

PRODUCT BROCHURE

# PCS100 SFC 125 kVA - 10 MVA

## Static Frequency Converter



- Minimize operating and maintenance costs
- High reliability provides maximum power availability
- N+1 modular redundancy for mission critical applications

# PCS100 Static Frequency Converter

## 125 kVA to 10 MVA

PCS100 Static Frequency Converters are commonly used to interconnect 50 Hz and 60 Hz systems.

01 PCS100 SFC diagram

ABB's PCS100 Static Frequency Converter allows the interconnection of grid systems with varying frequencies, offering the ideal solution for shore to ship, plant relocation and testing facility applications.

### User benefits

- Minimize operating and maintenance costs
- High reliability provides maximum power availability
- Keeps equipment running through utility voltage sags and frequency variation
- N+1 modular redundancy for mission critical applications
- Lowest total cost of ownership
- Minimal spares required
- Easy paralleling to other voltage sources using droop

### Key product features

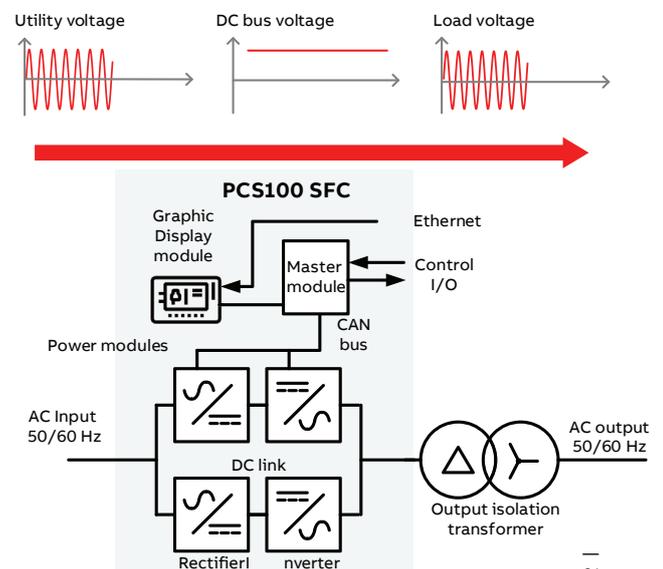
- High efficiency power conversion
- Clean sinewave output voltage
- Unity power factor, sinewave, active rectifier design
- Built-in module redundancy without interruption of operation
- Fully isolated AC connection using an output transformer
- Wide range of voltages available; 50 Hz and 60 Hz
- Small footprint design
- Touch screen colour graphic display (GDM)
- Internal web server and Modbus TCP allows remote monitoring
- Output cable voltage drop compensation
- Seamless generator change over standard (synchronization)
- Generator emulation and load sharing
- Power flow control
- Extensive remote control with extend I/O card

### How it works

The system is constructed of multiple power electronic modules and functions by converting the input AC power through a sine-wave rectifier to a DC link, and then through an AC sine-wave inverter to produce a clean, full sine-wave output at the new frequency and voltage.

The PCS100 SFC is extremely flexible in terms of paralleling with other voltage sources, either generators or multiple SFC units. Parallel load sharing is achieved using frequency and voltage droop profiles programmed into the converter. This allows the converters to share power with other systems without the need for any additional communication signals.

Starting the SFC into the live bus is greatly simplified due to the automatic output synchronization feature. This enables a full seamless transfer from generator supply to SFC supply on the output bus. If the output bus is dead when the SFC is given a start command it will ramp up the voltage over one second, providing a soft energizing of the output.



# Complete grid interconnection

## Typical applications

Providing highly reliable clean and efficient frequency conversion.



The power converter system's flexibility allows a wide range of applications, such as:

- Interconnection of ships at berth to the electricity grids (conversion of frequency and stabilization of port electricity grid)
- Special industrial applications

### Typical applications

#### Industrial applications - FPSO

Floating platform storage and offloading (FPSO) operations are typical for the oil and gas industry. ABB have delivered systems across the world, including Armada D1 (previously known as the Monte Umbe vessel), and NKOSSA II off the coast of Congo.

#### Shore-to-ship (ports and shipyards)

ABB supplied a PCS100 SFC during the Louis Vuitton Cup and the America's Cup, as the official supplier to Emirates Team New Zealand in 2013. ABB has also supplied many PCS100 SFCs for shore-to-ship (S2S) applications, mostly in the range of 800–2000 kVA.

#### Plant relocation

PCS100 SFCs can be tailored not only for port and marine solutions, but can also be configured to support major plant relocation projects. For example a PCS100 SFC was utilized to support a textile company's relocation from Italy to Mexico. By installing the PCS100 SFC the Mexican grid power is converted to the Italian grid specification therefore the original plant equipment remains standard maintaining its original reliability and robustness.

#### Onboard vessels

ABB has supplied multiple PCS100 SFCs to provide voltage and frequency stabilization on vessels with shaft generator based power systems. With a standard shaft generator based power system the vessel must maintain a constant speed to keep a stable voltage and frequency on board, but with ABB's technology in place, the ships electrical system is able to carry on working at the rated voltage and frequency while varying motor speed to conserve fuel or to travel faster.



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