Always in their element

GreenTech EC motors for home appliances

ebmpapst

The engineer's choice

GREEN TECH

About ebm-papst.

As a leader in technologies for ventilation and drive engineering, ebm-papst is in demand as an engineering partner in many sectors. With over 15,000 different products, we provide the right solution for just about any challenge. Our fans and drives are reliable, quiet and energy-efficient.

Six reasons that make us the ideal partner:

Our systems expertise.
You want the best solution for every project. The entire ventilation system must thus be considered as a whole. And that's what we do – with motor technology that sets standards, sophisticated electronics and aerodynamic designs – all from a single source and perfectly matched.

Our spirit of invention.
We are also always able to develop customized solutions for you with our versatile team of over 600 engineers and technicians.

Our lead in technology.
We are pioneers and leaders in the development of high-efficiency EC technology. Already today almost our entire product range is also available with GreenTech EC technology. The list of benefits is long: higher efficiency, low maintenance, longer service life, sound reduction, intelligent control characteristics and incomparable energy efficiency.

Proximity to our customers.
ebm-papst owns 57 sales offices worldwide, of which 47 are subsidiaries with an extensive network of sales representatives and distributors. You will always have a local contact, someone who speaks your language and knows your market.

Our standard of quality.
Our quality management is uncompromising, at every step in every process. This is underscored by our certification according to international standards including DIN EN ISO 9001, ISO/TS 16949-2 and DIN EN ISO 14001.

Our sustainable approach.
Assuming responsibility for the environment, for our employees and for society is an integral part of our corporate philosophy. We develop products with an eye to maximum environmental compatibility, in particular resource-preserving production methods. We promote environmental awareness among our young staff and are actively involved in sporting, cultural activities and education. That's what makes us a leading company – and an ideal partner for you.

GreenTech EC technology ever more popular.

The increasing trend towards energy-efficient devices is also making its mark on the home appliance industry. Over the past few years, standards and regulations introduced in both Europe and the USA have constantly increased the requirements for the efficiency classes of new devices entering the market. The corresponding energy efficiency labels are an indication of this. In home appliances, significant energy savings can be achieved by employing efficient electric drives. EC motors use 30% less energy than conventional AC shaded-pole motors.
GreenTech EC motors from ebm-papst can be used to drive pumps or fans in the home appliance industry for example. They guarantee smooth, energy-efficient, low-noise operation and are future-proof in every respect.

GreenTech is based on a firm principle: Every newly developed has to be economically and ecologically superior to its predecessor.
To achieve this we are constantly improving materials and processes, flow behavior and performance – whilst at the same time reducing energy consumption. The latest energy, air conditioning and ventilation technologies ensure maximum energy efficiency in our factories. Any number of environmental prizes and distinctions, and our unprecedented success in undercutting even the toughest energy limits, are the rewards for our efforts.

GreenTech is a good investment for our customers: In particular thanks to ebm-papst EC (electronically commutated) technology. This is not just the essence of our philosophy, but also at the heart of our most efficient products. It enables us to attain efficiency levels of up to 90% as well as the greatest possible energy savings, and makes our products maintenance-free. With integrated open-loop or closed-loop control and BUS capability, it represents an ecological and consistently more economical alternative to AC technology.

What matters.

The requirements for motors in home appliances differ greatly depending on the application. In addition to the demand for high energy efficiency, factors such as noise level and size are becoming increasingly important criteria when deciding on a modern EC motor. With their useful technical properties and functions, GreenTech EC motors from ebm-papst offer the ideal solution for all requirements. The following criteria make it easy to select just the right EC motor for your application:

– Your advantages in each application (Page 5)

– Possible uses, product features and installation positions (Pages 6-7)

Air flow

Hot air flow

Cold air flow

Pumping

Single-phase

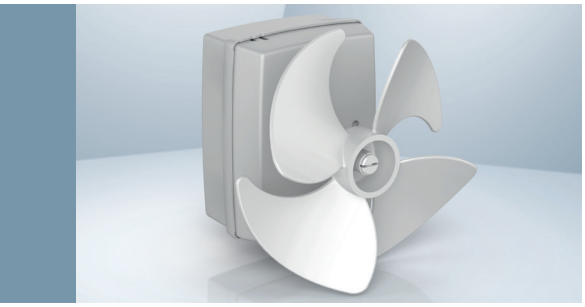
Three-phase

Horizontal shaft/ installation position

Variable shaft/ installation position

– Power ranges and technical data (Pages 8-9)

Your choice.



