Innovations for the construction materials industry

Technologies for aggregates, concrete, and asphalt production
Efficiency is success – rising demands for the construction materials industry

Your challenge
Market demand for construction materials is fluctuating with the state of the economy. Energy prices are steadily intensifying their pressure on the cost base. Environmental concerns are increasing and regulations are becoming harsher. Customers are posing stricter quality requirements. Today the construction materials industry faces a host of challenges.

Our solution
Siemens is the right partner for you to handle those challenges. With our broad portfolio, we can support you in:

- improving your operations, and so saving operating and capital costs as well as energy
- ensuring higher availability and therefore higher plant productivity
- lowering costs and extending the life of your equipment
- delivering the highest product quality and top service to your customers
- gaining a competitive edge in the marketplace.

Benefits
Industry expertise
We understand your business and your technological challenges and we are ready to work with you to solve your most pertinent problems.

Global presence
We offer support and delivery to any corner of the world to improve your global growth. If necessary, specialists can be at your location within hours.

One-stop shopping
Fulfilling all your needs for electrical components from a single source saves engineering and maintenance costs throughout the lifecycle of your plant and ensures a seamless integration.

Technological leadership and innovation
When you partner with Siemens, you partner with a trendsetter, and you will always have the latest technological advancements available.

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Quarries are one of the most arduous application areas for any industrial product. Temperature extremes, dust, wind, rain, snow, and sun – they have it all. In this environment, you need equipment you can rely on.

Siemens supports your needs in the production of aggregates – from power generation and distribution to plant automation and drives. Our products are perfectly suited for the harsh environments of the quarry, and they also set the benchmark for energy efficiency. Siemens automation ensures the optimal operation of your crushing plant and a consistently high product quality.

From blasting to stockpile – solutions for the aggregates production process
Just the right mix – solutions for the ready-mix concrete and asphalt process

Reliable customer service and on-time delivery are crucial for perishable products like ready-mix concrete and asphalt. That’s why plant operators have to be able to rely on their technical equipment. When partnering with Siemens, RMC and asphalt plant operators can rely on their systems and so can concentrate solely on serving their customers. Automation from Siemens has set the standard for the industry in many countries and at multiple global customers because it ensures the highest process transparency and availability.

Ready-mix concrete production process and Siemens portfolio

Asphalt production process and Siemens portfolio

Automation

- Minerals Bundle based on SIMATIC PCS 7
- TIA Portal, WinCC, WinCC flexible
- SIMATIC PLC, Distributed I/O, HMI Panels, Industrial PCs
- SCALANCE Ethernet switches

Process instrumentation

- SITRANS L level measurement
- SIWAREX and Milltronics weighing technologies (static, dynamic)
- SITRANS P/T pressure and temperature measurement
- SITRANS F flow measurement

Power and motor control

- SIRIUS components for switching, starting and protecting
- SIMOCODE pro Motor Management System

Motors and drives

- SIRIUS low-voltage AC motors
- SIMATIC and FREICHT Perfecl Harmony frequency converters
- SIRIUS soft starters, direct starters

Gear units, geared motors and couplings

- FLENDER gear units
- FLENDER couplings
- SIMOGEAR geared motors
Increasing productivity – process automation and control system solutions

Automation in the construction materials industry not only helps you keep cost down, but also ensures the highest availability of your equipment and a consistently high product quality.

SIMATIC PLC and distributed I/O
SIMATIC controllers and distributed I/O systems offer integrated functionality and numerous options for performance scaling.

SIMATIC embedded automation
In the demanding environment in your quarry or mixing plant, SIMATIC PCs offer everything you need: modern industrial design, compliance with industry standards, and high system availability while also withstanding loads that include vibration, cold, dust, and heat.

SIMATIC HMI
To help you maintain an overview of your production processes and equipment, Siemens offers a broad selection of tools – from operator panels and WinCC visualization software for the control and monitoring of your machines to comprehensive SCADA systems that manage almost any process visualization requirement in your plant.

