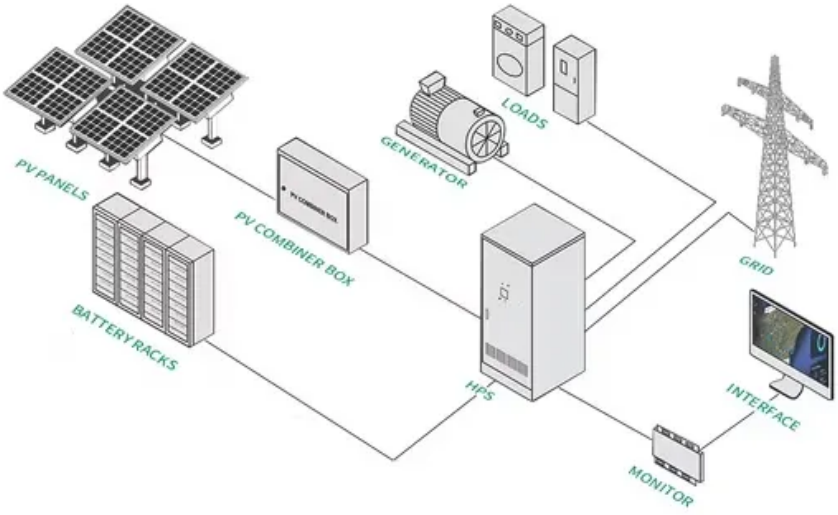
SolarMax Energy Systems

Power generation from large container ships



Overview

Can a large container ship have electric propulsion?

Particularly, a large container ship with electric propulsion will be the key element of global trades for sustainable shipping. This study investigates the combined power cycles for the electric propulsion system in a large container ship. Combined cycles have the primary power machinery and a secondary one.

How much power does a container ship need?

For this particular case study it is assumed one auxiliary engine operates at 30% load, resulting in an average power demand of 329 kW and energy demand of 8,482 kWh per day. For the container ship setup, it is assumed that the shore power infrastructure is notavailable.

How many configurations of electric propulsion system are suggested in a large container ship?

Three configurations for the electric propulsion system are suggested in a large container ship. Comparative results of three configurations are provided for selecting an appropriate alternative. A hythane-fueled marine power plant becomes solely available with a stricter EEDI phase.

How much power does a sustainable ship need?

Sustainable Ships’ analysis uses a database of over 3,000 vessels and calculates demand based on auxiliary engine ratings at 30% load. The results vary from 60 kW to 3,825 kW, with an average demand of 584 kW. Only four data point account for the highest outlying values, all except these are below 2,000 kW.

Does a container ship have a propulsion engine?

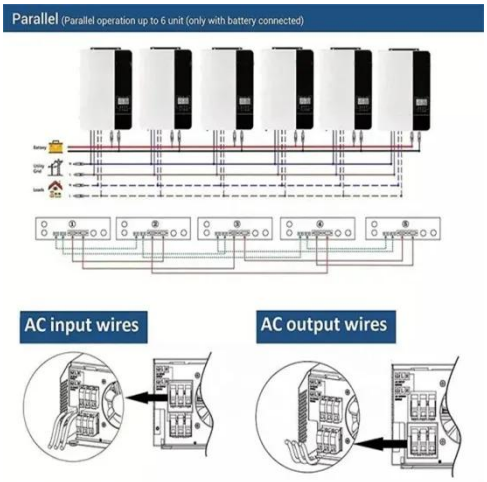
Large container and other heavy haul ships actually have 1 or more propulsion engines that drive the propeller. They are low speed engines and can run in

reverse to turn the propeller backwards. They may have a small reduction gearbox but not much of one.

Can grid-connected PV generation systems be integrated with a ship's electrical propulsion system?

On this basis, increases in the installed capacity of PV generation systems in large-scale ships might enable grid-connected PV generation system to be integrated with a ship's electrical propulsion system, offering significant possibilities for ship design in the future.

Power generation from large container ships



The ship's electrical network, engine control and automation

The first step is to define the ship type. It goes without saying that the vessel's size and purpose are key factors when dimensioning the ship's electrical network. The following illustrate the ...

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Can Container Ships Be Powered By Renewable Energy

Regulatory changes are anticipated by 2030, requiring larger container ships to adopt shore power, while alternatives like wind, batteries, and hydrogen for ship propulsion are ...

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Will future container ships sail on electricity?

Large ships have both a main engine that drives the ship forward and an auxiliary engine that, using fuel, generates power for the actual ship operation--such as lighting and ...

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Energy extraction potential

from wave-induced ship motions ...

The concept of extracting energy from wave-induced ship motions is interesting since it could serve as a potential means for reducing the use of conventional fuels on ships ...

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Comparative feasibility study of combined cycles for marine power

This study investigates the combined power cycles for the electric propulsion system in a large container ship. Combined cycles have the primary power machinery and a ...

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Business case for a Feedermax containership with a shore power ...

This case study evaluates a mobile shore power battery barge designed for a 1,730 TEU containership in the Port of Rotterdam. An average power demand of 329 kW and ...

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What is the average shore power demand of a container ship

The IMO estimates shore power demand for containerships based on TEU (Twenty-foot Equivalent Unit) sizes, with results ranging from 0 kW for the smallest ships to a ...

