

Hybrid/Battery Systems



The Wärtsilä hybrid system is designed and integrated to optimise the overall operation of the vessel. The system ensures fuel savings and reduced maintenance costs, in addition to substantial reductions in emissions.

The Wärtsilä hybrid/battery system and its integration with conventional diesel – or dual fuel engine gensets, offers significant efficiency improvement by running the engines on optimal load and absorbing many of the load fluctuations through batteries.

By increasing the power redundancy, the system allows the engine to operate closer to its optimum design point where it has highest efficiency and least emissions. This will result in reduced maintenance need and increased system performance. Rapid response from the battery system are also among the benefits offered.

The Wärtsilä hybrid/battery system is suitable for application in a variety of market segments, including offshore vessels, tugs, ferries and coastal vessels, for new building as well as for retrofits of existing installations.

WÄRTSILÄ HYBRID BENEFITS

Optimised engine operation

The Wärtsilä Hybrid system supports operation of engines at optimal specific fuel consumption.

Fuel saving and reduced emissions

Through the engine optimisation the Wärtsilä hybrid system ensures substantial reduction in emissions, and supports a sustainable operation with different fuels. The yearly fuel savings have proven to be between 10-20% depending on type of engines and configurations.

Increased redundancy and efficient operations

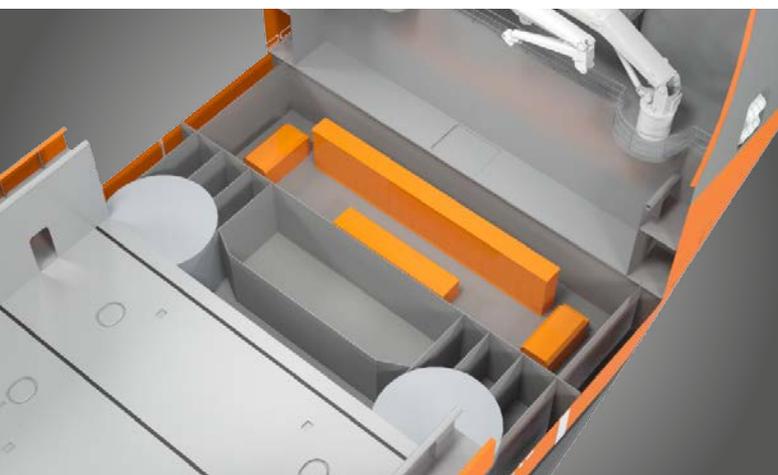
In Dynamic Positioning (DP) normally two or more engines have to be in operation to secure back-up power for the required load in case a fault condition occurs. This operation is not energy efficient because the loading of the engines is low. By using a battery system and one engine, the engine will operate closer to its optimum design point.

Reduced maintenance

Due to more stable operation and less running hours the engine maintenance cost will be reduced.

Increased performance

Vessel performance will be more responsive due to the fast power response from the energy storage system. This may also increase dynamic performance in critical operations.



Integrated solution



Retrofit solution

Experience and recent successes

LOW LOSS HYBRID INSTALLED ONBOARD VIKING LADY

During 2014 Low Loss Hybrid was installed and demonstrated onboard Platform Supply Vessel "Viking Lady". The savings in fuel and reduction in emissions in various vessel operating conditions have been documented through a comprehensive measurement program. By introducing a hybrid energy system onboard "Viking Lady", the fuel consumption is reduced by 15%. For "Viking Lady" this would give an estimated pay-back time of less than 4 years. The emission reductions are also substantial, in particular local emissions in the harbour.

Operational modes:

- Transit mode in heavy weather conditions where the battery is used to reduce frequent load variations on the engines and one genset less in operation because higher average load can be maintained.
- Critical operation where the battery is used as power redundancy as well as adopting a charge/discharge strategy allowing one engine and one battery to operate at the most efficient loading.



MF FOLGEFONN RETROFIT

In 2015 the car ferry "MF Folgefonn" was retrofitted into a full scale hybrid and plug-in hybrid ferry. The ferry services the connection between the islands of Stord, Tysnes and Huglo in Norway. "MF Folgefonn" is now unique in terms of having all types of electrical power solutions in one vessel; it can be run as conventional diesel electric, as hybrid electric and plug-in hybrid. In hybrid operation the savings in fuel consumption in optimised mode is 10-20%. Emissions will be reduced by 30%, as a result of both the reduced fuel consumption and the improved operational profile for the combustion engines on board. In plug-in hybrid operation the fuel savings will be 20-30%, and in pure plug-in operation the potential is 100%.



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