



**Mitsubishi Engines and Generator Sets are built to last and meet the high demands of reliability needed in the extreme conditions of the offshore industry. Together with our partners, we have many years of experience.** We now offer completely customized offshore wind containerized generator sets for backup applications. It is a complete solution that builds on our reliable engines and generator sets. With our mechanical fuel system, our engines are durable and easy to maintain, minimizing downtime and maintenance expenditure.

## ADVANTAGES

- Customized
- Meet high requirements
- Fully automated
- Built in Norway
- Qualified service staff
- Many years of experience in Offshore

## Delivery to the worlds largest offshore wind project “Dogger Bank Wind Farm”

Dogger Bank Wind Farm is the world’s largest offshore wind farm project. It is located more than 130 km from the North East coast of England. It is developed in three phases; Dogger Bank A, B and C and will have a total installed capacity of 3.6 GW, capable of powering 6 million homes. Dogger Bank A and B is a joint venture between SSE Renewables (40%), Equinor (40%) and Eni (20%). Dogger Bank C is a 50:50 joint venture between SSE Renewables and Equinor. SSE Renewables is leading on Dogger Bank construction and delivery while Equinor will operate the wind farm on completion.

Mitsubishi has been selected to supply the offshore containerized generator sets for the backup application of Dogger Bank A, B and C. These generator sets will be part of the unmanned High Voltage Direct Current (HVDC) offshore substations that will be supplied by Aibel. In case of a power outage, the set will ensure that the substation stays operative. The generator sets and containers are completely customized to the project requirements and to meet the high demands of the offshore environment.

### Completely customized and containerized Marine Generator set

We offer completely customized offshore wind containerized generator sets that are self-contained and cover the complete functionality of an emergency generator system. Below is an example of a system we can deliver.

- Container with diesel storage tank and spill tank in the bottom of the container.
- Day tank and diesel purifier system in a separate room inside the container.
- Generator set (Mitsubishi engine with alternator on base frame)
- Generator set circuit breaker panel
- Generator set auxiliary power panel
- EGCP (Essential Generator Control Panel)
- Battery breaker panel
- Interface panel
- Firefighting system, in a separate room inside the container (argonite)
- Radiator/cooler unit on the roof of the container
- Silencer on the roof of the container
- Fire damper air outlet
- Air filter, air supply fan on the roof of the container
- Davit on container roof for maintenance lifting
- Trolley beams inside for maintenance usage

**Diesel system:** The diesel system has a capacity of 37 m<sup>3</sup> diesel in the diesel tanks that ensures many hours of running unmanned. It has a storage tank and day tank that automatically transfer the diesel via purifier system in addition to primary and secondary filter systems that secure clean diesel provided to the engine. The fuel purifier system runs continuously to always supply clean particle free fuel with real-time readings on fuel quality.

**Air, exhaust system:** The container has a heating and HVAC system, frequency-controlled to keep the operational conditions. It is also installed with fire dampers that will close in case of fire, following argonite release. The exhaust system has a 45dbA silencer that fulfils the noise requirements.

**Lube oil system:** The lube oil system is a closed circuit within the Mitsubishi engine. Lube oil will pass through the engine and the engines breather system is re-entered into the turbocharger via an oil mist separator.

**Cooling water system:** The radiator cooling battery is placed on the roof of the container. This includes four fans that are controlled from the 400 VAC distribution cabinet in the container. The fans will start automatically when the engine starts.

**Start system:** The battery system for starting is self-contained with dual battery banks and chargers.

**Control system:** The engine and the generator are also equipped with all necessary instrumentation to monitor the unmanned operation. This diesel generator set is controlled by seven genset controllers. It controls alarm and safety functions, start/stop and breaker control according to the power management operating philosophy.

