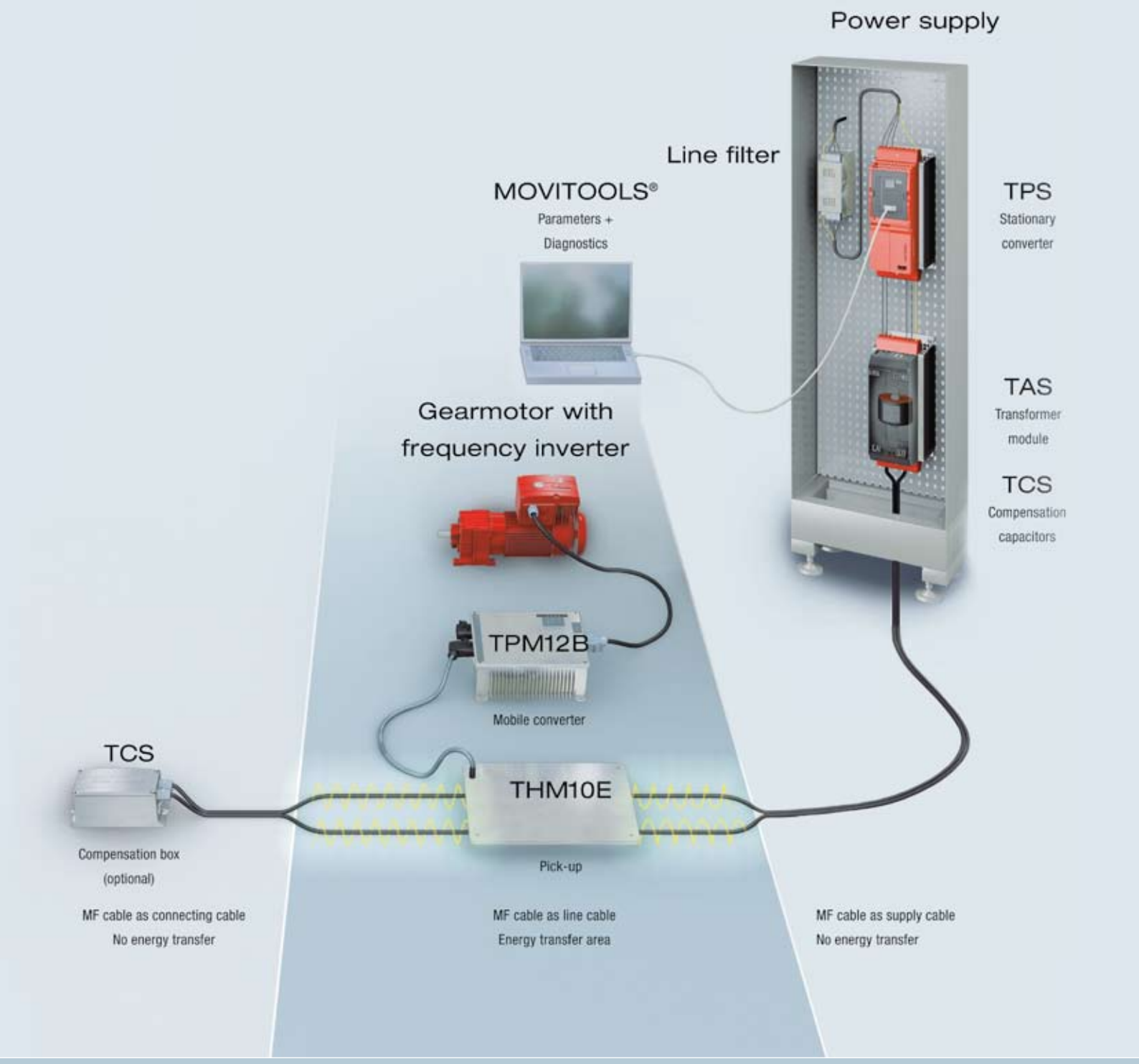
MOVITRANS®, the contactless energy transfer system from SEW-EURODRIVE, works on the principle of inductive energy transfer. Electrical energy is transferred from a conductor in a fixed installation to one or more mobile devices in a contactless manner. The electromagnetic connection is made via an air gap and is not subject to wear making it maintenance-free. Another advantage: this type of power supply is emission-free and resistant to external influences.

MOVITRANS® system components

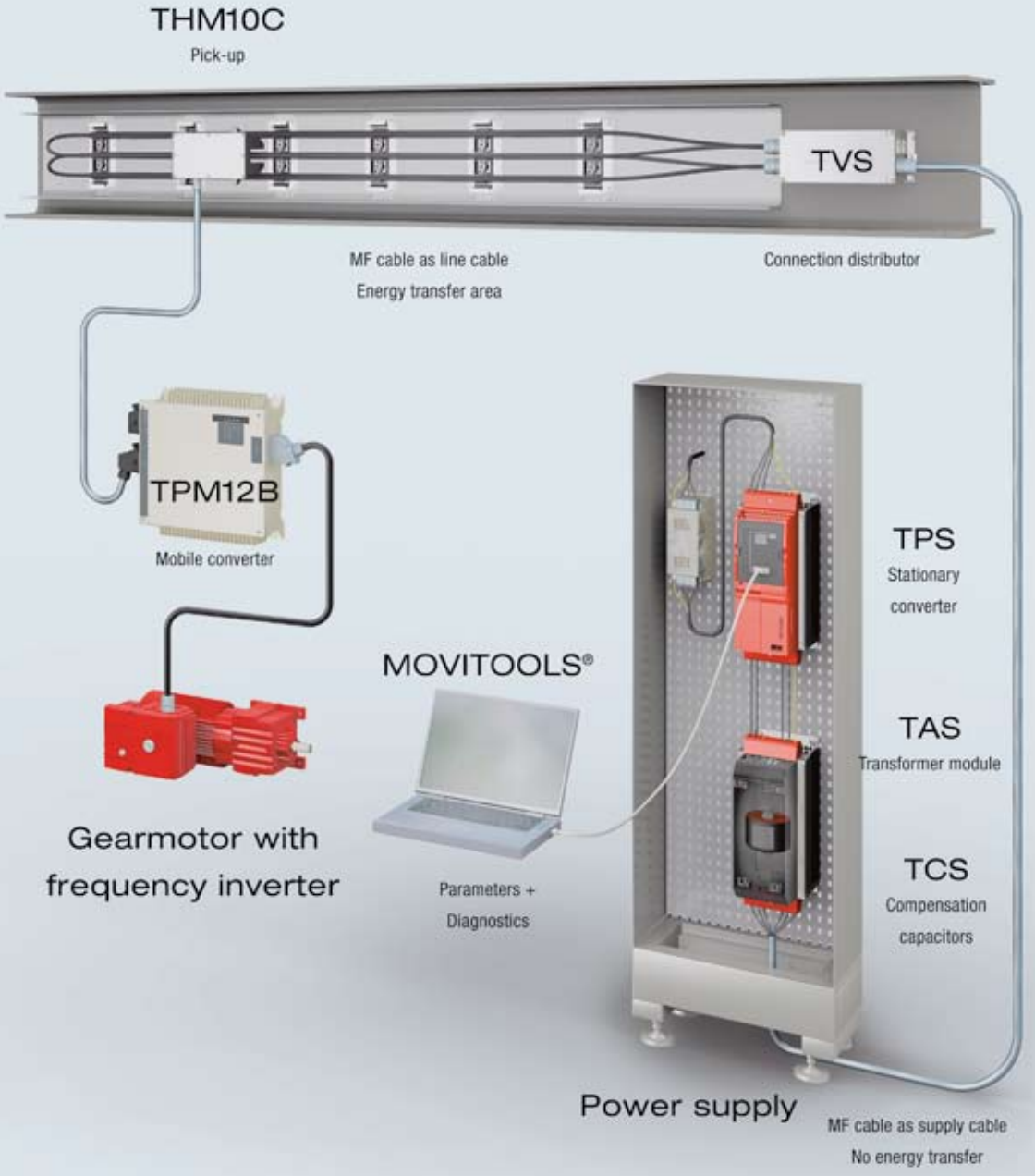
MOVITRANS® is the perfect supply system for all mobile applications and has been tested according to BGV B11. MOVITRANS® is the perfect solution if you want to cover long travel distances at high speeds and if maintenance-free operation is required. It is also suited for applications subject to additional environmental pollution and applications in wet and damp environments.