DE 20

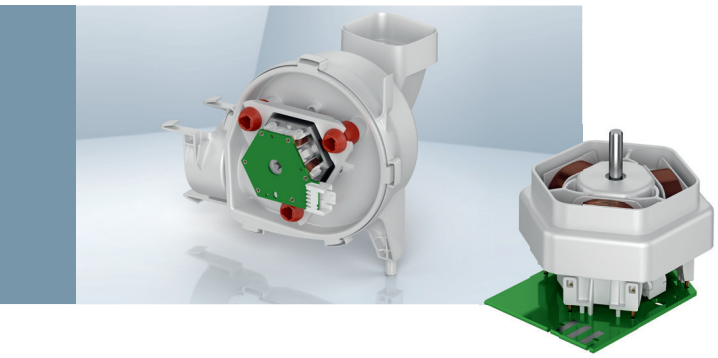
– Motor in robust plastic housing or as platform module for simple integration
– Retrofit for AC shaded-pole motors
– Max. power consumption 3 W (5 W on request), speed range from 800 to 2,700 rpm
– Smooth and quiet operation for a long service life of L_{10} > 80,000 hours
– Speed control and "constant speed" option for 12 VDC version

Use in evaporator applications (condenser applications on request)

BG 15, BG 20

– Motor in plastic housing or as platform module for simple integration
– Retrofit for AC shaded-pole motors
– Speed range from 800 to 2,500 rpm
– Smooth operation for a long service life
– Speed control on request, BG 15 as "constant speed" version

Use in evaporator and condenser applications as well as in fans



BG 19

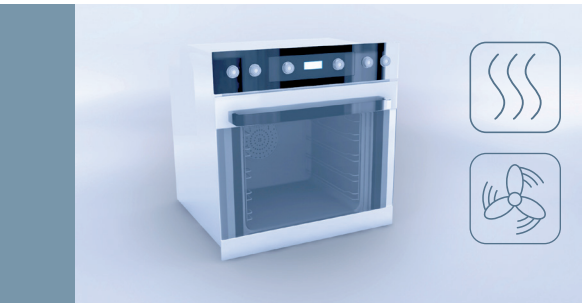
– Platform module with hexagonal design for simple integration
– Sensorless, 3-phase motor for noise-sensitive applications
– Powerful drive unit with speed range from 1,500 to 12,000 rpm
– Defined starting torque permits great freedom of application design

Use in process fans and high-efficiency pumps with speed control

BG 22

– Motor in die cast aluminum housing or as platform module for simple integration
– Two maintenance-free ball bearings for a long service life
– Powerful drive unit with speed range from 1,500 to 12,000 rpm
– Integrated 24 VDC electronics
– Speed control with 0-10 V analog input or PWM

Use as fan drive (e.g. axial and centrifugal fans, tangential blowers)



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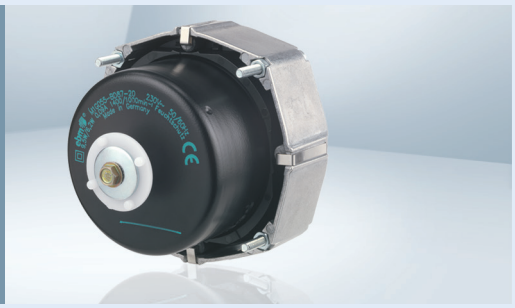
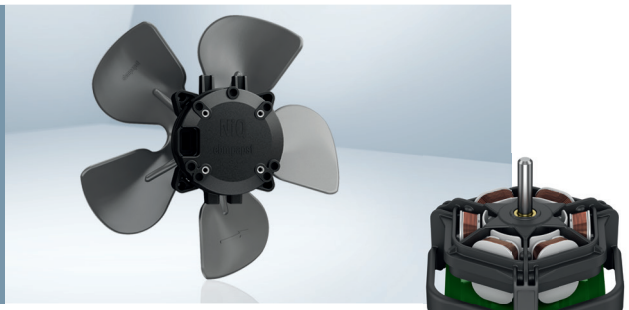


