

SIEMENS

EFFICIENT. SECURE. FUTURE-PROOF.

# SINAMICS G220

The high-performance variable frequency drive for all industries  
[siemens.com/sinamics-g220](https://www.siemens.com/sinamics-g220)





# Table of contents



## Meet current and future challenges in motion control

Most objectives in motion control involve increasing productivity and availability – not only right now, but also years down the line. SINAMICS G220 is an innovative variable frequency drive that enables you to meet these objectives. As the first SINAMICS drive to join the Siemens Xcelerator portfolio, the Siemens-wide business platform for digital transformation, SINAMICS G220 is equipped with the necessary functions to make your applications more efficient, secure and future-proof.

### Key benefits



**Ease of use** with user-friendly configuring, commissioning and engineering



**Secure technology,** guaranteeing safe and reliable operation



**Energy efficiency,** making your applications more sustainable



**Future-proof solution,** opening up new possibilities via digitalization



**Safety Integrated** functions for personnel and plant protection

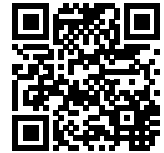


**Perfect fit** for use in all industries

# Reduce selection and commissioning times



SINAMICS G220 is compatible with most of our proven engineering tools. All of them are easy to use, which shortens selection and commissioning times. If you require additional functionalities, you can easily upgrade the hardware or add software options. For a fast and convenient support service, all product information is available digitally via the QR code.



Scan this code or click on this link for more information  
[siemens.com/sinamics-g220](https://www.siemens.com/sinamics-g220)

## Selection tools

- Our **SINAMICS Selector** app guides you to the right frequency drive.
- **Siemens Product Configurator (SPC)** and **TIA Selection Tool (TST)** help you configure your drive and mechanical system.

## Commissioning tools

- The **integrated web server** enables efficient set up, fast diagnostics and maintenance via a wide range of clients. The SINAMICS Smart Adapter enables Wi-Fi access from your smart devices.
- **SINAMICS Startdrive** in TIA Portal provides you with step-by-step instructions for commissioning and integrating the system in an automated environment.
- Integration into a **PCS7 / neo environment via SIMATIC PDM** ensures that your application runs smoothly.



# Enjoy a **new level of efficiency**



In addition to streamlining the selection and commissioning process, SINAMICS G220 increases productivity and energy efficiency in the operating phase. This reduces both operating costs and CO<sub>2</sub> emissions, making your applications more sustainable.

## **Achieve optimal dynamics with SINAMICS Motor Control Extended**

The drive system offers best-in-class motor control, which allows you to achieve optimal dynamics and be more energy efficient. Synchronous reluctance motors can be optimally controlled, even if they are near standstill or have a high load torque.



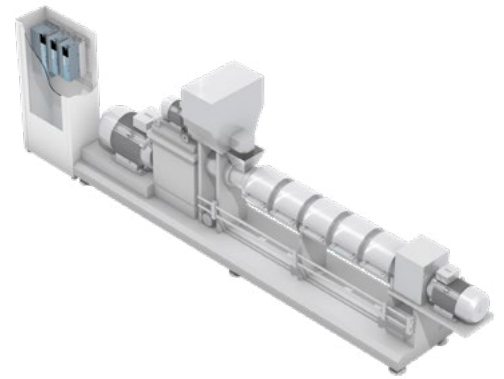
### Integration in TIA Portal and Industrial Edge

- Increase productivity thanks to seamless interaction with SIMATIC PLCs and HMI
- Save time and resources in the design phase by using the digital twin and SINAMICS DriveSim Engineer
- Optimize processes based on more transparent drive train and application data



### Individual features for more productivity and sustainability

- Support for high-efficiency motors including IE5
- Fast PROFINET RT/IRT connection and MRP/MRPD/S2 redundancy via the plug-in communication module
- Designed for long cable lengths, integrated DC-link choke in all power ratings, optional EMC filter and energy-saving functions



Optimal extruder operation relies on the capacity control provided by SINAMICS G220, ensuring both flexibility and energy efficiency.

