

SIEMENS

Ingenuity for life



SIMOGEAR

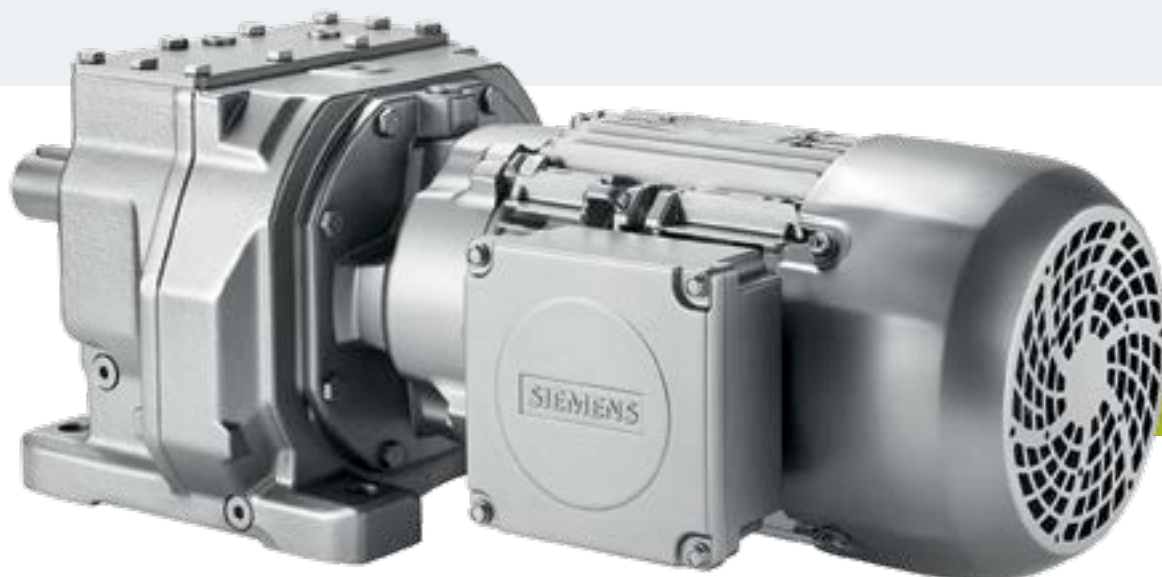
Precise. Powerful.
Your geared motors portfolio.

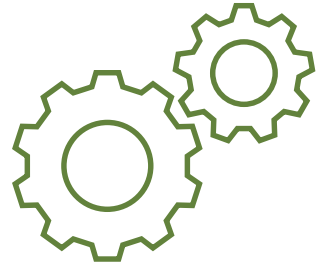
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2020

[siemens.com/simogear](https://www.siemens.com/simogear)

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SIMOGEAR: Introduction

Our geared motors have been designed for optimum usability and maximum flexibility. With high power density, high gear ratios, high energy efficiency and fine torque scaling, we offer drive systems with the highest performance.

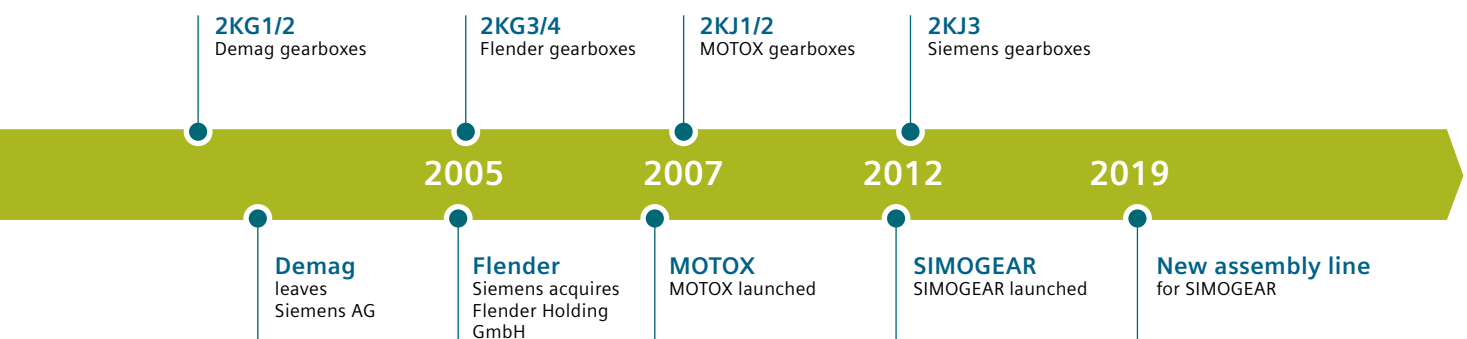
SIMOGEAR geared motors have compact dimensions so that they are easily integrated into restricted spaces. Furthermore, they are rugged and operate under harsh conditions, which allows them to address a wide range of application conditions.

This is complemented by the outstanding quality of our mechanical products. We have a wide portfolio of geared motors, based on asynchronous and synchronous motor technology.

