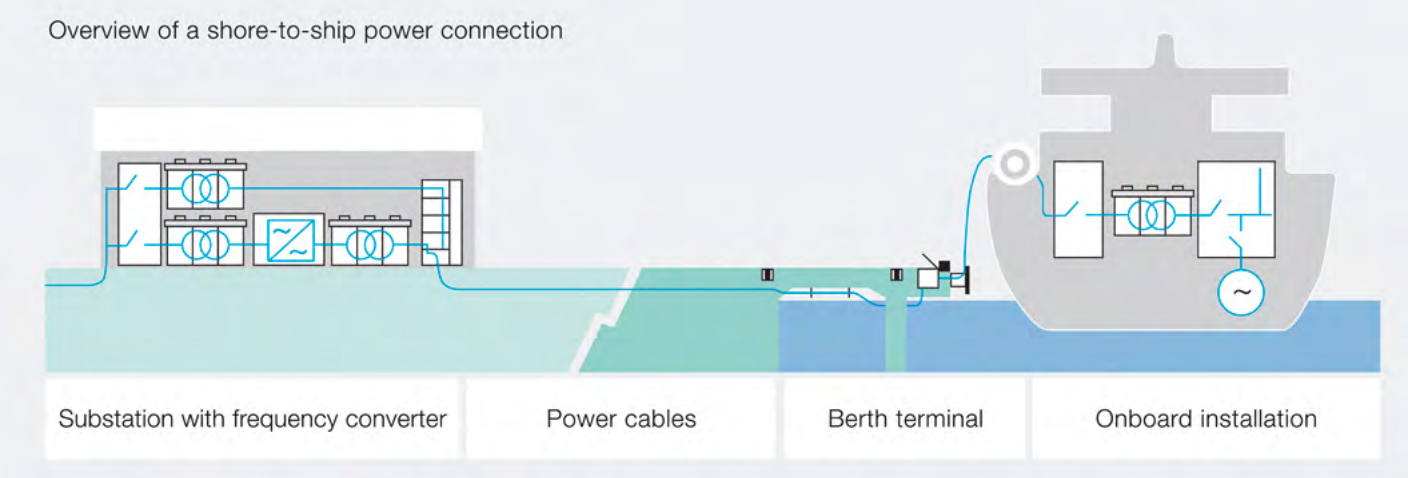
Enabling the shore-to-ship power connection
Static frequency converters



Enabling the connection

ABB static frequency converters are an economic and efficient solution to convert the grid electricity to the appropriate load frequency.

ABB static frequency converters utilize ABB's modular converter design providing highly reliable, clean and efficient power conversion. ABB static frequency converters are internally configured as an arrangement of modular rectifiers and inverters controlled by a power electronic controller. The converters produces sine wave voltage to supply the output load.

Shore-to-ship power

Shore-to-ship power helps to reduce emissions in ports by connecting ships to the port electricity grid. Shore-to-ship power permits ships to shut down the onboard power generation unit while at berth. Most ships operate with 60 Hz electricity whereas local grid in most parts of the world is 50 Hz.

ABB static frequency converters help to adjust the grid electricity to the appropriate ship frequency and are a viable solution in replacing motor generator sets.

Features

- Scalable solutions ranging from 0.1 up to 120 MVA
- High efficiency also under partial-load conditions
- Small foot print (high power density permits compact design)
- High availability (high reliability, low maintenance, proven service concept with 24/365 support, remote diagnosis)
- Generator emulation and load sharing

User benefits

Enabled connection of ships to port grids regardless of their respective frequencies (supports ships and grids at both 50 and 60 Hz)

PCS 100 SFC [0.1 – 2 MVA]

PCS 100 converters utilize the latest high performance Insulated Gate Bipolar Transistor (IGBT) power switching devices controlled by a micro controller.

PCS 100 SFC comes with an advanced redundancy feature.

Input	
Typical grid voltage	0.4 .. 30 kV
Frequency	50 / 60 Hz
Input section	IGBT voltage source converter
Converter voltage	200 .. 480 VAC
Total harmonics distorsion	< 3 %
Output	
Typical ship voltage	480 V / 6.6 kV
Frequency	60 / 50 Hz
Output section	IGBT voltage source converter
Converter voltage	400 .. 480 VAC
Total harmonics distorsion	< 3 %
Efficiency	95% typical
Max overload capacity	30 seconds 150%
Short circuit limit	0.5 seconds 200%
Mechanical	
Enclosure	IP 20 or IP 23
Cooling	Forced ventilation
Standard color	RAL 7035

Interface	
User interface	Graphic display module touch panel, notebook connection
Control protocool	Ethernet, Modbus-TCP, dry contacts
Environmental	
Operation temperature	0°C .. 40°C / 32°F .. 104°F up to 50°C / 122°F with derating
Humidity	< 95% non-condensing
EMC emissions	IEC 61000-2-2, IEC 61000-2-4, IEC 61000-6-2

Standards and norms compliance

ISO/IEC/IEEE FDIS 80005-1, IEC 61400-21, IEC 60146-2, IEC 61800-3, IEC 60721, IEC 61071-1, IEC 60871, IEC 60439, IEC 62271-1, IEC 60071, IEC 60664, IEC 60204, IEC 60529, IEEE519, IEC/TR 61000-3-6

