

**SIEMENS**



# SINAMICS G130

## Drives chassis units











Operator-friendly and economic  
in every phase of the product lifecycle

[siemens.com/sinamics-g130](https://www.siemens.com/sinamics-g130)

Answers for industry.

# SINAMICS – the optimum drive for each and every task

The drives family for drive solutions that are fit for the future

Low voltage								DC voltage	Medium voltage
Basic Performance	General Performance				For basic servo applications	High Performance		For DC voltage applications	For applications with high power ratings
									
V20	G120C/G120P/G120	G110D/G120D	G130/G150	G180	S110	S120	S150	DCM	GL150/GM150/SM150/SL150
0.12 – 15 kW	0.37 – 250 kW	0.75 – 7.5 kW	75 – 2.700 kW	2.2 – 6.600 kW	0.12 – 90 kW	0.12 – 4.500 kW	75 – 1.200 kW	6 kW – 3 MW	0.8 – 85 MW
Pumps, fans, compressors, conveyor belts, mixers, crushers, textile machines	Pumps, fans, compressors, conveyor systems, mixers, crushers, extruders, single-axis positioning applications (G120)	Conveyor systems, single-axis positioning applications (G120D)	Pumps, fans, conveyor belts, compressors, mixers, crushers, extruders	Industry specific e.g. pumps, fans, compressors, extruders, mixers, crushers, kneaders, centrifuges, separators	Single-axis positioning applications in machinery and plant building	Packaging, textile and printing machines, machine tools, plants, process lines and rolling mills	Test stands, cross cutters, centrifuges	Rolling mill drives, wire drawing machines, extruders, kneaders, cable railways and lifts, test stand drives	Pumps, fans, crushers, rolling mill lines, mine hoist drives, excavators, test stands, ship's drives, conveyor belts, blast furnace blowers

### Common Engineering Tools:

DT Configurator – selection and configuration | SIZER – for simple planning and engineering | STARTER und Startdrive – for fast commissioning, optimizing and diagnostics\*

\*Exception: V20 – does not require a selection and configuration tool; G180 is commissioned using the IMS software (Inverter Management Software)

**SINAMICS offers the optimum drive for each and every drive task – and all drives can be engineered, parameterized, commissioned and operated in the same standard fashion.**

### SINAMICS – can tackle any task

- Wide range of power ratings from 0.12 kW–120 MW
- Both in low-voltage and medium-voltage versions
- Standard, unified functionality by using a common hardware and software platform
- All drives are engineered in precisely the same way using just two tools: SIZER for engineering and STARTER for parameterizing and commissioning
- High degree of flexibility and the ability to be combined

### SINAMICS G130 – maximum flexibility through a modular concept

With SINAMICS G130, machinery construction OEMs and plant construction companies can enjoy the benefits of a modular drive system that permits individual and application-related solutions for the design and integration into the electrical cabinet. This allows drive solutions that are perfectly tailored to the particular application to be implemented.

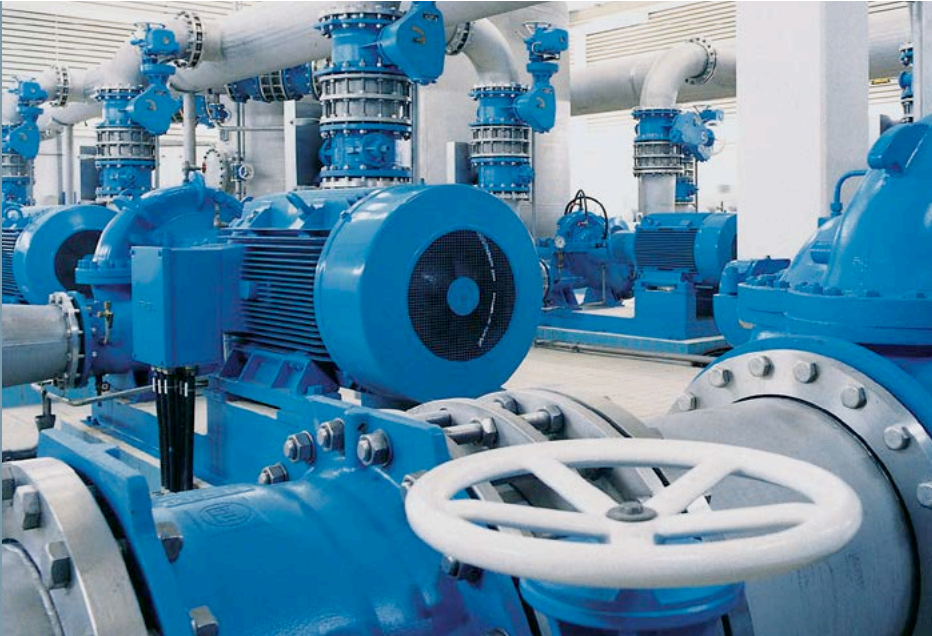
SINAMICS G130 comprises two modular, autonomous components:

