The mechatronic drive system for completely new perspectives

MOVIGEAR®
Designers and operators of materials handling systems in many areas of logistics, such as the automotive, food and beverage industries, airport logistics or intralogistics, opt for drive solutions made by SEW-EURODRIVE. They choose innovative drive technology, highest product quality and consulting competence.
SEW-EURODRIVE offers a nearly unlimited selection of components and combination options for implementing countless individual applications. Perfectly matched drive components, including gearmotors, drive electronics and control options, are the heart of the materials handling system and ensure functionality and operating efficiency. The latest in-house development of SEW-EURODRIVE is a logical consequence of our continuous development and research efforts especially in the field of decentralized drive technology. With MOVIGEAR®, the mechatronic drive system for horizontal materials handling technology, we set entirely new standards in terms of efficiency and functionality. MOVIGEAR® not only combines the gear unit with a motor and matching drive electronics within one product. Above all, it makes optimum use of all technical and economic advantages of these three drive components.

The new mechatronic drive system MOVIGEAR® reduces total costs and operating costs also in your materials handling system.
**MOVIGEAR®**: Mechatronic drive system comprising motor, gear unit and electronics

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<td>- MOVIGEAR® with hollow shaft and key</td>
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<td>- MOVIGEAR® with TorqLOC® hollow shaft mounting system</td>
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MOVIGEAR® is basically available in two sizes and two mechanical designs:

**MGFT.2 and MGFA.4** (examples)
The following figure shows a MOVIGEAR® MGFT.2 mit TorqLOC® hollow shaft mounting system and a MOVIGEAR® MGFA.4 with hollow shaft and key.

**Features and advantages**

- Compact design: Motor, gear unit and electronics are combined in one mechatronic drive system
- SNI principle (Single Line Network Installation): Only one cable has to be installed for energy and information transfer
- Simplified system planning and design
- Reduced number of variants due to wider setting range and universal mounting position
- Lower storage costs
- High degree of protection
- Hygienic surface design for applications in hygienic areas
- No air, dirt and germ swirls
- Reduced energy costs due to high efficiency of all components (gear unit, motor, electronics)
- High degree of reliability due to systematic development of all components
- Reduced total costs and operating costs of the materials handling system
## Application options

The following types of electronics covers are available for all sizes of MOVIGEAR® DSC-B and MOVIGEAR® SNI-B units:

- Electronics cover without application slot
- Electronics cover with application slot

The electronics cover of MOVIGEAR® DBC-B and MOVIGEAR® DAC-B is designed without application slot.

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### Electronics cover without application slot, electronics cover with application slot (with installed GI012B option)

Application options are installed in the application slot of MOVIGEAR®. These options implement specific interfaces, such as binary inputs or binary outputs. The energy supply of the option as well as the communication between MOVIGEAR® and the option are contactless.

**GI012B application option**

The GI012B application option allows for controlling up to 2 digital actuators and for processing up to 4 digital sensors.

**GI013B application option**

The GI013B application option comes equipped with the following interfaces:

- 1 digital output
- 4 digital inputs (two of them can be used as primary frequency input)
- 1 analog output
- 1 analog input
The exceptionally compact MOVITRAC® LT E frequency inverter is now available in IP55/NEMA 12 housing offering an ideal and uncomplicated form of motor control: Effective and reliable MOVITRAC® LT E can be utilised to realize a number of applications quickly, easily and cost-effectively. The MOVITRAC® LT E is uniquely suitable for applications including fan and ventilation systems (HVAC), pumps, conveying, machining and materials handling systems as well as motor control in tool manufacturing and metalworking.

New: For applications in demanding environments like the food and beverage or the pharmaceutical industry MOVITRAC® LT E in the new housing meets the requirements of IP55/Nema 12 assuring high performance and reliability even in dusty environment or under low pressure water flow.

Available in two sizes, MOVITRAC® LT E covers a power range from 0.37 to 4.0 kW / 0.5 to 5 HP for operation on 1-phase (220-240 V) and 3-phase (380-480 V), 50 ... 60 Hz power supply systems. MOVITRAC® LT E offers the perfect balance between functionality and cost-effectiveness. With its 14 standard parameters and user-friendly interface, MOVITRAC® LT E can be started up quickly and easily on-site, “plug in and drive”: Startup doesn’t require cost-intensive and time-consuming support services.

Greater energy efficiency for reducing energy and operating costs

Using any opportunity to save energy is not only an important contribution to conserve the environment but also pays off financially. This also affects the development of modern drive technology. The drive technology used and its overall efficiency play a major role in this approach.

