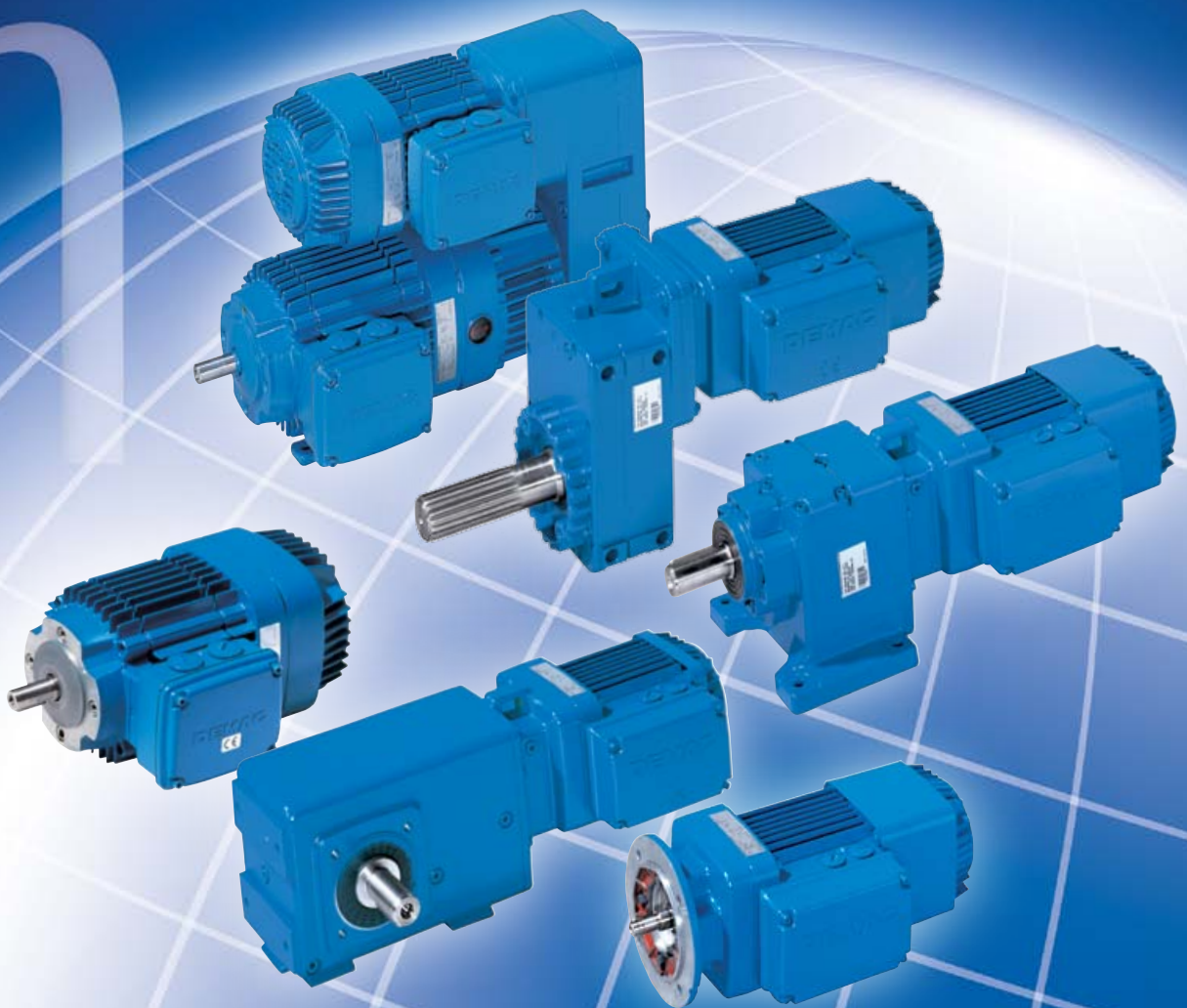
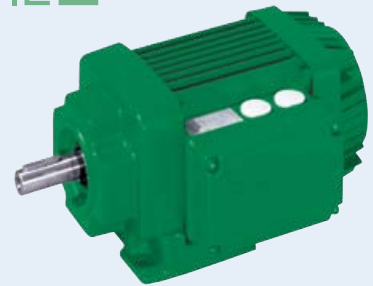


Efficient and kind to the environment

Demag drives

IE2



Legal requirements for energy efficiency – motor efficiency classes

New efficiency classes for AC motors

With a need to save resources and the increasing reduction of energy costs and CO₂ emissions, the IEC 60034-30:2008 standard submitted by the EU and passed by the International Electrotechnical Commission (IEC) defines new efficiency classes for AC motors. The standard represents the international implementation of the EuP* Directive.