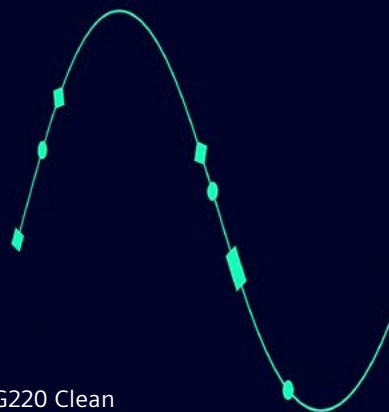


# Introducing Clean Power technology

The SINAMICS G220 Clean Power frequency drive ensures optimal power quality and compliance with the strictest grid standards. Its compact design allows for seamless and quick integration, making it ideal for high-demand applications in the process, hybrid, and infrastructure industries.

Total harmonic distortion

**< 2%\***



## Lower your carbon emissions

By reducing harmonics, SINAMICS G220 Clean Power lowers your carbon footprint and operational costs for a greener, more sustainable future while increasing the availability of the overall system.

\* With a relative short-circuit power of 33 in undistorted networks under nominal load conditions up to 90 kW.



# The ultimate **low-harmonics drive** for a sustainable future



Optimal power  
quality



Robust and seamless  
space-saving design



Grid compliance



Efficient integration and  
commissioning



space saving  
up to

**80%**



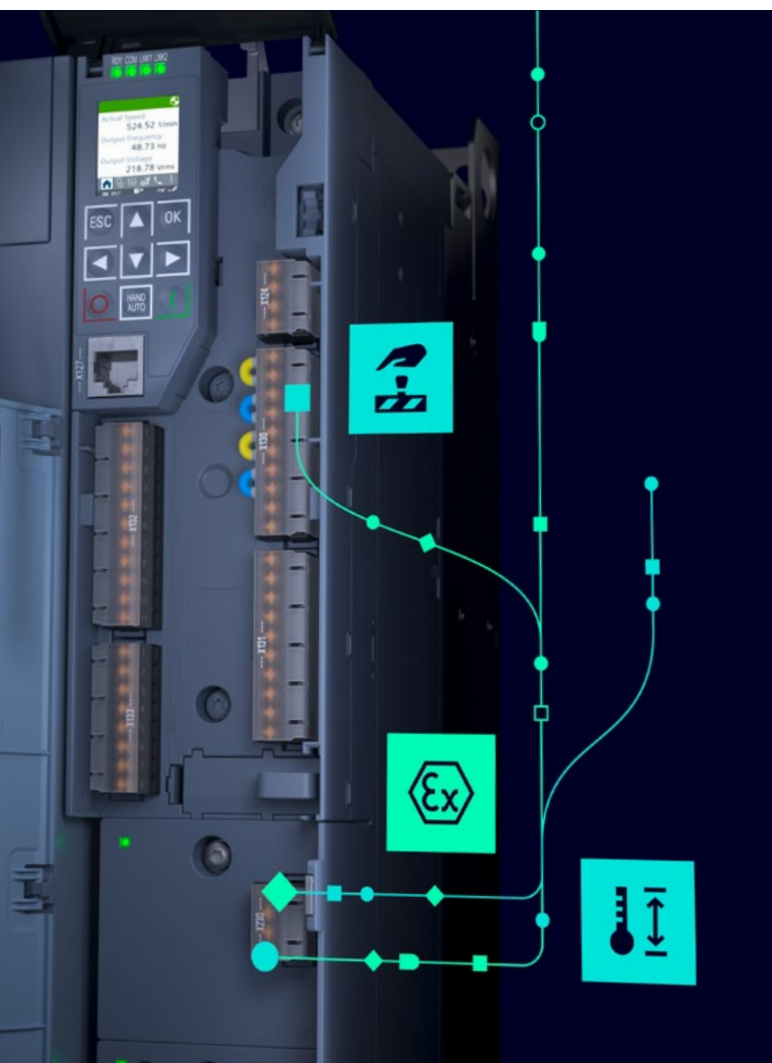
## **Optimize space and maximize efficiency**

SINAMICS G220 Clean Power boasts an ultra-compact design with side-by-side mounting, reducing cabinet footprint by up to 80% compared to traditional setups. No external power components are required, which maximizes efficiency.



# Rely on **safe and secure technology**

To keep your machines running smoothly, SINAMICS G220 includes comprehensive functions for machine safety and cybersecurity. All Safety Integrated functions can be directly controlled via PROFIsafe and the terminals, while Security Integrated can be easily managed via the Security wizard, including through User Management & Access Control (UMAC).