- Power Module, and
- Control Unit

These two components can either be mounted separately or as single unit. Further, the drive system can be optimally adapted to the particular requirements as a result of many supplementary electrical components and options. Pre-defined interfaces simplify engineering and commissioning.

# SINAMICS G130 – the cost-reducing chassis unit

For pumps, fans, compressors, extruders and mixer drives



## Power and voltage ranges SINAMICS G130

380–480 V	110–560 kW
500–600 V	110–560 kW
660–690 V	75–800 kW

### Quiet, compact, operator-friendly

SINAMICS® G130 is the Siemens chassis-format solution for high-rating single-motor drives without regenerative feedback into the line supply. These are predominantly applications that have square-law load torques, i.e. machines such as pumps, fans and compressors; but also constant-torque applications such as extruders, mixers or crushers can be addressed. A new technical concept makes these inverter chassis units so unique. A modular mechanical design, extremely low loss IGBT semiconductors and an innovative cooling system. All of these features make SINAMICS G130 the quietest and most compact inverter chassis unit. The ready-to-connect drive units are easy to operate, and service is simple thanks to their transparent, modular design.

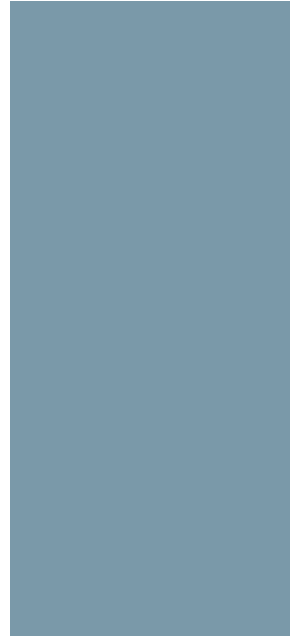
### Low costs: From planning to service

The SINAMICS G130 inverter has been completely newly developed and distinguishes itself as a result of its cost-effectiveness and simplicity in every phase of the product lifecycle. This extends from planning and procurement through mounting & installation and commissioning up to day-to-day operation and service. SINAMICS G130 offers an excellent price-performance ratio and can be integrated in any automation solution.

### 97% line supply voltage at the motor – without any secondary effects

Up until now, voltage-source DC link inverters used two main techniques to generate a variable output voltage. Each of these techniques has its own specific disadvantages: The so-called space vector technique minimizes the harmonic content in the motor current – and therefore the supplementary losses in the motor. However, only a maximum of 92% of the

line supply voltage is available at the motor terminals. As a consequence, it is possible that the rated operating point of the driven machine isn't reached – especially for machines with square-law load characteristics. The alternative technique using block pulsing can achieve an output voltage of up to 105% of the line supply voltage – but with an extremely high harmonic component in the motor. The result: Considerable harmonic losses in the motor and a significantly poorer utilization when compared to direct online operation. The SINAMICS G130 utilizes a technique that is absolutely unique in the marketplace. A technique that combines the advantages of the two techniques mentioned above. The so-called edge modulation with optimized pulse patterns means that 97% of the line supply voltage is available at the motor terminals even under load – and more specifically, without any secondary effects such as extremely high harmonics and supplementary losses in the motor. The inverter losses are also lower. This so-called edge modulation is only available for Siemens inverters such as the SINAMICS G130.