Designed to CE mark requirements

Service

24/365 service support expert, remote access and diagnosis optional

Worldwide service and spare parts network

PCS 100 SFC

Model ratings and dimensions

Model	Nominal power [kVA]	Current rating [A]	Converter		Transformer		Number of module pairs
			Dimensions HWD [m] [a]	Weight [kg]	Dimensions HWD [m] [b]	Weight [kg] [b]	
PCS 100 SFC-0125	125	150	2.2 x 0.8 x 0.8	860	included in converter cabinet		1
PCS 100 SFC-0250	250	300	2.2 x 0.8 x 0.8	601	2.2 x 0.8 x 0.8	908	2
PCS 100 SFC-0375	375	450	2.2 x 0.8 x 0.8	761	2.2 x 1.2 x 0.8	1510	3
PCS 100 SFC-0500	500	600	2.3 x 1.6 x 0.8	1503	2.3 x 1.2 x 0.8	1910	4
PCS 100 SFC-0625	625	750	2.3 x 2.0 x 0.8	1772	2.3 x 1.2 x 0.8	2310	5
PCS 100 SFC-0750	750	900	2.3 x 2.4 x 0.8	1932	2.2 x 2.3 x 1.6	2800	6
PCS 100 SFC-0875	875	1050	2.3 x 2.4 x 0.8	2308	2.2 x 2.3 x 1.6	3000	7
PCS 100 SFC-1000	1000	1200	2.3 x 2.4 x 0.8	2586	2.2 x 2.3 x 1.6	3200	8
PCS 100 SFC-1125	1125	1350	2.3 x 4.4 x 0.8	2746	2.2 x 2.3 x 1.6	3400	9
PCS 100 SFC-1250	1250	1500	2.3 x 4.4 x 0.8	3407	2.4 x 2.3 x 1.6	3700	10
PCS 100 SFC-1375	1375	1650	2.3 x 4.4 x 0.8	3700	2.4 x 2.3 x 1.6	3850	11
PCS 100 SFC-1500	1500	1800	2.3 x 4.4 x 0.8	3860	2.4 x 2.3 x 1.6	4000	12
PCS 100 SFC 1625	1625	1950	2.3 x 5.2 x 0.8	4248	2.4 x 2.3 x 1.6	4100	13
PCS 100 SFC-1750	1750	2100	2.3 x 5.2 x 0.8	4550	2.4 x 2.3 x 1.6	4250	14
PCS 100 SFC-1875	1875	2250	2.3 x 5.2 x 0.8	4710	2.4 x 2.3 x 1.6	4400	15
PCS 100 SFC-2000	2000	2400	2.3 x 6.0 x 0.8	5102	2.4 x 2.3 x 1.6	4600	16

Parallel load sharing allows operation of multiple PCS 100 SFC.

[a] Dimensions are for side-by-side configuration. Back to back configuration dimensions will vary. For IP 23 add 0.1 m depth

[b] Weights are for LV transformers. For MV, transformers add 25% approximately

PCS 6000 SFC [4 – 7 MVA]

PCS 6000 converters utilize the proven high performance IGCT (Integrated Gate Commutated Thyristor) power switching devices. PCS 6000 SFC converters work very efficient even at partial load while requiring only a smalll foot print.
Parallel load sharing allows operation of multiple PCS 6000 permits higher power range.

Input	
Typical grid voltage	11 .. 132 kV
Frequency	50 / 60 Hz
Input section	12 pulse diode bridge
Converter voltage	1.725 kVAC
Total harmonics distorsion	< 4 %
Output	
Typical ship voltage	6.6 kV / 11 kV
Frequency	60 / 50 Hz
Output section	IGCT voltage source converter
Converter voltage	2.3 kVAC
Total harmonics distorsion	< 2 %
Efficiency	98.0% typical
Short circuit limt	0.6 seconds 110 %
Mechanical	
Enclosure	IP 54 indoor cabinet / outdoor container
Cooling	Closed loop liquid cooling
Standard color	RAL 7035

Interface	
Control interface	Hardwired, Modbus-TCP, Anybus S
Environmental	
Operation temperature	5°C .. 40°C / 41°F .. 104°F -25°C .. 55°C / -13°F .. 131°F with derating
Humidity	< 95% non-condensing
EMC emissions	IEC 61000-2-2, IEC 61000-2-4, IEC 61000-6-2

Standards and norms compliance
ISO/IEC/IEEE FDIS 80005-1, IEC 61400-21, IEC 60146-2, IEC 61800-3, IEC 60721, IEC 61071-1, IEC 60871, IEC 60439, IEC 62271-1, IEC 60071, IEC 60664, IEC 60204, IEC 60529, IEEE519, IEC/TR 61000-3-6
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Service
24/365 service support expert, remote access and diagnosis optional
Worldwide service and spare parts network

PCS 6000 SFC indoor cabinet

Model ratings and dimensions

Model	Nominal power [MVA]	Indoor cabinet	
		Dimensions HWD [m]	Weight [kg]
PCS 6000 SFC-4000	4	2.5 x 4.9 x 1.2	5200
PCS 6000 SFC-5000	5	2.5 x 4.9 x 1.2	5200
PCS 6000 SFC-6000	6	2.5 x 4.9 x 1.2	5200
PCS 6000 SFC-7000	7	2.5 x 4.9 x 1.2	5200

For more information please contact:

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