Stationary components – Technical data	
TPS stationary converter	– Power: 4.0 kW or 16.0 kW – V_{mains}: 380 V ... 500 V ± 10% – Degree of protection: IP20
TAS transformer module	– Power: 4.0 kW or 16.0 kW – Output current: 60 A or 85 A – Degree of protection: IP10
TCS compensation capacitors	– Capacitance values: 2 µF, 4 µF, 8 µF, 16 µF or 32 µF – Output current: 60 A or 85 A – Degree of protection: IP00

Mobile components – Technical data	
TPM12B mobile converter	– Rated output power - when connecting 4x THM10C: max. 3.6 kW - when connecting 2x THM10E: max. 3.0 kW – Output voltage: DC 500 V – Additional output voltage: 24 V, max. 2 A – Degree of protection: IP65
THM10E pick-up	– Power: 1.5 kW – Degree of protection: IP65
THM10C pick-up	– Rated power: 0.8 kW – Peak power: 0.9 kW – Degree of protection: IP65
TVS connection distributor	– Degree of protection: IP65 – Output current: 60 A or 85 A
TCS compensation box	– Degree of protection: IP65 – Output current: 60 A or 85 A – Compensates a distance of 25 to 30 m



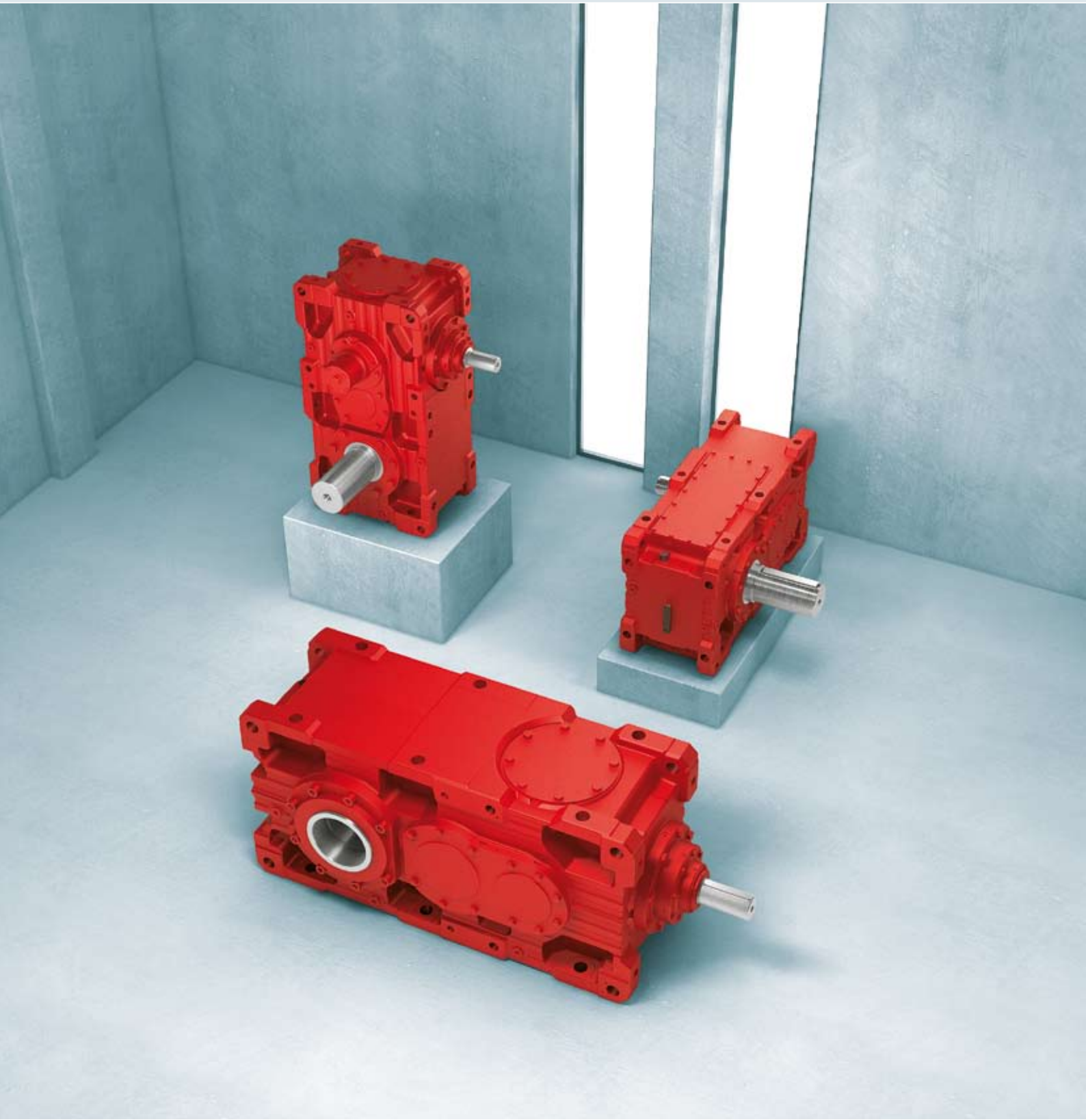
MOVITRANS® with flat pick-up
(THM10E)



MOVITRANS® with U-shaped pick-up (THM10C)

TIS
Installation components
for line cable support

CLASSIC – Industrial gear units



Innovative drive solutions for all industries and applications

All services made by SEW-EURODRIVE

SEW-EURODRIVE offers the right industrial gear units when you need especially large torque ratings to carry out especially large movements. The modular concept will once again provide optimum adaptation of industrial gear units to meet a wide range of different applications. SEW-EURODRIVE is your competent partner for all areas, from process planning, through project planning all the way to startup. These services are supported by our renowned, worldwide service network in order to guarentee the reliable completion of all process stages.

Power for every application

SEW-EURODRIVE offers five series of industrial gear units with impressive data and performance. Output torques up to 700 kNm are no problem. Whether series or customized gear units, SEW-EURODRIVE industrial gear units can handle all types of applications in such industries as systems engineering, mining, shipbuilding and the energy, timber, mineral and processing industries.