This has resulted in a new standard that can be applied all over the world and which replaces the various national systems.

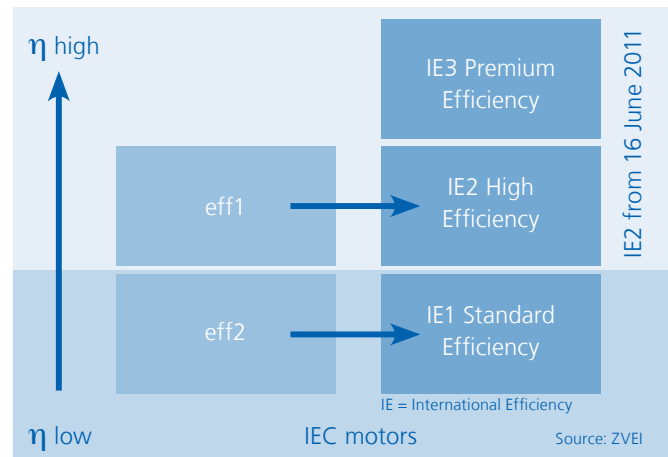
June
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The first stage of the EuP Directive comes into effect on 16 June 2011. From this point of time onwards, motors that are subject to this Directive and which do not at least meet the requirements of efficiency class IE2 may no longer be sold or placed on the market.

* EuP = Energy using Products

The new IE motor standard applies for the following specifications:

- Rated voltages up to 1,000 V
- Rated outputs from 0.75 kW to 375 kW
- Motors for 2, 4 or 6 poles
- Rating for continuous duty (S1) or almost continuous duty (S3 with a duty factor of 80 % or more)
- Motors suitable for direct switching-on via a line supply
- Motors suitable for the ambient conditions defined in IEC 60034-1 (e.g. temperature and installation height)

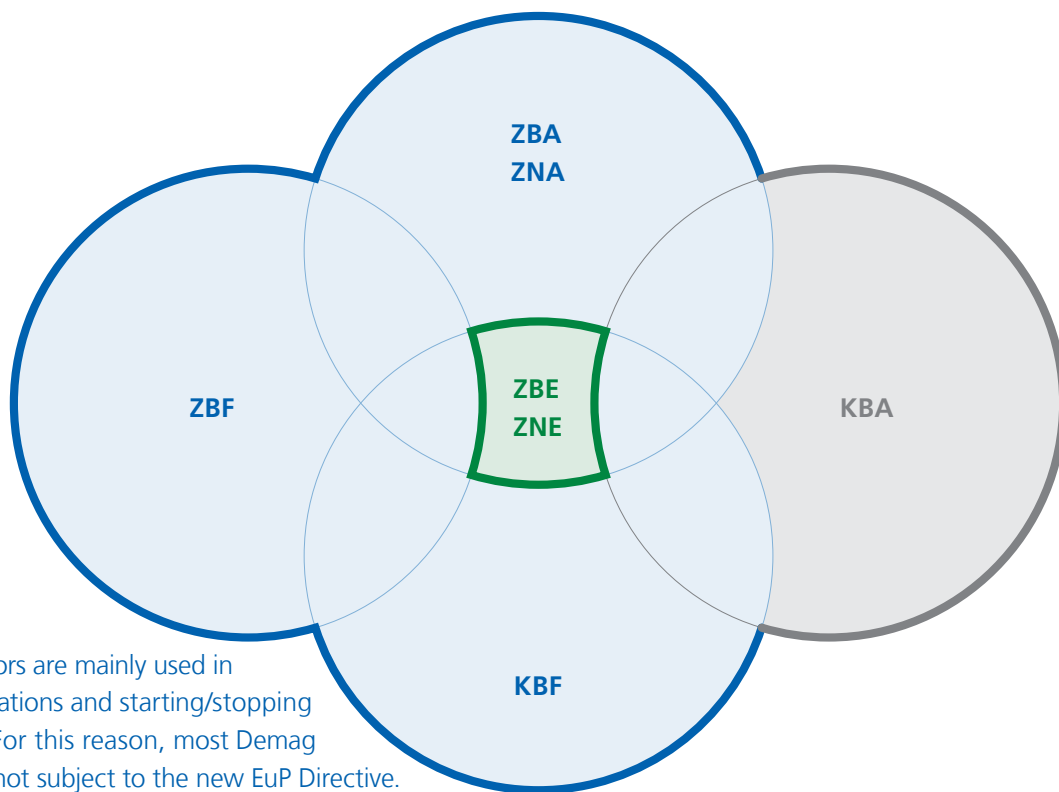


Whereas AC motors have been classified in “eff” efficiency classes until now, these classes will be replaced by the new international IE standard from June 2011.

