

2 MW – 36 MW, 6.0 – 13.8 kV

ACS5000 Medium Voltage Drive

The power you require. The reliability you expect.

The ACS5000 special purpose drive

The ACS5000 medium voltage drive is part of ABB's special purpose drives portfolio. Special purpose drives are engineered drives for your high power, high speed or special performance applications such as test stands, marine propulsion and thrusters, rolling mills, SAG and ball mills, large pumps, fans and compressors.

The drives cover a wide power and voltage range, including voltages up to 13.8 kV and powers of more than 100 MW.

Get a drive solution that meets the requirements of your application and ensures high productivity and optimum performance of your operations. Benefit from the built-in expertise of our special purpose drives and take your business forward with everything working like clockwork.

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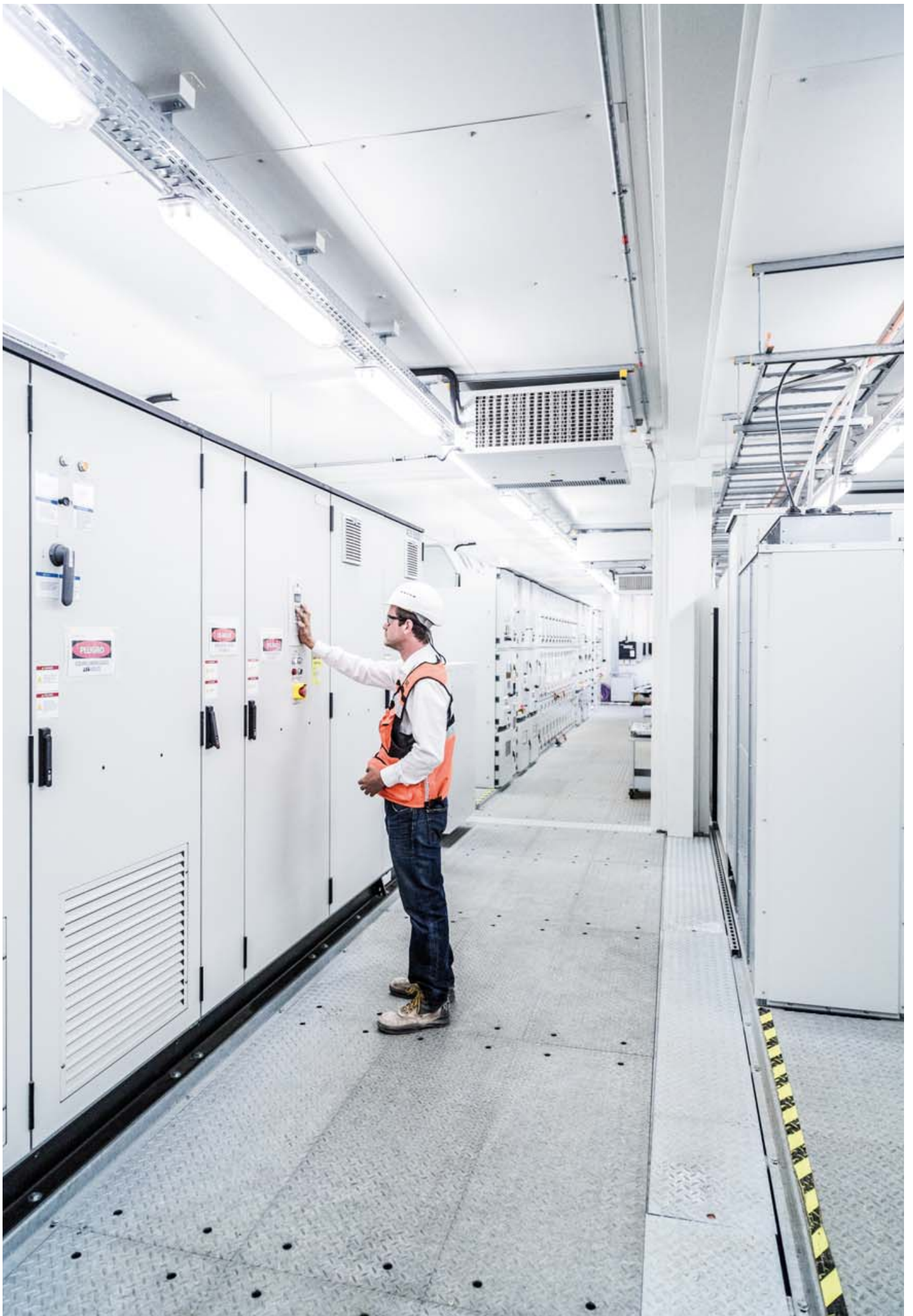
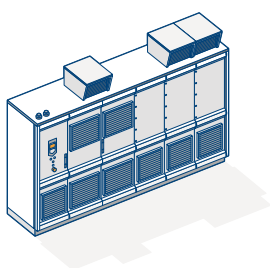


ABB Medium Voltage Drives

Product portfolio

A broad range of variable speed drives for medium voltage applications allows you to select the drive that best meets your individual requirements. Get the perfect match for you.

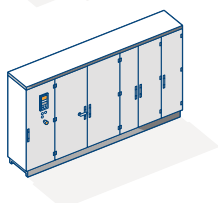


ACS580MV general purpose drive

The ACS580MV is part of the all-compatible ABB drive portfolio. It turns complicated to simple while ensuring the highest reliability. The drive has all essential features built-in as standard, and it is designed to control a wide range of applications in different industries.

Power range
200 kW–6.3 MW

Output voltage
6–11 kV



ACS1000 industrial drive

Whatever your industry, the ACS1000 is an all-rounder to control your standard applications and optimize your processes.

Power range
315 kW–5 MW

Output voltage
2.3–4.16 kV

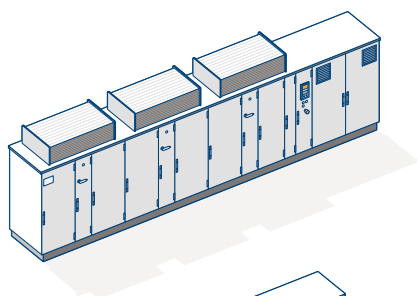


ACS2000 industrial drive

The ACS2000 is an industrial all-rounder that perfectly adapts to a wide variety of standard applications across all industries.

Power range
250 kW–3.68 MW

Output voltage
4.0–6.9 kV

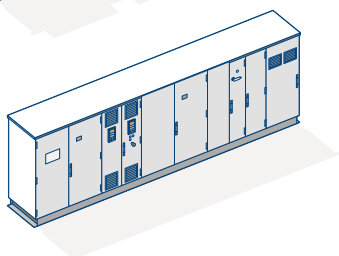


ACS5000 special purpose drive

The ACS5000 effortlessly controls your high power applications such as compressors, pumps and fans.

Power range
2–36 MW
(higher on request)

Output voltage
6.0–13.8 kV

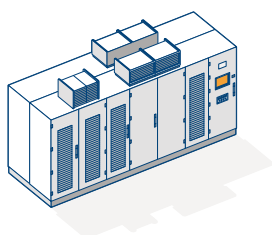


ACS6000 special purpose drive

Look no further than the ACS6000 if your high performance applications require a single- or multi-motor drive solution.

