Integrated Drive Systems for bulk material handling from 15 to 1,500 kW

Faster project run times through coordinated, ready-to-connect solutions

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Efficient, reliable, quickly available

Conveyor system manufacturers that can provide exceptionally efficient and reliable systems in a very short time have a clear competitive edge in the market for bulk material handling systems. Our Integrated Drive Systems play a valuable role by increasing the reliability of your conveyor systems while reducing project run times.

The continuous availability of high-output performance is vital in conveyor technology, whether it’s in the mining industry, the cement and building-materials industry or for power plant technology. Ever increasing amounts of material need to be transported over long distances more and more quickly – often in 24/7 operation. At the same time, the shortest possible project run times are a key factor when manufacturing conveyor systems. Operating companies need their new or converted conveyor systems to be up and running as quickly as possible.

Our Integrated Drive Systems help you to perfectly meet these requirements.

Maximum reliability through optimum interaction

Based on our many years of experience as a leading manufacturer of drive systems for material extraction, we’ve optimally matched premium products with each other and combined them into homogeneous and coordinated integrated drive systems. The excellent inter-operation between the individual drive components and between the drive components and the automation system ensures the maximum reliability of conveyor systems – even under the extreme conditions that these systems are often exposed to. These include dust, dirt, moisture, heat and frost when used outdoors, as well as belt-related phenomena like vibration, peak torques, and heavy stressing when transporting large volumes of material uphill and downhill.

Short project cycles, thanks to reduced costs and minimized error rate

Our Integrated Drive Systems reduce your production costs for bulk material handling systems. They speed up production throughput times and ensure that your system is operational more quickly.

The unique advantage of Integrated Drive Systems lies in their simpler and more efficient processes, from procurement and engineering to commissioning. All logistical and technical issues are already clarified when the complete drive train is delivered, there is no work involving interface engineering or installation of the individual components of the drive system. All of these factors significantly reduce the delivery time. Simplified installation and minimum error rates shorten the time even more when setting up the system. Delivery of the complete drive system as a coordinated unit saves time-consuming adjustments to the conveyor system. This means that you can use your resources more effectively and flexibly, substantially boosting the profitability of your projects.
Adjusted and ready to be connected up

We offer perfectly coordinated Integrated Drive Systems as complete packages for solutions that are very close to the standard ones for standard bulk material handling systems from 15 to 1,500 kW. All components are connected and aligned at our factories and delivered as a ready-to-connect unit.

This basic package comprises:

- Gear unit
- Coupling
- Motor
- Converter (for variable-speed operation)

Typically, gearbox, coupling and motor are mounted as system on a swing base or equipped with motor bell housing.

Comprehensive portfolio of additional components

A flexible combination of additional components and solutions rounds off the complete package depending on the specified application. The selection of components available from a single source includes:

- Transformers
- Auxiliary and maintenance drives
- Mounted components
- Backstops
- Oil supply systems
- Oil cooling systems
- Sensors
- Condition monitoring systems
- System and process control

We work together with the conveyor system manufacturer to create a solution based on this modular system that is perfectly coordinated with the particular bulk material handling application.
Increase your plant availability by up to **99%**

Horizontal integration
Integrated drive portfolio:
All converters, motors, couplings, and gear units from a single source, integrated and working together perfectly. For all performance classes, as a standard solution or as a completely customized solution.

Reduce engineering time with the TIA Portal by up to **30%**

Vertical integration
Integrated in the automation technology: from the field level to the controller level to the MES, thanks to Totally Integrated Automation (TIA).
For every application.

Lower maintenance costs by up to **15%**

Lifecycle integration
Integrated software and services for the entire lifecycle.
For higher performance and maximum investment protection.
The complete drive system for conveyor belts as a coordinated package ready for connection – gear unit, coupling, motor, and in the case of variable-speed systems, the converter as well – are integrated and operate together perfectly. Integrated Drive Systems offer manufacturers of bulk material handling systems some compelling advantages, from cost reduction and conveyor system upgrades to minimized risks, while operating companies profit from the excellent availability and reliability of their system.

Advantages of horizontal integration
- High machine availability
- Increased system efficiency and low energy costs
- Full compatibility of all components
- Minimized costs for procurement, construction, and warranty
- Exclusion of error sources

By seamlessly embedding the entire drive train in the automation environment, both manufacturers and users of bulk material handling systems can implement extremely efficient processes and maximize added value.