SIMATIC NET industrial communication
High efficiency in your plant can only be achieved through open, transparent communication across all levels. Siemens offers innovative technology based on proven standards – ranging from AS-Interface, Profinet, and HART interfacing to Industrial Ethernet with integrated IT technology.

SIPLUS extreme
Humidity, short-lived condensation, vibration, icing and temperatures from –40 to +70° Celsius matter little to our SIPLUS extreme version of the SIMATIC components, making them particularly suitable for use under adverse conditions such as those found in the humid vicinity of mixer and weighing platforms.

SIPLUS CMS
SIPLUS CMS offers efficient condition monitoring for the early detection of mechanical machine damages.

Process control system: Gain a competitive edge
Today reliable processes are crucial for succeeding in the construction materials industry. To stay competitive, your plant must function smoothly and efficiently at all times, delivering the best possible ROI at the lowest possible cost. With process control software based on S7-410E, Siemens offers a highly innovative distributed control system that guarantees your competitiveness and opens the door to the Internet of Things or brings digitalization to your plant over time – by optimizing productivity, plant availability, and energy efficiency.

The process control system based on S7-410E is the right tool for you to easily control, monitor, and visualize the ongoing operations in your plant – from crushing through material handling and loading. To increase your plant availability and productivity, the system helps you immediately diagnose system errors directly from the control room, which saves you time spent in resolving them.

did you know? Siemens recently introduced to the market the Minerals Bundle for the construction materials industry based on the leading process control system for cement CEMAT SIMATIC PCS 7 and S7-410 Entry PLC.

In the construction materials industry Siemens offers you solutions for any automation philosophy – the lightweight SCADA/PLC for easy and flexible process visualization or the leading DCS system SIMATIC PCS 7 for scalable operations and customers with multiple production sites.

SIMATIC TIA Portal: Your gateway to automation in the Digital Enterprise
The TIA Portal lets you integrate all the key components in your automation project: control, HMI & SCADA WinCC and WinCC OA, drives, decentralized peripherals, motor management, and now also motion control and power distribution.

It provides you with unrestricted access to our complete range of digitalized automation services, from digital planning and integrated engineering to transparent operation.

The TIA Portal shortens the time to market, for example by means of simulation tools, increases the productivity through additional diagnostics and energy management functions, and offers broader flexibility by connecting to the management level. These options benefit system integrators and machine builders as well as plant operators.
Customized performance – Siemens motors and drive systems

Only the right drive technology ensures the reliability and performance required in the construction materials industry. With its unmatched portfolio of motors, drives, gear units, and couplings, Siemens meets your needs in the most reliable and energy-efficient way.

SIMOTICS low-voltage motors: Unbeatable in cost-effectiveness and engineering excellence
The construction materials industry has its own specific requirements when it comes to drive technology. Complementing our standard range of general-purpose and severe-duty motors, we also offer specific motors that fully comply with special sector requirements. This allows us to provide solutions that perfectly match our customers’ demands.

SIMOTICS SD Severe Duty motors
Our SD motors with gray cast-iron frames are especially rugged. This makes them the first choice for applications in the toughest of environmental conditions, where they easily master dust and vibration in crushers and mixers.

SIMOTICS N-compact and SIMOTICS FD
Siemens N-compact motors offer you more power and higher cost-effectiveness combined with outstanding reliability. The power rating of these motors above DIN 42673 is extremely progressive and lies significantly above the power rating of the previous series – with unchanged frame size. SIMOTICS FD motors are designed and optimized for VSD operation in various cooling concepts.

Benefits
Especially user-friendly
User-friendly terminal boxes preconfigured with a terminal board that can be rotated through 360 degrees make installation simpler and easier even in narrow spaces – which saves you money.

More power in smaller sizes
Our motors offer unbeatable envelope dimensions and weight at any power rating. For example, in high-efficiency class (IE2 and IE3), the power ratings of a standard motor can be realized in the next smaller shaft height.