# SINAMICS G130 – lower costs through simplicity itself



## **Integration into the plant: Fast and reliable**

Plant construction companies and panel builders simply select the optimum version of the SINAMICS G130 – that can be used globally – from the easy-to-use catalog. The standard versions for all of the relevant voltage ranges and line frequencies are available within a short time. The power ratings are graduated according to user requirements and motor ratings so that the drives can be precisely dimensioned. The drive converters already have everything required so that they can be connected to grounded and non-grounded line supplies (TN, TT and IT line supplies). And SINAMICS G130 drives can be easily integrated into an automation solution through various analog and digital interfaces.

## **Fast commissioning and simple operation – without a Manual**

A SINAMICS G130 is directly commissioned at the user-friendly AOP30 operator panel or – at the PC using the user-friendly STARTER commissioning software. In both of these cases commissioning is extremely simple and doesn't require any long training times. With the menu-prompted commissioning at the unit only a few parameters have to be set. As a whole, the time required for installation and operation has been reduced to approx. 1/10; further it is no longer necessary to study Manuals – a time consuming affair. And operation is just as simple as commissioning. The straightforward operation helps to avoid operator errors. This in turn increases the availability of the drive units and also the productivity of the plant as a whole.

## **Consequentially favorably-priced: SINAMICS G130**

- Low costs from planning through to service
- Quiet and compact
- Cost-saving: The drive system requires up to 50% less energy
- Precise: For flexible adaptation to the process
- Straightforward: Standard and simple operation
- Unique: 97% line supply voltage at the motor without any secondary effects
- Also available as SINAMICS G150 cabinet unit

# SINAMICS G130 – components and options



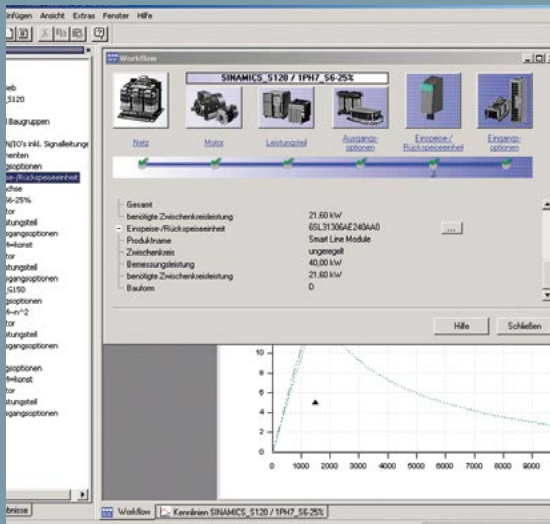
## **Flexible modular concept: Transparent and cost reducing**

A wide range of options means that SINAMICS G130 inverter chassis units can be precisely adapted to a customer's requirements. By being able to flexibly adapt the drive unit to the specific application avoids including functions that aren't required.

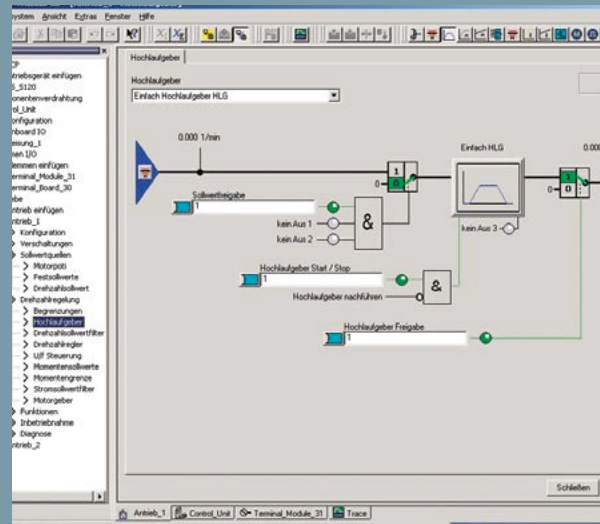
## **SINAMICS G130: Selection of options**

- Main switch and main contactors including line fuses
- Circuit-breaker
- Line harmonics filter to limit harmonics to below the stringent limit values of IEEE519-1992
- Radio interference suppression filter
- Line reactors
- Braking unit
- Output reactors
- dv/dt filter to limit voltage gradients
- Sinusoidal filter
- Emergency Stop functions
- Thermal motor protection
- Connection for external auxiliaries