## Protect personnel and plants with Safety Integrated

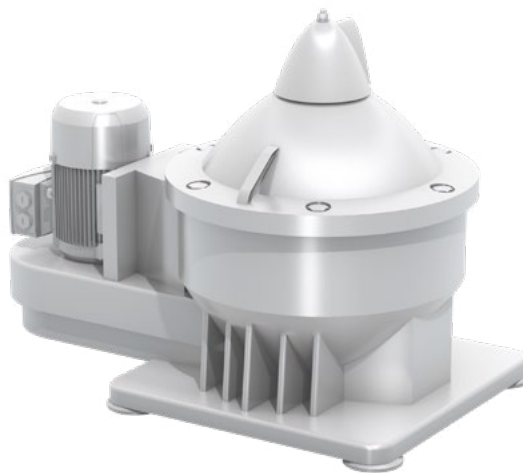
- SINAMICS G220 includes safety functions up to safety integrity level (SIL) 3/performance level (PL) e/Category 4. Commissioning and testing these functions is now much easier thanks to the improved usability concept. Additionally, test stops are now done automatically.
- For additional safety, Safe Torque Off (STO) is pre-commissioned and immediately ready for use.
- With Safe Motor Temperature (SMT), the drive is suitable for applications in ATEX environments. The input for PTC sensors is ATEX-certified, ensuring thermal motor protection.
- Extended safety functions can be added easily through software options:
  - Safe Stop 1 (SS1)
  - Safely-Limited Speed (SLS)
  - Safe Direction (SDI)
  - Safe Speed Monitor (SSM)
  - Safe Stop 2 (SS2)
  - Safe Operating Stop (SOS)
  - Safety-Limited Acceleration (SLA)





### Keep systems and data safe with Security Integrated

- Combining plant security, network security and system integrity, Security Integrated is a defense-in-depth concept that shields your applications from any cybersecurity threats.
- By default, only necessary functions are enabled in the factory settings and they are preconfigured with secure settings.
- Security Integrated ensures safe communication between the drive and TIA Portal or web clients.
- Integrity and authenticity checks prevent the installation of manipulated firmware.



SINAMICS G220 is ideally suited for centrifuge applications – separating the components of a mixture based on their size and density at high speed.



### Ensure availability in harsh environments with a high protection class

- SINAMICS G220 is available with IP55 protection, which protects the drive from dust or water.
- 3C3 coating on electronic components makes them extremely robust, ensuring longer lifetimes in corrosive environments.
- PROFINET S2 system redundancy guarantees the availability of your systems.

# Future-proof your applications

SINAMICS G220 offers digital tools and services to streamline processes in each phase, making them more time and cost-efficient. Thanks to additional hardware modules and an expandable software portfolio, SINAMICS G220 meets the specific requirements to future-proof your business.



## Accelerate time-to-market with the digital twin

- SINAMICS G220 allows for easy and fast design and commissioning thanks to the digital twin. This way, you can test the drive's behavior, identify any issues and make adjustments in the design phase – without requiring any hardware.
- The digital twin is available in SINAMICS Startdrive (TIA Portal) with DriveSim Engineer, which is the ultimate solution for optimizing your drive system.



## Optimize your drive and plants with the IIoT Option Module

- SINAMICS G220 can be easily connected to the Industrial Edge ecosystem via the IIoT option module. This module exchanges high frequency data between the drive and Industrial Edge, increasing transparency and providing valuable insights.
- This data can be used for extensive monitoring and diagnostics, which provide the basis for improving the system and boosting its reliability.



- In addition, the insights that are gathered from this data and analyzed via Drivetrain Analyzer Edge can be used for predictive maintenance and prevent downtime.



### Enjoy maximum flexibility with hardware and software options

- To fulfill specific requirements, SINAMICS G220 is customizable with communication modules and option modules. They can be easily plugged into the drive and swapped out if any of your requirements change.
- While the majority of SINAMICS Drive Software functions are already included in the firmware, additional software options are available for specific needs. SINAMICS Safety Integrated Extended offers additional safety functions while SINAMICS Motor Control Extended enhances motor performance.
- All offerings are part of included in a seamless portfolio that complies with global standards. As a result, SINAMICS G220 can be implemented in any plant worldwide.