Energy-saving motors
Our energy-saving motors require less energy for the same power output. Using SinaSave software, you can easily calculate their savings and the payback time of your investment.

SINAMICS frequency converters: Impressive in every respect
To meet the varying requirements of our customers, we offer a wide range of drives suitable for any application in the construction materials industry. For the most common applications such as conveyors, pumps, and fans, the SINAMICS G product family provides an impressive technological functionality.

SINAMICS S high-performance converters are designed for more sophisticated applications – drive tasks where several motors work together or where energy regeneration opportunities exist. For medium-voltage applications, Siemens provides the SINAMICS GM150 and ROBICON series.

SIRIUS soft starters: Outstanding functionality in compact design
With SIRIUS, we offer you a unique comprehensive portfolio for every industrial control application. The major advantages: With their modular design, our products can be planned and built into a control cabinet in a very simple way. They are especially easy to integrate into distributed systems. Using SIRIUS soft starters in a cascade operation, you can achieve the best, most energy-efficient solution for the motor application for fixed speed, variable speed, or a combination of both in each case.

SIPLUS CMS: Transparency of mechanical variables across all levels
To support predictive maintenance, SIPLUS CMS records and analyzes mechanical variables from machines, integrates them into the automation world, and provides decision making aids to maintenance staff, operators, and management. With CMS1200, mechanical condition data from the production can be directly integrated into the data stream via a controller.

Did you know? Through the installation of a regenerative variable-speed drive onto the hoist system or a downhill conveyor, the energy can be recycled. The drive allows the energy created through braking to be fed back into the main energy supply system. This energy can then be used again to power the hoist, rather than be wasted.

Benefits
Optimal process control and substantial energy savings
Using Siemens drives, you save up to 70 percent energy in pumps, fans, and even mixers, while consuming only what your applications demand at any given moment. In addition, their accurate parameter control contributes to more consistent quality and throughput.

Reduced maintenance cost
Siemens drives also lower maintenance costs and downtime, and ensure longer equipment life by minimizing mechanical damage when starting and controlling your plant’s equipment – from crushers and feeders to conveyors and mixers.

Easy to install and commission
Engineering and parameterization of Siemens drives is made easy using the proprietary SIZER and STARTER tools and the intuitive basic operator panel (BOP). Users benefit from a standardized and user-friendly operating concept that minimizes training and service requirements.

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Benefits
High-rated gear unit torques
With our new SIMOGEAR series, you profit from higher-rated torques with the same gear unit size as geared motors from our competitors. You also achieve a better operating factor and therefore higher plant availability and operational reliability.

High gear unit ratio
As a result of our special mechanical design, in many applications one gear stage can be eliminated. You also enjoy more cost advantages if you can use standard four-pole motors instead of six- or eight-pole motors.

High degree of flexibility
Our SIMOGEAR modular system allows you to configure all of the versions of geared motors generally found on the market. When using mounting shaft functional units like brakes, separately driven fans and encoders can be installed. The basic motor always remains the same so that functional units can be added even after the motor has been installed.

SIMOGEAR: The new standard for geared motors
With the added benefits of a higher gear unit torque than normally found on the market, Siemens SIMOGEAR geared motors deliver performance ranges up to 200 kW and can achieve a gear unit torque up to 19,500 Nm. Standstills of your mixers and conveyors remain a thing of the past. SIMOGEAR geared motors are 1:1 compatible with the general standard in the market. This means that you can completely modernize or reconfigure your complete drive solution at any time - with low associated cost.

FLENDER gear units and coupling: The universal solution for power transmission
With FLENDER, Siemens offers you the widest industrial gear unit and coupling ranges worldwide – from standard to application-related and customer-specific ones. In the construction materials industry, gear units and couplings must be robustly designed so that they can work reliably even under extreme conditions. That is why FLENDER gear units and couplings are created to withstand cold, heat, and dust in the extreme conditions in quarries and plants.

Benefits
Unmatched portfolio for any application
Due to the modular design of the gear units and the multitude of series, sizes, and drive powers of FLENDER couplings, any customer requirement can be met – from mixers and conveyors to cranes and crushers.