Power range
5–36 MW

Output voltage
2.3–3.3 kV

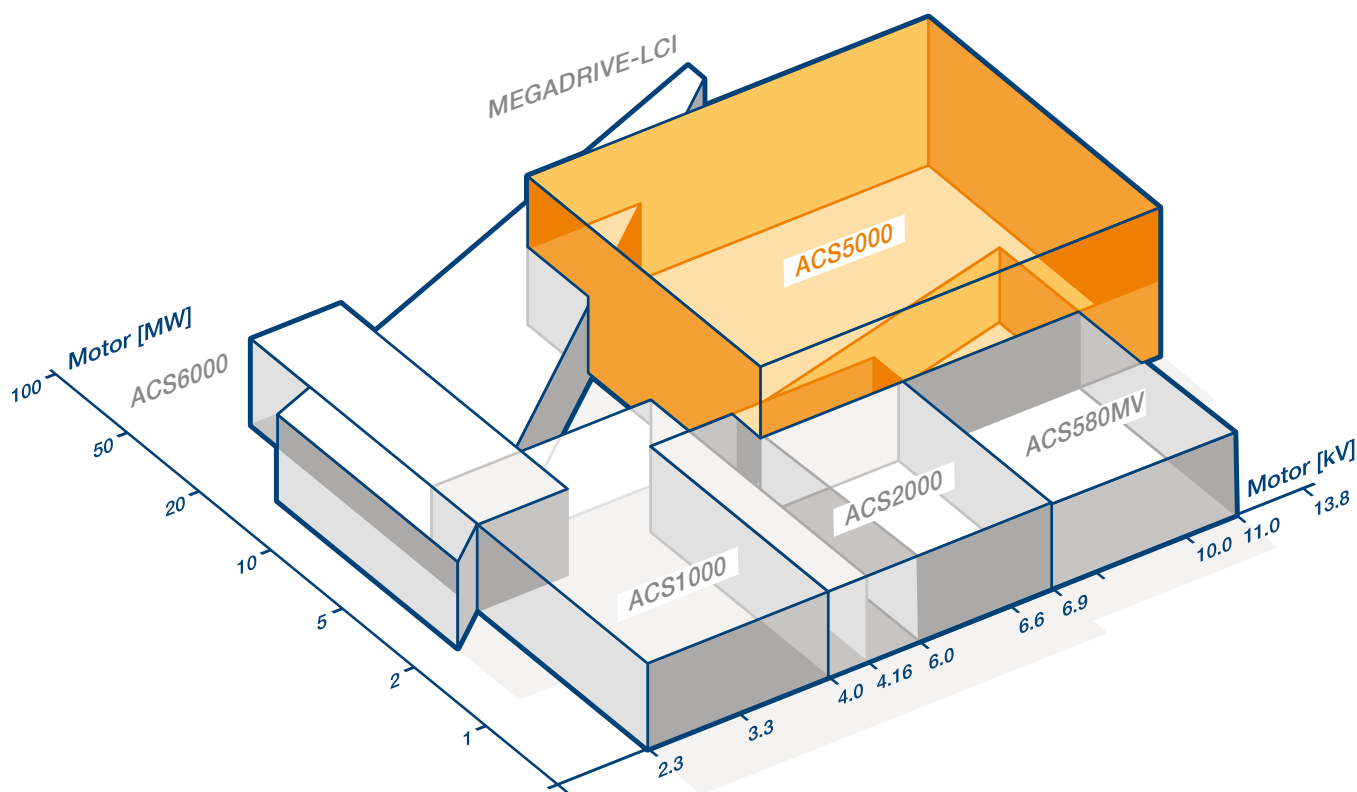


MEGADrive-LCI special purpose drive

The well-proven technology offered in the MEGADrive-LCI controls your high power applications and provides soft starting of large synchronous motors.

Power range
2–150 MW
(higher on request)

Output voltage
2.1–2 x 25 kV



Our product portfolio comprises medium voltage drives in the range of 250 kW to more than 100 MW.

Get more using less

Our broad portfolio of medium voltage drives will help you to increase your productivity and profitability. Your processes will use only the energy required to carry out the job and no more. Precise control ensures efficient operation with high uptime and optimized use of raw materials. This will all add up to cost and time savings for you.

Delivering global support and peace of mind

Our worldwide network offers you fast service and support around the clock, providing peace of mind by always being there when you need us.

Reliable performance you can count on

Depending on your industry and application, we provide you with solutions that meet your individual needs and requirements. Our variable speed drives - from 250 kW to more than 100 MW – control a wide range of medium voltage applications.

Through the use of quality components and the integration of special features, our drives ensure high process availability and safety for your business. With well-proven drive technology at the heart, your operations will run smoothly and reliably every day.

ACS5000

High power drive for safe operations

The champion in the high power field provides advanced safety features and industry-specific functions to meet the specific needs of your application. It ensures reliable control of applications that require high powers and makes your operations efficient and safe.

Powerful and reliable

The ACS5000 medium voltage drive conforms to operations in many fields, but is particularly suited for the chemical, oil, gas and power generation industries due to its robust design. The drive comes with various industry-specific features, which integrate seamlessly with your system and increase the productivity of your processes.

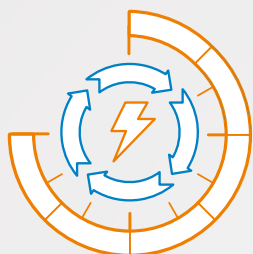
Due to the ACS5000's advanced arc resistant design, you can be sure of the highest safety levels in your day to day operations for your personnel and equipment.

The compact air-cooled ACS5000 is designed to control standard motors, typically used for applications such as pumps, fans, compressors, mixers, mills and conveyors. The water-cooled ACS5000 drives your high power, high speed or special performance applications such as large pumps, fans, extruders and compressors.



ACS5000

Benefits that add value

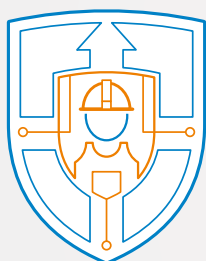
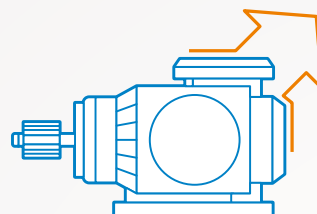


Energy efficiency

Our medium voltage drives run your motors based on the demands of your process rather than running them at full speed and ensure optimized power consumption and process efficiency. In this way you can save energy and reduce CO₂ emissions.

High power motor control

The ACS5000 is a reliable solution for controlling induction, synchronous and permanent magnet motors and driving your high power applications such as compressors, pumps and fans.

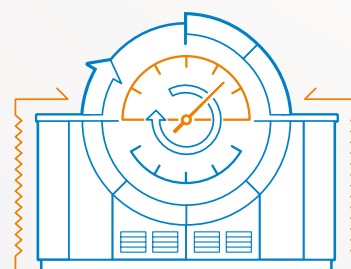


Highest level of personnel safety

Your people and goods are protected from electric arcs thanks to the advanced safety design of the ACS5000. Arcs are detected and eliminated very fast, avoiding production stoppages. Certified functional safety features and a DC grounding switch make your systems safe and reliable.