A simple equation illustrates this:

\[ P_{\text{input}} = P_{\text{output}} + P_{\text{losses}} \]

This means the costs for the electric energy supplied \( P_{\text{input}} \) is the sum of the mechanical energy actually required \( P_{\text{output}} \) and the losses \( P_{\text{losses}} \) resulting from the total efficiency. Irrespective of the type of application or system, energy costs can only be reduced if energy losses during operation are kept as low as possible. This is why more and more system operators invest in the latest development of SEW-EURODRIVE. For them, the mechatronic drive system MOVIGEAR® is not only an investment in future-oriented and intelligent drive technology but also helps them reduce energy costs immediately.

Verified by an independent entity: Energy saving potential of up to 50%

“A comparison of the test results shows a significant efficiency advantage of the MOVIGEAR® drives ... over the entire load range.”
The mechatronic drive system MOVIGEAR® achieves the high total efficiency due to
- optimized interfaces between motor and gear unit
- permanent-field synchronous motor
- highly efficient gearings
- new electronic components and intelligent control modes.

Highest motor efficiency due to permanent-field synchronous motor. Already today, the motor efficiency complies with the planned efficiency class IE4 (Super Premium Efficiency) of the international standard IEC 60034-T30.

Solution for horizontal transport
Latest measurements on a belt conveyor of a baggage handling system in airport logistics show the following:*  
- Average reduction of power consumption by approx. 4400 kwh/a per drive
- Reduction of energy consumption by 55%
- Reduction of CO$_2$ emission of 2391 kg/a per drive
- € 536 of energy saved per drive/year

*Calculation based on customer data with energy costs of 0.122 €/kwh and a runtime of 18 hours per day and 365 days per year.

Compared to conventional drive solutions, the higher costs of the drive components already pay off within one or two years due to the saved energy costs.

Other energy saving aspects:
- The energy efficiency of MOVIGEAR® makes a sustainable contribution to reducing CO$_2$ emissions and in this way actively protects the environment.
- MOVIGEAR® significantly reduces the reactive power consumption compared to motors operated directly on the supply system and so helps to ensure compliance with reactive power limit values.

Using MOVIGEAR® is not only an active contribution to conserving resources and the environment but also enables system operators to save a substantial amount of costs.
The exceptionally compact MOVITRAC® LT E frequency inverter is now available in IP55/NEMA 12 housing offering an ideal and uncomplicated form of motor control: Effective and reliable MOVITRAC® LT E can be utilised to realize a number of applications quickly, easily and cost-effectively. The MOVITRAC® LT E is uniquely suitable for applications including fan and ventilation systems (HVAC), pumps, conveying, machining and materials handling systems as well as motor control in tool manufacturing and metalworking.

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In addition to the objectives such as “higher productivity” or “cost reduction”, the system environment is becoming a more and more important criterion for the development of modern machines and systems. Until now, compliance with normative limit values has served system operators as a gauge for determining the environmental impact. In the meantime however, the creation of high-quality workplaces has become one of the key purchase criteria. This is why the influences on the system environment, e.g. noise emission, are thoroughly analyzed.

The design without fan also reduces noise since in conventional drives, a considerable amount of noise is caused by air swirls and vibrations of the fan guard.

Low noise emissions improve the quality of the workplace

Solutions for sensitive areas
Clean room variant

Energy-efficient drive solutions with MOVIGEAR® are now also possible up to cleanliness class 2*. The compact and easy to clean design meets the demanding hygienic requirements on air quality as well as the permitted amount and size of particles released. At the same time energy consumption is reduced by up to 50% compared to conventional drive technology used for such applications.

This mechatronic drive system will open up entirely new energy-saving potential for the production and logistics plants of many machine and system operators. Examples:

- Food industry
- Chemical, pharmaceutical and cosmetic industries
- Biotechnology and medical technology
- Semiconductor industry and solar panel production
- and many more.

* meets ISO 14644-1

The Fraunhofer Institute certifies that the MOVIGEAR® drive for clean room applications meets the requirements up to air cleanliness class 2 according to ISO 14644-1, depending on the motor speed, and that the drive can be operated in such applications.
MOVIGEAR® for use in wet areas

Every end user is grateful to know that high demands are placed on hygiene in all so-called "sensitive production areas." This statement applies to employees as well as all machines and systems involved. This approach is the only way to ensure that contaminated food products, cosmetics or drugs do not enter the market. That is particularly important for certain branches of industry, such as the beverage and food industry as well as the chemical and pharmaceutical industry. Often, regulations even stipulate a completely germ-free environment. The drive solutions used in the past made it very difficult to clean the production systems as thoroughly as required. Standard drives often come equipped with cooling fins in which dirt can accumulate and germs and bacteria are distributed via air swirls.

This is where MOVIGEAR® with its smooth surface design comes in. The geometric design of MOVIGEAR® was based on the Hygienic Design guidelines already during the concept stage. This minimizes cleaning efforts, which leads to reduced cleaning and system downtimes and ultimately to reduced operating costs. The smooth surface is virtually self-cleaning as it prevents dirt from adhering to it.