High efficiency and low lifecycle costs
Due to their optimal efficiency and low power-weight ratio, our standard gear units promise high energy efficiency, and their first-class quality and proven technology ensures low lifecycle costs.

High availability
The modularity of the entire product range permits comparably short delivery times. Our products’ special designs and powers and multiple application-specific add-ons have been fully standardized so that adapting a gear unit to customer requirements does not affect delivery time.

Power under control – Siemens mechanical drives and geared motors
More flexibility, more power – the expectations of the construction materials industry toward the drives technologies employed are rising, especially when conveying or mixing aggregate.

Gear units and clutches take the hardest hits as they try to protect your motors from vibration and to keep them operating at maximum efficiency. When this requirement is fulfilled, high plant availability and low product lifecycle costs are practically guaranteed.

Did you know?
Mechanical drives are as important as electrical components when considering energy efficiency. For example, exchanging your old worm gear unit with a helical one might boost the efficiency of this component from 50 percent to up to 94 percent.
Ensured power supply – Siemens motor control and power distribution

When even a short power failure may have serious consequences, you need products and systems that can cope with every eventuality and always keep you on the safe side. Our portfolio is the broadest worldwide, covering everything from transformers, switchboards, and motor starters to socket outlets.

**SIRIUS**: Modular standard components for switching, starting, and protecting

The SIRIUS modular system provides you with cost-efficient solutions for low-voltage control and distribution. For soft starting and ramping down to avoid mechanical shocks or voltage dips, SIRIUS soft starters 3RW44 are the perfect solution.

The individual SIRIUS components with their compact design can be fast and easily configured, mounted and maintained. Soft starters, circuit breakers or contactors are simply screwed together and the load feeder is ready for use.

**SIMOCODE pro**: The flexible and modular motor control system for low-voltage motors

SIMOCODE pro combines in just one compact system all required protection, monitoring, safety, and control functions. Connected to the automation system via PROFIBUS, Modbus, PROFINET, OPC UA, and Ethernet/IP, SIMOCODE pro covers all functional requirements between the motor starter and the automation system – including the fail-safe disconnection of motors.

**SIVACON**: Trendsetter in power distribution boards and motor control centers

The SIVACON low-voltage power distribution boards set new standards as a power distribution board or Motor Control Center (MCC) for industrial applications or in infrastructure. The power distribution board up to 7,000 A guarantees maximum personnel as well as system safety and answers any power distribution challenge in the construction materials industry.

Using SIVACON with SIMOCODE pro, up to 40 communications-capable motor feeders can be integrated in a single control cubicle.

**SENTRON**: More efficient utilization of your energy

Whether in a quarry, at a construction site, or in your plant, a reliable power supply is of utmost importance – and the SENTRON family always provides you with the right device: air circuit breakers, molded-case circuit breakers (MCCB), or switch disconnectors. In addition, the PAC3200 multifunction meter reliably and precisely measures consumption data and provides the ideal basis for optimization measures.

**Benefits**

- **Easy planning, configuration, and retrofitting**: Siemens components are standardized and are precisely matched with each other. Their modular design makes planning, assembly, and retrofitting for the low-voltage power distribution easy and fast.
- **Space-saving**: Considerably reduced space requirements and up to 75 percent cost savings on wiring in your cabinets thanks to a compact design.
- **Convenient handling, easy expandability, and cost-saving storage**: Thanks to a very limited number of models and standardized accessories, Siemens power distribution components save you on storage costs and reduce plant downtimes that result from missing parts.

**Did you know?** Siemens switching and protection devices not only set the stage for plant-wide energy management; they also save energy by reducing intrinsic power loss. With the new generation of our extensive modular system, intrinsic power loss is cut significantly – on the average by ten percent. The results are less heat, higher packing density, and less power required in the control cabinets.
Know your process – Siemens instrumentation solutions

Whether you want to weigh, measure level, flow, pressure, or temperature, we have the solution for harsh environments. This comprehensive product range puts Siemens firmly in the position of a main instrument vendor to the construction materials sector.