Drive robustness ensures high availability

The robust ACS5000 effortlessly drives your high power applications and controls operations even in harsh environments. Special features such as automatic restart ensure the high availability of your processes.



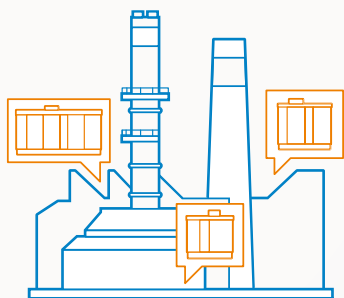
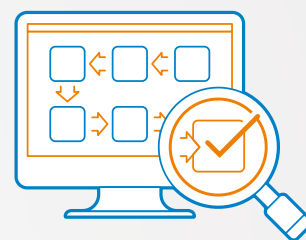


High reliability through well-proven design

Availability of your operations is ensured thanks to the simple, fuseless design. A low parts count and proven components contribute to high uptime and the long lifetime of your drive. Reliability is further increased with the drive's power loss ride-through function so that you are less dependent on network conditions.

Increased productivity due to precise process control

Reduce your energy consumption and increase process efficiency with ABB's direct torque control (DTC) method. Drive control is immediate and smooth in any conditions, ensuring optimum output and productivity.

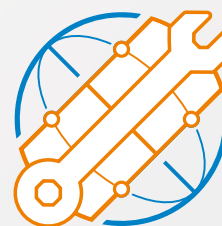


Industry-specific solutions for individual needs

Features designed specifically for the oil and gas and power generation industries allow the ACS5000 to adapt perfectly to your application. Choose from a broad range of configurations to drive your standard and high-speed motors, and optimize your system costs.

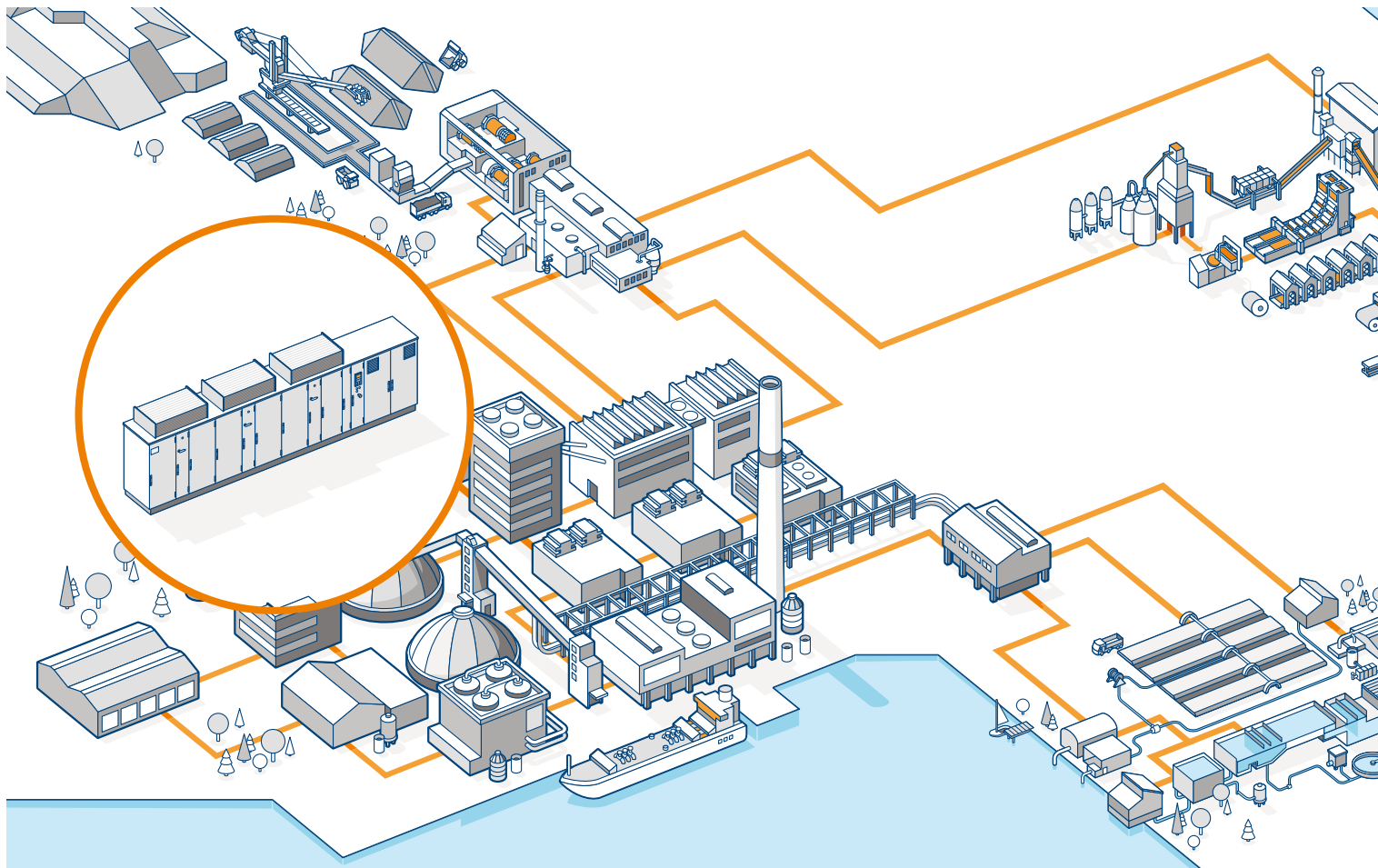
Serviceability

Easy access to all components ensures that maintenance of the ACS5000 is simple and smooth. In addition to powerful diagnostic tools, you will profit by convenient remote monitoring.

