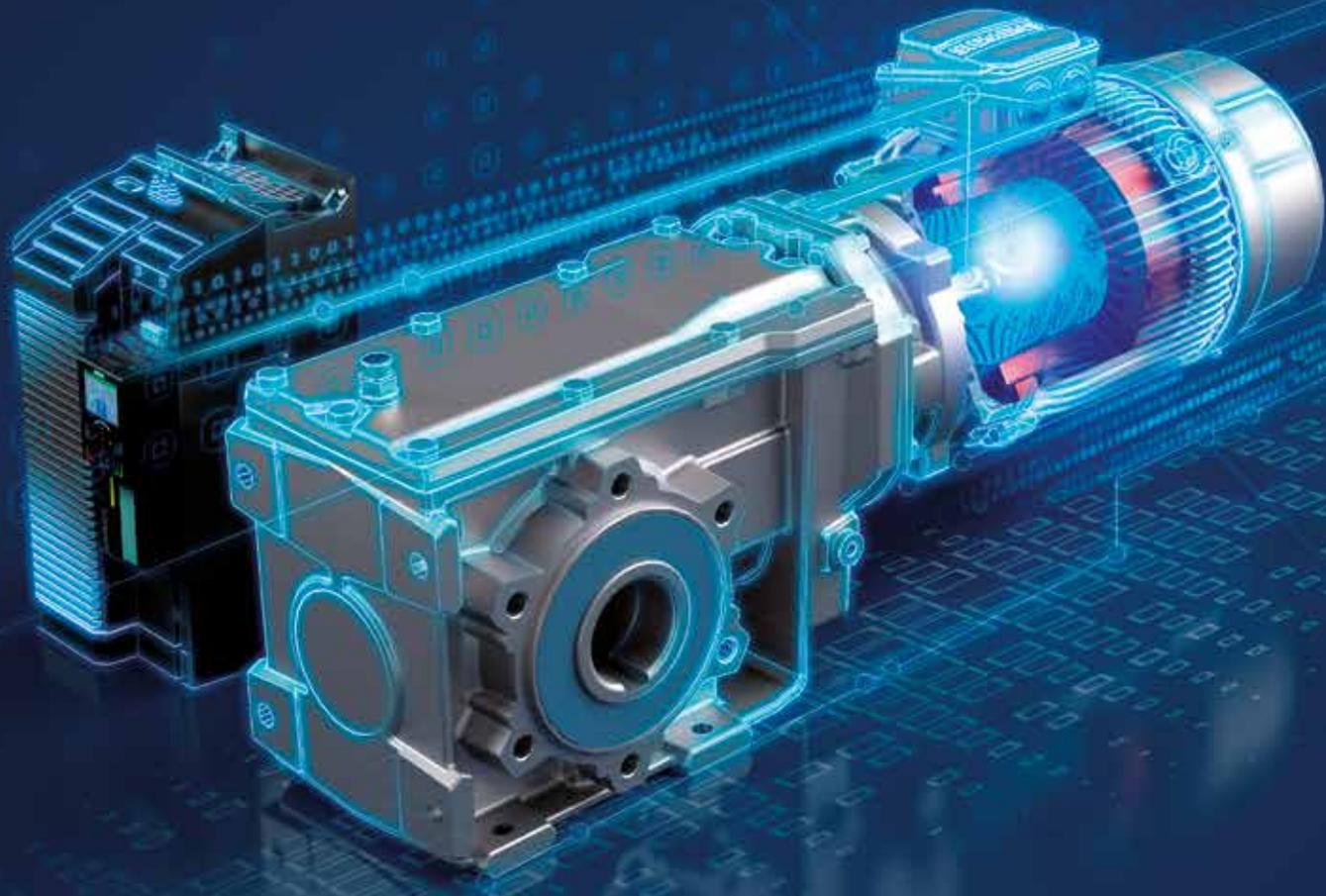


SIEMENS

Ingenuity for life



SIMOGEAR reluctance geared motor

The new synchronous-reluctance drive system

usa.siemens.com/simogear

Compact. Rugged. Energy-efficient.

The new SIMOGEAR synchronous-reluctance drive system consists of standard SIMOGEAR gear units, SIMOTICS synchronous-reluctance motors and SINAMICS variable frequency drives. With this solution, we are increasing our SIMOGEAR geared motors portfolio by combining the gearbox with the SIMOTICS reluctance motor as a complete new offering for our customers.