SITRANS L: Level measurement to meet the industry’s needs
Whether you are measuring liquids, slurries, or bulk solids, Siemens provides the right level measuring technology for every application. Our best-in-class level measurement devices set the benchmark in the construction materials sector.

SITRANS P: Pressure measurement without compromise
Siemens pressure transmitter products offer maximum precision, robustness, and ease of use. The series covers basic level proportional hydrostatic pressure through digital pressure transmitters for measuring gauge pressure, absolute pressure, differential pressure, flow, and level.

SITRANS T: Robust and reliable temperature sensing
Whatever you are looking for in a temperature transmitter, Siemens temperature measurement devices offer you a solution. They are designed to support all common RTDs, thermocouples, resistance, and millivolt sensors. The range covers head, rail, and field transmitters and includes industry-specific sensors for all common applications.

SIWAREX and Milltronics: Optimal solution for static and dynamic weighing
Simplicity and reliability define Siemens weighing products. First-class solutions help you master conveyor belt weighing, static weighing, and loss-in-weight applications with ease. Our SIWAREX PLC-based weighing electronics allow direct integration into the Siemens range of PLCs, providing unparalleled flexibility and ease of use. In the construction materials industry, our weighing technology makes a decisive contribution toward meeting quality, cost, and deadline targets.

Benefits
- Rugged design
Siemens process instrumentation products are designed to withstand the harsh conditions of the construction materials industry. From the dust-laden atmosphere found in quarries and cement silos to the high temperatures in bitumen tanks and the abrasive slurries in concrete plants – they can handle it all.
- Leader in innovation
Siemens is a recognized leader in the development of industry benchmark products for the construction materials sector. The ongoing improvements to existing products and application-driven new products keep Siemens at the forefront of process instrumentation. This continuous research and development investment process allows us to better serve our customers’ ever-changing needs.

Unmatched portfolio
Siemens offers the most comprehensive product portfolio for the construction materials sector. With products designed specifically for this industry, we are confident that we can provide a measurement solution for even the most difficult task.

Did you know? SITRANS LR560 is the first radar level transmitter ever to operate at a frequency of 78 GHz, producing a beam angle of just four degrees. The advantage: LR560 provides the ability to measure up to 100 m range on any solids application while minimizing the effects of stand pipes and obstructions, significantly reducing the costs of installation and commissioning.

Milltronics MSI, SITRANS LR560, SITRANS FM TRANSMAG 2
**MindSphere – the cloud-based open IoT operating system from Siemens**

**Connectivity**

With MindConnect, Siemens offers numerous possibilities for connecting machines, plants, and worldwide fleets to MindSphere, regardless of the manufacturer. MindConnect Nano for instance is a plug-and-play solution that enables you to read out data from your industrial asset and preprocess it for transfer to MindSphere – simply and reliably. The encrypted data is transferred securely to MindSphere, where it is then available for your analysis.

**Options for connection to MindSphere:**
- MindConnect Nano
- MindConnect IoT 2040
- MindConnect software
- Integration in SIMATIC and other Siemens products
- Further options already in progress

**Digital services**

In increasingly dynamic markets with ever more complex production requirements, data can make the difference between the success or failure of a company.

With MindSphere, Siemens is paving the way to digital services. These services offer a competitive advantage for customers through the use of data in the form of higher availability of individual machines, entire plants and systems, and globally distributed machine fleets, as well as improved productivity and efficiency.

MindSphere provides the technological platform for digital services from Siemens and 3rd-party suppliers, and combines a number of established and new technologies for data analysis, reliable connectivity and cyber security.

**Open interfaces**

MindSphere is designed as an open ecosystem, making it possible to exchange data across company boundaries and to connect a wide range of different products. Thanks to open standards and interfaces, data can be gathered from industrial equipment of many different manufacturers and analyzed in MindSphere.