Helical and bevel-helical gear units

X series

Robust and universal gear unit series which can be optimally adjusted to the task due to finely stepped torque ratings. The universal modular system concept sets new standards with respect to availability and offers a broad range of application options, e.g. for materials handling systems, ball mills, and agitators. Application gear units, such as for bucket elevators, complete the range.

Technical data

Gear unit version	Stages	Reduction ratios	Rated torque M_{N2} [kNm]
Helical gear unit X.F..:	2, 3 and 4 stages	6 ... 400	58 ... 475
Bevel-helical gear unit X.K..:	2, 3 and 4 stages	6 ... 400	58 ... 475
Bevel-helical gear unit X.T..:	3 and 4 stages	12 ... 400	58 ... 475

Baureihe MC

MC series industrial gear units are particularly compact helical and bevel-helical gear units. The 6 sizes available in the MC series cover the 6 to 48 kNm torque range. Their parallel shaft design offers plenty of flexibility in system design and requires remarkably little space. MC gear units can be used in applications such as materials handling, transporting heavy loads, mixing, crane drives and shredders. Based on this series, a version with increased bearing distance and reinforced output shaft is available.

Technical data

Gear unit version	Stages	Reduction ratios	Rated torque M_{N2} [kNm]
Helical gear unit MC.P..:	2 and 3 stages	7.1 ... 112	6 ... 48
Bevel-helical gear unit MC.R..:	2 and 3 stages	7.1 ... 112	6 ... 48

ML series

ML series helical and bevel-helical gear units are the ideal platform for customized applications with a variety of options for connecting a wide range of modules. The flexibility and variability of these gear units are hard to beat. An increased center distance is available, for example for hoist applications. ML series gear units are available in 5 sizes, covering the 180 to 680 kNm torque range. ML gear units can be used in applications such as mining, crane construction and the chemical industry.

Technical data

Gear unit version	Stages	Reduction ratios	Rated torque M_{N2} [kNm]
Helical gear unit ML.P..:	2, 3 and 4 stages	6 ... 315	180 ... 680
Bevel-helical gear unit ML.R..:	3, 4 and 5 stages	14 ... 1250	180 ... 680

Planetary gear units

P series

Up to now, it was almost impossible to order planetary gearmotors in this power class from a catalog. Our P series products are a significant step closer to achieving this ideal situation. The gearmotor is mounted directly in front of the planetary gear unit. Couplings, intermediate flanges and adapter flanges that take up space and increase costs are a thing of the past. P series units are available in 9 sizes, covering the 24 to 359 kNm torque range. P gearmotors can be used anywhere you need to move heavy weights at a low speed.

Technical data

Gear unit version	Stages	Reduction ratios	Rated torque M_{N2} [kNm]
Helical planetary gear unit (motor) P.RF..:	4 and 5 stages	100 ... 4000	24 ... 359
Bevel-helical planetary gear unit (motor) P.KF..:	5 stages	140 ... 4000	24 ... 359

P.MC.. series

This series is characterized by the maintenance-free and fully oil-covered bearings, combined with the high power density of the planetary output stages. They are mainly used for high gear ratios and low output speeds. Individual optional features, such as special sealing systems and lubricants, torque arms and swing bases complete the range, which is mainly used for slat conveyors, bucket-wheel reclaimers and jibs.

Technical data

Gear unit version	Stages	Reduction ratios	Rated torque M_{N2} [kNm]
Stirnrad-/Kegelstirnrad-Planetengetriebe P1.MC..:	3 and 4 stages	31.5 ... 500	24 ... 185
Stirnrad-/Kegelstirnrad-Planetengetriebe P2.MC..:	4 and 5 stages	140 ... 4000	69 ... 359

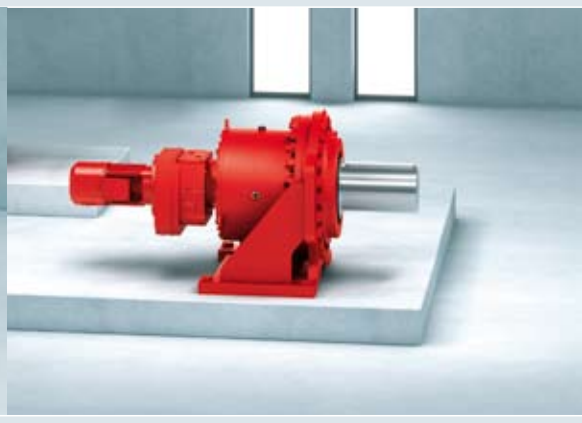
Explosion-proof industrial gear units

Explosion-proof industrial gear units of the MC, X series and P, P.MC.. planetary gear units. Explosion protection according to ATEX

Validity

The new directive 94/9/EC or ATEX 95 specifies new regulations for explosion protection in all types of devices for the European market. This directive is therefore also valid for industrial gear units of the MC series and planetary gear units. As of July 1, 2003, the directive 94/9/EC has been applying without restrictions to the use of industrial gear units of the X, MC series and planetary gearmotors within the European Union. Other European countries, such as Switzerland, have fallen in with this regulation since.

Special measures are required for the operation of systems and machinery in areas with potentially explosive air/gas or air/dust mixtures. If mixture formation cannot be prevented, specially protected gear units have to be used. Applicable standards and regulations govern the use of equipment within existing hazard zones. They also regulate the quality requirements that have to be met by the drive manufacturer.



The explosion-proof industrial gear units of the X, MC series and the planetary gear units of SEW-EURODRIVE meet the construction requirements for group II, category 2G or 3G (potentially explosive gas atmospheres) and 2D or 3D (potentially explosive dust atmospheres). The gear units are suitable for use in zones 1 and 21 or zones 2 and 22.

For every motion in your machines and systems and for every industry: As a leading drive technology specialist, we always supply the right drive. This includes not only gear units, motors or drive electronics, but also the matching controller and a comprehensive service portfolio. This is what we call Drive 360° – Seeing the big picture: From system availability to problem-solving competence, from low operating costs over energy efficiency to the complete system that handles all your tasks.

www.sew-eurodrive.com

SEW EURODRIVE

Other system components and services

SEW-EURODRIVE – your partner for drive engineering

SEW-EURODRIVE not only offers powerful and flexible drive technology, VARIOLUTION® packages and MAXOLUTION® system solutions but also the matching system accessories, such as

- controllers
- Remote maintenance
- operator terminals
- project planning tools and
- startup software
- Drive Benefits
- CDS® Complete Drive Service
- And many more

The result are individual application solutions in coordination with system designers and system operators that ensure the required functionality and efficiency in all project phases: from project planning through startup all the way up to operation and production reliability as well as maintenance and service.

MOVI-PLC® controllers

Designing functional and efficient drive solutions requires a high degree of flexibility of all components involved, that is, drives and drive electronics as well as suitable technology.

