

Ocean Green Hybrid CC – The path to carbon free ocean crossings

Author(s):

Siemens Energy; Rune B. Andersen

Abstract:

The presentation will outline a new environmentally friendly power and propulsion system for ocean crossing ships designed to slash CO₂ emissions, reduce unit freight cost and virtually eradicate methane slip.

The Hybrid CC is an innovative hybrid combined cycle power and propulsion plant utilizing gas turbine as the main engine in combination with steam turbine and energy storage for the electrical propulsion and distribution system.

The increased cargo capacity is enabled by the compact engine room and significantly reduced consumables, offering a power to volume/weight ratio that is highly improved compared with existing propulsion systems.

The compact propulsion system allows for hydrodynamic hull optimization, a slenderer stern, larger propeller diameter, reduced propeller RPM, hence further improved fuel consumption and reduced emissions.

The incorporation of energy storage in marine power plants can generate wide ranging benefits for operators, allowing them to reduce the runtime of combustion engines and keep generators operating at a level where efficiency is maximized.

The removal of 2-stroke engines with associated auxiliary systems and consumables such as heavy fuel oil, lubrication oil, cylinder oil, pilot fuel, and urea will reduce weight and heating demand, hence further reduced the fuel consumption and improved performance.

As new IMO rules will be implemented, ship operators have become increasingly focused on reducing emissions of their operations, and at the same time the need to reduce the cost of operations. The Hybrid CC is future proofed, it can burn carbon neutral fuel and make it a zero-emission vessel without any midlife upgrade. The system is however design to implement any future electrical source of energy when available.