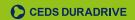


# Antrieb für eine grüne Zukunft





### **Drives & Generators Technologies/Applications**

### **Asynchronous**

Areas of application:

- conveyor technology
- fans and air conditioning
- compressors
- pumps
- mixers and kneading machines
- hoisting technology
- machine tools
- traction drives

### **Synchronous**

Areas of application:

- paper industry
- cleaning facilities
- belt drives
- synchronism
- parallel operation w/o feedback

### Direct current

Areas of application:

- wind power industry
- textile industry



### **Torque**

Areas of application:

- radar systems
- rotary plate for machine tools
- powerful rotary drives
- construction machinery
- tunnel boring machine



### Servo

Areas of application:

- machine tools
- ▶ for very limited installation space
- compressor / extruder
- highly dynamic applications
- travel drives

### **Geared motors**

Areas of application:

- cleaning facilities
- rail vehicles
- conveyor technology
- textile industry







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## Technologies/Applications **Drives & Generators**

	drive motors					generators
parameters	synchronous	asynchronous	servo	torque	direct current	a-/synchronous
power [p]	up to 1MW	up to 600 kW	up to 1 MW	application-specific	up to 20 kW	up to 500 kW
rotational speed	20.000 rpm	30.000 rpm	20.000 rpm	application-specific	application-specific	up to 1.800 rpm
voltage	0-500 VAC	0-500 VAC	0-500 VAC	0-500 VAC	0-500 VAC	application-specific
torque	1 Nm-10 kNm	1 Nm-10 kNm	1 Nm-10 kNm	20 kNm	application-specific	application-specific
efficiency	up to 97 %	up to 95%	up to 97%	application-specific	application-specific	up to 97%
Torque density	high	good	high	very high	low	high
advantages	<ul> <li>+ light and compact design</li> <li>+ efficient in relation to size</li> <li>+ high efficiency with small rotational speeds</li> <li>+ grid operation possible</li> </ul>	+ cost-effective + very long service life + low maintenance + high rotational speed + can deliver 3 times the rated capacity for a short time	<ul> <li>+ high positioning accuracy</li> <li>+ high acceleration capacity</li> <li>+ light and compact design</li> <li>+ efficient in relation to size</li> </ul>	+ very high rotational speed + compact design (packet lengths) + high positioning accuracy	+ direct battery emergency operation in case of power failure + high starting torque	+ high efficiency (synchronous) + rotational speed independent of load (synchronous) + low maintenance
limits	- frequency inverter required for rotational speed variance - limited rotational speed due to rotor design	- size - no braking torque in case of power failure - no speed stability without recirculation	- frequency inverter required - limited rotational speed due to rotor design - peripheral costs (permanent magnets)	- high iron losses - expensive periphery - peripheral costs (per- manent magnets)	- relatively maintenance- intensive - limited rotational speed due to collector - limited efficiency	- expensive permanent magnets necessary - increased acquisition costs - peripheral costs (permanent magnets)



CEDS DURADRIVE GmbH Neuenkirchener Straße 13 48499 Salzbergen Germany

p. +49 5976 6449 0 f. +49 5976 6449 113 info@ceds-duradrive.de

www.ceds-duradrive.de/en