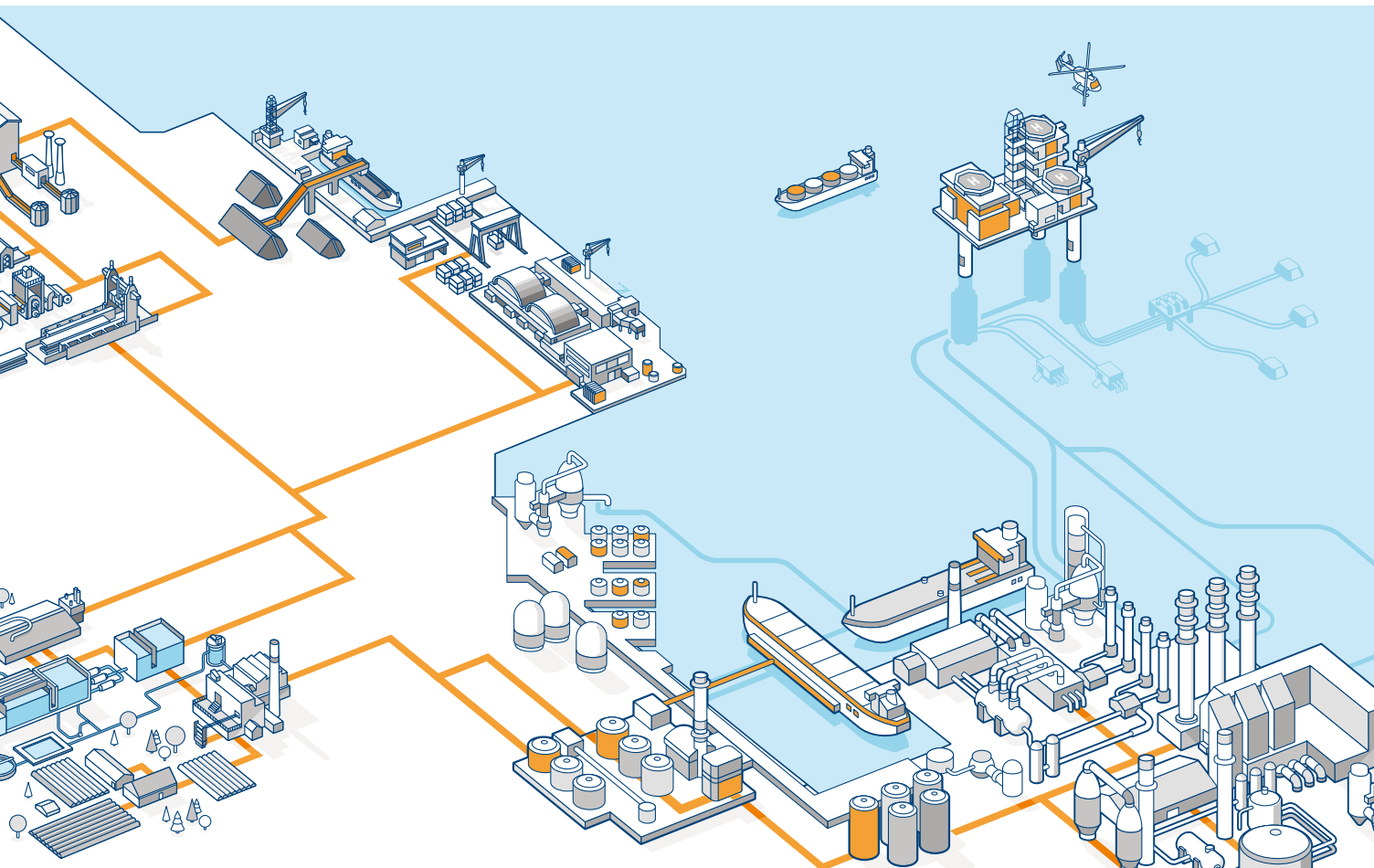


ACS5000

Driving your high power applications



Industry-specific solutions make the ACS5000 perfectly suitable to control your applications in the high power range.



Applications

Chemicals, oil and gas

Compressors, extruders
and pumps

Cement, mining and minerals

Grinding mills, conveyors,
crushers, fans and pumps

Metals

Blast furnace blowers,
fans and pumps

Power generation

Fans, pumps,
gas turbine starters

Water

Pumps

Other applications

Test stands and wind tunnels

ACS5000

Flexible drive system integration



Customized solutions enable a smooth integration of the drive into any industrial environment.

Industry-specific options

The ACS5000 can be easily integrated into your processes and systems, thanks to a broad range of special features particularly tailored to your high power applications.

Open control system

We offer an open communication concept, enabling connection to higher level process controllers. The ACS5000 can be fitted with all major fieldbus adapters for smooth integration, monitoring and controlling of different processes, according to your requirements.

Commissioning

The commissioning wizard DriveStartup is an advanced tool that simplifies and speeds up commissioning. Standardized parameter sets and trained, certified professionals ensure smooth and fast commissioning.

Grid compatibility

The air-cooled ACS5000 can be configured with an external or integrated input transformer.

Depending on the availability of cooling water, the water-cooled ACS5000 can be configured with a combined water cooling system of the input transformer and the converter. Even if no cooling water is available you can benefit from the high power of the ACS5000 water-cooled drive by using closed loop cooling with dedicated air blast coolers or chillers.

The ACS5000 can also be adapted for applications with very long motor cables.

ACS5000

More efficiency with drive packages



Packaged drive solutions provide you with ultimate efficiency and reliability to optimize your cost of ownership.

All-in-one package

Committed to supporting you in your business, we offer packaged drive solutions for applications in various industries. Customer-specific drive packages including medium voltage converters, motors and transformers can be developed as turnkey solutions meeting your individual requirements.

Matched performance

To ensure design integrity and an optimum match of equipment, ABB products have undergone combined tests ensuring performance predictability for your application.

Single point of contact

The combined power of the ABB offering is geared to deliver on customer expectations. We deliver motor-drive solutions that support your technical and commercial needs, from quotation, through delivery and service, over the entire product life-cycle.

Converter motors

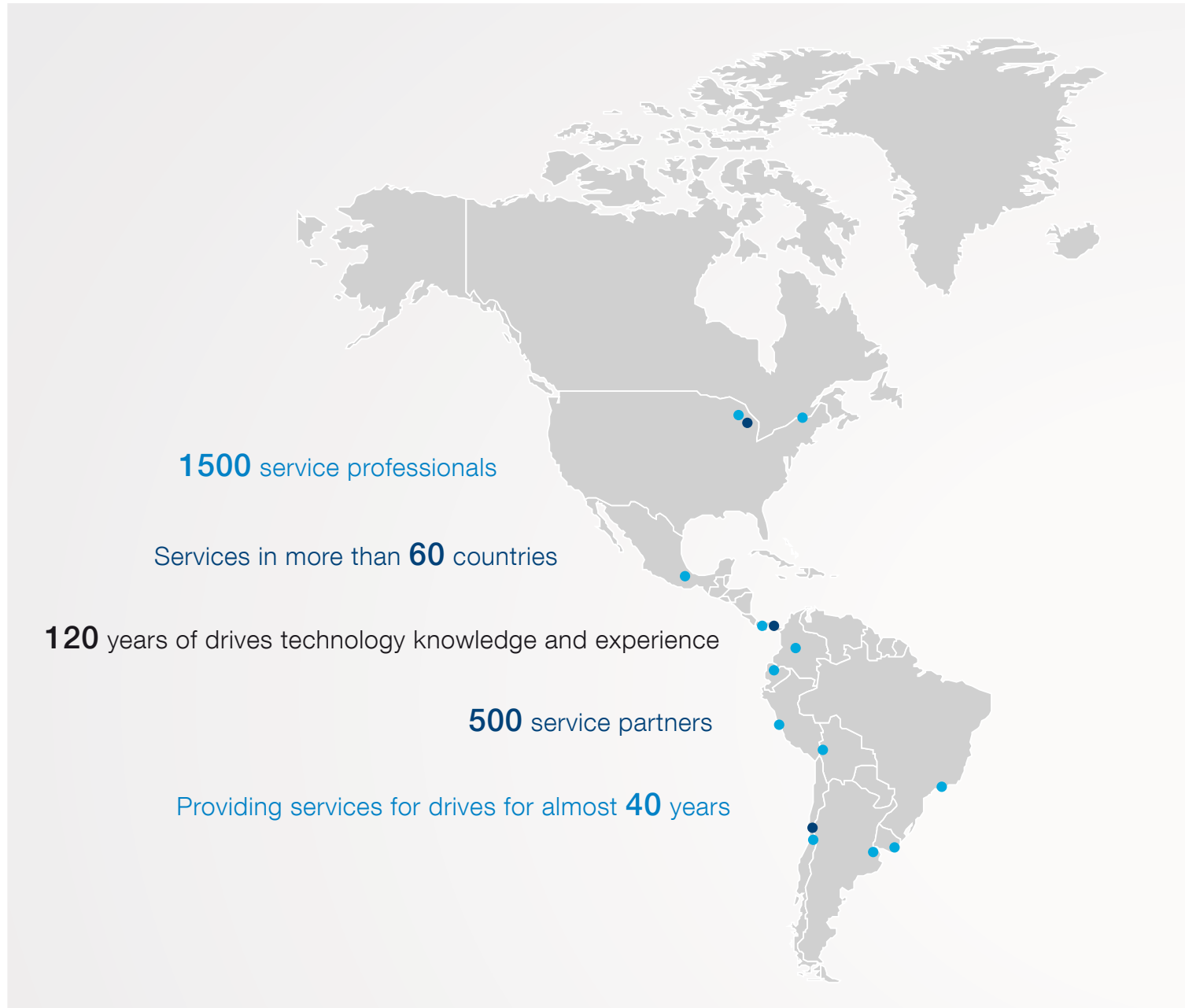
With ABB's motors for your applications you will benefit from high versatility, reliability and simplicity.