SINAMICS G220 is well-suited for mixer applications, producing smooth and homogeneous products.



Digitalization is the key to making processes more efficient, increasing machine availability and streamlining workflows.



# The perfect fit for all industries



Thanks to its comprehensive features and innovative design, SINAMICS G220 is suitable for various industries, including processing, manufacturing, and marine. It can be implemented in moving, processing, pumping, ventilating, compressing, and positioning applications, meeting even the most stringent requirements.



## Food & Beverage

With SINAMICS G220, we are providing the food and beverage industry with a drive solution that allows them to meet individual customer requirements quickly, flexibly and in the highest quality. In addition, the drive ensures that all processes are energy-efficient and reliable.





### Pharma

The pharmaceutical industry is characterized by fast changes and requires a drive system that can match this pace. Thanks to its flexible design, SINAMICS G220 can be easily adapted to changing requirements. Its communication redundancy and security enable reliable production for users while energy efficiency gives users a competitive edge.



### Chemicals

Applications in the chemical industry need to be robust, reliable and safe, meaning that the same applies to the drive systems. SINAMICS G220 offers 3C3 coating and IP55 protection, which makes it fit for use in harsh environments. To further increase reliability, SINAMICS G220 supports S2 redundancy.



### Oil & Gas

High levels of efficiency and safety are crucial in the oil and gas industry – SINAMICS G220 can fulfill both requirements. Security Integrated ensures system availability and Safety Integrated functions keep people and machines safe, even in ATEX environments.



### Marine

Harmonics need to be strictly limited in the marine industry, which is why SINAMICS G220 Clean Power is the ideal drive solution for auxiliary applications, such as deck machinery or winches. It reduces harmonics and thereby also lowers system losses, increasing the energy efficiency of applications and improving their environmental footprint.

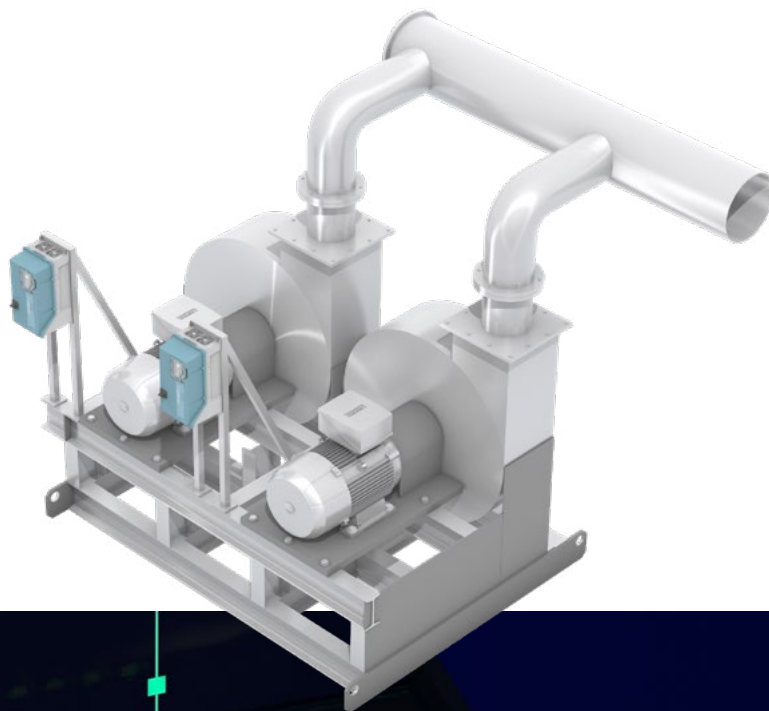
# Technical data



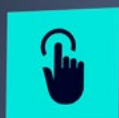
System	Drive Offerings			
	IP20	IP55	IP20	IP55
				