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Prediction of the very

Cargo capacity expressed in 20-foot equivalent units (TEU) was identified as the main predictor of the electricity generation capacity based on a representative very- and ultra-large container ...

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(PDF) Prediction of the very- and ultra-large Container Ships

Contemporary configurations of ships' electric power stations are presented and discussed. Cargo capacity expressed in 20-foot equivalent units (TEU) was identified as the main predictor of the

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ELI5: Why is it more efficient for large ships to be powered

The most common propulsion for the largest cargo ships is still a slow-speed

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Ship Engines - 7 Monster Engine Designs, Part 1

Ship owners like a single engine/single propeller design and the new generation of larger container ships needed a bigger engine to propel ...

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main engine output on certain type of merchant ships (e.g.

main engine output on certain type of merchant ships (e.g. container ships with a large number of refrigerated containers), minimalization of electricity produ-ction costs has gained in the last ...

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Assessment of Ship Electric Power Consumption

Refrigerated containers are a large part of the energy consumption on board of a

container ship since the cargo must be refrigerated 24 hours a day during all navigation time, in order to ...

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China reveals molten-salt nuclear reactor-driven ...

It is also a completely zero-emissions fuel. "The ultra-large nuclear container ship is designed to truly achieve zero emissions during the ship's ...

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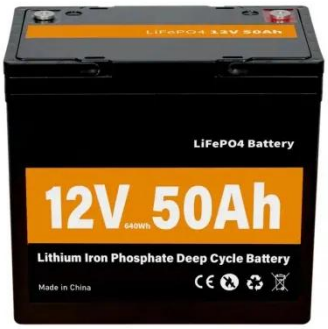

Can Container Ships Be Powered By Renewable Energy

Researchers are developing a fuel cell system that will generate CO2-free power for large ships, such as container ships. The Laura Maersk, the world's first container vessel ...

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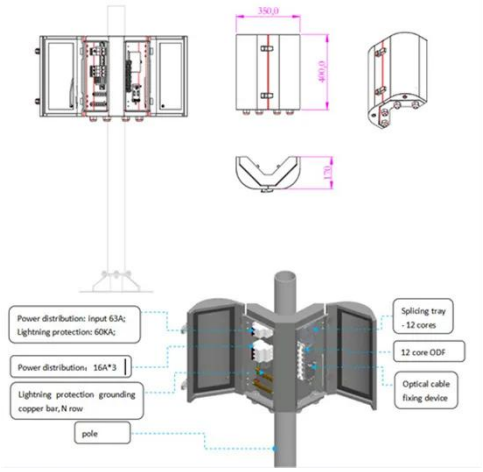

Will future container ships sail on electricity?

Large ships have both a main engine that drives the ship forward and an auxiliary engine that, using fuel, generates power for the actual ship ...

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Nuclear propulsion in ocean merchant shipping: The role of ...

Global marine shipping annually accounts for about one billion tonnes of CO 2 equivalent greenhouse gas emissions. Nuclear power propulsion may be an option to de ...

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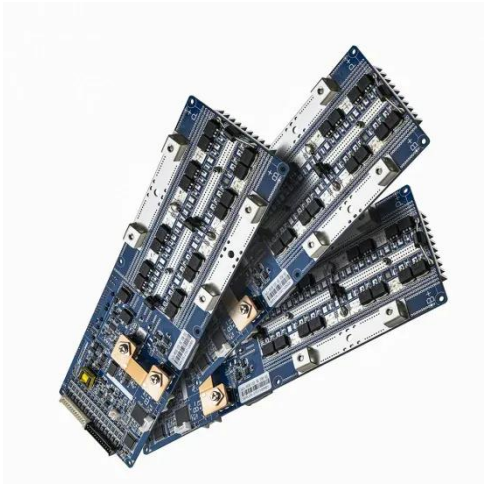
Research progress on ship power systems integrated with new ...

Solar energy can now be used as the



main power source to propel small-scale ships, and as an auxiliary power source in large-scale ships to supply lighting, communication ...

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Energy extraction potential from wave-induced ship motions ...

In the present study, we extend the assessment to cover cargo and large-sized ships, and we generalise the findings to consider all wave-encounter angles (from head waves ...

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The evolution of container ships and their sizes

The race for the largest container ship The Triple E vessels, the first Very Large Container Vessels, remained the largest vessels until 2013 when multiple ...

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Regression analysis for container ships in the early design stage

The seaway trade market has expanded in the last years and container ship dimensions are constantly increasing for higher cargo capacity. In the early design stage, main ...

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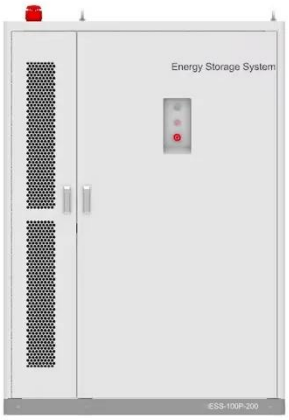

Maritime / China Unveils Plans For 'Largest Ever' ...

China has unveiled plans for a nuclear-

powered container ship expected to be the largest ever built, powered by a thorium reactor and ...

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The Case for Nuclear Cargo Ships

A large container ship needs about 3,000 megawatt-hours a day, which is roughly the capacity of the biggest grid battery ever built. "The battery solution is dead before it starts," ...

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