Advantages of vertical integration
- Seamless integration in the open-loop control system, communication infrastructure, and higher-level supervisory control system
- Shorter time to market and lower complexity thanks to incorporation in TIA
- Intelligent control and monitoring ensures highest availability

Manufacturers and operators alike can derive particular benefits from the large number of services covering all aspects of maintenance and repair of the drive system. Thanks to the Siemens global service and sales network, these services, including spare parts, are available quickly and conveniently anywhere in the world. A collaborative partnership as well as standard tools and service concepts ensure greater cost efficiency over the entire lifecycle. Smart software tools for design, engineering, and product lifecycle management add real value for manufacturers of conveyor systems.

Advantages of lifecycle integration
- Configuration and development tools for shorter time to market
- Higher productivity thanks to simple, intuitive operation
- Maximum engineering flexibility
- Professional support based on customized services
First-class components, perfectly combined

Siemens Integrated Drive Systems significantly simplify the topic of drive technology for conveyor belt manufacturers. From procurement and design to service support, the optimally coordinated components ensure simpler processes and increased value added at every stage.

Significantly faster to market with lower costs

With Siemens Integrated Drive Systems, you have the same procurement source and one contact person for your entire drive system, which offers a large number of compelling advantages:

• Perfectly coordinated and fully compatible components
• No interface engineering
• No associated extra expenditures, no risks, no consequential losses
• Tailor-made components prevent costly oversizing – even for very demanding environmental conditions, the excellent thermal ratings eliminate the need to move up to the next larger system
• Delivery of all drive components as a complete system simplify the integration of the complete system unit in the conveyor belt
• Elimination of the time-consuming selection of suitable components and drastically reduced expenditures for clarifying technical issues
• Significant simplification of purchasing processes
• Simpler logistics as individual components do not have to be supported
• Complete documentation for the entire drive system in one common document
• Distinct demarcation of areas of responsibility in the event of service within or outside the warranty period

Integrated Drive Systems for bulk material systems in the power range from 15 to 1,500 kW are based on a finely coordinated modular system. The complete solution from a single source ensures maximum flexibility and optimal interaction of all drive components.
Maximum flexibility and optimal dimensioning

Integrated Drive Systems for conveying bulk materials are standardized and, thanks to their modular concept, can be adapted flexibly to your specific application – because every bulk material application is different. We take all drive components from a finely scalable modular system based on the most comprehensive portfolio of high-quality and reliable drive components in the world: FLENDER couplings and FLENDER gear units, SIMOTICS motors and SINAMICS converters, many of which are global market leaders in their field. We combine these into an ideal solution for the individual application and ensure that they work together perfectly as an integrated drive system.

Maximum value added for the entire conveyor system

The entire conveyor belt system is upgraded and the manufacturer’s market position strengthened because the operating company can rely on exceptionally high productivity, energy efficiency, and reliability of the system supplied. Conveyor systems with Integrated Drive Systems mean maximum reliability and high machine availability – even under the harshest conditions when used outdoors. These systems also deliver higher system efficiency and lower energy costs, lower maintenance needs, reduced brake wear, minimized belt vibration, optimized process control, excellent electromagnetic compatibility and low operating noise.

Self-aligning with low space requirement

Not every conveyor system application offers enough room for complex measurement, alignment and installation work. This is where the patented FLENDER self-aligning system offers the perfect complete solution. Axial fan, fan cover and the patented smart airflow-guidance system “Clever-Cooling” ensure optimized heat dissipation. The FLENDER self-aligning system provides flexibility during commissioning, both in terms of space requirements as well as location and installation. No specialist knowledge is required for conversion or for dismantling, because the drive unit does not need to be aligned.
## Integrated Drive Systems from 15 to 1,500 kW for bulk material handling systems

### Converters

- Voltage: 400 V–7.2 kV
- Types of protection: IP20–IP54
- Cooling methods: air and liquid cooling
- Energy-saving and low-stress system operation
- Reliable and low maintenance
- Easy to operate
- Optional: with or without energy recovery into the line supply
- Available as individual or multiple motor drives

### Motors

- Premium quality based on 150 years of experience in electric motor manufacture
- Voltage: 400 V–7.2 kV
- Number of poles: 2/4/6/8
- Types of protection: IP23, IP55
- Cooling methods: self-cooling, forced cooling, water jacket cooling, air-water heat exchanger
- Specific designs for line and converter operation
- Large selection of motors to address the widest range of applications
- Compact design: high power density with low envelope dimensions
- High efficiency (IE2, IE3)
- Low noise
- Rugged for reliable operation