Surface protection

The completely enclosed mechatronic drive system uses surface cooling and does not require additional fans. Sucking in dirt and spreading germs and bacteria due to air swirls are a thing of the past. The high degree of protection ensures maximum reliability. And should it become necessary after all to replace the electronics, the upper part with the electronics can be separated from the connection part quickly and easily. Replacing the electronics part takes only a few minutes. Connection cables do not have to be removed so that maximum system availability is ensured.

Thanks to these features, it is very easy to apply a decentralized installation philosophy even to sensitive production areas without additional effort required for cleaning drive components.
Optimum solution for wet areas

The mechatronic drive system MOVIGEAR® for applications in wet areas is specifically intended for permanently wet areas.

For hygienic areas in the food and beverage industry with regular acidic and caustic wet cleaning. Antistick properties support the cleaning process even in inaccessible areas.

Sample applications:
- Hygienic and aseptic conveyors in the beverage industry
- Systems in cheese dairies and butcher shops
- “Splash zones” in the food industry

Overview of the features:

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<th>Feature</th>
<th>Description</th>
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<tr>
<td>Design</td>
<td>The smooth overall design and the compact unit comprising gear unit, motor, and electronics facilitates thorough cleaning of the entire drive system and results in a reduced emission of particles.</td>
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<tr>
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<td>At present available in two sizes covering a torque range from 20 Nm to 400 Nm.</td>
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</tbody>
</table>
| Special anti-stick surface HP200 | Makes for easier cleaning  
Prevents paint flaking at the interfaces as the surface is treated prior to assembly and burnt into the housing material  
Prevents particles from sticking to the surface  
Is resistant against mechanical stress and common cleaning agents |
| No fan                   | No swirling of air, dirt, and particles  
Reduction in noise emission  
Allows for complying with noise limits at the workplace |
| Cost-effectiveness       | Reduction in energy costs by up to 50% due to high overall efficiency |
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**Installation topology with an SNI controller**

**MOVIGEAR® SNI**

**Single Line Network Installation**

**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
- Integrated STO safety function

**Applications:**
- As a drive for applications with high breakaway and starting torques
- Conveyor systems with variable 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
High performance and fast bus communication

MOVIGEAR® with SEW system bus allows for a functional integration of the mechatronic drive system in applications close to the machine. High performance and short response times distinguish this variant and enable reliable implementation of challenging drive tasks.

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
- Integrated STO safety function

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
The mechatronic drive solution MOVIGEAR® binary was developed by SEW-EURODRIVE specifically for stand-alone solutions and applications with simple functionality. DIP switches and potentiometers allow for simple and fast startup, no PC is required. The unit is controlled via the binary inputs either by a central PLC or in local/manual mode.

Stand-alone operation

Installation topology with MOVIGEAR® binary

**MOVIGEAR** binary

Stand-alone operation

### Features:

- Simple startup without a PC using DIP switches and potentiometer
- Constant speeds and ramps can be configured
- Control of binary inputs and evaluation of signal relay via PLC
- On-site/manual operation via binary inputs
- Interface for diagnostics and parameter setting
- Integrated STO safety function

### Applications:

- Basic stand-alone and individual applications
- For applications that require a soft start-up behavior
- Applications with two constant speeds
- For applications with high breakaway torques
- Applications with/without STO safety function

### Areas of application:

- Simple conveyors
- Rotary tables
- Drives for infrequent speed variations
- Stirrers and mixers
- Crushers and shredders
- presses
Efficient fieldbus connection

MOVIGEAR® AS-Interface for simple fieldbus connection via standard AS-Interface. Parameterizable fixed speeds and ramps, integrated STO safety function and connection options for external sensors ensure fast and extremely efficient implementation of material handling systems.

Installation topology with MOVIGEAR® AS-Interface

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<th>MOVIGEAR® AS-Interface</th>
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<td>Basic, economical fieldbus interface</td>
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**Features:**
- Constant speeds and ramps can be configured
- Control via standard AS-Interface specifications
- Connection of external sensors on the actuator
- Voltage supply for connected sensor technology
- On-site/manual operation via binary inputs
- Interface for diagnostics and parameter setting
- Integrated STO safety function

**Applications:**
- Basic fieldbus interface
- For applications that require a soft start-up behavior
- Signal feedback from connected sensor technology
- For applications with expansive space requirements
- Applications with/without STO safety function

**Areas of application:**
- Accumulating roller conveyors
- Roller and wheel conveyors
- Pallet conveyors
- Rotary tables
How we’re driving the world

With uncompromising quality that reduces the cost and complexity of daily operations.

With drives and controls that automatically improve your productivity.

With comprehensive knowledge in virtually every branch of industry today.

With industry-leading training and 24-hour technical support, nationwide.

With a global presence that offers responsive and reliable solutions. Anywhere.

With a worldwide service network that is always close at hand.

With innovative technology that solves tomorrow’s problems today.

With online information and software updates, via the Internet, available around the clock.

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