EC external rotor motors from ebm-papst

– Extensive family of motors for different power requirements
– Platform modules for simple integration
– Line voltage and DC versions
– Speed control with 0-10 V analog input or PWM
– BUS functionality on request

Use as drive for axial, centrifugal and diagonal fans



BG 32

– Motor with robust plastic housing (IP54, protection class II) with various mounting options or as platform module with compact design for simple integration
– Clockwise and counter-clockwise operation, speed control on request
– Speed range from 500 to 3,500 rpm

Use in evaporator, condenser, cooling air and circulating air applications

BG 36

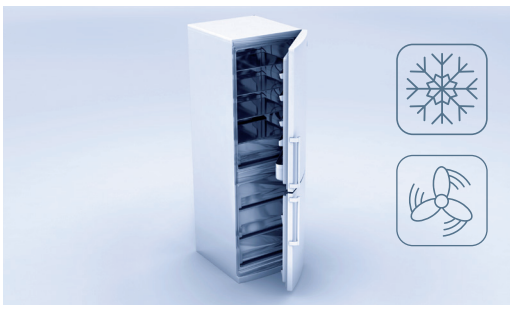
– Platform module for simple integration
– Choice of various motor heights
– Different sizes with power consumption of 10 to 350 W available
– Efficiency up to 75%, optimum speed range from 1,000 to 9,000 rpm

Use as drive for centrifugal fans in a wide variety of applications

BG 43

– Powerful sensorless 3-phase motor
– Retrofit for capacitor motors
– Speed control with 0-10 V analog input or PWM, optional with 24 VDC
– Flexible positioning of electronics
– Speed range from 500 to 4,000 rpm

Use as drive for centrifugal fans, tangential blowers, pumps and transmissions



Usage examples.

Ovens

– Reversible direction of rotation for optimum temperature distribution
– Speed adjustable via control electronics or sensors
– Reduced noise emission thanks to demand-regulated speed adjustment
– Reduced diversity of parts thanks to setting of different operating points (e.g. standard or pyrolysis mode)

as energy-saving drive for hot-air blowers, circulation blowers and kitchen range jacket cooling

Dryers and washer dryers

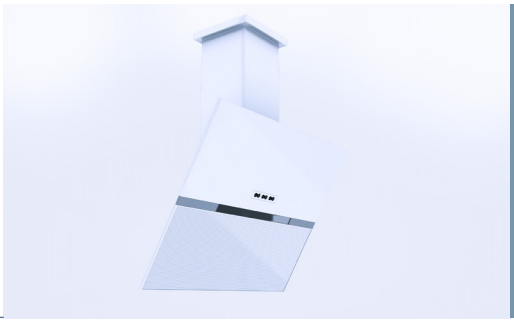
– Additional functions as compared to AC shaded-pole motors
– Speed adjustable via control electronics or sensors
– Reduced noise emission thanks to demand-regulated speed adjustment

as energy-saving drive for condensate pumps, dosing pumps and drying blowers

Extractor hoods

– Sufficient suction power combined with a low noise level at all times
– Available as drive for all types of cooker hood
– Compact design as external rotor motor for easy integration
– Extremely smooth operation
– Speed infinitely variable or adjustable in increments

as energy-saving drive for blowers in circulating air and extractor hoods (also for downdraft applications)



Refrigerators and freezers

– High energy savings thanks to EC technology in continuous operation
– Extremely smooth operation
– Reduced noise emission thanks to demand-regulated speed adjustment
– Space-saving functional units with high-efficiency centrifugal fans
– Simple replacement of shaded-pole motors