	MOVI-PLC® controllers MOVI-PLC® is a programmable logic controller for inverters that offers flexible solutions for user-friendly and powerful automation of drive applications. Logic processing and sequence control are realized using programming languages in accordance with IEC 61131-3.
Universal	MOVI-PLC® can easily be integrated into any drive solution: as an option card in MOVIDRIVE® B inverters or MOVITRAC® B frequency inverters, as well as in the MOVIAXIS® multi-axis inverters, in the decentralized MOVIFIT® drive control or as a compact control on a DIN rail. It is also considered a universal solution because all SEW-EURODRIVE inverters can be connected via the system bus. Furthermore, only one tool is required for the engineering of both the MOVI-PLC® and the inverters.
Scalable	MOVI-PLC® is scalable as it is available in two power classes: – MOVI-PLC® basic for the medium power range controls up to 12 axes – MOVI-PLC® advanced for the higher power range allows for controlling up to 64 axes. Both classes are available with various technology levels: Level T0 with single-axis functions, T1 for technology functions, and T2 for application solutions and multi-axis interpolation of complex kinematics. The connection of the drives via a CAN or EtherCat-based system bus, as well as via the interface to the higher-level control based on classic fieldbuses or ETHERNET.
Powerful	A broad variety of function blocks provides the user with convenient access to the entire drive functionality, whereas the programming to IEC 61131 allows for simple handling. Thus, users are able to quickly implement complex drive tasks. The connection of the inverters via the fast, clock-synchronous system bus allows for reducing response times and thus enhancing the performance of the drive system, particularly when coordinating multiple axes.

Keeping the access to comprehensive drive functionality as simple as possible is also critical for the implementation. MOVI-PLC® provides drive functionality in the form of parameterizable function blocks that can be programmed conveniently to IEC 61131. These blocks are adapted to the drive electronics and provide scalable functionalities – simple single-axis functions, universal program modules, or application solutions for multiple axes. The integrated standard blocks of a PLC additionally provide full Logic Control.

The MOVI-PLC® controllers at a glance

DHP11B-T..

MOVI-PLC® basic control card
– in unit versions T0, T1, T2
– for installation in MOVIDRIVE® B, MOVITRAC® B*, MOVIAXIS® master module*

Technical data:
– PROFIBUS slave DP-V1
– 2 CAN interfaces, 1 of which is electrically isolated
– RS-485 interface
– 7 LEDs for PLC, PROFIBUS and CAN status display
– 8 digital I/Os, 5 of which are interruptible
– 512 kB program memory
– 128 kB data memory
– 16 kB retain variables
– 8 kB system variables (retain)
– Up to 4000 IL lines / msec
– Free-wheeling task
– Cyclic tasks: 1 ms, 5 ms, 10 ms, 100 ms

OST11B

Extension for MOVI-PLC® basic DHP11B.

Technical data:
– additional engineering/RS-485
– for installation in MOVIDRIVE® B, MOVIAXIS® master module*
– optional in compact control

* can only be installed at the factory

DHx41B

MOVI-PLC® advanced control card
– DHE41B with ETHERNET interface
– DHF41B with additional PROFIBUS and DeviceNet slave interface
– DHR41B additionally with PROFINET / Ethernet IP / Modbus TCP/IP-Slave interface
– for installation in MOVIDRIVE® B, MOVITRAC® B*, MOVIAXIS® master module*

Technical data:
– 2 x ETHERNET (10/100 BaseT)
– 2 x CAN interfaces, 1 of which is electrically isolated
– 2x RS-485
– USB
– PROFIBUS slave DP-V1, DeviceNet slave (DHF41B)
– 8 digital I/O
– Status display for PLC and fieldbus
– 8 MB program memory
– 4 MB data memory
– 32 kB retain variables
– 8 kB system variables (retain)
– Up to 4000 IL lines/msec
– free-wheeling task, 5 cyclic tasks (1 ms ... 10000 ms)
– PC-readable memory card for firmware and application program

OMH41B-T..

Memory cards for MOVI-PLC® advanced
– with technology activation T0 ... T10

* can only be installed at the factory, DHF41B not in MOVITRAC® B

DH../../UOH..

MOVI-PLC® compact controls
– DHP11B-Tx/UOH11B
– DHP11B-Tx/OST11B/UOH21B
– DHE41B/UOH11B
– DHF41B/UOH21B*

MT..

MOVIFIT® function level “Technology”
– with integrated MOVI-PLC® basic
– for decentralizedm field installation

* product announcement

MOVI-PLC® I/O-System

MOVI-PLC® I/O-System

The MOVI-PLC® I/O system expands the digital and analog interfaces of MOVI-PLC®. Up to 32 modules can be connected per bus coupler in enclosure IP20 via the system bus. Accordingly, MOVI-PLC® can automatically access a large spectrum of inputs and outputs:

- MOVI-PLC® I/O system
- I/Os directly integrated with MOVI-PLC®
- I/Os of the controlled inverters

Advantages

- Powerful connection to MOVI-PLC® via the system bus of the machine module
- Optimally integrated into the programming software PLC Editor of MOVITOOLS® MotionStudio
- A variety of combination options makes for the implementation of flexible and individual machine solutions
- The compact design and the modular structure reduce control cabinet space requirements to a minimum
- Quick and easy installation or replacement in case of startup or service

ORA11B / Remote maintenance

Remote maintenance also provides a convenient engineering access. SEW-EURODRIVE provides several solutions depending on the plant topology:
The simplest solution merely requires an analog phone line. Signals are converted for Ethernet via the ORA11B modem. Thus a MOVI-PLC® advanced can be addressed. This provides the ideal solution if MOVI-PLC® "stand-alone" automates an entire machine. Alternatively, the MOVI-PLC® can be addressed via a higher-level central PLC.

Technical data

Power supply	0 – 60 V_{DC} / 3 – 5 W
Functions	– Analog modem with dial-up line up to 56 kBit/s – Router with dial-in / dial-out / callback / DHCP server and client – Switch with 4 ports, 10 / 100 MBit/s, full and half-duplex
Configuration	Web interface (local / remote)
Features	2 binary I/Os, SMS message functionality

Programming or parameterization

Motion control with MOVI-PLC® provides three options that will provide functional solutions quickly and easily, irrespective of the complexity of the individual task or the programming skills of the user.

Function blocks: Versatile combinations and flexible applications

The direct access to the blocks that allow for a certain drive function provide the highest level of flexibility. They are clearly arranged in libraries according to their functionality and the respective type of inverter. With some experience, the user can flexibly combine these function blocks to form an optimal program.

Program modules: Optimized connection and efficient use

The program modules comprise bundled comprehensive drive functions. These can be simple functions like positioning, referencing or speed control, technology functions for controlling a cam or a synchronous operation, or functions for multi-axis interpolations of kinematics. Once these program modules have been integrated, the user merely has to concentrate on programming the most important processes of the respective application. The program modules provide the entire drive functionality via an interface. Thus, program modules are ideal for PLC programmers that intend to reduce the programming effort of the drive functionality. möchten.

Application modules: Individual preprogramming and immediate executability

The application modules comprise function blocks that, in turn, contain drive functions for certain applications. The user can use function blocks directly as executable programs by using simple parameterization without having to deal with complex programming. The MOVI-PLC® can be operated directly via a defined process data interface.

Functional safety technology

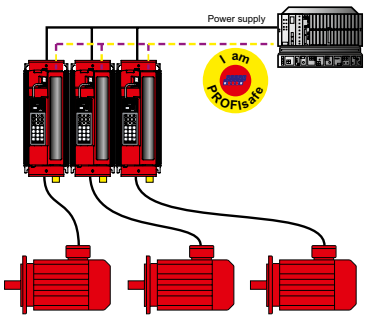
Avoiding industrial accidents while maintaining trouble-free and economical system operation can be implemented flexibly and individually using integrated and modular safety technology from SEW-EURODRIVE. Compliance with EN 954-1 and EN ISO 13849-1, intended to minimize the risk posed to people by technical equipment, allows for installating system control that monitors the production process instead of switching it off. The control systems applied must satisfy the relevant requirements regarding safety and performance level.