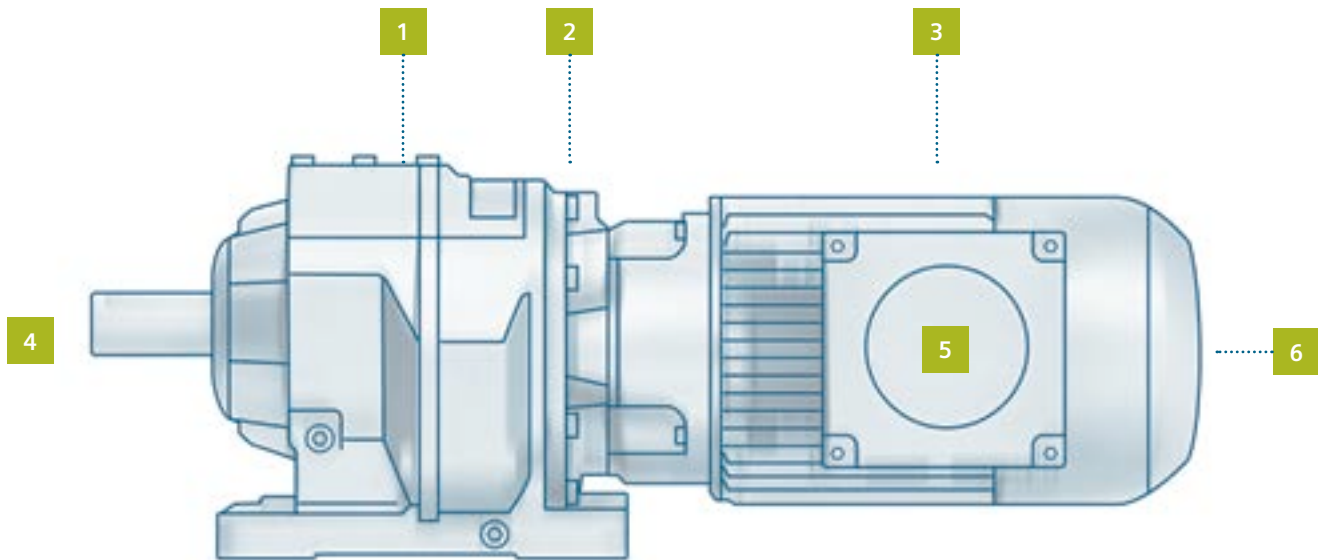
SIMOGEAR geared motors deliver top performance from 0.09 kW up to 55 kW. Gearboxes are available as helical, parallel shaft, helical bevel and worm gearboxes – and have torque ratings extending all the way up to 19,500 Nm.



History of SIMOGEAR geared motors



SIMOGEAR geared motor at a glance



- 1 Gearbox
- 2 Interface
- 3 Motor
- 4 Output shaft
- 5 Terminal box or connector
- 6 Optional mounted components using the MoDulog system
Examples
 - Encoder
 - Brake
 - Separately driven fan

Did you know?

MODULOG

- ⌵ Modular mounting shaft system for brakes, rotary encoders, forced ventilation.
- ✓ Always in stock with short delivery times and can be subsequently modified.

SIMOLOC

- ⌵ This installation system offers a **low-cost easy-to-fit alternative** to conventional shaft connections such as hollow shaft with a feather key, hollow shaft with shrink disk or hollow shaft with spline.

SIMOGEAR drive systems: optimum integration and maximum usability



SIMOGEAR geared motors are the perfect match for any drive system. The result is the most comprehensive portfolio worldwide for the complete drive train.

This extends from geared motors through motor starters and converters up to identification systems, switch-gears and automation technology. All of the components are tested, checked out in the field and coordinated with one another – and equipped with standard interfaces for communication systems.

The demands placed on industrial drive technology are always increasing: Compact and versatile geared motor solutions that can be optimally inte-

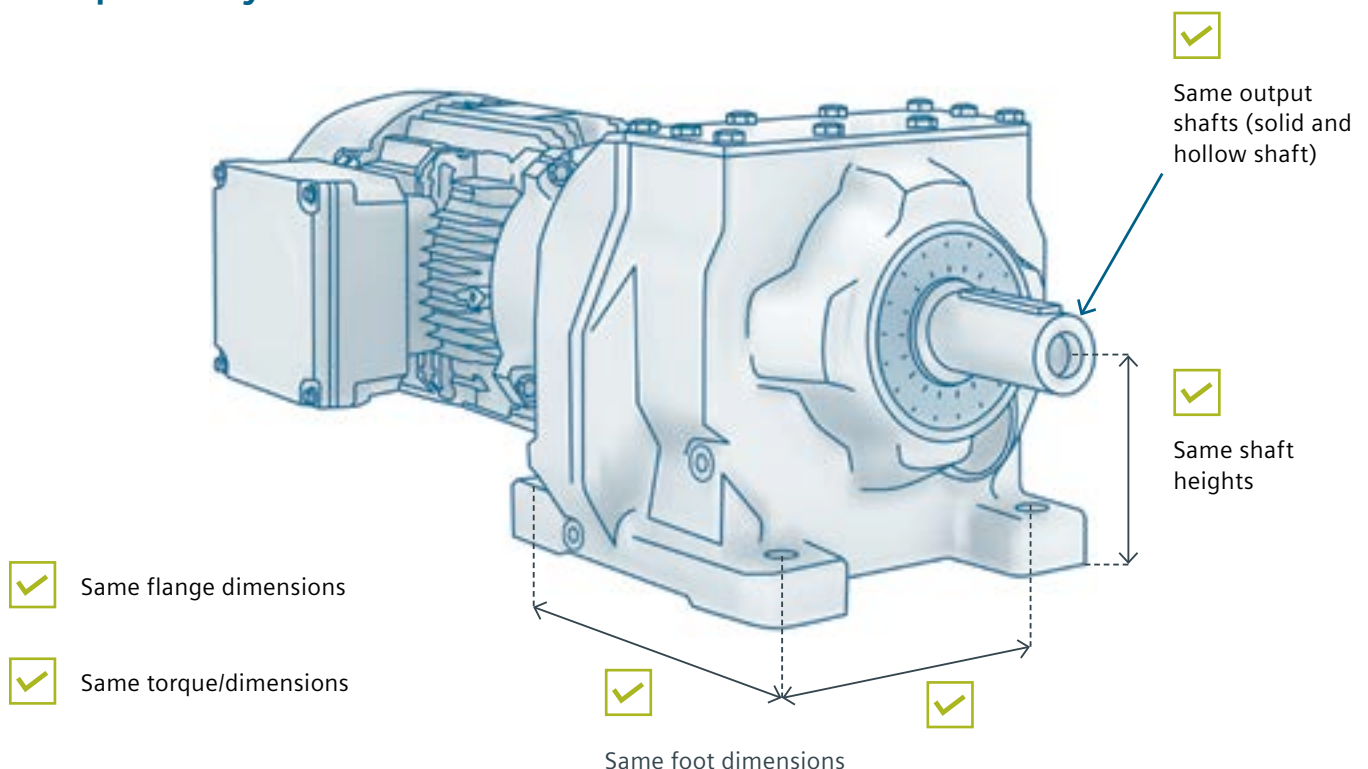
grated into the drive train are demanded. More flexibility, more power, a more standard approach – these are the expectations of the sector, especially in conveyor technology.