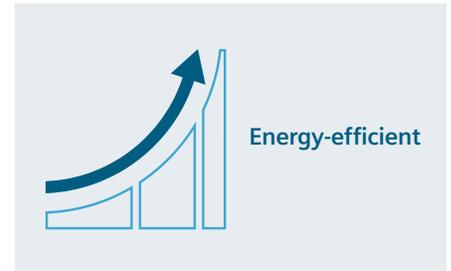
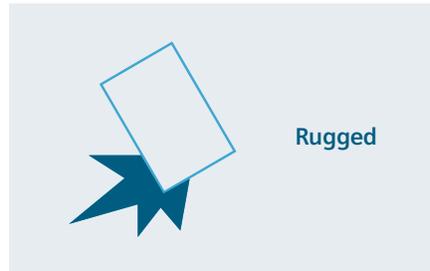
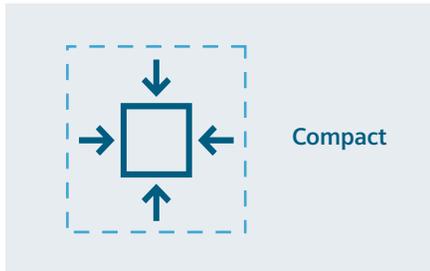
By combining these products, the customer benefits especially from the efficiency class compared and even exceeding IE4, which scores with higher efficiency and lower losses, especially in a partial load than to comparable asynchronous motors. Highly energy-efficient, the motor heats up less and provides high operation reliability thanks to its excellent thermal behavior resulting in increased service factors.

This solution also boasts high dynamics thanks to the motor's lower moment of inertia and optimized control. Commissioning is established quickly and easily by entering the motor code into the drive. The constant torque-speed characteristics up to the rated speed make an external fan redundant. In the drive system, all components are perfectly coordinated with each other.

The synchronous-reluctance solution allows it to be used in many different applications and with the major technical benefits compared to a standard asynchronous solution. The SIMOGEAR reluctance geared motor is particularly suited towards conveyor technology and general machinery systems where applications with high energy efficiency are required. Together with the right variable frequency drive, the portfolio is very extensive.

The drive system is typically used for rollers, chains and belt conveyors within baggage and cargo handling facilities at airports. It also fits within warehouses and distribution logistics and in postal and packaging. It's commonly used in hoisting gears, scissor lift tables and monorail conveyors as well as in rollers, chains, belts and skids found in the automotive industry.





Compact

- Siemens is expanding its SIMOGEAR portfolio, which meets customer requirements as well as industry standards regarding mounting dimensions
- Shorter and compact design together with fine torque graduation is standard for SIMOGEAR gearboxes
- Coupled with SIMOTICS reluctance motors and SINAMICS drives, the new drive systems result in excellent operation

Rugged

- Users benefit from an overload capacity of up to 200%
- Without permanent magnets the synchronous-reluctance motor is easier to service than synchronous motors with permanent magnets
- The SIMOGEAR reluctance geared motor adds to the robustness of the entire system in different environmental conditions

Energy-efficient

- Optimum functionality of the drive system is provided by the interaction of the reluctance motor, gear unit and drive, which are precisely matched to each other
- The system boasts with high dynamic performance through optimized control and low moment of inertia
- SIMOGEAR reluctance geared motors exceed energy efficiency class IE4

Synchronous-reluctance solution

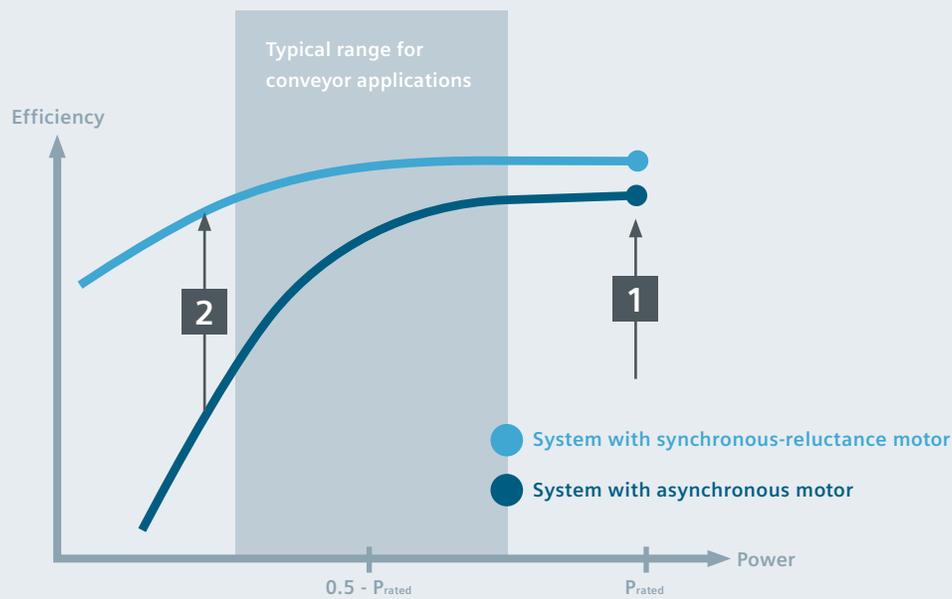
Demands on the efficiency of drive systems are high, so there is a greater chance for synchronous-reluctance motors to show their efficiency improvements. The Siemens solution is the right step forward. The entire drive system benefits from the synchronous-reluctance solution, which differs from the asynchronous in several ways.