Excluded from the new classification:

- Motors for short-time duty (S2) or intermittent duty (S3 < 80 % up to S10)
- Pole-changing motors
- Motors for inverter operation which cannot be driven by the mains power supply
- Motors that are specially designed for an application in such a way that their efficiency cannot be independently measured – such as conical-rotor motors for starting/stopping operation with a fully integrated brake, for example

Demag drives – the right motor for every application



Demag motors are mainly used in travel applications and starting/stopping operation. For this reason, most Demag motors are not subject to the new EuP Directive. Demag Cranes & Components has, however, developed ZBE/ZNE motors specially to meet the provisions of this Directive.

Wide range of motors

Demag Cranes & Components offers a wide range of motors for many drive requirements both in the general industrial drives sector and for materials handling applications.

Impact of the new IE motor standard

The vast majority of Demag motors are used in travel applications and starting and stopping operations with a duty factor $\leq 60\%$. They are used to drive cranes and materials handling equipment, for example. For this reason, ZBA/ZNA and ZBF cylindrical-rotor motors and KBA and KBF conical-rotor brake motors are not subject to the EuP Directive, since it does not specify any limit values for such motors. ZBE/ZNE motors have been specially developed for line operation at 100% CDF for pumps, fans and continuous conveyors and meet the requirements of efficiency level IE2.

Efficient use of energy

All Demag motors are, of course, developed and manufactured to use energy effectively and guarantee a high level of efficiency. In this way, they help to ensure that efficient and environmentally friendly solutions are achieved.

Demag Cranes & Components is a part of the Demag Cranes Group. Besides energy-efficient electric motors for continuous, travel and starting/stopping operations, sustainable product solutions produced by the Group also include battery-powered and hybrid drives for special applications in industry, ports and terminals.

Demag ZBE/ZNE motors – the energy-saving motors for the new EuP Directive

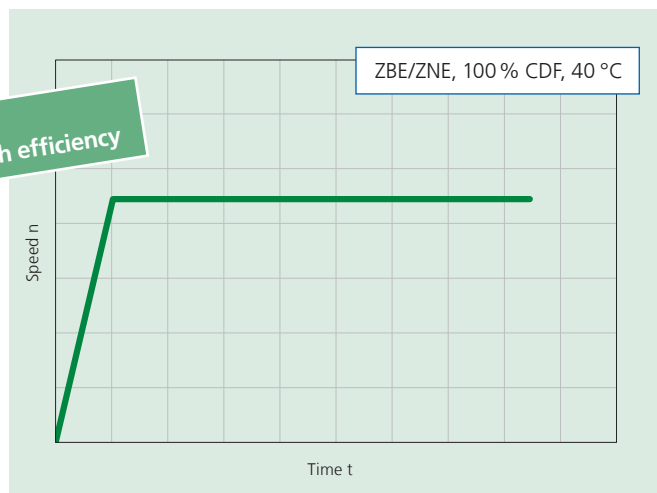
Demag Cranes & Components has developed ZBE/ZNE motors for efficiency class IE2 which applies worldwide from 16 June 2011. These new Demag energy-saving motors are designed for drives with a duty factor of 100 % at 40 °C.

ZBE/ZNE cylindrical-rotor motors are available as 4-pole units and are adapted to meet varying regional voltage and frequency requirements.

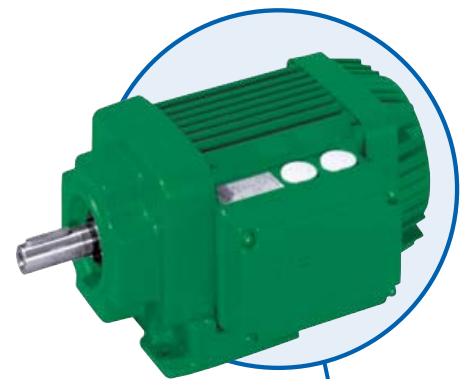
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The new Demag ZBE/ZNE motors are available worldwide from 1 April 2011. Please contact your local Demag sales office.