SIMOGEAR geared motors are compatible to the general standard in the market, and can therefore be simply integrated into existing or new machines and systems.

This approach always provides you with the optimum drive system for your specific application.

SIMOGEAR has the same flange, torque arm foot mounting and output (solid and hollow shaft) and shaft height dimensions as is generally required in the market. This means that this innovative geared motor system is simply integrated 1:1 into existing or new machines and systems.

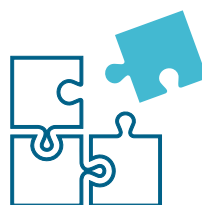
Compatibility means:



SIMOGEAR: Highlights

In conjunction with motors, converters, PLCs and special software, SIMOGEAR allows a wide range of applications to be addressed in many industries.

SIMOGEAR geared motors are an integral component of Totally Integrated Automation (TIA), the extensive range of Siemens products and systems for company-wide automation in all sectors.



Compatibility

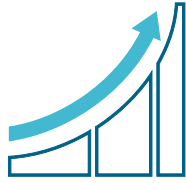
Compatible with market standard

✓ When it comes to mounting dimensions

SIMOGEAR stands for:

- ✓ **Highest Performance:**
With high power density, high gear ratios, high efficiency and fine torque scaling.
- ✓ **Fully integrated solution:**
With a wealth of experience to offer fully integrated solutions engineered in Totally Integrated Automation (TIA) portal.
- ✓ **Productivity:**
Siemens offers solutions to support your business and increase your profitability.





High energy efficiency

Energy efficiency

2-stage bevel geared motor

- ✓ Specifically designed to address conveyor applications
- ✓ Ratio up to $i = 60$
- ✓ Mech. efficiency $\geq 96\%$

High gear ratios based on the shaft-pinion principle

- ✓ 2-stage gearbox with an efficiency $\geq 96\%$ instead of 3-stage gearbox with efficiency of only 94%

High-efficiency motors

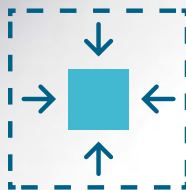
- ✓ In efficiency classes IE2, IE3, IE4



Performance

Highest performance

- ✓ Highest power density
- ✓ Finely scaled wide range of ratios



Compact design

New additional center distances

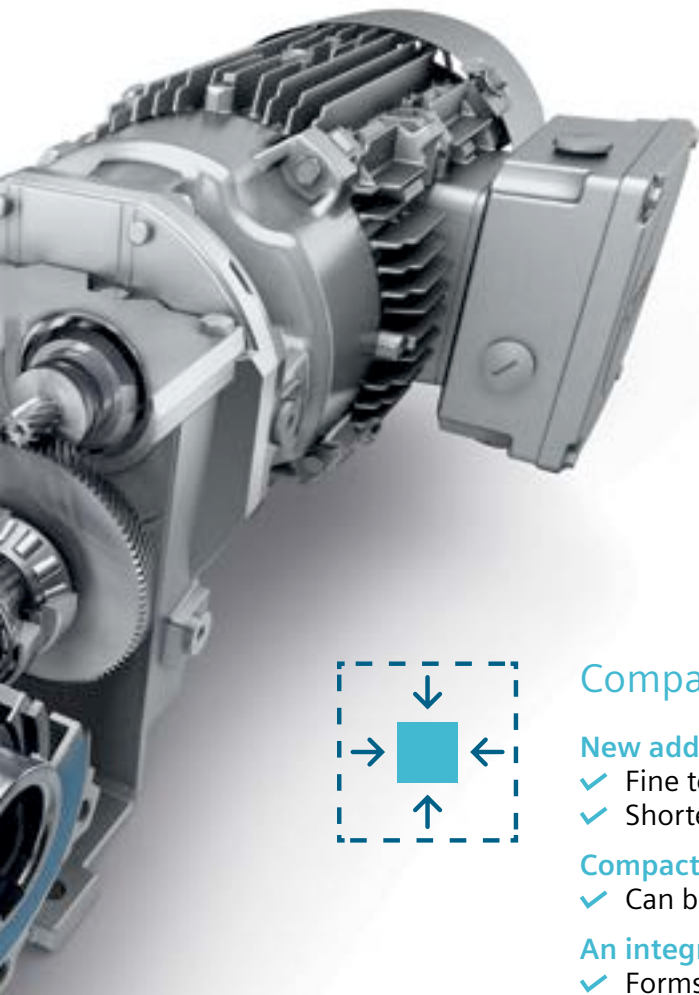
- ✓ Fine torque scaling
- ✓ Shorter and more compact design

Compact dimensions

- ✓ Can be integrated into the smallest spaces

An integrated motor DE bearing shield

- ✓ Forms the interface to the gear unit



SIMOGEAR: Ready for digitalization

Connected to the cloud means that SIMOGEAR is ready for digitalization as a part of the complete drive train – this means that the conditions of geared motors, converters and driven loads can be visualized and analyzed using our MindSphere application **Analyze MyDrives**. It provides you with valuable data to optimize your processes and service & maintenance strategy.

