China niue ship energy storage electric propulsion

Can electric propulsion be used in all-electric ships?
The integration of electric propulsion in all-electric shipsseems to emerge as a solution for the newly more stringent environmental requirements by facilitating the introduction of other complementary technologies and operational practices for high levels of energy efficiency.

Can electric propulsion reduce fuel consumption on ships?
For the requirements of more efficient ships,extensive electrification of marine vessels has become a topic of extensive research. Electric propulsion implemented with an integrated power system (IPS) appears to be a promising solution for reduced fuel consumption on ships.

Can thermo-chemical energy storage be used in maritime propulsion?
There may be scopeto adapt some power industry thermo-chemical energy storage developments for future application in maritime propulsion,especially as future oil prices rise.

What are the benefits of integrated electric propulsion architecture?
Compared to conventional propulsion systems,the integrated electric propulsion architecture provides tremendous opportunities in terms of efficiency improvement and ship design[7,17,18]. Improve prime mover efficiency: ship service and propulsion loads are efficiently managed through a common power distribution system.

How can wind energy be used in ship propulsion?
Wind energy for assisting in ship propulsion can be exploited in various ways,for example,wind turbines,Flettner rotors and towing kites. In favorable wind conditions,wind turbine technology is able to make a 16% fuel saving contribution while Flettner rotors gain fuel saving potential of up to 20%.

Why is electric ship propulsion a problem?
On the contrary, the electric ship propulsion still poses some technical challenges such as loss due to additional conversion stages of power converters, power quality problems due to the massive use of electronic equipment and an increase in cavitation due to the use of fixed pitch propellers .

The methods to increase energy efficiency and environmental performance of all-electric ships to satisfy such requirements involve integration of energy storage with a ...

To support the International Maritime Organization"s (IMO) 2050 greenhouse gas reduction targets, hybrid propulsion energy management systems (EMS)--which integrate multi-energy ...

The energy storage system is an essential piece of equipment in a ship which can supply various kinds of

shipboard loads. With the maturity of electric propulsion technology, all-electric ships ...

By using this technology, all power generation and energy storage units are combined to supply electric power for propulsion, which has been applied to towing ships, ...

With the maturity of electric propulsion technology, all-electric ships have become the main trend of future ship design. In this context, instead of being mainly responsible for auxiliary loads as ...

: Electric ships experience large propulsion-load fluctuations on their drive shaft due to encountered waves and the rotational motion of the propeller, affecting the reliability of the ...

Additionally, the integration of an energy storage system has been identified as an effective solution for improving the reliability of shipboard power systems, pointing out the ...

In this paper, through the MATLAB simulation, optimization of capacity is calculated and charge-discharge control strategy of composite energy is analyzed. The results showed that composite ...

At present, more than 90% of China"s water transport ships still use diesel-powered propulsion systems, which have issues such as high fuel costs, high noise levels, and ...

In order to make the operation of all-electric propulsion ship more stable and efficient, a lithium battery energy storage system (ESS) is adopted to join the s

The most notable features of hybrid new energy source ship power systems compared with single-source ship power systems are that the quality of power and system security of the ship ...

This paper identifies promising technologies and practices that are applicable to onboard energy systems of all-electric ships and also reveals energy efficiency sensitivity of all ...

The defossilization of the open-sea ship traffic can most definitely only be achieved with alternative energy carriers. Besides synthetic fuels, battery-electric propulsion is ...

Simulation research on the effect of ship electric propulsion system power quality, made by flywheel energy storage, was completed by using the software Matlab/simulink.

This paper first classifies current energy storage technologies, then intro-duces the structures of typical all-electric ships and points out the application scenarios of energy storage sys-tems, ...

This paper focuses on the theme of green and high efficiency, based on the analysis of the power requirements of different ship types, comprehensively considering the technical conditions of ...

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Although shaftless rim propulsion and pod propulsion have various key technical challenges, their propulsion efficiencies are higher than traditional propeller propulsion. And they are promising ...

This study investigates the configuration of an energy storage system (ESS) and the optimization of energy management strategies for diesel-electric hybrid ships, with the goal ...

As regulations on ship internal combustion engines are strengthened worldwide and the need for eco-friendly propulsion technology is required, research and development of ...

In order to meet the relevant international ship emission regulations, the solution of developing electric ships is proposed. As the core device of the electric ship propulsion system, the ...

In order to make the operation of all-electric propulsion ship more stable and efficient, a lithium battery energy storage system (ESS) is adopted to join the ship microgrid to meet the sudden ...

Taking a dual-fuel (diesel-natural gas) microgrid of electric propulsion ship as the object, the Matlab program is used to implement the algorithm and obtain the optimal solution set, and ...

The International Maritime Organization has implemented stricter standards to promote advanced energy management systems and energy storage technologies, aiming to gradually decrease ...

The N997 has two propulsion motors with a capacity of 900 [kW] each and a total battery capacity of 50 [MWh] - best estimate currently available. The 120 meter long ship has a ...

This paper was inspired to answer the fundamental question on whether electric battery powered ships can ultimately be a promising solution for future maritime environmental ...