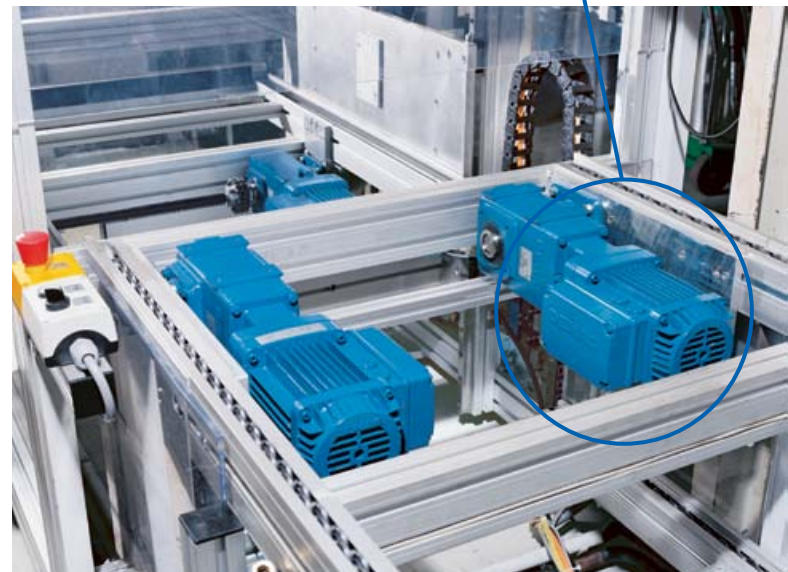
Curve for applications in continuous duty



ZBE/ZNE motors are also operated in continuous duty for applications that are controlled direct on-line to drive pumps, compressors or fans, for example.

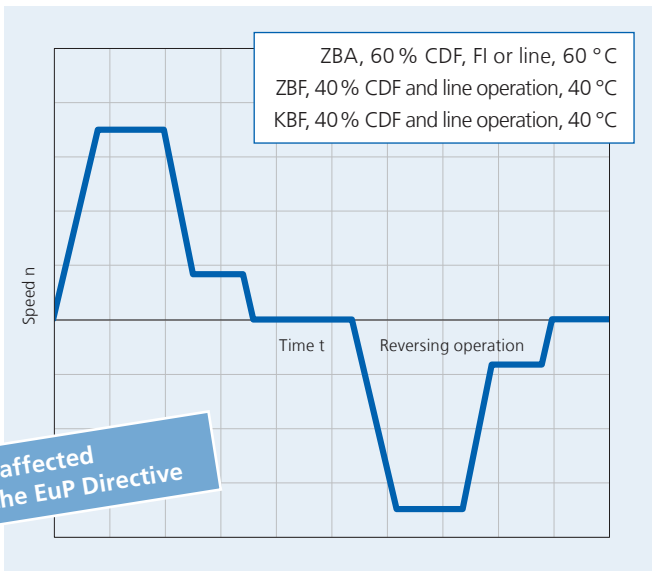


The new Demag ZBE/ZNE energy-saving motors are suitable for operation in continuous roller conveyors for continuous material transport, for example.



Demag drives – focus on travel applications and starting/stopping operation

Curve for applications in intermittent duty: Travel applications



Demag ZBA/ZNA, ZBF and KBF motors are designed for a wide range of travel applications and are mainly used for reversing duty with creep positioning speeds.

ZBA/ZNA and ZBF cylindrical-rotor motors and KBF conical-rotor brake motors

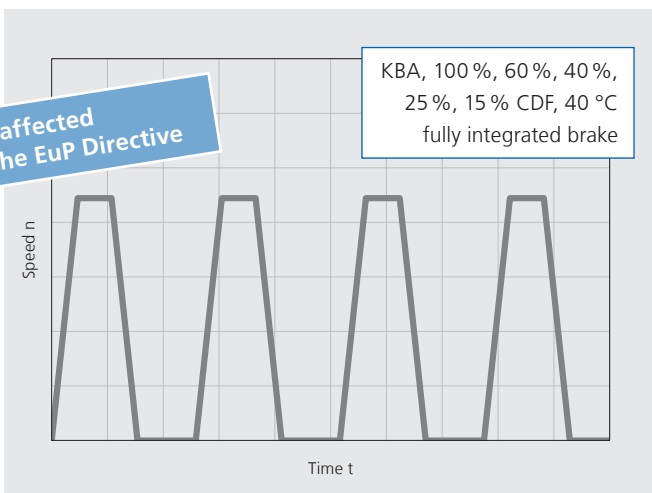
Particularly suitable for travel applications. Frequency inverter (FI) or line operation depending on the motor type.

ZBA as wide voltage range motors specially suited for operation with frequency inverters. The low moment of inertia offered by ZBA motors provides for efficient acceleration in travel applications and frequency inverter operation.

ZBF for gentle acceleration and deceleration, **KBF** to accommodate braking energy – both for line operation.



Curve for starting and stopping applications



Demag KBA conical-rotor brake motors are designed for starting/stopping applications with short cycle times and high positioning accuracy.