Our value added includes wide-ranging application experience and broad industry knowledge.

We simply evaluate and monitor your processes with the objective to reduce the total costs, shorten the time to market and increase the security of your investment – therefore sustainably improving your competitiveness.

Connected to MindSphere, you always have your application under control, and with preventive maintenance you minimize failures and downtimes. We support you in improving your business.

Did you know?

MindSphere

is the cloud-based IoT open operating system from Siemens that connects your products, plants, systems and machines, enabling you to harness the wealth of data generated by the Internet of Things (IoT) through extensive analysis.



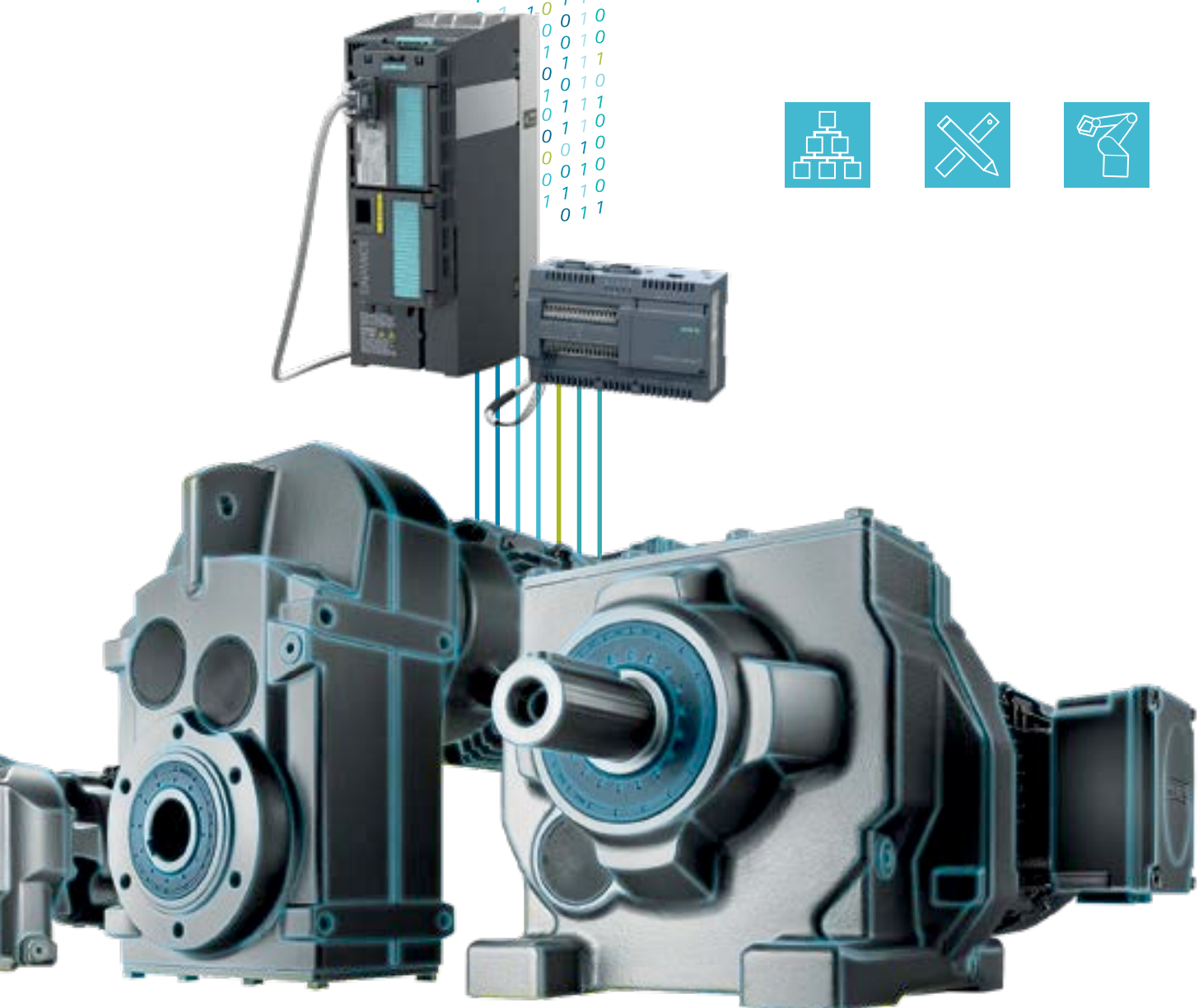
The MindSphere application such as **Analyze MyDrives** facilitates:

- ✓ Transparency along the drive train
- ✓ Visualization and analysis of converter data
- ✓ Preventive maintenance



MindSphere

1 1 1 1
1 0 1 1 0
1 1 1 0 1 1
0 1 1 0 0 1 0
1 0 1 0 1 1 0
1 0 1 0 1 1 0
1 0 0 1 0
1 0 0 1 0
1 0 0 1 0
1 1 1 1
1 0 1 1 0
1 1 1 0
0 1 1 0
0 0 1 0
0 1 1 0
0 1 1 0
1 0 1 1



SIMOGEAR geared motors

The SIMOGEAR portfolio is extensive and you always find a perfect geared motor that precisely meets your requirements.

Our standard portfolio includes various gearbox types as basis for our geared motors. The geared motors are suitable for either horizontal or vertical mounting.