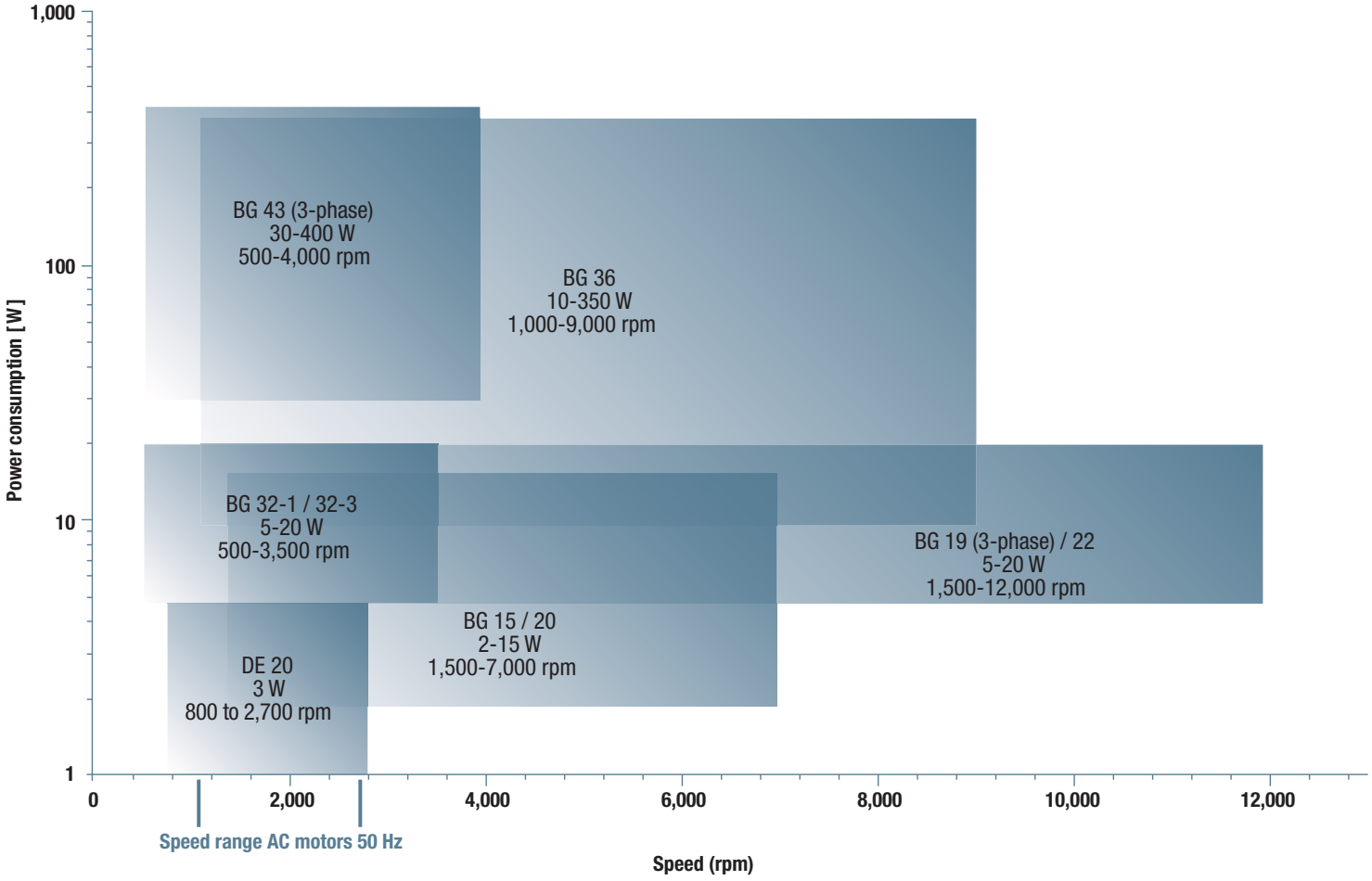
as energy-saving drive for axial and centrifugal fans or tangential blowers for use as evaporator, circulating air (e.g. 0°C zone) or base unit fans

Dishwashers

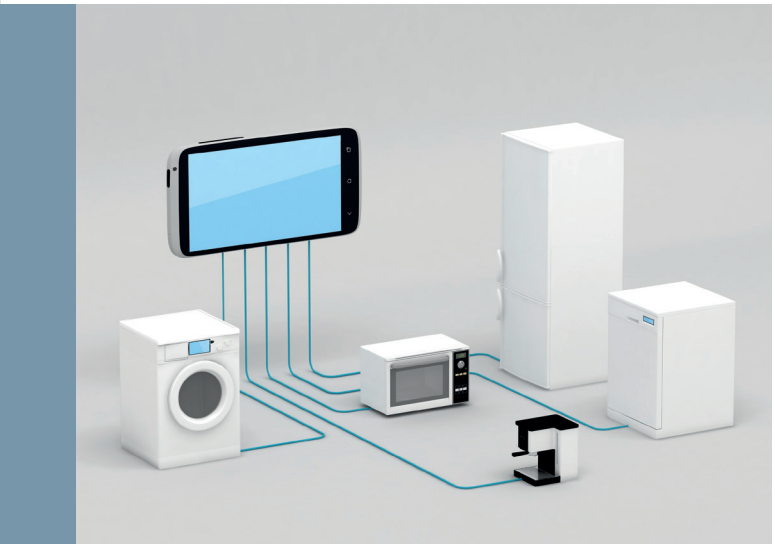
– Compact design of EC motor module
– Easy to integrate into the functional unit
– One motor concept for alternating operation of blower and pump
– Powerful units requiring minimum installation space even with high pressure losses on account of broad speed range