# One system for all drives – standard engineering



SIZER for Siemens Drives



STARTER tool

## Favorably-priced with system-based flexibility

As a consequence of its unique standard philosophy and operator control, the new SINAMICS drive family – that has been completely newly developed – has the potential to reduce costs! This means that it is easy to learn – and what has been learned can be directly applied to all of the other drives. For instance, with the higher-level standard tools for engineering, configuring and commissioning. The two tools – SIZER for Siemens Drives and STARTER – can run as autonomous Windows applications. Once the experience is gained with these tools, it can also be used when engineering any of the other SINAMICS drive products.

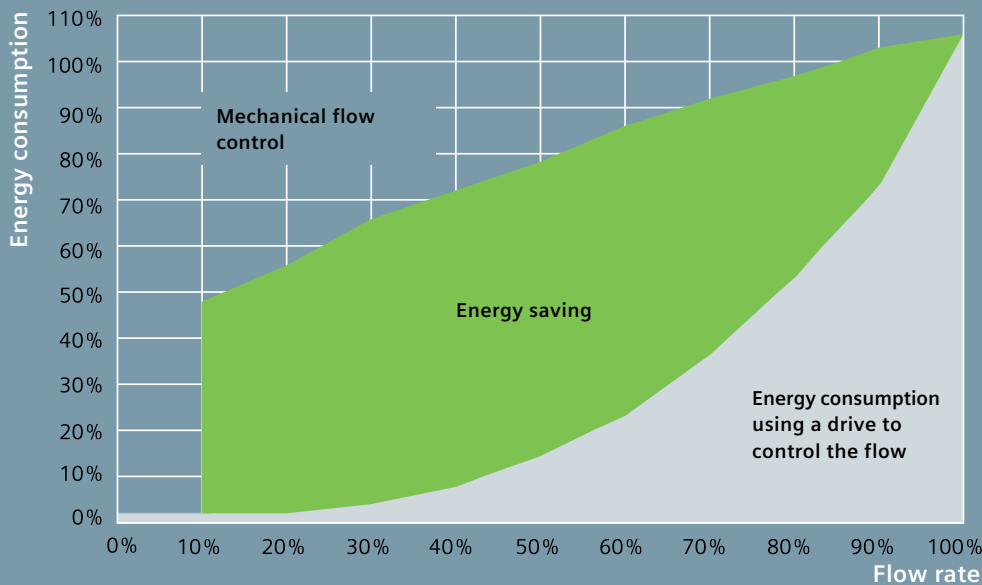
## Minimizes time and costs: SIZER for Siemens Drives engineering tool

The SIZER for Siemens Drives engineering tool decisively simplifies the engineering of low-voltage drive systems: Starting from your application, the tool supports you step-by-step when defining the mechanical system as well as when selecting and dimensioning inverters, motors and gear units. The tool also allows additional system components to be configured along with the open-loop/closed-loop control.

## Faster commissioning: STARTER tool

The STARTER commissioning tool supports you when parameterizing, commissioning, troubleshooting and when service is required. A real highlight: Using STARTER, you can import all of the relevant data from the electronic type plates of the drive components. This speeds up parameterization, helps avoid possible incorrect entries and therefore significantly reduces your costs. You can check your parameterization and automatically optimize it using the integrated test functions. Setpoints and actual values can be traced and displayed in the and frequency domains. Further, STARTER offers a graphic configuring interface. This provides a good overview, simple handling and allows safety acceptance reports to be automatically generated.

# With variable speed – SINAMICS G130 saves energy



## **Saving instead of wasting: Variable-speed operation**

Still today, pumps and fans are frequently controlled using traditional control techniques. These have a decisive disadvantage: The motor permanently operates at its rated speed – although this is only infrequently required in practice. The result: high energy loss in partial load operation, e.g. for throttle control. Variable-speed operation using an inverter puts an end to this expensive energy wastage.