Geared motor types

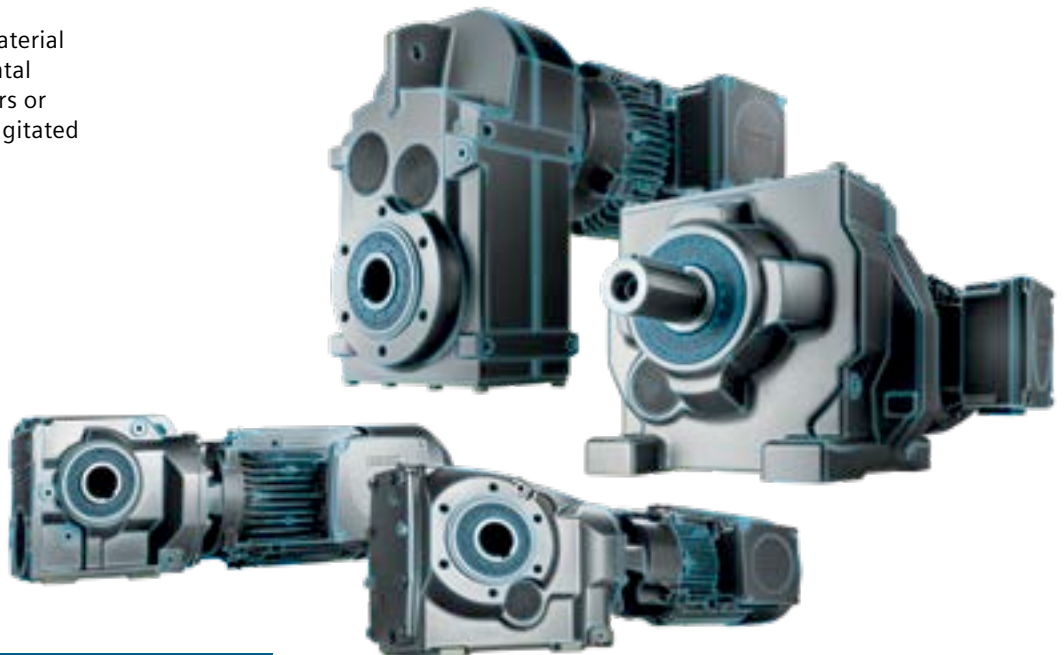
Helical geared motors, Helical bevel geared motors, Parallel shaft geared motors, Worm geared motors, Helical worm geared motors

Applications

Application examples include material handling applications as horizontal conveyor belts, vertical conveyors or lifters. Also cranes, mixers and agitated drives.

Industries

-  Intralogistics
-  Food and Beverage
-  Automotive
-  Machine Building
-  Water and Waste Water



Highlights:

- ✓ Highest performance and energy efficiency
- ✓ Compactness and outstanding quality of mechanical parts
- ✓ Suitable for both horizontal and vertical applications

SIMOGEAR reluctance geared motors



Reluctance geared motors set themselves apart as a result of their very high energy efficiency. Further, they are easy to service thanks to the synchronous-reluctance solution therefore representing an excellent choice when selecting a drive system with high energy efficiency.

The synchronous reluctance solution can be applied in many different domains, and it has many important technical benefits when compared to standard asynchronous motors. These motors maintain a stable speed even without encoder, and it is also possible to achieve a high permanent overload in the higher speed range.

SIMOGEAR reluctance geared motor are ideally suited to address conveyor applications and general machine systems where a high energy efficiency is demanded. Together with the right converter, we offer a wide range of innovative drive solutions.

Applications

The system is typically used to control roller, chain and belt conveyors in airport baggage and cargo handling facilities. It is also a great fit for warehouses and distribution logistics including packaging and mail handling areas. It is commonly used in hoisting equipment, scissor lift tables and monorail conveyors as well as for skids used in the automotive industry.

Industries



Airports



Automotive



Intralogistics

Highlights:

- ✓ High dynamic performance
- ✓ Excellent thermal behaviour
- ✓ Extremely high energy efficiency



SIMOGEAR gearboxes with motor adapters

In addition to versions with integrated motors, the SIMOGEAR series is also available with motor adapters, allowing various SIMOTICS motors to be used.



Flexible



Combinable



Optimized

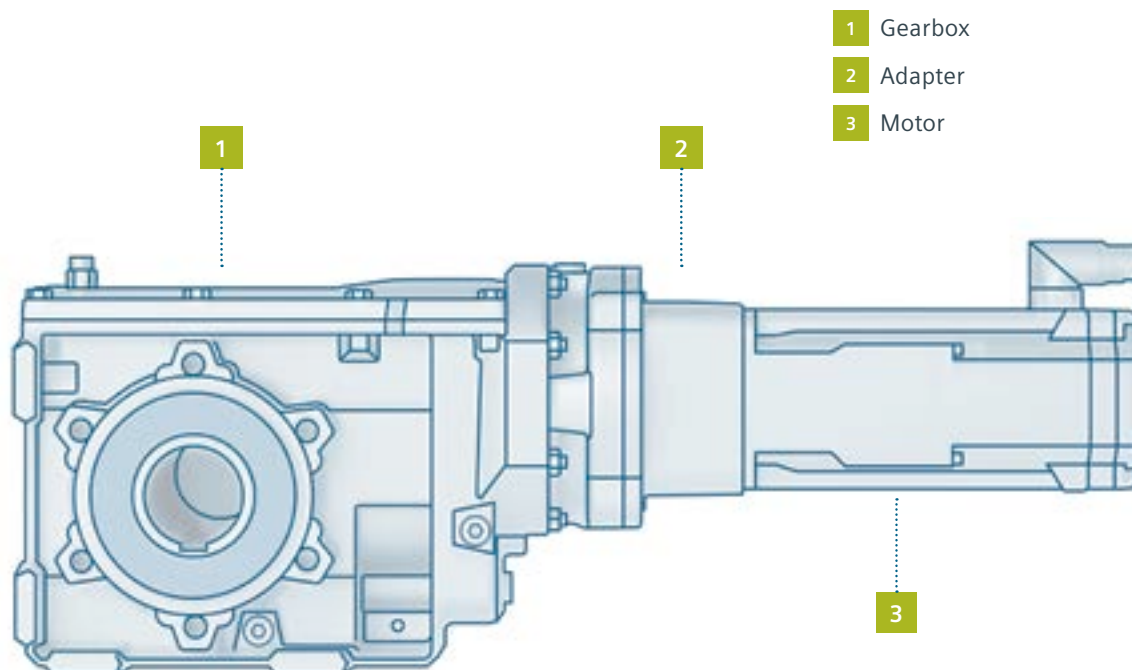
A wide range of SIMOTICS motors from Siemens can be mounted as a result of the many adapters that are available. This is true for both synchronous as well as asynchronous motors. With the newly developed short coupling adapters, the optimum geared motor is available for every application. SIMOGEAR adapters currently include:

IEC motor adapters

Standard IEC motors can be mounted in two ways. We suggest the short K4 adapter for universal use and the coupling adapter K2 to address more sophisticated and demanding applications. The adapters can be mounted on all SIMOGEAR types and are in accordance with the dimensions of the standard IEC flange (B5).

NEMA motor adapters

Standard NEMA motors can be mounted in two ways. We suggest the short K5 adapter for universal use and the coupling adapter K3 to address more sophisticated and demanding applications. The adapters can be mounted on all SIMOGEAR types.



Motor adapters for servomotors

There are three servomotor adapter versions. The first version is the new KS adapter available for SIMOTICS S-1FL6, S-1FK2, S-1FK7, S-1FT7, M-1PH8 and is considerably broadening the Siemens drive system portfolio for servomotors.

The other two versions include the KQ adapter that is designed for SIMOTICS S-1FK7 and SIMOTICS S-1FT7 synchronous servomotors. The third version is the K8 adapter available for SIMOTICS M-1PH8 asynchronous servomotors.



Typical servo applications:

Handling systems, packaging and labelling machines, metal forming machines, printing



SIMOGEAR adapters are flexible and compact, and allow new drive system solutions to be created to specifically address your demands.

Industries

-  Machine building
-  Intralogistics
-  Food & beverage

Highlights:

- ✓ Fast and simple mounting and removal
- ✓ Further cost savings due to optimized spare part stock
- ✓ Compactness and flexibility



SIMOGEAR geared motors with converters integrated in the motor



SIMOGEAR geared motors with SINAMICS converters integrated in the motor provide the perfect solution to any conveyor-related challenge.



Highlights:

- ✓ SINAMICS distributed frequency converters are assembled and configured for the particular SIMOGEAR geared motors (motor data, brake and temperature sensor)
- ✓ Fast installation and commissioning
- ✓ Easy-to-handle and space saving drive systems

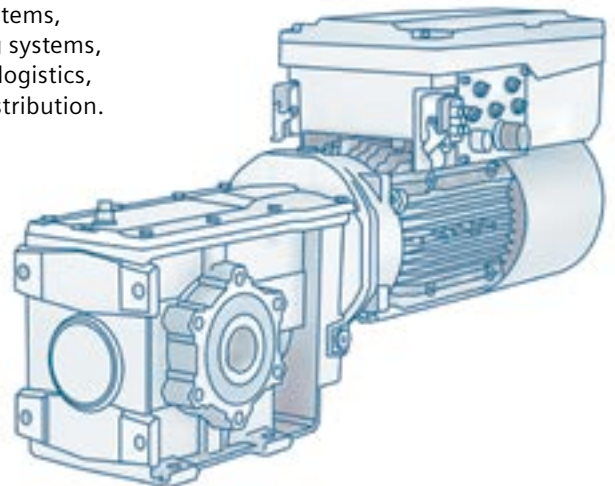
The system is easy to install, the converter is quickly commissioned and the overall system is extremely user friendly. Thanks to Safety Integrated, the Safe Torque Off (STO) safety function can be used with any SINAMICS G110M or G115D (in preparation) with no additional external components. The compact device, available in two sizes (FSA, FSB), is space saving and allows applications to be flexibly addressed. In addition, it is integrated into the TIA Portal – the intuitive engineering framework from Siemens – which allows efficient integration into higher-level SIMATIC PLC controllers.

Typical applications:

Conveyor system applications such as conveyor belts, sortation systems, baggage and cargo handling systems, warehouse and distribution logistics, mail sorting and package distribution.

Industries

-  Intralogistics
-  Airports
-  Food & beverage
-  Automotive



www.siemens.com/simogear
www.siemens.com/sinamics-g110m

SIMOGEAR Carwash

SIMOGEAR Carwash is a special kind of geared motor used in car washing systems. Inquiries are channeled through our Quotation Center*.