KBA conical-rotor brake motors

Ideal for extremely high switching frequency when operated with a line supply and featuring a rugged design for short-term overloads. Available as microspeed drives with wide speed ranges. Brake fully integrated in the motor, which means the efficiency of the motor cannot be measured without the brake.



Technical data

Applications for continuous duty

Output [kW] 100 % CDF 40 °C temp.	Designation * ZBE ZNE	Efficiency levels [%]		
		η_{50}	η_{75}	η_{100}
0.75	ZBE/ZNE 80 B4	80.1	82.4	81.9
1.1	ZBE/ZNE 90 A4	81.4	82.6	82.4
1.5	ZBE/ZNE 90 B4	83.2	84.4	83.9
2.2	ZBE/ZNE 100 A4	82.3	84.9	84.7
3	ZBE/ZNE 100 B4	83.6	86.4	86.2
4	ZBE/ZNE 112 A4	86.0	87.9	87.7
5.5	ZBE/ZNE 132 A4	86.0	89.3	89.0
7.5	ZBE/ZNE 132 B4	87.5	90.3	90.0
11	ZBE/ZNE 160 A4	89.0	90.8	90.6
15	ZBE/ZNE 160 B4	89.2	91.8	91.3
18.5	ZBE/ZNE 180 A4	89.3	92.4	92.3
22	ZBE/ZNE 180 B4	89.3	92.8	92.5
30	ZBE/ZNE 200 A4	88.4	92.8	92.7
37	ZBE/ZNE 225 A4	90.8	93.2	93.0
45	ZBE/ZNE 225 B4	92.8	94.2	94.0

* ZBE = braked
ZNE = no brake

We will be pleased to provide you with technical data on further ZBF, KBF and KBA motor types on request.

Applications for intermittent duty: travel applications

Output [kW] 60 % CDF 60 °C temp.	Designation ZBA = braked ZNA = no brake
0.18	ZBA/ZNA 63 B4
0.25	ZBA/ZNA 71 A4
0.37	ZBA/ZNA 71 B4
0.55	ZBA/ZNA 80 A4
0.75	ZBA/ZNA 80 B4
1.1	ZBA/ZNA 90 A4
1.5	ZBA/ZNA 90 B4
2.2	ZBA/ZNA 100 AL4
3	ZBA/ZNA 100 B4
4	ZBA/ZNA 112 A4
5.5	ZBA/ZNA 132 AL4
7.5	ZBA/ZNA 132 B4
9.5	ZBA/ZNA 132 C4
11	ZBA/ZNA 160 AL4
15	ZBA/ZNA 160 B4
18.5	ZBA/ZNA 180 A4
22	ZBA/ZNA 180 B4
30	ZBA/ZNA 200 A4
37	ZBA/ZNA 225 AL4
45	ZBA/ZNA 225 B4

Output [kW] 40 % / 40 % CDF 40 °C temp.	Designation
0.06 / 0.25	ZBF 63 A 8/2
0.09 / 0.34	ZBF 71 A 8/2
0.13 / 0.5	ZBF 80 A 8/2
0.2 / 0.8	ZBF 90 B 8/2
0.29 / 1.2	ZBF 100 A 8/2
0.46 / 1.9	ZBF 112 A 8/2
0.72 / 2.9	ZBF 132 A 8/2
0.88 / 3.5	ZBF 132 B 8/2

Output [kW] 40 % / 40 % CDF 40 °C temp.	Designation
0.04 / 0.2	KBF 71 A 8/2
0.06 / 0.3	KBF 71 B 8/2
0.13 / 0.5	KBF 80 A 8/2
0.2 / 0.8	KBF 90 A 8/2
0.26 / 1.2	KBF 100 A 8/2
0.42 / 1.9	KBF 112 A 8/2
0.65 / 2.9	KBF 125 A 8/2
1.1 / 4.5	KBF 140 A 8/2

Starting/stopping applications

Output [kW] 40 % CDF** 40 °C temp.	Designation
0.48	KBA 71 A4
0.72	KBA 71 B4
1.05	KBA 80 A4
1.3	KBA 80 B4
1.65	KBA 90 A4
2.0	KBA 90 B4
2.4	KBA 100 A4
3	KBA 100 B4
3.6	KBA 112 B4 A
4.5	KBA 112 B4
6	KBA 125 B4 A
7.4	KBA 125 B4
9.6	KBA 140 B4 A
11.5	KBA 140 B4
20	KBA 160 B4
30	KBA 180 A4
40	KBA 200 B4
55	KBA 225 B4

** Typical duty factor for KBA motors