## **Saving in a double-digit percentage range**

Inverter-based variable-speed drive systems precisely adapt the power they draw to the actual operating point. This means that the motor only draws the power that is presently required. The power factor and efficiency remain almost constant. As a consequence energy savings of up to 60% – and in extreme cases even up to 70% – can be achieved when compared to a throttle-controlled drive system.

Optimizing the magnetic flux in the motor also provides additional energy saving. This is especially true for drives requiring low dynamic performance – such as pumps and fans – where the efficiency can be increased by an additional 10% in partial-load operation.

## **Reduces the stress on the plant and on the balance sheet**

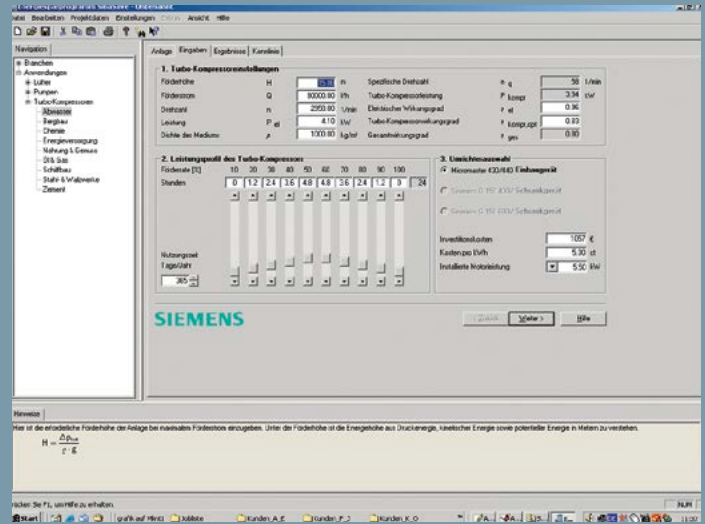
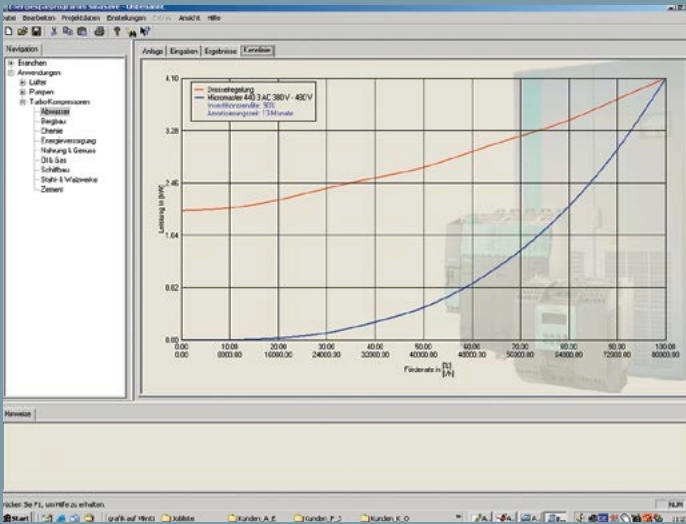
Inverters avoid current peaks, torque surges as well as unfavorable operating states. Not only this, they also reduce the stress on the complete mechanical transmission line as a result of the soft starting and stopping. Mechanical controls are not required. The effect: Improved performance, lower maintenance costs and a longer lifetime. This reduces the level of stress on your plant as well as on your balance sheet.

## **Ideal for applications without energy recovery**

With their rugged vector control SINAMICS G130 has been specifically designed for drive applications without energy recovery. A large proportion of these are machines such as pumps, fans and compressors – precisely those applications with the highest energy-saving potential.



# An investment that pays off – SinaSave calculates the payback time



More on the subject of energy saving with SinaSave under: [www.siemens.com/energysaving](http://www.siemens.com/energysaving)

## Correct calculation using individual data

Based on the energy costs saved and the purchase and investment costs, SinaSave calculates the payback time of the inverter, which is frequently just a few months.