Highlights:

- ✓ Increased protection against the ingress of moisture and increased corrosion resistance
- ✓ High thermal reserves and overload capacity, highest efficiency and low losses
- ✓ Longer service life and high operational reliability

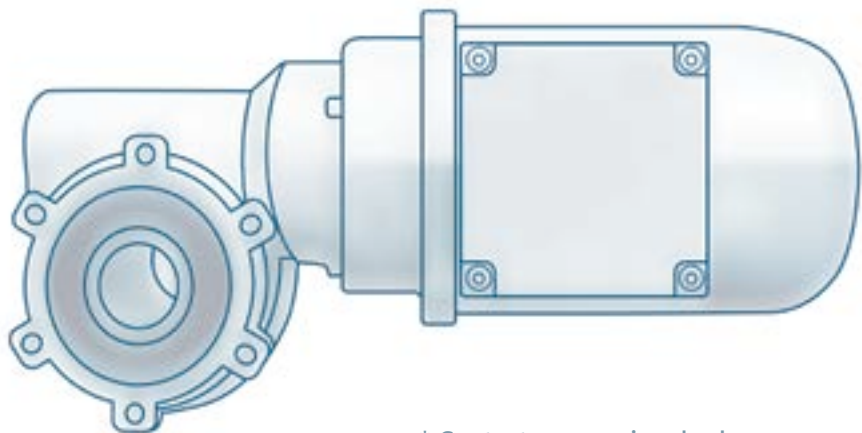
Designed and constructed to stand up to harsh car wash environments, it comprises a one-piece die-cast aluminum housing gearbox with a symmetrical design, no bearing end shield, no mounting cover – and only one version for all mounting positions.

Typical applications:
Car washing systems

Technical description:

Power range 0.25 ... 1.5 kW
Three-phase 230/400 V 50 Hz
Ambient temperature 0 °C to 45 °C
Humidity up to 100%

Can be sprayed with chemicals. The chemical composition of the seals manufactured out of NBR (nitrile butadiene rubber) is suitable for this type of application.




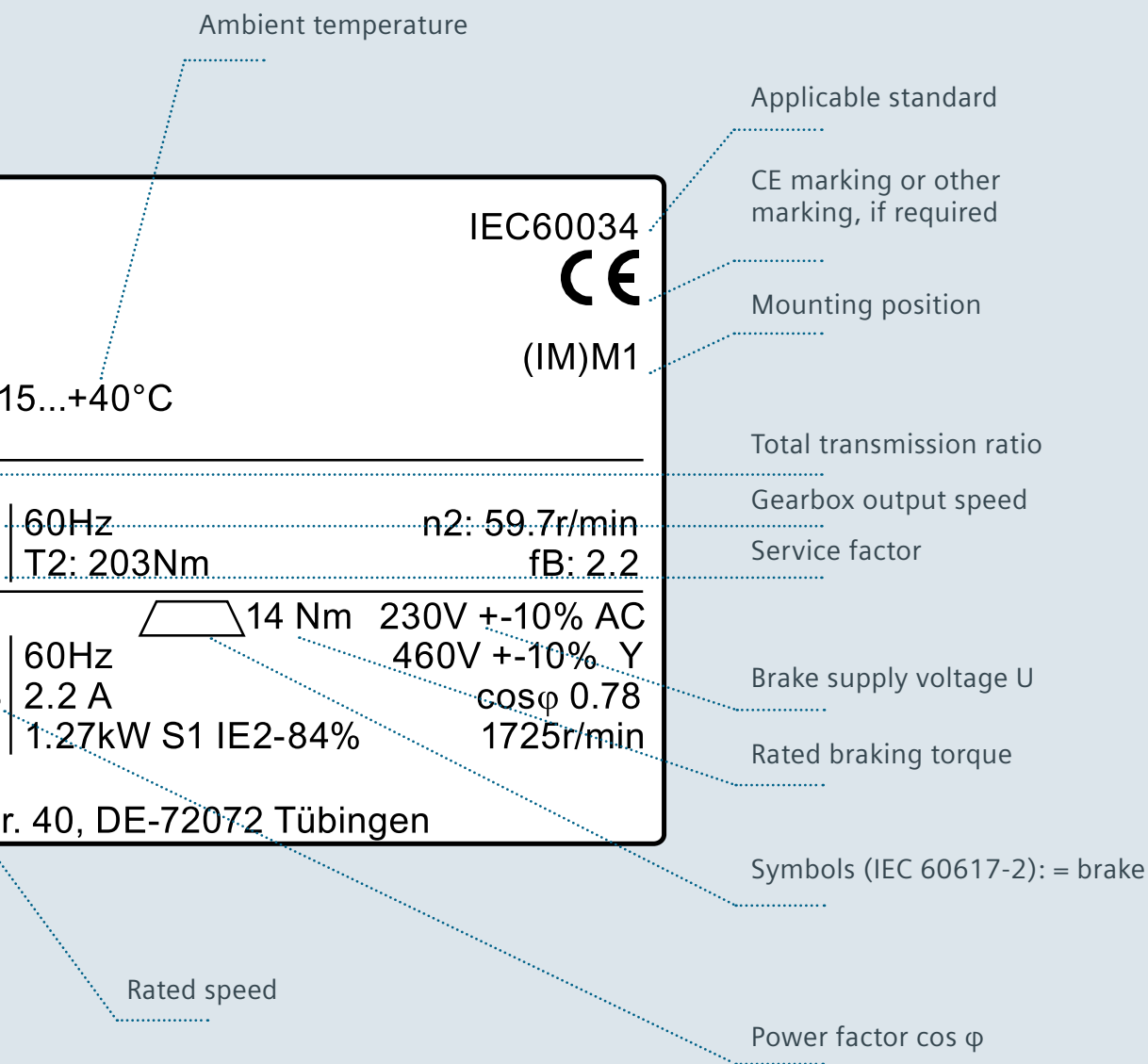
* Contact your regional sales representative

