

Scalable Payment Method for Mobile Energy Storage Containers at Port Terminals

Do seaports use underground thermal energy?

Underground thermal energy resources in seaports can help to reduce energy costs and emissions, contributing to more sustainable port operations. However, there are only a few examples of the actual large-scale application of underground thermal energy use in ports, such as in Rhine River ports (Puttke, 2013).

How can a smart energy management system improve cargo operations?

A recommendation is to implement a smart energy management system to match energy demand and supply optimally, leading to higher energy efficiency and sustainability. For instance, solar energy can be stored to offset peak energy consumption when a terminal encounters the highest volume of cargo operations.

Why is energy management a key topic in ports?

As key port-related companies, terminal operators have attempted to use cost-efficient methods for terminal operations (Yap and Ho, 2023). Hence, energy management is a key topic in ports. At the same time, sustainable development has drawn increasing attention from regulators, governments, industry practitioners and scientists around the world.

Can a port adopt thermal energy?

For a port to adopt thermal energy, the geographical location is a major determinant or hindrance simply because a nearby thermal energy source or power plant may not be available. According to the International Geothermal Energy Association's estimation, only 6.9% of the global potential thermal energy is exploited (IGA, 2023).

Ports and container terminals are important hubs for global trade in goods. Port container handling is mainly done using Rubber-Tired Gantry Cranes (RTGs). Energy costs, CO2 emissions ...

Originality/value The use of renewable energy as an eco-friendlier energy source is underway in various ports. However, there is almost no literature that analyses and compares ...

This paper introduces scalable modular energy storage solutions designed to boost port flexibility by integrating healthy and second-life batteries into power grids. The use of Second-Life ...

Hybrid renewable energy systems (HRESs) are being incorporated and evaluated within seaports to realize efficiencies, reduce dependence on grid electricity, and reduce operating costs. ...

Battery storage and smart management of green energy play a crucial role in terminal operations. Via a connection, a Battery Energy Storage System (BESS) and the local grid metering ...

Abstract Port terminals, especially their reefer container yards, face surging power demands. Efficient reefer charging is critical for port sustainability and efficiency, as it helps reduce ...

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How can ports reduce the dependence on grid-supplied electricity? To minimize the dependence on grid-supplied electricity, ports are also investing in renewable generation notably PV ...

Moreover, this study presents URCS as an eco-friendly alternative for port-based reefer container storage, offering practical alignment with sustainability goals and regulations. The ...

What is a 40ft containerized battery energy storage system? AZE's 40Ft containerized battery energy storage system comes in scalable containerized modules ranging from tens of kWh to ...

A Containerized Energy Storage System integrates battery modules, power conversion systems, and control equipment into a standard ISO shipping container or a custom-engineered ...

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