## A handle on all factors

The SinaSave energy-saving program takes into account all of the values required for the calculation:

- Flow rate and delivery head for pumps
- Mass flow and total differential pressure for fans
- Specific density of the medium being pumped

- Efficiency of the pump or compressor, electrical efficiency and total efficiency of the plant or system
- Number of working days and working shifts
- Pumping profile over the day and the year

## The optimum technology at the right price

Based on the individual application and load data that was entered, SinaSave determines the energy demands of the inverter-fed variable-speed drive system as well as the energy requirement of the reference system. The reference system control can use a throttle, a vane mechanism or pole changing motors. Bypass operation can also be analyzed using Sina Save. By comparing both drive systems, SinaSave determines the potential for reducing energy usage and CO<sub>2</sub> emissions, and by taking into account

individual energy prices, also the potential for reducing energy costs. In order to determine the payback time, the calculated, individual cost-saving potential is compared with the required investment costs. When analyzing the payback time, SinaSave not only calculates the costs for the inverter itself, but also takes into account specific costs, e.g. for necessary infrastructure-related measures, installation etc.

More on the subject of energy saving with SinaSave under: [www.siemens.com/energysaving](http://www.siemens.com/energysaving)

# SINAMICS G150 – the compact cabinet unit



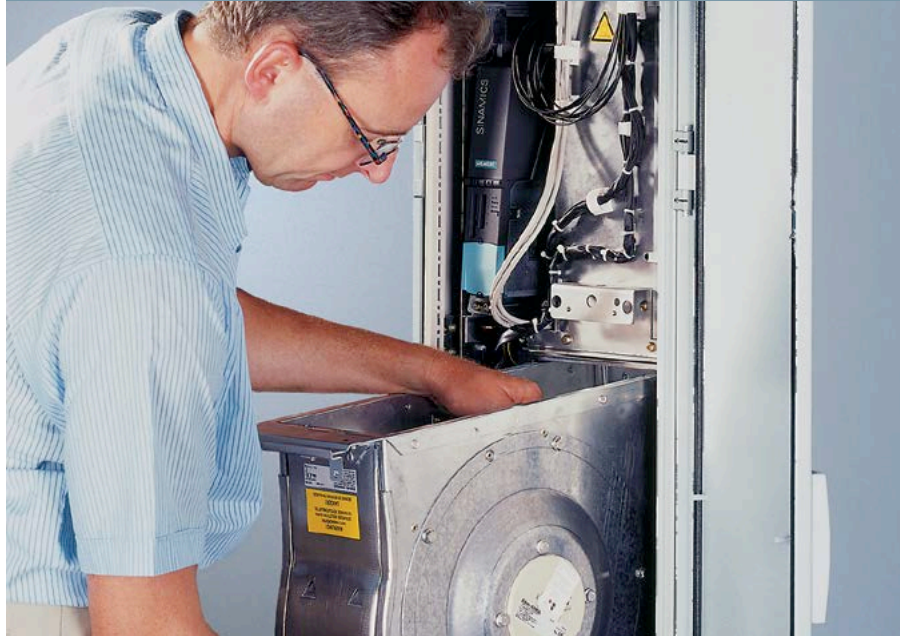
SINAMICS G150 is the ready-to-connect inverter accommodated in a standard electrical cabinet. These drives address the same types of applications as SINAMICS G130. This means high-rating single-motor drives without energy recovery – such as pumps, fans, compressors, extruders, mixers and crushers. With their standard design and standard dimensions these electrical cabinets can be seamlessly integrated into any plant or system. They have been optimized for low maintenance and have compact dimensions. Further, they can be simply and quickly installed and commissioned. These drive units can be adapted to the particular requirements using an extensive range of options. They are available with cabinet widths starting at 400 mm – increasing in 200 mm steps. They can be supplied in various degrees of protection up to IP54 without the mounting footprint changing.

There are two versions:

## **SINAMICS G150, Version A**

Version A offers sufficient mounting space for all of the options that are available. There are different versions so that the line supply and motor can either be connected at the top or bottom. This results in a high degree of flexibility when it comes to mounting the units.

# Service from Siemens: You can depend on it!



## **SINAMICS G150, Version C**

This is an especially space-saving version for applications where the line supply connection components are accommodated in a central low-voltage distribution panel – which means that they don't have to be installed in the electrical cabinet. Both versions have the user-friendly AOP30 operator panel as standard mounted in the cabinet door.

SINAMICS G150 drives in standard electrical cabinets are available in the power range from 75 kW extending up to 2700 kW.

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