Inverters with integrated safety technology/control cabinet	Functionality
MOVITRAC® B frequency inverters	– Safe disconnection (integrated in the unit) – Safe communication - DFS11B PROFIsafe / PROFIBUS with output for safe disconnection of MOVITRAC® - DFS12B PROFIsafe / PROFIBUS with CAN connection for DCS21B
MOVIDRIVE® B inverters	– Safe disconnection (integrated in the unit) – Safe communication - DFS11B PROFIsafe / PROFIBUS with output for safe disconnection of MOVIDRIVE® - DFS12B PROFIsafe / PROFIBUS with CAN connection for DCS21B - DFS21B PROFIsafe / PROFINET with output for safe disconnection of MOVIDRIVE® - DFS22B PROFIsafe / PROFINET with CAN connection for DCS21B - DCS21B safety monitor with speed and position monitoring and PROFIsafe connection - DCS31B safety monitor with speed and position monitoring and binary control

Decentralized installation	Functionality
MOVIMOT® gearmotors with integrated frequency inverter	– Safe disconnection (integrated in the unit) – Safe communication (as option with MOVIFIT®)
MOVIFIT® decentralized drive control: – FC series: Open-loop frequency inverter – MC series: Up to three MOVIMOT® units can be connected via hybrid cable	– Safe disconnection (integrated in the unit) – Safe communication with safety option S11, via PROFIsafe/PROFIBUS or PROFIsafe/PROFINET
Field distributors	– Safe disconnection (integrated in the unit) – Safe communication with MQS22F/32F via PROFIsafe/PROFIBUS
Servo	**Functionality**
MOVIAXIS® multi-axis servo inverters	– Safe disconnection (integrated in the unit) – Movement and positioning monitoring (as option with modular safety technology UCSxxB)

Modular and universal safety technology	Functionality
MOVISAFE® UCSxxB	– Multi-axis capable – Speed, velocity, standstill, direction and emergency stop monitoring – Safe position, safe target travel, safe travel range – Certified to SIL3 (IEC 61508 and IEC 62061) – For operation up to category 4/PL e (EN ISO 13849-1)
– MOVISAFE® UCS10B, safety modules with logic operation – MOVISAFE® UCS11B, safety modules, monitoring with 1 encoder – MOVISAFE® UCS12B, safety modules, monitoring with 2 encoders	– 14 digital inputs – 2 clock outputs – 2 relay outputs – 4 electronics outputs (2 of them safe) – 2 signal outputs
MOVISAFE® UCS23B digital expansion modules	Expansion for the basic modules – Up to 2 modules can be expanded – 14 digital inputs – 10 configurable inputs / outputs – 2 clock outputs
MOVISAFE® UCS25B diagnostic modules	Expansion for the basic modules – Diagnostics via configurable CAN interface
Electromechanics and mechanics	**Functionality**
Safety-oriented BST brake modules	Safe brake control, meets the requirements of – EN 954-1; cat. 3 – EN ISO 13849-11; cat. 3, PL d
BMG.T double disk brakes	Specifically for use in theaters; meets the requirements of – DIN 56950 – EN 954-1; cat. 3 – EN ISO 13849-1; PL d – BGV C1

Safety fieldbus: PROFIsafe



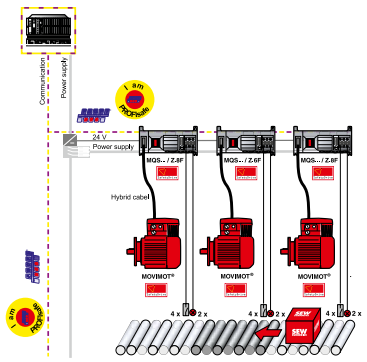
Centralized installation via PROFIsafe

The safe stop function to EN 954-1 can be activated via PROFIsafe for MOVIDRIVE® B inverters and MOVITRAC® B frequency inverters.

The figure shows the implementation of a PROFIsafe installation with MOVIDRIVE® B inverter with integrated disconnection and standard motors or gearmotors.

Process data and safety related information will be transmitted via one single medium. The costs for installation of a separate, safety-related fieldbus will be eliminated.

- DFS11B interface is required for connecting MOVIDRIVE® B / MOVITRAC® B: PROFIsafe to PROFIBUS
- DFS21B interface is required for connecting MOVIDRIVE® B / MOVITRAC® B: PROFIsafe to PROFINET
- Cost savings
- This interface evaluates the safety-related protocol and offers a safety-related output to switch an individual MOVIDRIVE® / MOVITRAC® B or a group of MOVIDRIVE® / MOVITRAC® B units to safe stop.4

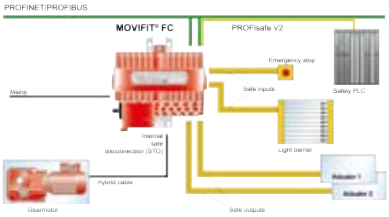


MOVIMOT® – Decentralized installation via PROFIsafe

MOVIMOT® gearmotors with integrated frequency inverters can be controlled using PROFIsafe in conjunction with type MQS../Z.6F field distributors. Field distributors with an integrated type MQS../Z.7F or MQS../Z.8F MOVIMOT® inverter are also equipped with a PROFIsafe interface. This provides the safe stop function. In addition, the safety-oriented MQS.. field distributor offers two additional safety-oriented inputs for the connection of emergency stop relays.

The figure shows an installation that is comprehensively decentralized through to the control level via PROFIsafe, for use in safety applications compliant with EN 954-1, category 3.

MOVIFIT® – Decentralized installation via PROFIsafe



The MOVIFIT® drive control can also be controlled via PROFIsafe by connecting MOVIFIT® MC or FC to the PROFIsafe option S11. This is the safe stop function. The PROFIsafe option S11 offers four additional safety-related inputs for connecting safe sensors and two safety-related outputs.

The figure shows the implementation of a uniform decentralized installation right through to the control level via PROFIsafe, for use in safety applications according to EN 954-1, category 3.

Diagnostic units

Preventive maintenance is becoming an increasingly important feature for many systems from an economic point of view. The diagnostic units from SEW-EURODRIVE offer perfect assistance: They help to prevent downtimes and increase system availability.

DUV10A Diagnostic Unit Vibration
Drive diagnostics using vibration analysis for preventive maintenance

The DUV10A diagnostic unit from SEW-EURODRIVE is the perfect sensor for simple and reliable monitoring of antifriction bearings. The DUV10A diagnostic unit measures the structure-borne noise and uses this value to calculate the frequency spectrum. The unit uses this frequency spectrum to constantly evaluate the condition of the antifriction bearings. The structure-born noise sensor and evaluation electronics are fully integrated in the diagnostic unit.