The biggest advantage is the increased efficiency of the synchronous-reluctance drive system compared to the efficiency of the drive system with asynchronous motors. Additionally, thermal limits are different—synchronous-reluctance motors reach high reliability of operation due to low motor temperature.

In synchronous-reluctance motors, the speed is perfectly known due to the synchronous mode of operation. Precise speed is reached even without an encoder. The system boasts high dynamic performance through optimized control and low moment of inertia.

The SIMOGEAR reluctance geared motor has an output range from 0.55 to 4 kW and is available for SINAMICS G110M, G120D, G120, G120X and S120 drive systems. Optimum functionality of these drives is provided by the interaction of the reluctance motor, gear unit and drive, which are precisely matched to each other. This results in economical operation and efficient performance of the entire drive system.

Energy efficiency at rated load and partial load



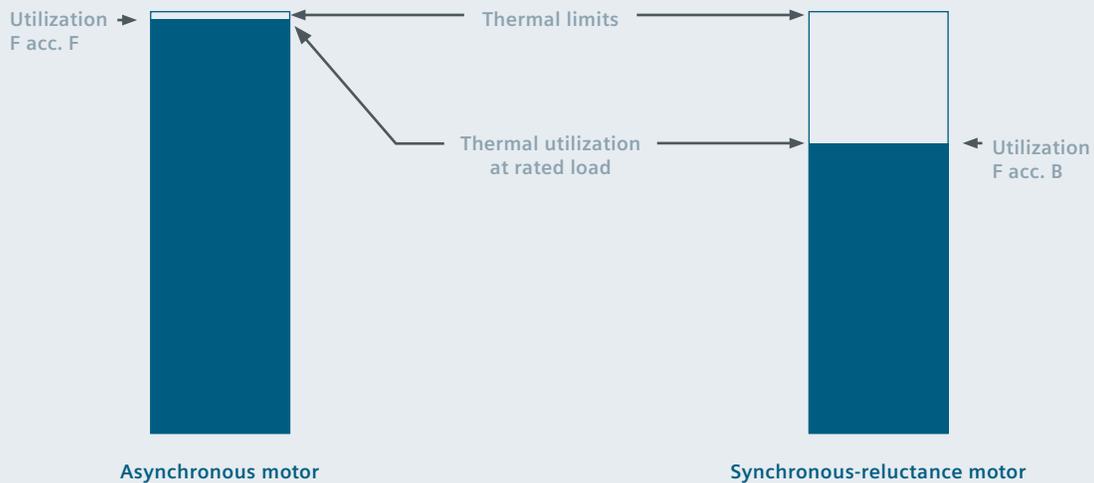
1 Efficiency at rated load

The efficiency of the drive system with the synchronous-reluctance motor is higher at rated load compared to the efficiency of the drive system with the IE4 asynchronous motor

2 Efficiency at partial load

The efficiency of the drive system with the synchronous-reluctance motor is much higher at partial load than the efficiency of the drive system with the IE4 asynchronous motor

Thermal behavior— High reliability of operation due to low motor temperature



- Synchronous-reluctance motor has almost no losses in the rotor compared to the asynchronous motor. This results in a significant temperature reserve in the synchronous-reluctance motor.
- This is also based upon that the synchronous-reluctance motor can be operated down to 10% of a rated speed with a rated torque (but the torque reduction is not necessary).
- As a result, the reluctance motor can be operated with a higher overload in a lower speed range as compared to the asynchronous motor.

Efficiency with precise functions

When it comes to mounting dimensions, shorter and compact design, together with fine torque graduation, is the standard for the SIMOGEAR gearboxes. Coupled with SIMOTICS reluctance motors and SINAMICS drives, users benefit from the excellent operation of these new systems. And when you require highly efficient motors with the highest level of performance, this system is a perfect solution for your application.



The new synchronous-reluctance drive system

As a complete system, the reluctance motor with the gearbox and the drive are perfectly coordinated and enable best-in-class operational results when combined with each other.

This results in cost-effective operation of the entire system and high efficiency performance.

Highlights

- ✓ High dynamic performance
- ✓ Excellent thermal behaviors
- ✓ High energy efficiency

Technical information

Type	Synchronous-reluctance drive system
Efficiency class	System efficiency class IES 2, motor efficiency exceeds IE4
Shaft height	SH80, SH90, SH112
Power range	0.55 kW – 4 kW*
Certificates	CE, UL/CSA, CCC**
Overload capacity	Up to 200%
Service	Synchronous-reluctance motor is easy to service due to absence of permanent magnets
Insulation system	Insulation system is optimized for drive operation
Compatible gearboxes	
	Helical
	Parallel shaft
	Helical worm
	Bevel

*2.2 kW and 3 kW are implemented in SH112 **in preparation

Compatible drive systems				
SINAMICS G110M	SINAMICS G120	SINAMICS G120D	SINAMICS G120X	SINAMICS S120
				



SIMOGear reluctance geared motor is included in the DT Configurator

Learn more
[siemens.com/dt-configurator](https://www.siemens.com/dt-configurator)

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5300 Triangle Parkway, Suite 100
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