



GE VERNOVA

## SHORE POWER SUPPLIES, PORT OF BREST

# CASE STUDY

### Commissioning milestone in 2023 for innovative SeaGreen™ shore power system at the busy port of Brest, France.

The Brest ESID (Defence Infrastructure Service Establishment) has a new, unique Shore Power System equipped by GE Vernova's Power Conversion business.

It is delivering critical electric power to ships in port. The equipment helps to significantly reduce the port's carbon and noise emissions.

Shore power applications have very specific demands, including the ability to accommodate repeat, frequent cycles of connection and disconnection from shore to ship, so converters - especially semiconductors - must be robust. The GE Vernova technology is resilient to component failure, making it safe and reliable.

### DYNAMIC POWER MANAGEMENT

GE Vernova's Power Conversion business provides system paralleling capability so that power supplies can flex for different ships' needs, sharing available power where and when it's needed.

With its dynamic power management capability, GE Power Conversion's system is particularly adaptive. The conversion systems can rapidly, automatically reconfigure for different ships berthed in port, without interruption to electrical power supply.

For example, if a dock needs more power than its allocated converter's capacity, another converter automatically connects to ensure continuity of service. This feature gives extraordinary flexibility, protection and safety.

### FOCUS ON RELIABILITY FOR LONG LIFE

Used for more than 20 years on cruise ships and port Shore Power Systems, our press-pack power electronic technology has proven reliability. It helps to ensure availability, durability, and long life of the Shore Power System, critical for installations that need to operate for several decades.





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#### SEAGREEN™ SHORE POWER SUPPLIES

Providing 50:60Hz frequency conversion between the port main 20kV network and 6.6kV vessel power networks.

Frequency conversion is carried out by static frequency converter sets over two sites:

**Site 1:** set of four power conversion systems, each 3.55MVA

**Site 2:** set of two power conversion systems, each 3.55MVA



#### Each 50/60Hz converter system with capacitors includes:

- Transformer room for 24-pulse 4.4MVA input transformer
- MV7315 static frequency converter comprising skid-mounted cabinets with:
  - 50/60Hz frequency conversion with integrated system automation
  - Voltage maintenance function via a DC/DC chopper with integrated automation and control
- Capacitive storage system
- 4.1MVA output transformer installed in the transformer room
- Effective air-cooling for heat dissipation of static converter losses
- Control system cubicle alongside the converter PLC cabinet for user HMI functionality.

#### SAFETY AND AVAILABILITY

20 KV protection, grid-side of the frequency converter system.  
6.6 KV protection between frequency converters and vessel.

Capability to limit overcurrent with safe turn-off under all operating and failure conditions.

Voltage maintenance function with capacitive storage system maintains supply to the 60Hz vessel power network if there is a voltage dip on the 50Hz network.

Vessel 60Hz power supply is maintained for a maximum power of 3.55MVA for a duration less than or equal to 500ms.

Automation systems that synchronize, connect or disconnect converters developed, operated and tested successfully with vessels.