**Data sources:**
- SIMATIC S7-300/S7-400/ET 2005
- SIMATIC S7-1200/S7-1500
- OPC UA
- Others in progress

**Applications**

The Siemens MindApps Fleet Manager and Visual Analyzer are already available on MindSphere. These apps help users to connect their machines, plants, and other industrial assets to MindSphere to configure them, to read out and to visualize the relevant data for analysis. Further applications are already in the pipeline and will be made available to users on an ongoing basis. MindSphere also offers the option of developing dedicated applications and using them on MindSphere as well as offering them to other users.

**The possibilities here are practically unlimited. Use MindApps from Siemens and apps from other developers for:**
- Predictive maintenance
- Energy Data Management Services
- Resource optimization
- Online monitoring of globally distributed machines
- And a lot more

**Foundation for the future**

Modernization plan doubles production, minimizes costs at California quarry

For more than 40 years, Canyon Rock has literally been the foundation of its California community. The family-operated quarry has provided quality rock, concrete mixes, and sand for everything from roads and rail beds to parks and schools in Sonoma County and its environs.

Just as a new generation was taking control of the company, Canyon Rock won one of the biggest projects in its history—a large, time-sensitive job that would require a doubling of production as quickly as possible. Recognizing the urgent need to incorporate state-of-the-art technology, the new managers turned to a long-time business associate in EandM and the high-quality Siemens automation products and systems they distribute.

**Getting automated and integrated**

The benefits of expanding and automating the operations were clear. Specifically, the company sought to minimize noise pollution by using more conveyors—instead of loaders—to move materials from place to place. Automating the materials handling operations with sophisticated controllers, motor starters, and variable-frequency drives (VFDs) enabled Canyon Rock to reduce its carbon footprint and cut fuel costs, all while significantly increasing throughput.

**Time is of the essence**

“We were behind schedule from the start,” says Grant Schulz, engineering manager. “Prevent management’s strong belief in automation and technology gave us the opportunity to bring Siemens state-of-the-art controls and systems on board. We needed a way to catch up, and we found it in Siemens’ TIA Portal programming software.”

“We with TIA Portal, we were able to program all the Siemens products involved in the modernization with one package,” Schulz explains. “A more traditional approach would have required three or four software tools and three or four diagnostic tools to do what we did with TIA Portal alone. It gave us the efficiency to roll out the systems with a speed that no other diagnostic tool could match.”

The customer sees the one software package as the main reason they were able to complete the job in such a short time frame. “We were able to commission everything in time-sensitive job that would require a doubling of production as quickly as possible. Recognizing the urgent need to incorporate state-of-the-art technology, the new managers turned to a long-time business associate in EandM and the high-quality Siemens automation products and systems they distribute.

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- And a lot more
With the Totally Integrated Automation (TIA) concept, Siemens is the only supplier of a comprehensive range of automation products and systems designed to work seamlessly together and covering the entire process chain in your plant. With TIA you also profit throughout the complete lifecycle of your plant – starting with the initial planning steps through operation to modernization.

**Totally Integrated Automation**:  
- Reduces the number of interfaces.  
- Ensures maximum data transparency.  
- Covers all levels of your operation – from the field level through the control level to the management level. Combining Siemens technology and products with an impressive degree of integration into an automation system, TIA provides the foundation for all your planning and processes, from excavation to the final product.

**TiA creates added value, in all automation tasks**

- **Integrated Engineering**  
  Less time, money, and effort – due to consistent, comprehensive engineering in all phases of the production process.

- **Industrial Security**  
  Systematically minimize the danger of an attack on your plant and machinery, through the consistent use of automation security mechanisms.

- **Industrial Communication**  
  Unlimited consistent communication maximizes transparency across all levels – by using international cross-vendor standards.

- **Safety integrated**  
  Reliable, comprehensive protection of people, machinery and the environment – through the seamless integration of safety into standard automation technology.

- **Energy Management**  
  SIMATIC Energy Management enables you to analyze consumption data, identify potential for energy savings, and sustainably increase efficiency and productivity.

