

CASE STUDY:

DONG FANG OFFSHORE INVESTS IN HYBRID SOLUTIONS TO POWER GLOBAL GROWTH

OVERVIEW

Collaboration Helps Lower Costs and Greenhouse Gas Emissions

CUSTOMER

Dong Fang Offshore

LOCATION

Taiwan

CAT® DEALER

Capital Machinery Limited (CML) and PON AS Norway

PRODUCT

Cat® C32 and 3500 series engines, and C7.1 and C4.4 auxiliary and gen sets

INDUSTRY

Offshore Wind

Battery Hybrid Powertrains and Fuel Flexible Solutions Reduce Greenhouse Gas (GHG) Emissions Without Sacrificing Performance

Supporting Global Ambitions

As interest in offshore wind farms increases across Asia Pacific, Dong Fang Offshore has set its sights on being a leading provider of offshore maritime services for the sector in Taiwan and beyond. The vessel operator began in 2019 with a small number of crew transfer vessels (CTVs) to offer regular transportation of maintenance staff and supplies, ensuring timely replenishment and personnel rotation. Dong Fang's excellent reputation for reliability and cost efficiency enabled the company to quickly grow to a fleet of 14 vessels capable of performing a variety of functions including tug survey, construction support and service operations.

Serving offshore wind farms subjects vessels to extremely rough conditions. Ensuring they are up to the challenge is crucial, as any unplanned downtime can result in lost opportunities. This is why Dong Fang depends upon Cat® C32 propulsion engines alongside C4.4 and C7.1 auxiliary engines and gen sets to power its CTVs, while 3516 and 3512 engines underpin the operator's service operation vessels (SOVs).

Guided by its strong commitment to reducing its fleet's greenhouse gas (GHG) emissions, Dong Fang sought the guidance of Caterpillar Marine and Taiwanese Cat dealer Capital Machinery Limited (CML) to ensure its new builds and current ships can reduce GHG emissions while meeting performance requirements. CML collaborated with Norwegian dealer Pon AS to draw on their extensive experience implementing Caterpillar solutions in numerous offshore vessels.

Standardizing on Fuel Flexible Solutions

The C32, C4.4, C7.1 and 3500 series solutions not only provide reliable power but also support Dong Fang's goal of operating with energy-efficient, low GHG emission powertrains. The technologies easily run on lower-carbon intensity fuels such as biodiesel and hydrotreated vegetable oil (HVO). Additionally, the 3500E engines are methanol ready. Employing these particular power solutions provides Dong Fang important fuel flexibility that the vessel operator can leverage when these diesel alternatives are available in Taiwan's ports. These solutions also enable Dong Fang to incorporate electrification options to further reduce GHG emissions.



For these reasons, Dong Fang, Caterpillar Marine, CML and Pon AS collectively decided to standardize on the four engine models. Standardization affords the vessel operator important cost savings as it increases the number of common parts fleetwide. As Dong Fang scales, it's able to not only increase its stock of spare parts but also spare engines, which helps ensure maximum fleet availability at all times.

CML supports and streamlines Dong Fang's inventory by carefully planning service and related parts needs in advance. Maintenance intervals, such as overhauls, are strategically scheduled to reduce disruption, and required parts are stocked at CML's local facility to ensure availability. Additionally, CML's close proximity to Dong Fang's operations allows the dealer to deliver parts within 24 hours should immediate needs arise.

"As we serve the renewable energy industry, we strive to not only maximize our fleet utilization but also ensure our vessels reflect our climate-related goals," commented Ben Darrington, Chief Operating Officer at Dong Fang Offshore. "Standardizing on the C32, C4.4, C7.1 and 3500 series engines helps us achieve both aims. We value our collaboration with Caterpillar Marine and CML, and we'll benefit from the support of the global Cat dealer network as we expand."



BUILDING – AND RETROFITTING – FOR TOMORROW

With its power options solidified, all new Dong Fang vessels will feature battery hybrid propulsion systems that incorporate the selected Caterpillar Marine engines. Three new commissioning service operation vessels (CSOVs) are contracted with VARD and will be equipped with four Cat 3512Es to enable Dong Fang to eventually utilize methanol fuel. Furthermore, one offshore subsea construction vessel is contracted with VARD, equipped with five Cat 3516Es, which takes the Dong Fang Offshore fleet to 18 vessels once the current new build program is complete. All existing CTVs feature C32 engines to provide primary power and auxiliary C4.4 and C7.1 gensets, positioning Dong Fang to use lower-carbon intensity fuels for those vessels.

Additionally, older vessels in the fleet will be retrofitted with hybrid battery powertrains. This will enable Dong Fang to continue to derive the benefits of engine standardization while layering GHG emissions reduction technologies for maximum results.

"At Dong Fang, we are investing for the long-term," added Darrington. "We purchase best-in-class vessels equipped with best-in-class equipment and operate them with the best people internationally to deliver reliable, cost-effective services each day. Working with Caterpillar Marine, CML and the broader Cat dealer network creates valuable synergies that support our growth and helps our team remain competitive."

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– BEN DARRINGTON,
CHIEF OPERATING OFFICER,
DANG OFFSHORE



¹ Lower-carbon intensity fuels have greenhouse gas emissions at the stack that are essentially the same as traditional fuels.