Converter transformers

ABB offers converter transformers for all ratings, as well as for indoor or outdoor mounting. Particularly designed for operation with variable speed drives, the transformer adapts the converter to the supply network and provides a galvanic isolation between drive and supply network.

Service and support

You choose, we respond, globally



For everyone who makes the decision to choose our expert drive service solutions, we are with them every step of the way. To guide and facilitate whatever service choices suit their business, for the entire drive's lifetime. With expert service and advice and on-time delivery, every time.

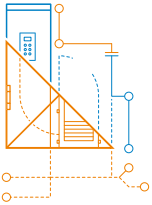
For decades we have built one of the most comprehensive service networks, globally. It is well-structured to ensure you have all the experts close at hand, locally and globally. We have local drives and control service units complemented by external ABB value providers in over 60 countries. Regional service centers, training centers and authorized drive service workshops form a well-structured and large service organization, making sure that ABB drives and control service team is never too far from your site.



- Regional Service Centers
- Local Service Units

Technical features

Robust solution with special features



Robust drive design

Special control features of the ACS5000 drive allow reliable operation in both weak and unbalanced networks. The drive is available with IP54 enclosure, making it suitable for operations even in harsh environments.

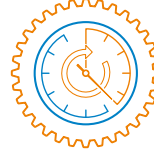


Highest level of personal and equipment safety

Electric arcs represent a hazard source for people and goods. For systems where large and dangerous arc fault currents can occur, special attention is required. Therefore, the high power water-cooled ACS5000 is equipped with a superior protection function and ABB's Arc Guard System™. This IAC classified solution assures very fast arc detection and elimination (less than 6 ms) to protect people and equipment.

Certified functional safety features

The ACS5000 is equipped with SIL (safety integrity level) 3 and PL (performance level) e certified functional safety features to allow the design of safe and reliable systems. An integrated grounding switch and electromechanical door locks make your operations even safer.



Reliable and efficient components

The combination of well-proven parts and an innovative topology results in a reliable drive solution to control your processes.

IGCT semiconductors

The ACS5000 uses a power semiconductor known as IGCT (Integrated Gate Commutated Thyristor), which is an ideal switch for high-powered medium voltage applications. The use of IGCTs results in a low parts count, providing an efficient and reliable drive.

Long-life DC link capacitors

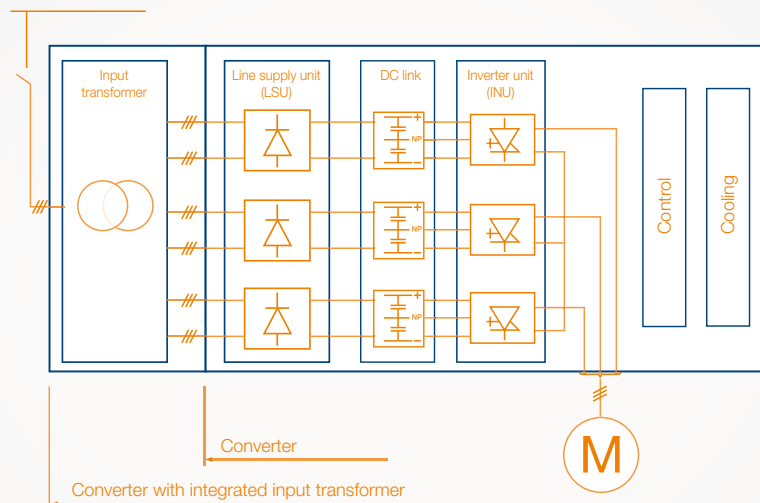
Advanced, self-healing, environmentally friendly foil capacitors, designed for a long lifetime, are used in the DC link. This technology gives you a clear advantage over unreliable and maintenance intensive designs that are based on electrolytic DC link capacitors.

Fuseless design

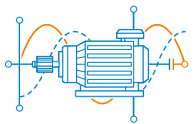
The converter design does not require any medium voltage power fuses, which are known to be unreliable, costly and subject to aging. The ACS5000 uses dedicated IGCTs which provide faster and more reliable protection of the drive. This protection scheme responds in less than 25 µsec, about two hundred times faster than fuses.

Power loss ride-through

A special feature of DTC is its ability to ride through short main supply voltage interruptions so that in most cases the process is not affected.



ACS5000 Voltage Source Inverter Multilevel-Fuseless (VSI-MF) topology



Motor-friendly output waveform for use with new or existing motors

The ACS5000 topology has an optimum number of switching levels, which provides a multilevel output waveform. This allows

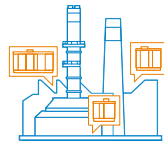
the use of standard motors up to 6.9 kV without compromising reliability. The drive is equipped with a 36-pulse rectifier meeting the most stringent requirements for current and voltage harmonic distortion as defined by IEEE, IEC and EN. This eliminates the need for costly harmonics analysis or the installation of network filters when applying a new drive.



Powerful performance with DTC

Fast, reliable and accurate process control in combination with low energy consumption results in top performance.

The ACS5000 drive control platform is ABB's award-winning direct torque control (DTC), resulting in the highest torque and speed performance, as well as the lowest losses ever achieved in medium voltage drives. Control of the drive is immediate and smooth under all conditions, even during high supply voltage and frequency variations.