SINAMICS G120, G130, G150, and S120 converters for integrated drive systems for bulk material handling applications

SIMOTICS SD, FD, and TN motors for integrated drive systems for bulk material handling applications

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Couplings

- Low maintenance
- High reliability
- Rugged system for a long service life
- Fast availability
- Soft and smooth starting and acceleration of the conveyor systems with a lower load on the motor when starting
- Torque limiting when starting and under overload conditions as protection against torque peaks
- Outstanding oscillation decoupling and surge damping
- Wear-free torque transmission
- Simple handling
- Very high power rating: up to 2,500 kW at 1,500 rpm
- Engineered couplings: individually adapted solutions for every application

FLENDER couplings for integrated drive systems for bulk material handling applications

siemens.com/couplings

Gear units

- Premium quality based on 120 years of experience
- Torque: up to 1,400,000 Nm
- Transmission ratio: 11.2 to 450*
- Improved cooling as a result of larger gear unit surface
- Optional: built-on auxiliary drive
- Modular system
- Degressively graduated sizes for better size selection
- Very good noise characteristics thanks to ground bevel gears and noise-optimized housing
- High degree of flexibility due to multiple mounting positions
- Optionally mounted backstop
- Special sealing system for increased dust protection

* for bulk material handling

FLENDER FZG and SIG gear units for integrated drive systems for bulk material handling applications

siemens.com/gearunits
Better results – simply faster

When using Integrated Drive Systems, manufacturers of conveyor systems don’t need to worry about the connections to the automation and higher-level supervisory control system. These systems are an integral component of Totally Integrated Automation (TIA), and, as such, are completely embedded in the automation environment from the field level all the way up to the manufacturing execution system.

Integrated Drive Systems communicate seamlessly with the individual controls at the field level as well as with the master control room. The optimized connection of Integrated Drive Systems to control systems like SIMINE in the mining industry and SICEMENT in the cement industry pays off, especially for conveyor applications.

Perfect connection of a large number of subsystems

As part of Totally Integrated Automation, Integrated Drive Systems are also already prepared for the connection of additional subsystems for acquiring and analyzing performance characteristics, such as belt load, material properties, and conveyor system condition. These subsystems include, for example, instrumentation, sensors, condition monitoring systems, diagnostics, weighing systems and many others.

Working more efficiently with Integrated Drive Systems in the TIA Portal

The TIA Portal is the key to realizing the full potential of Totally Integrated Automation. This software optimizes all machine, process, and operating procedures and is especially user-friendly thanks to a familiar user interface, simple functions and complete data transparency. This means significantly greater efficiency, especially for manufacturers, thanks to lower engineering and training costs and standard data storage with consistent data. Existing expertise from configurations already implemented can be easily transferred to new applications, and the task-oriented workflow helps avoid program errors.
Consistently optimized value added

Close collaboration right from the planning phase cuts project-specific engineering costs for our partners, and reduces their project run time to final completion of the finished conveyor system. We also provide tools and service concepts that can be utilized throughout the lifecycle of the working machine.

Software and services for the entire lifecycle of a drive system help pave the way to the future of industry, where the virtual world is intensively merged with the actual production process. This makes production faster, more flexible and more intelligent.

As far as planning, design and engineering are concerned, the conveyor belt manufacturer profits from the availability of standardized 3D dimension drawings. These dimension drawings can be used during the entire planning, engineering and production process of a conveyor belt.

Smarter decisions, better products

The Product Lifecycle Management (PLM) platform Teamcenter® provides a means of enhancing productivity and performance, and substantially cutting the time to market. Teamcenter is the most commonly used PLM system in the world. It is flexible and based on a future-proof architecture so that it can grow with your requirements.

Teamcenter’s new Briefcase Browser provides a desktop solution for exchanging data between OEMs and subcontractors – including suppliers who do not use Teamcenter themselves.

Long-term service agreements and other service packages for the entire lifecycle are optionally available, including sector-specific solutions for the mining and cement industries.
Learn how Integrated Drive Systems can boost the competitiveness of production plants and entire companies in every sector.

The advantages of Integrated Drive Systems at a glance

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