DUV10A diagnostic unit overview:

- Maintenance intervals can be planned according to the application
- Data is decentrally recorded, processed, and evaluated
- Signs of wear on anti-friction bearings are detected at an early stage
- The condition of the bearings is simple to detect and read:
  The colors green, yellow, and red indicate the condition of the bearings
- Monitoring options: Read values directly from the sensor or visualize them externally via switch outputs (DUV10A can be linked to bus systems)
- Parameters set via RS-232 interface
- System operators can set parameters as required
- Up to 5 bearing positions can be monitored with one sensor
- Alternative: Diagnosis of 20 single frequencies (e.g. tooth meshing frequency, imbalance)
- Level monitor that monitors the entire vibration spectrum

DUO10A Diagnostic Oil Aging
Gear unit oil diagnostics using thermal analysis for preventive maintenance

The DUO10A diagnostic unit from SEW-EURODRIVE is the perfect sensor to determine the remaining service life of gear unit oil and indicate the right time for an oil change. A thermal sensor installed in the gear unit measures the oil temperature and forwards this information to an evaluation unit, which then calculates the time remaining until the next oil change for the specified oil type.

The diagnostic unit takes the oxidation characteristics under thermal stress of the different oils into account.

DUO10A diagnostic unit overview:

- Reduces oil costs
- Optimally utilizes oil service life
- Maintenance intervals can be planned according to the application
- Parameter setting and startup can be performed directly on the diagnostic unit (without PC)
- Time until next oil change can be detected and read off easily
- Monitoring options: The remaining service life and status messages can be read on the diagnostic unit or externally visualized via switch outputs (DUO10A can be linked to bus systems)
- Monitoring for 5 different types of oil

DUB10A diagnostic unit
Brake diagnostics with function and wear analysis

The DUB10A (Diagnostic Unit Brake) diagnostic unit from SEW-EURODRIVE is the ideal sensor for monitoring the wear and functionality of the brake. The voltage-dependent signal can be evaluated by an SEW-EURODRIVE frequency inverter or a higher-level controller.

Two sensors allow you to monitor proper brake functioning and lining wear simultaneously and reliably.

DUB10A diagnostic unit overview:

- Maintenance intervals can be planned individually according to wear
- Brake lining wear can be detected in good time
- Reliable brake function monitoring
- Easily processed voltage-dependent output signal
- Quick diagnosis of the condition of the brake
- Can be used in damp conditions up to IP66
- Actuators made of stainless steel
- Self-cleaning contacts inside the sensor
- Snap switch mechanism: Flexible tongue made of beryllium-copper with self-cleaning contacts
- Housing material: PA6T/X with fiberglass reinforcement
- Actuator material: Stainless steel

DOP operator terminals for visualization and diagnostics

Modern drive inverters and controllers are increasingly taking on control functions. In particular, drive tasks, such as positioning, synchronous operation and the coordinated movement of several drives in relation to one another, are being performed with high levels of accuracy. As more and more functions are integrated, the demands on operation, visualization and diagnostics also increase.

The DOP (Drive Operator Panel) series operator terminals meet these requirements and provide additional and new functions, such as recipe management, dual driver function, pass-through mode, or integrated web server. Operator terminals let you implement optimal visualization and operation of the system in a simple, reliable manner at any time and any place.

They make for constant optimization of the production process and let you adjust individual parameters immediately, such as speed, target positions, stop marks, and ramps. These are optimal requirements for the economic efficiency and reliability of the plant.

HMI Builder

Operator terminals are programmed using the HMI Builder operating software. This software operates on a WYSIWYG basis. During programming the user can see how the operators will see the visualization later. The HMI Builder provides an object library with a large selection of static and dynamic objects. These objects are represented by simple and illustrative symbols. Users simply select and edit objects to create their own personalized screen display.

DOP series, B series

DOP operator terminal functionality ranges from 160 x 32 pixels of built-in units (e.g. for 2 lines with 20 characters each) up to a 1024 x 768 pixel touchscreen.

The range also includes a hand-held terminal with additional safety functions, such as emergency stop and confirmation button, to ensure safe and convenient operation also directly on the machine.

Unit type	Display & LEDs	Membrane keypad	Interfaces	Memory
DOP11B-10	– 160 x 32 pixels (monochrome) – 6 LED	IP66 membrane keypad with – navigation keys – num. keypad – 6 function keys	RS-485, RS-232 Optional Ethernet	500 kByte
DOP11B-15	– 240 x 64 pixels (monochrome) – 6 LED	IP66 membrane keypad with – navigation keys – num. keypad – 6 function keys	RS-485, RS-232 Optional Ethernet	500 kByte
DOP11B-20	– 240 x 64 pixels (16 gray scale) – 16 LED	IP66 membrane keypad with – navigation keys – num. keypad – 8 function keys	RS-485, RS-232 Ethernet, USB	12 MB
DOP11B-25	– 5,7“, 320 x 240 pixels (16 gray scale)	– Touchscreen	RS-485, RS-232 Ethernet, USB	12 MB
DOP11B-30	– 5,7“, 320 x 240 pixels (64k colors)	– Touchscreen	RS-485, RS-232 Ethernet, USB	12 MB
DOP11B-40	– 5,7“, 320 x 240 pixels (64k colors) – 16 LED	IP66 membrane keypad with – navigation keys – num. keypad – 16 function keys	RS-485, RS-232 Ethernet, USB	12 MB
DOP11B-50	– 10,4“, 800 x 600 pixels (64k colors)	– Touchscreen	RS-485, RS-232 Ethernet, USB	12 MB
DOP11B-60	– 15“, 1024 x 768 pixels (64k colors)	– Touchscreen	RS-485, RS-232 Ethernet, USB	12 MB

Mobile operator panel DOP M70	– 6,5“, 640 x 480 pixels (64k colors)	– Touchscreen and – membrane keypad (IP66) – 8 function keys	RS-485 or Ethernet, USB	12 MB

MOVITOOLS® MotionStudio: Perfect automation – All tools in one modular software system

The more functions drive technology offers, the more important it is to have an effective tool for operating drives and visualizing processes. MOVITOOLS® MotionStudio operating software from SEW-EURODRIVE is such a tool. You can use MOVITOOLS® MotionStudio to communicate with MOVIDRIVE®, MOVITRAC®, MOVIAXIS® and MOVIMOT® inverters and MQ fieldbus interfaces.

MOVITOOLS® MotionStudio

A software package for consistent engineering: Startup, control, diagnostics, communication and visualization

Characteristics

- Convenient drive startup and parameter setting
- Drive diagnostics using the built-in oscilloscope function
- Create application and user programs, in high-level languages if required, right on the plant floor using the Assembler or using the graphic programming interface
- View status of connected units
- Bus monitor
- Control technology functions
- Completed application modules for various applications
- Read out electronic nameplates

Centralized system concept	– MOVIDRIVE® drive inverter – MOVITRAC® frequency inverters – Fieldbus gateways
Decentralized system concept	– Decentralized MOVIFIT® drive controller – MOVIMOT®, gearmotor with integrated frequency inverter – Field distributor
Servo	MOVIAXIS® multi-axis servo inverter