Industry-specific solutions

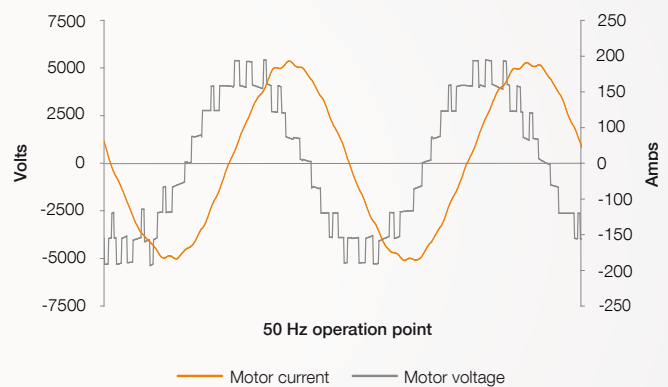
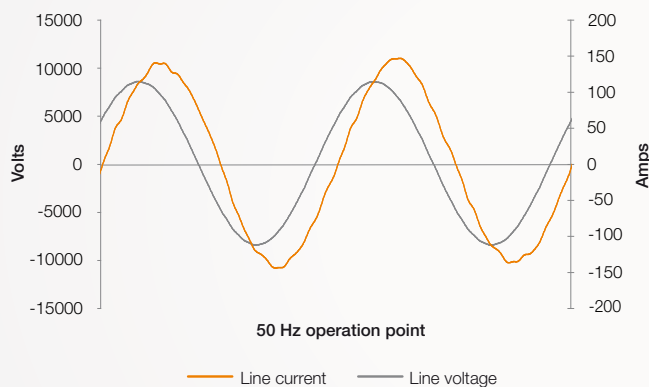
The ACS5000 provides you with high configuration flexibility and ensures powerful and application-friendly performance.

Select from the wide range of configurations available for the water-cooled ACS5000 in order to meet the specific requirements of your application. Industry-specific features make the drive particularly suitable for the oil and gas and power generation industries.

Transformer flexibility

The drive can be connected to an external or integrated transformer. The use of an external input transformer will minimize the heat losses into the electrical room, eliminating the need for additional ventilation systems. When operating the drive with an integrated transformer, installation and commissioning is particularly simple and fast.

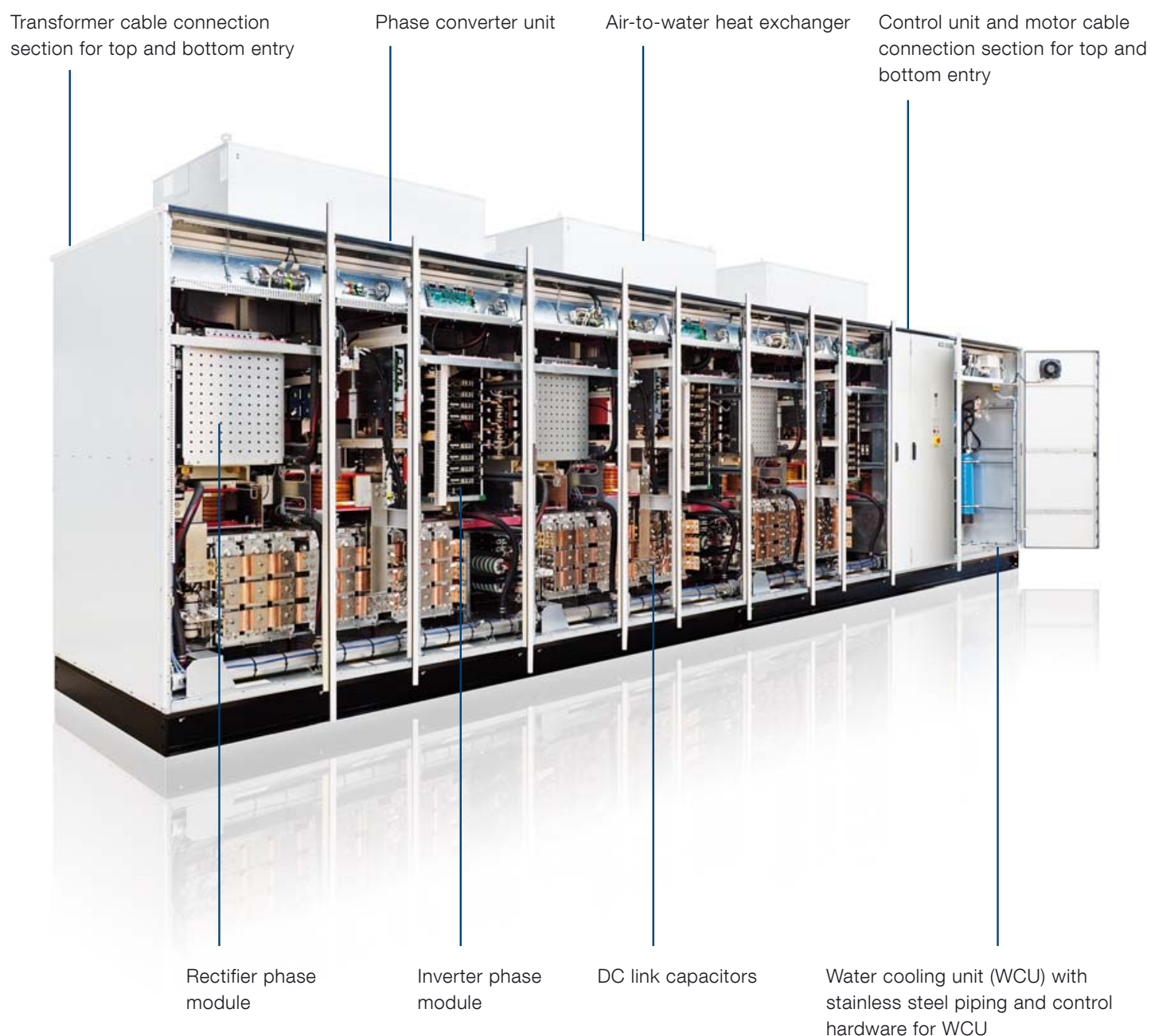
Line and motor current and voltage



ACS5000

Water-cooled, 5–36 MW

Thanks to water cooling and a sealed cabinet, you can reduce energy and ventilation costs. High reliability is ensured thanks to a minimized part count.



Water-cooled ACS5000, 18 MVA, 6.9 kV

ACS5000

Air-cooled, 2–7 MW

Cost optimization and simple system integration is possible with the air-cooled ACS5000.



