

CASE STUDY

Facet Supports Pollution Prevention from Substations at Off-shore Wind Farms

**THE SEAWATER FLOWING THROUGH THE
TAIWAN STRAIT IS PROTECTED BY
FACET'S MAS OIL WATER SEPARATOR.**

To help preserve marine life and lessen the environmental impact of Off-shore Wind Farms, engineers from Facet developed a solution to protect our oceans delicate life for future generations.



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Offshore wind energy, a fast-growing sector of renewable energies worldwide, is changing the marine environment resulting in a wide range of potential environmental impacts from offshore wind farms. However, the ambitious targets of various countries to increase the share of renewable energy will significantly increase the number of Off-shore Wind Farms (OWF) in Europe and worldwide having grave long-term environmental impact if not properly planned and mitigated. When Taiwan was in active pursuit of replacing coal with sustainable energy sources, they determined that the Taiwan Strait would be ideal locations for, what is now referenced as the Greater Changhua 1 & 2 Offshore Wind Farms. It was identified early on in the planning and design stages they were found that the environmental impacts could put the marine environment at-risk.

THE CHALLENGE

The Offshore Wind Farm in Taiwan needed an environmental filtration solution that would protect delicate ocean life from harm.

Offshore substations are the systems that collect and export the power generated by turbines through specialized submarine cables, an essential component of offshore wind farms, especially at large multi-megawatt sites.

These systems serve an important function: to stabilize and maximize the voltage of power generated offshore, reduce potential electrical losses, transmit electricity to shore, and do so in a manner that supplies the greatest return on investment. In order to convert DC current from wind turbines to AC current, Offshore Sub Stations (OSS) are outfitted with multiple Transformers. These transformers contain oil for refrigeration in order to prevent any oil spill or other oily contaminated drain or rain water from leaking into the sea. In each OSS it is mandatory to install a "Pollution Prevention System" that consist mainly of an approved Oil Water Separator to avoid any oil spill into the sea. The challenge was to develop products that assist the Pollution Prevention Systems and treat the effluents coming from the oily drain systems and water drain systems within the OSS that will withstand the extreme environmental conditions. Because maintaining anything offshore is more costly and hazardous to operators, there is an inherent risk of unexpected equipment breakdown if maintenance is not made simpler and more efficient. Configuration of a substation, access points, and storage areas for maintenance equipment are important when considering the design for use at an offshore wind farm. These factors impact how often a substation may require servicing and its accessibility.

THE SOLUTION

The team set in motion to offer an automated system with limited maintenance and a high protection value.

Given the operation and maintenance cost for these large-scale offshore wind installations is substantial, Facet set out to offer a solution with greater cost-effectiveness and efficiency. Harsh environmental conditions on the OSS and high effluent quality requirements

led Facet to supply the MAS Oil Water Separator. Facet has had great success in marine and environmental applications, with the MAS Oil Water Separator. The MAS Oil Water Separators are designed to treat hydrocarbon water both by gravity or pumping. These units perform the separation by physical means, do not require any consumables and have no mobile parts, so no maintenance is needed and their operation is free of failures.

THE RESULTS

By choosing the MAS Oil Water Separator the Greater Changhua 1 & 2 Off-shore Wind Farms reduced the maintenance cost of their Pollution Prevention Systems by 20%.

The MAS Oil Water Separators do not require any consumables (water, air or electricity), so they are the best option for Offshore Substations, and they also offer effluent quality according to the requirements of the IMO MEPC 107 standards (49) or EN-858.