Description of the SIMOGEAR nameplate

General data

Motor and brake data

Serial No.		Weight	
Article No.			
Type designation	SIEMENS		
Degree of protection	FDU0412/8999999 nnn		
Customer specific data	2KJ3105-1EM22-2AV1-Z		
Oil quantity, type, viscosity	ZF59-LE90SG4E-L32/14N-IN SI04	30kg Tamb -	
Rated frequency	IP55		
Geared motor output torque	K-ID: 1234567890		
	1.5L OIL CLP VG220 i: 28		
	50Hz	n2: 49.3r/min	
	T2: 213Nm	fB: 2.1	
Number of phases and type of motor current	3~Mot. ThCl.155(F) TP-WT		
Rated frequency	50Hz	230/400V +-10% D/Y	
Rated current	4.33/2.5A	cosφ 0.78	
Rated power, duty type	1.1kW S1 IE2-81.4%	1425r/min	
Motor series	Mot. 1AV2090B 1LE1001-0EB0		
	SIEMENS AG, Bahnhofst		
Efficiency class according IEC 60034-30			
Temperature class Th.Cl.			
Rated voltage			
Motor designation			



How to order SIMOGEAR

You can simply configure and order your geared motor with a 17-digit order number. The following structure shows you how to configure your geared motor to specifically address your requirements.

2	K	J	3	X	X	X	–	X	X	X	X	X	–	X	X	X	X	–	Z
1	2	3	4	5	6	7		8	9	10	11	12		13	14	15	16		17

Digit Description

1–4 SIMOGEAR designation 2KJ3

5	Gearbox type	Helical gearbox E, 1-stage,	0
		Helical gearbox Z, 2-stage,	1
		Helical gearbox D, 3-stage,	2
		Parallel shaft gearbox FZ, 2-stage	3
		Parallel shaft gearbox FD, 3-stage	4
		Bevel gearbox B, 2-stage	5
		Bevel gearbox K, 3-stage	5
		Helical worm gearbox C, 2-stage	6
		Worm gearbox S, 1-stage	7

6–7 Gearbox size

8 Output shaft

9–10 Motor frame size

11 Motor type

12 Motor efficiency

13 Frequency, voltage

14 Gearbox mounting design

15–16 Transmission ratio

17 Suffix followed with order codes or plain text



SIMOGEAR service

We support you with comprehensive service from the very beginning. This extends from commissioning and maintenance through troubleshooting up to service contracts. Regional contact persons around the globe are there to ensure the availability of your plants and machines.

Furthermore, SIMOGEAR service center is available 24/7, which is just another advantage of our service. When it comes to the mechanical system, SIMOGEAR is always the right choice.

Email: simogear.service.cc.industry@siemens.com

Interested in financing?

Find out the value of flexible financing that offers you the benefits of technical progress without over-extending budgets or liquidity. We are on your side with our expert consultation. Select a solution that will significantly increase your entrepreneurial freedom.

Informational hotline: 0800 6366360
Email: info-sfl.sfs@siemens.com

SIMOGEAR:

Family overview

Helical geared motors

Parallel shaft geared motors



Gearbox designation	E39 ... E149 (1-stage) Z19 ... Z189 (2-stage) D19 ... D189 (3-stage)	FZ29 ... 189 (2-stage) FD29 ... 189 (3-stage)
Number of sizes	7 (1-stage) 13 (2/3 stage)	11
Max. output torque T_{2N}	Up to approx. 20,000	Up to approx. 20,000
Transmission Ratio i	1,29 ... 9,79 (1-stage) 3.0 ... 60 (2-stage) 36 ... 328 (3-stage) 325 ... 27,816 (multistage)	3.5 ... 60 (2-stage) 50 ... 330 (3-stage) 250 ... 50,000 (multistage)
Max. motor power ¹⁾ P_1	55 kW	55 kW
Housing	19 ... 39 aluminum 49 ... 189 cast iron	29 aluminum 39 ... 189 cast iron

**Bevel
geared motors
(2-stage)**

**Bevel
geared motors
(3-stage)**

**Helical worm
geared motors
(2-stage)**

**Worm
geared motors
(1-stage)**



B19 ... B49
(2-stage)

K39 ... K189
(3-stage)

C29 ... C89
(2-stage)

S09 ... S29
(1-stage)

4

10

5

3

Up to 450

Up to approx. 20,000

Up to 1450

Up to 116

3.5 ... 59 (2-stage)

5,7 ... 237 (3-stage)
170 ... 14,900
(multistage)

6,48 ... 363 (2-stage)
270 ... 19,000
(multistage)

5 ... 100 (1-stage)

7.5 kW

55 kW

7.5 kW

0.55 kW

Aluminum

Cast iron

39 aluminum
49 ... 89 cast iron

Aluminum

1) with 4-pole motor at 50 Hz line voltage

Select & configure your drive system

Efficient geared motor selection and dimensioning:



TIA Selection Tool

Our dimensioning and engineering tools support you when configuring all of the components necessary for a drive application. You are navigated through the various engineering steps, from the line supply through converter and geared motors up to the control systems. You have extensive engineering options at your disposal as a result of the wide variety of motor configurations as well as the selection of application-oriented drive and control solutions. This tool is extremely user friendly as a result of the intuitive navigation using the workflow and the fact that simple drives up to complex multi-axis applications are handled in the exact same way.

The SIZER engineering software is now integrated into the TIA Selection Tool.

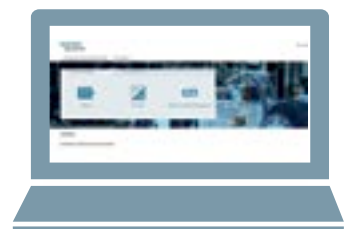
Drive Technology Configurator

The Drive Technology Configurator (DT Configurator) supports you when selecting the optimum products for your application – from motors through converters up to the relevant options.

Comprehensive documentation – from data sheets through operating instructions up to 2D/3D dimension drawings and certificates – can also be called up. The components that you selected can be directly ordered by transferring them into the Industry Mall shopping cart.



www.siemens.com/tst



www.siemens.com/dt-configurator

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