Tool	Functionality
	**Startup** – Configuration and startup: For adapting the inverter to the connected motor and optimizing current, speed and position controllers. – Manual operation: The tool allows for manually controlling the units directly from the PC.
	**Parameterization** – Parameter tree: Uniform editor for parameter setting of different unit types – PDO Editor: A process data object editor for graphic configuration of process data for the MOVIAXIS® multi-axis servo inverter. – Gateway configurator: Uniform tool for diagnostics and configuration of the fieldbus gateways UFx41B, DFx and MOVIFIT® with Classic and Technology function levels
	**Diagnostics and visualization** – Status: Support for unit diagnostics, provides general unit status information, manual unit reset possible – Application Builder: Editor for creating application-specific visualizations and application-specific diagnostics. Visualization is connected via data download with the inverter program IPOS and the parameter settings. – Fieldbus monitor: Diagnostics for communication between fieldbus and unit (monitor modes) and setpoint specification on the unit, controller-independent (control mode) – Scope: Diagnostics by using an oscilloscope program for all SEW-EURODRIVE inverters
	**Programming** – PLC Editor: Programming the MOVI-PLC® controller series using application programs written once; can be applied independent of the unit – IPOS® Assembler and Compiler
Technology editors – function-independent: – Motion technology editor for MOVIAXIS® or MOVIDRIVE® technology functions – Single-axis positioning for MOVIAXIS®	

Parameterizable MOVIVISION® system software

The new, intuitive MOVIVISION® software solution allows system manufacturers and operators to startup the materials handling system of their plant, a drive system or an individual drive quickly and easily without special programming skills and with a minimum expenditure of time. Even during the production process, the operator can always respond to manufacturing modifications without tying up human resources to a disproportionately high extent.

MOVIVISION® performs the following tasks:

	– Designing and dimensioning the system
	– Plant data management and administration
	– Plant parameterization – Plant startup – Simplification of plant maintenance
	– Plant diagnostics – Plant operation and monitoring

Plant overview and operating principle

The combination of central data storage and decentralized intelligence makes MOVIVISION® the comfortable software solution in materials handling technology. The decentralized intelligence simplifies and shortens the complex communication paths between all hardware and software components of the plant. Fastest possible bus cycle and response times on every level ensure a permanent flow of information and commands. This also allows for an object-oriented display.

Each individual user can display the entire production plant, the drive systems or individual drives.
User-friendliness is ensured by the easy-to-use MOVIVISION® interface. The user can perform tasks, e.g. startup or production changes during operation, quickly and easily, at any time and from any location: simply by setting parameters. Special programming skills are not necessary.

MOVIVISION® configuration and diagnostics tool:
The user can access the central database of the MOVIVISION® server via the Windows-based configuration and diagnostics tool PLC/PPS.

MOVIVISION® server

- All data is stored in one central database
- A link to the connected, decentralized control components is established
- Data exchange between the server and decentralized control components is realized via fieldbus and/or networks
- Only here, parameters are set or changed
- Management and supervision of access authorizations
- High degree of data security and user-friendliness

MOVIVISION® client

The interface displays the data of the decentralized control components visually. Parameter and diagnostic data of each unit is displayed separately. Both nodes are divided into the

- Drive level
- Positioning level
- Technological level

It is possible to grant different access rights to the users, e.g. for monitoring, for parameter setting, for initial startup, for replacing units, etc.

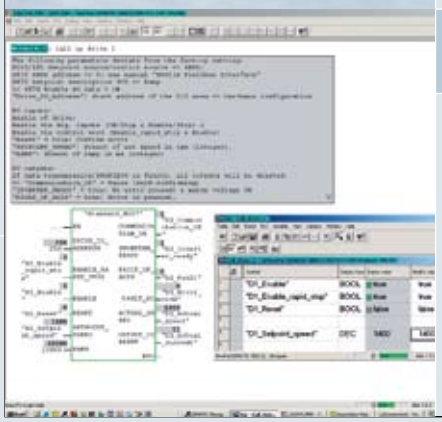
Project planning tools

Servo project planning tool

Applications from the “Servo” drive range not only place exacting demands on dynamics and precision of the implemented drive technology, but require a lot of time and effort for project planning. The individual system solution provided by SEW-EURODRIVE not only offers dynamic and precise drive technology, but also tailor-made software that guides users quickly and simply to their goal: The new servo project planning tool for optimum project planning of servo applications.

EPLAN® makros

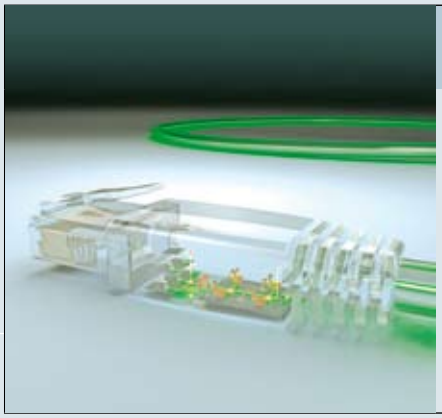
SEW-EURODRIVE offers ready-made EPLAN® 5.50 macros for faster generation of wiring diagrams using CAE/CAD programs. The macros enable the user to create a standard layout, adapted to the typical EPLAN® functions. The SEW-EURODRIVE product range is displayed in an easy-to-use tree structure. Simply select the product required and the data is displayed automatically in EPLAN® format. A tremendous amount of time is saved whenever you generate a wiring diagram because you no longer have to create your own illustrations or format the data. Macros are available for the decentralized technology, MOVIDRIVE® and MOVITRAC® B product groups.



Sample programs for SIMATIC STEP7

Time-consuming and expensive startup procedures are a thing of the past: SEW-EURODRIVE provides sample programs on the Internet at no cost. These programs make project planning, programming, diagnostics and communication with the SIMATIC STEP7 programmable logic controller user-friendly and reliable. The sample programs contain S7 sample control programs for MOVIMOT® gearmotors, MOVITRAC® B frequency inverters, MOVIDRIVE® drive inverters and MOVIAXIS® multi-axis servo inverters. S7 sample modules are also available for operating the DP-V1 parameter channels.

Fieldbus concepts



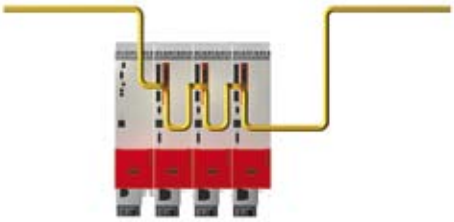
Industrial Ethernet

Information technology is becoming increasingly important in industrial systems. Technical product data should be able to be called up at every PC in the company at the touch of a button, without additional manufacturer-specific software. At the same time, vertical data communication at the control level is to be available over a broad bandwidth as is horizontal process data communication between the controller and the application (e.g. drive inverters).