User-friendly drive control panel for local operation

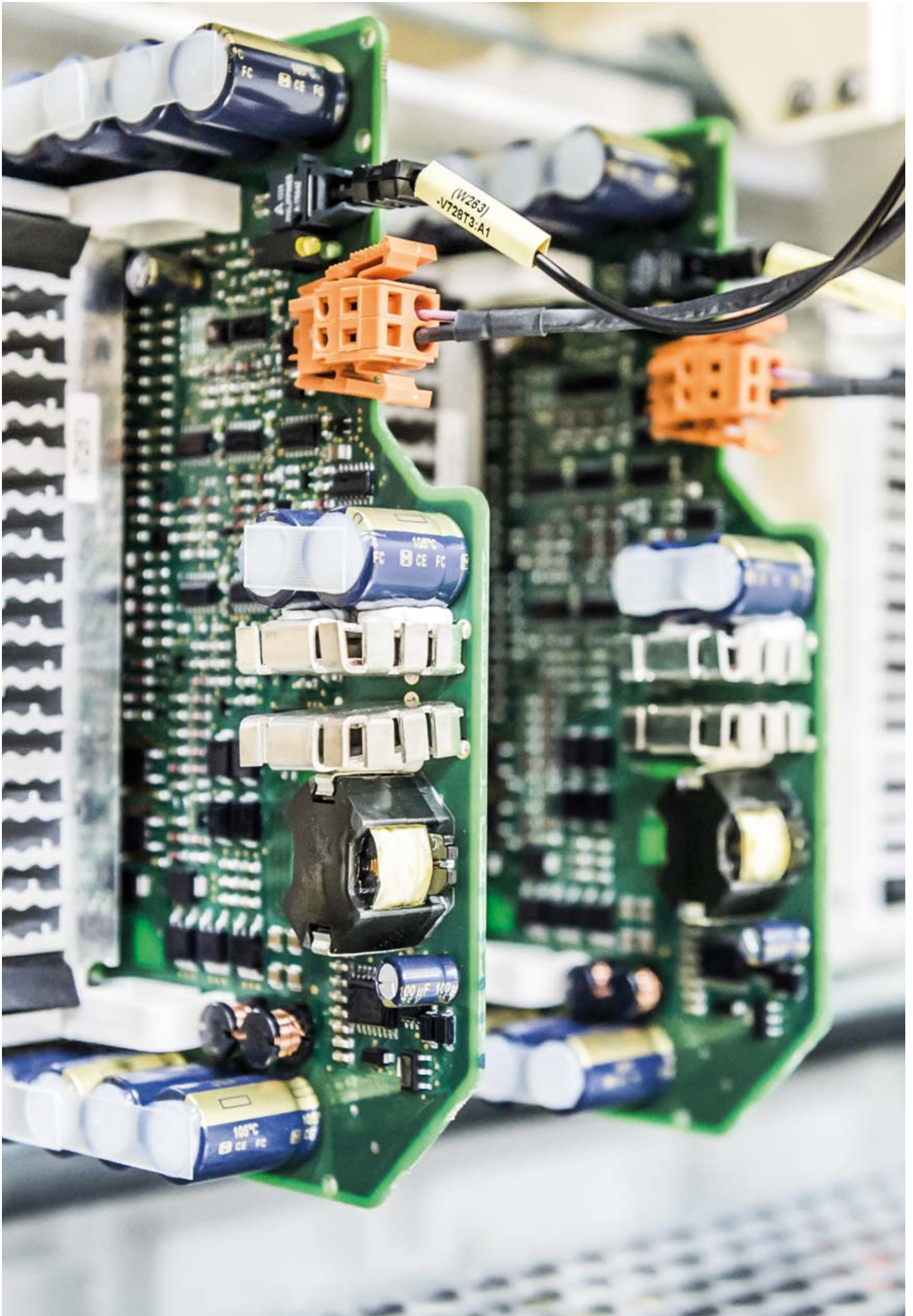
- Keypad with multi-language display
- Main supply on/off pushbuttons
- Emergency off pushbutton

Air-cooled ACS5000 for operation with integrated input transformer, 7 MVA, 6.9 kV

Technical data

At a glance

Input	
Input configuration	36-pulse diode rectifier
Input voltage	Input to diode rectifier: 1920–1980 V, 3700–3960 V Input to integrated transformer: 4.16–13.8 kV
Input voltage variation	±10% without derating +20/-30% with derating
Input frequency	50/60 Hz
Input frequency variation	<5%
Input power factor	>0.96
Input harmonics	IEC 61000-2-4 and IEEE 519 compliant
Auxiliary voltage	Control (optional): 110 V DC, 220 V DC or 110–240 V AC 50/60 Hz Auxiliary: 380–480 V AC 50/60 Hz, 3-phase 500–690 V AC 50/60 Hz, 3-phase (for water-cooled only)
Output	
Output power	2000–36000 kW (higher on request)
Output voltage	6.0–13.8 kV
Output frequency	0–250 Hz
Motor type	Induction, synchronous and permanent magnet
Efficiency of converter	>98.5%
Mechanical	
Enclosure	Standard air-cooled: IP21 Standard water-cooled: IP42 Optional air-cooled: IP42 Optional water-cooled: IP54
Cable entry	Top/bottom
Environmental	
Altitude	2000 m.a.s.l. (higher with derating)
Ambient air temperature	+1 °C to +40 °C (lower and higher with derating)
External cooling water temperature	+5 °C to +32 °C (lower and higher with derating)
Noise	Water-cooled: ≤75 dB(A) Air-cooled: ≤80 dB(A)
Cooling type	Air, water
Standards	EN, IEC, CE, (optional CSA)



Ratings, types and voltages

ACS5000 air-cooled

Motor data			Converter data					
Nominal rating²			Type code³	Power kVA	With external transformer		With integrated transformer	
kW¹	hp¹	A			Length mm	Weight kg	Length mm	Weight kg
6000 V								
1500	2010	170	ACS5000-060-A01A-x6-010	1800	3300	3000	5700	7700
1800	2410	210	ACS5000-060-A01B-x6-010	2200	3300	3000	5700	7700
2000	2680	240	ACS5000-060-A01C-x6-010	2500	3300	3000	5700	7700
2500	3350	290	ACS5000-060-A01D-x6-010	3000	3300	3000	6000	9200
2800	3750	315	ACS5000-060-A02A-x6-010	3300	3700	4000	6400	10200
3150	4220	355	ACS5000-060-A02B-x6-010	3700	3700	4000	6700	11200
3550	4760	400	ACS5000-060-A02C-x6-010	4200	3700	4000	6700	11200
4000	5360	440	ACS5000-060-A02D-x6-010	4600	3700	4000	6700	11200
4500	6030	510	ACS5000-060-A02E-x6-010	5300	3700	4000	6700	15500
5000	6700	585	ACS5000-060-A02F-x6-010	6000	3700	4000	6700	15500
6600 V								
1600	2140	170	ACS5000-066-A01A-x6-010	1900	3300	3000	5700	7700
2000	2680	210	ACS5000-066-A01B-x6-010	2400	3300	3000	5700	7700
2250	3020	240	ACS5000-066-A01C-x6-010	2800	3300	3000	6000	9200
2500	3350	290	ACS5000-066-A01D-x6-010	3300	3300	3000	6000	9200
2800	3750	315	ACS5000-066-A02A-x6-010	3600	3700	4000	6400	10200
3150	4220	355	ACS5000-066-A02B-x6-010	4100	3700	4000	6700	11200
3550	4760	400	ACS5000-066-A02C-x6-010	4600	3700	4000	6700	11200
4000	5360	440	ACS5000-066-A02D-x6-010	5000	3700	4000	6700	15500
4500	6030	510	ACS5000-066-A02E-x6-010	5800	3700	4000	6700	15500
5600	7500	585	ACS5000-066-A02F-x6-010	6700	3700	4000	6700	15500
6900 V								
1600	2140	170	ACS5000-069-A01A-x6-010	2000	3300	3000	5700	7700
2000	2680	210	ACS5000-069-A01B-x6-010	2500	3300	3000	5700	7700
2250	3020	240	ACS5000-069-A01C-x6-010	2900	3300	3000	6000	9200
2800	3750	290	ACS5000-069-A01D-x6-010	3500	3300	3000	6000	9200
3150	4220	315	ACS5000-069-A02A-x6-010	3700	3700	4000	6700	10200
3550	4760	355	ACS5000-069-A02B-x6-010	4200	3700	4000	6700	11200
4000	5360	400	ACS5000-069-A02C-x6-010	4800	3700	4000	6700	11200
4500	6030	440	ACS5000-069-A02D-x6-010	5200	3700	4000	6700	15500
5000	6700	510	ACS5000-069-A02E-x6-010	6100	3700	4000	6700	15500
6000	8040	585	ACS5000-069-A02F-x6-010	7000	3700	4000	6700	15500