as energy-saving drive for process and drying blowers or pumps

Full of power.



Forward looking.



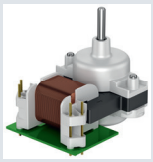
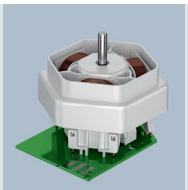
Alongside the variable speed and direction, EC technology from ebm-papst offers further potential for digital communication in the future.

For example

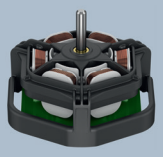
- Speed evaluation
- Integration of communication via bus systems
- Determination of operating statuses and
- Visualization on an end device in a networked system
- Implementation of predictive maintenance through intelligent data utilization.

Further comfort functions are feasible. Please contact us to discuss how to create a solution for your particular requirements.

Technical details.

		DE 20	BG 15	BG 20	BG 19	BG 22
Motor	Motor design	Internal rotor	Internal rotor	Internal rotor	Internal rotor	Internal rotor
	Motor topology (phases)	1	1	1	3	1
	Number of sizes	2	3	2	1	1
Power values	Voltages (in V DC / AC)	12, 230 (115 on request)	12, 220-240	12 / 220-240, 115	24, 220-240	12, 24
	Power consumption	3 (5 on request)	2-15 W	4-10 W	5-20 W	5-20 W
	Torque range		0.1 - 2.5 Ncm	0.1 - 2.5 Ncm	0.1 - 2.5 Ncm	0.1- 6 Ncm
	Speed range	800-2,700 rpm	1,500-7,000 rpm	1,500-7,000 rpm	1,500-12,000 rpm	1,500-12,000 rpm
	IP protection motor / electronics	20 / 20	20 / 20	20 / 20	00 / 00	20 / 20
	Shaft diameter	3.175	3.175	3 / 3.175	4	6
	Service life L_{10} @ temperature	80,000 @ 40°C	80,000 @ 40°C	80,000 @ 40°C	40,000 @ 60°C	40,000 @ 60°C
Function	Hot air, cold air, air distribution, pumping	Cold air, air distribution	Hot air, cold air, air distribution	Hot air, cold air, air distribution	Air distribution, pumping	Air distribution
Electronics	External/internal electronics	Internal	Internal	Internal	External	Internal
	Interface	On request	0-12 V	PWM	0-10 V / PWM	0-10 V / PWM



		BG 32-1	BG 32-3	BG 36	BG 43
Motor	Motor design	Internal rotor	Internal rotor	Internal rotor	Internal rotor
	Motor topology (phases)	1	1	1	3
	Number of sizes	3	1	4	3
Power values	Voltages (in V DC / AC)	- / 220-240, 115	24 / -	24, 325 / 220-240, 115	24, 220-240
	Power consumption	5-20 W	5-20 W	10-350 W	30-400 W
	Torque range			0.1 - 50 Ncm	1-100 Ncm
	Speed range	500-3,500 rpm	500-3,500 rpm	1,000-9,000 rpm	500-4,000 rpm
	IP protection motor / electronics	54 / 54	00 / 00	20 / 20	54 / 21
	Shaft diameter	6	8	6 / 8	8 / 12
	Service life L_{10} @ temperature	90,000 @ -30...+40°C	On request	40,000 @ 60°C	40,000 @ 60°C
Function	Hot air, cold air, air distribution, pumping	Hot air, cold air distribution	Hot air, cold air distribution	Cold air, air distribution	Air distribution
Electronics	External/internal electronics	Internal	Internal	Internal	External / internal
	Interface	On request	On request	0-10 V / PWM / epL-Bus	0-10 V / PWM

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