Drive variant	SINAMICS G220		SINAMICS G220 Clean Power	
Supply voltage / power kW (hp)				
3AC 200 ... 240 V	0.55 – 55 kW / 0.75 – 75 hp		1.1 – 30 kW / 1.5 – 40 hp	
3AC 380 ... 500 V	1.1 – 110 kW / 1.5 – 150 hp		1.1 – 55 kW / 1.5 – 75 hp	7.5 – 110 kW / 10 – 150 hp 7.5 – 55 kW / 10 – 75 hp
Motors supported	Asynchronous motor (induction), synchronous reluctance motor, permanent magnet motor			
Target verticals	Food and beverage, pharma, oil and gas, chemicals, marine, general machinery			
EMC	C2 (400V) / Removal of functional grounding (IT system) possible		C2 / Removal of functional grounding (IT system) possible	
Cooling	Air cooling using an integrated fan			
Ambient temperatures	IP20: –20 to 45 °C / to 60 °C (> 45°C with derating) IP55: –20 to 40 °C / to 55 °C (> 40°C with derating)			
Motor cable length	150 m (EMC Category C2) / 300 m			
Motor control	U / f, FCC, ECO, vector control encoderless / with encoder, torque control encoderless / with encoder*			
Overload capability	HO: 200% 3 s, 150% 57 s, LO: 150% 3s, 110% 57s every 300 s			
Inputs / outputs	6 DI (1 PTI), 1 F-DI, 3 DO (1 NO 2 NO / NC relay), 1 F-DO, 2 AI, 1 AO, 1 input for PTC / KTY84 / Pt1000 motor temperature sensor			
Communication	PROFINET (RT / IRT, MRP & S2 redundancy), Modbus TCP / IP, Ethernet / IP			
Safety functions	Integrated: Safe Torque Off (STO), Safe Stop 1 (SS1), SIL 3, PL e, Cat. 4 via terminals or PROFIsafe SINAMICS Safety Integrated Extended license: SS1, SS1E, SS2, SS2E, SLS, SLA, SSM, SDI, SOS			

\* Possible with synchronous reluctance motors and SINAMICS Motor Control Extended license

SINAMICS G220 is the key to energy-efficient fan operation, while also being reliable and efficient over extended periods of time.



Efficient usability is achieved through the integrated SINAMICS Smart Drive Interface (SDI Standard)





# Hardware & Software options



## Hardware options

### Operator panels

#### SINAMICS SDI Pro 5.5"

Color touch display (5.5"),  
multilingual operator interface,  
multi-drive access



### Wi-Fi access

#### SINAMICS Smart Adapter

Wi-Fi connection to access the drive  
via mobile devices  
(smartphone, tablet, laptop)



### Communication modules

#### CM-PN

PROFINET,  
Modbus TCP/IP,  
Ethernet /IP



### Optional modules

#### OM-DQ (Drive-CLiQ)

Fast connection and setup via two  
DRIVE-CLiQ ports



#### OM-IIoT (Industrial Internet of Things)

High-frequency data transfer  
to Industrial Edge



#### OM-SMT (Safe Motor Temperature)

ATEX-certified input for  
PTC sensors of motors in Ex-environment



## Software options

### SINAMICS Safety Extended

SS1, SS1E, SS2, SS2E, SOS,  
SLS, SLA, SSM, SDI



### SINAMICS Motor Control Extended

High-performance encoder-less closed-loop  
motor control from standstill



### SINAMICS OPC UA Single Extended

Seamless connectivity for  
next generation applications



### SINAMICS Positioning Extended

Powerful integrated  
positioning



### SINAMICS DCC Extended

Flexible software tool with  
graphical programming up to 100 blocks



### SINAMICS DCC Advanced

Flexible software tool with  
graphical programming up to 500 blocks



# Get the most out of your frequency drive

## SINAMICS OPC UA, the new chapter for connectivity\*

With compatibility in mind, SINAMICS G220 follows the universal OPC UA communication standard to allow clear communication with hardware from different manufacturers by using a standardized data exchange.

### With the integrated OPC UA server you get a SINAMICS G220 that:

- Is compatible with all major market-leading technologies
- Has a future-proof communication protocol
- Allows for easy collection of real-time data such as production throughput, condition monitoring and quality parameters

SINAMICS G220 is a future-proof drive that is compatible with any manufacturer's communication thanks to OPC UA. It allows a seamless data exchange and offers secure vertical communication to Industrial Edge HMI or SCADA.

\* Available soon

### Main benefits

- Vendor-independent vertical communication
- Unrestricted parallel operation of OPC UA and PROFINET within the same Ethernet network
- Integrated security with session encryption and authentication for protected vertical communication to partners outside the protected zone
- Powertrain Information Model 40400-1 for inventory management of hardware and firmware
- SINAMICS Functional Model for acquisition of process data

## SINAMICS Drive Control Chart (DCC) for SINAMICS G220

Create custom programs in DCC using intuitive drag-and-drop blocks, then download them directly to the SINAMICS drive. This allows the drive to take on more tasks which reduces the load on the PLC. DCC is fully integrated into TIA Portal and available via SINAMICS Startdrive for seamless engineering.