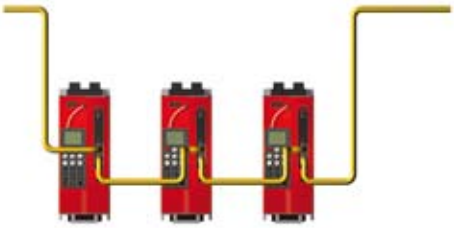
Ethernet – A bus system offering numerous advantages
Vertical and horizontal integration with Industrial Ethernet
Realtime capable process data communication between the controller and the drive technology (soft realtime with 10 process data words per slave)
Fast data transfer at 100 Mbit/s
Diagnostics for drive technology via Internet Explorer
Programming and diagnostics for the drive technology can be carried out via Ethernet, which makes remote maintenance easy to handle
Broadband data communication between the master level and field level
Control and engineering combined in one bus system
Fast, integrated info system configuration

Functions
Process data communication by means of protocol, either PROFINET IO/RT, EtherNet/IP or Modbus TCP, for simple and fast access to data at the master and field levels
Control and diagnostics via Ethernet – Local operation, diagnostics and maintenance at the field level
Integrated web server to diagnose drive technology using the Internet Explorer
Central data backup at master level
Parameter setting and programming using MOVITOOLS® MotionStudio via Ethernet
Reduction of installation costs and maintenance due to installation of only one diagnostic bus

EtherCAT and Motion Control – High-speed Industrial Ethernet

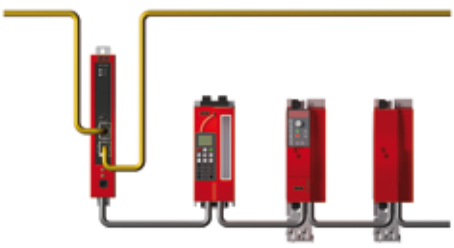


Servo drive systems: MOVIAXIS® multi-axis servo drive with XFE24A



MOVIDRIVE® inverters with DFE24A

MOVITRAC® frequency inverters with DFE24A



Applications with SEW drives, connected via DFE24B gateway

Motion control:
With synchronization via distributed clock and a synchronization cycle of 0.5 ... 10 ms, the hard realtime communication for MOVIDRIVE® inverters and MOVIAXIS® multi-axis servo inverters allows for the following operating modes:

– High-performance Motion Control operation with centrally calculated motion functions and clock-synchronous speed, position or torque settings
– Use of integrated Motion Control functions such as electronic cam, electronic gear unit, touch probe, positioning, etc. through clocksynchronous control
– Conventional PLC operation

PLC operation:
In conventional PLC operation, non-synchronized process data (such as control and status values, speed or position setpoint or actual values) are transfered. This allows for control of application modules (positioning, modulo, winder, etc.) in the MOVIDRIVE® inverter, but also enables MOVITRAC® frequency inverters and other SEW drives with SBus interface to be used for simple drive tasks.

The mailbox gateway in the EtherCAT master ensures unlimited engineering access, for example, for MOVITOOLS® MotionStudio down to the drive level.

Drive Benefits – Customized process solutions for your entire value creation chain

The Drive Benefits from SEW-EURODRIVE offer a variety of practice-oriented possibilities to accelerate processes in every value creation phase, to make these processes easier and handle them in a cost-optimized manner. Selecting the suitable components and combining them to form an overall concept will give you sustainable benefits.

- Measurable cost savings
- Less expenditure of time
- Increased process safety
- Increased efficiency
- Enhanced process automation

Consistent and integrative
You find the DRIVE Benefits of SEW-EURODRIVE in all areas of modern intralogistics processes. In every company – independent of size and industry.

The Drive Benefit system components at a glance:

1. Engineering and selection
- MOVITOOLS® Workbench
- DRIVE CAD
- EPLAN® Macros
- Configurator

2. Ordering and procurement logistics
- Electronic data exchange
- Customized procurement logistics
- Electronic invoicing

3. Material flow and startup
- Order-specific documentation
- Order tracking
- Intelligent material flow

4. Operation and spare part management
- Ordering spare parts
- Inquiring spare parts

CDS® – Complete Drive Service
Green light for your production

CDS® – Complete Drive Service from SEW-EURODRIVE offers system operators a complete range of services for all aspects of drive technology. CDS® covers any service requirement from machines and systems across the entire product life cycle of the drive components and lets operators optimally plan and calculate these requirements in the long term

A complete service concept – module for module

You can combine the individual CDS® system modules to form your individual service package. In this way, we provide exactly the system modules you need to meet your specific requirement profiles. The result will be higher availability for your system with downtimes reduced to a minimum.

CDS® in the product life cycle

Integrative services that can be tailored to the specific needs of every phase of the product life cycle make the Complete Drive Service from SEW-EURODRIVE the perfect solution. From project planning to retrofit and modernization measures – CDS® covers the entire life cycle of a system.

The CDS® system modules – Our services at a glance

24-hour service hotline
01805 7394357
01805 SEWHELP

Installation consulting service

Startup service

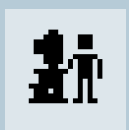
ApplikationsApplication programming service

Inspection and maintenance service

Repair service

Spare parts service

Express assembly service



Industrial gear unit service

Collection and delivery service

Retrofit service

Condition monitoring service

CDM® maintenance management

Training service

DriveAcademy® – Training made by SEW-EURODRIVE

The DriveAcademy® in Bruchsal is designed in such a way that it offers employees and customers of SEW-EURODRIVE the ideal learning environment. Seminars, teachware and models show state-of-the-art technology and provide ample of room for individual learning objectives. The training courses and seminars are held in Bruchsal and at six Service Competence Centers all over Germany.

Training for Drive

With target-group-specific product trainings for planners, project planners, design engineers, service engineers, repair staff, startup engineers, as well as trainers and teachers, the DriveAcademy® provides ideal conditions for hands-on experience with modern drive technology.

WIEPROconsulting – Always well advised

The consulting experts of WIEPROconsulting implement individual know-how into integrative competence. Their focus is on practical improvements of business processes as well as internal processes.

Modern personnel development

The wide range of seminars covers management training, communication and personnel related topics through to specific working methods and individual coaching.

DriveAcademy®-Online
www.driveacademy.sew-eurodrive.com

DriveGate – The customer service portal

DriveGate offers customers of SEW-EURODRIVE a wide range of services. It is the central online platform of SEW-EURODRIVE that provides numerous options for improving and optimizing internal processes, including expert consultation, in a convenient and clearly structured manner.

The advantages at a glance

- Registration and login free of charge
- User-friendly user interface
- Clear design
- Fast and direct access
- Many convenient download functions
- Available 24 hours a day, worldwide

www.drivegate@sew-eurodrive.com

SEW-EURODRIVE's DriveGate offers uncomplicated access, for example, to

SEW Workbench

The SEW Workbench is a planning and configuration tool to specify SEW-EURODRIVE products. Simple and clearly arranged graphical elements let you create complex configurations and verify their proper functioning. A great number of new functions offer additional options for creating exactly the drive solution required for the specific application. The SEW Workbench includes a complete electronic product catalog, all required documentation, and an option for creating individual CAD files. The SEW Workbench DVD provides customers of SEW-EURODRIVE with a personal code for easy registration to the DriveGate customer portal.

Useful reference tools

The "Drive Engineering - Practical Implementation" series of publications as well as various documentations (docu ROMs) and presentations (CBI-ROM) on CD-ROM are the ideal tools of reference for any question on drive technology. They also include detailed basic information, explanations, and useful tips. All this is arranged in a clear structure and with the focus on practical applications.

Drive 360

Seeing the big picture.

From the first idea to the running system, and beyond.

1677 0013 / 0409

For every motion in your machines and systems and for every industry: As a leading drive technology specialist, we always supply the right drive. This includes not only gear units, motors or drive electronics, but also the matching controller and a comprehensive service portfolio. This is what we call Drive 360° – Seeing the big picture: From system availability to problem-solving competence, from low operating costs over energy efficiency to the complete system that handles all your tasks.

www.sew-eurodrive.com

SEW EURODRIVE