¹ Indicative information referring to typical 4-pole induction motor under nominal supply voltage conditions.

² Nominal rating for no-overload operation

³ „x“ indicates the different converter types
E - for external transformer
J - for integrated transformer

Dimensions:

Height: 2,360 mm cabinet height
2,815 mm incl. cooling fans
2,935 mm incl. redundant cooling fans

Depth: 1,100 mm
1,300 mm for integrated transformer with power >5000 kVA

Ratings, types and voltages

ACS5000 water-cooled

Motor data			Converter data					
Nominal rating ²			Type code ³	Power kVA	With external transformer		With combined transformer ⁴	
kW ¹	hp ¹	A			Length mm	Weight kg	Length mm	Weight kg
6000 V								
6830	9150	670	ACS5000-060-W01A-x6-010	7000	7130	6800	8530	8650
8480	11360	840	ACS5000-060-W01B-x6-010	8700	7130	6800	8530	8650
10140	13590	1000	ACS5000-060-W01C-x6-010	10400	7130	6800	8530	8650
12680	16990	1250	ACS5000-060-W02A-x6-010	13000	9130	9700	9730	10450
15210	20380	1500	ACS5000-060-W02B-x6-010	15600	9130	9700	9730	10450
17750	23790	1750	ACS5000-060-W03A-E6-010	18200	13430	12200	n.a.	n.a.
20280	27180	2000	ACS5000-060-W03B-E6-010	20800	13430	12200	n.a.	n.a.
23300	31220	2300	ACS5000-060-W04A-E6-010	23900	15830	16500	n.a.	n.a.
25350	33970	2500	ACS5000-060-W04B-E6-010	26000	15830	16500	n.a.	n.a.
30420	40760	3000	ACS5000-060-W04C-E6-010	31200	15830	16500	n.a.	n.a.
6600 V								
7510	10060	670	ACS5000-066-W01A-x6-010	7700	7130	6800	8530	8650
9360	12540	840	ACS5000-066-W01B-x6-010	9600	7130	6800	8530	8650
11120	14900	1000	ACS5000-066-W01C-x6-010	11400	7130	6800	8530	8650
13940	18680	1250	ACS5000-066-W02A-x6-010	14300	9130	9700	9730	10450
16670	22340	1500	ACS5000-066-W02B-x6-010	17100	9130	9700	9730	10450
19500	26130	1750	ACS5000-066-W03A-E6-010	20000	13430	12200	n.a.	n.a.
22330	29920	2000	ACS5000-066-W03B-E6-010	22900	13430	12200	n.a.	n.a.
25640	34360	2300	ACS5000-066-W04A-E6-010	26300	15830	16500	n.a.	n.a.
27890	37370	2500	ACS5000-066-W04B-E6-010	28600	15830	16500	n.a.	n.a.
33440	44810	3000	ACS5000-066-W04C-E6-010	34300	15830	16500	n.a.	n.a.
6900 V								
7800	10450	670	ACS5000-069-W01A-x6-010	8000	7130	6800	8530	8650
9750	13070	840	ACS5000-069-W01B-x6-010	10000	7130	6800	8530	8650
11700	15680	1000	ACS5000-069-W01C-x6-010	12000	7130	6800	8530	8650
14530	19470	1250	ACS5000-069-W02A-x6-010	14900	9130	9700	9730	10450
17450	23380	1500	ACS5000-069-W02B-x6-010	17900	9130	9700	9730	10450
20380	27310	1750	ACS5000-069-W03A-E6-010	20900	13430	12200	n.a.	n.a.
23300	31220	2000	ACS5000-069-W03B-E6-010	23900	13430	12200	n.a.	n.a.
26810	35930	2300	ACS5000-069-W04A-E6-010	27500	15830	16500	n.a.	n.a.
29150	39060	2500	ACS5000-069-W04B-E6-010	29900	15830	16500	n.a.	n.a.
35000	46900	3000	ACS5000-069-W04C-E6-010	35900	15830	16500	n.a.	n.a.
11000 V								
16090	21560	870	ACS5000-110-W05A-E6-010	16500	13430	12000	n.a.	n.a.
18140	24310	980	ACS5000-110-W05B-E6-010	18600	13430	12000	n.a.	n.a.
20470	27430	1100	ACS5000-110-W05C-E6-010	21000	13430	12000	n.a.	n.a.
24180	32400	1300	ACS5000-110-W06A-E6-010	24800	15830	20000	n.a.	n.a.
27300	36580	1470	ACS5000-110-W06B-E6-010	28000	15830	20000	n.a.	n.a.
30710	41150	1650	ACS5000-110-W06C-E6-010	31500	15830	20000	n.a.	n.a.
13800 V								
17450	23380	750	ACS5000-138-W05A-E6-010	17900	13430	12000	n.a.	n.a.
20380	27310	870	ACS5000-138-W05B-E6-010	20900	13430	12000	n.a.	n.a.
23300	31220	1000	ACS5000-138-W05C-E6-010	23900	13430	12000	n.a.	n.a.
26810	35930	1150	ACS5000-138-W06A-E6-010	27500	15830	20000	n.a.	n.a.
29150	39060	1250	ACS5000-138-W06B-E6-010	29900	15830	20000	n.a.	n.a.
35000	46900	1500	ACS5000-138-W06C-E6-010	35900	15830	20000	n.a.	n.a.

¹ Indicative information referring to typical 4-pole induction motor under nominal supply voltage conditions.

² Nominal rating for no-overload operation

³ „x“ indicates the different converter types
E - for external transformer
C - for combined transformer

⁴ In combined transformer configuration the cooling system of the input transformer is connected to the cooling water system of the converter and the system has a common cooling water pump in the converter. The length and weight do not include the input transformer part.

Dimensions:

Height: 2,363 mm cabinet height
2,752 mm incl. cooling units
2,774 mm incl. cooling units and mechanical design for offshore applications

Depth: 1,600 mm

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