- **Easy**  
Enjoy effortless setup and configuration with a drag-and-drop interface in TIA Portal.
- **Scalable**  
Get 20 free blocks with SINAMICS G220, expandable up to 500 for greater flexibility.
- **Customizable**  
Access a rich library of arithmetic, logic, and close-looped control blocks to meet your machine-specific needs.

Discover more about SINAMICS DCC in SINAMICS Startdrive



# Dimensions



## IP20



	FSA	FSB	FSC
Supply voltage	3 AC 380 ... 500 V, -20% / +10%		
Rated power	1.1 kW ... 4.0 kW	5.5 kW ... 7.5 kW	11 kW ... 15 kW
<b>Height of the drive</b>	250 mm	355 mm	355 mm
<b>Rear panel height</b>	420 mm	548 mm	589 mm
<b>Width</b>	73 mm	85 mm	125 mm
<b>Depth</b>	219 mm	219 mm	219 mm

	FSD1	FSD2	FSE	FSF1
Supply voltage	3 AC 380 ... 500 V, -20% / +10%			
Rated power	18.5 kW ... 22 kW	30 kW ... 37 kW	45 kW ... 55 kW	75 kW ... 110 kW
<b>Height of the drive</b>	400 mm	442 mm	520 mm	640 mm
<b>Rear panel height</b>	650 mm	692 mm	803 mm	708 mm
<b>Width</b>	150 mm	200 mm	250 mm	300 mm
<b>Depth</b>	256 mm	256 mm	256 mm	290 mm

## IP55



	FSB	FSC	FSD1
Supply voltage	3 AC 380 ... 500 V, -20% / +10%		
Rated power	1.1 kW ... 7.5 kW	11 kW ... 15 kW	18.5 kW ... 22 kW
<b>Height</b>	415 mm	460 mm	571 mm
<b>Rear panel height</b>	455 mm	500 mm	610 mm
<b>Width</b>	225 mm	245 mm	209 mm
<b>Depth</b>	225 mm	250 mm	284 mm
<b>Depth, including repair switch</b>	265 mm	283 mm	319 mm

	FSD2	FSE
Supply voltage	3 AC 380 ... 500 V, -20% / +10%	
Rated power	30 kW ... 37 kW	45 kW ... 55 kW
<b>Height</b>	650 mm	778 mm
<b>Rear panel height</b>	695 mm	820 mm
<b>Width</b>	270 mm	327 mm
<b>Depth</b>	284 mm	315 mm
<b>Depth, including repair switch</b>	318 mm	379 mm

# Service offerings

To ensure that you are benefiting as much as possible from your SINAMICS G220, we offer a variety of services – from technical support and repairs to extended coverage options. The most comprehensive offering is Service Protect, which includes 8 years of extended warranty.



## Support and consulting services

- Technical support via phone, e-mail and chat
- **Siemens Industry Online Support App**



## Warranty

- Standard: 24 months
- Plus 12 months free of charge (FOC) with product registration via **myregistration.siemens.com**



## Spares and repairs, field services

- Spare part exchange as standard
- In-house repair with express repair offering
- Worldwide field service



## Added-value services

- Digital services
- Training services
- Service agreements
- Extended manufacturer cover – Service Protect (+3 years or +5 years)
- Retrofit and modernization service



Siemens Industry  
Online Support App



Product  
registration



**Published by  
Siemens AG**

Digital Industries  
Motion Control  
P.O. Box 31 80  
91050 Erlangen, Germany

For the U.S. published by  
Siemens Industries Inc.  
100 Technology Drive  
Alpharetta, GA 30005  
United States

Subject to change with prior notice  
Article-No. DIMC-B10124-02-7600  
Dispo 21500  
HL-2211-0440 WS 0725  
©Siemens AG, 2025

Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

All product designations may be trademarks or product names of Siemens AG or other companies whose use by third parties for their own purposes could violate the rights of the owner.

For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g., cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. For more information about industrial security, visit <http://www.siemens.com/industrialsecurity>