- **Condition Monitoring**  
  To support predictive maintenance, SIPLUS CMS records and analyzes mechanical variables from machines, integrates them into the automation world, and provides decision making aids to maintenance staff, operators, and management.
SIMATIC S7-400H
• Special offer for applications with up to 20 process controllers
• Standard, high availability and fail-safe applications
• One PROFIBUS and two PROFINET interfaces

SIMATIC S7-1500
• Scalable performance and functionality
• Integrated safety and security features
• PROFINET and OPC UA interfaces

SIMATIC S7-1200
• Modulare, flexible and compact control
• Ideal for discrete and small-scale automation tasks
• Fully integrated in the TIA Portal
• Perfect interplay with HMI, drives and drives

SIMATIC RT 2000P
• Multi-functional, highly modular 80 system
• Comprehensive modular range, including power supplies, digital and analog I/O modules, technology valves, motor starters

SIMATIC HMI Panels
• Modular HMI概念 for implementation of demanding visualization tasks
• Optional modularity with a wide ringing angle to 170°
• High-resolution, lightweight displays with 10.2-inch monitors

SIMATIC Advanced HMI Panels
• Designed for implementation of demanding visualization tasks
• Optional modularity with a wide ringing angle to 170°
• High-resolution, lightweight displays with 10.2-inch monitors

SIMATIC Embedded Automation and Industrial PCs
• High-end performance and compact size
• Secure, reliable and efficient operation
• Perfect interplay with SIMATIC/HMI Panel PC

SIMATIC NET
• Wide range of switches from simple to the most complex network topologies
• Support PROFIBUS or PROFINET

SIMATIC Low-Voltage AC Motors
• Up to 45 kW
• 2000 kW
• 4,000 HP
• Perfect for fans, pumps, motors, and compressors due to low weights

SIMOTICS S1 Geared Motors
• Motor and drive
• Frequency converters
• Motor and drive
• Frequency converters

FLENDER Gear Units
• FLUDEX Gear Units
• Up to 2 MVA
• Reduction ratio of up to i = 400
• Rated gear unit torques from 150 up to 200 kW

SIMOTEC Gear Units
• Self-cleaning and low-maintenance design
• One-handed installation and mounting

SIRIUS Components for Switching, Starting, and Protecting
• SIRIUS flexible bus system (SIRIU
• Standard cabinet or chassis module
• High-rated single-motor drives from 19,000 Nm

Level Measurement
• Suitable for vessels of differing size and shape, containing liquids, solids, or a combination of both
• Safe and easy maintenance for harsh process conditions

Flow Measurement
• Accurate, reproducible, fast responding, and stable flow signals in heavy-duty applications
• COMPACT 1030C
• Advanced measurement functions enable maintenance prior to device failure

Pressure and Temperature Measurement
• Local reading and programming capability

Weighing Technologies
• Unique precalibration style load cell design
• Outstanding accuracy and reliability

Innovations
• Harmonic drives

Machines and Drives
• Motor control and power
• Motion control, drives

Distributed Drive Systems
• Flexible, scalable, and easy-to-use modular drive systems for a broad range of applications

Motors and Drives
• Motor and drive
• Frequency converters
• Motor and drive
• Frequency converters

Servo Drives
• High performance and precise control
• Excellent load and position control

Hydraulic Drives
• High-performance hydraulic systems

Embedded Box PC
• Rugged two-chamber enclosure in die-cast aluminum
• Perfect interplay with SIMATIC IPC677E

Embedded Panel PC
• 30% thinner and more compact
• Preimplemented functions are included

SCALANCE X Ethernet Switches
• IndustrialEthernet

SCALANCE S4 Motor Control Systems
• DC control in all with integrated control

S7 and SIMATIC PCS 7

SINAMICS G120
• High resolution, dimmable wide-angle display

SINAMICS G120 Plus
• High-resolution, dimmable wide-angle display

SINAMICS G120
• Power range up to 200 kW

SINAMICS G120 Plus
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