

## SolarTech Power Solutions

# Refrigerated container has solar power generation



## Overview

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Driven by photovoltaic technology, solar reefer containers offer an eco-friendly alternative to conventional diesel powered units. How much energy does a refrigerated container use?

Good question, let's work it out. Energy consumption for a refrigerated container depends on a bunch of different factors (set-point temperature for the cooled space, ambient conditions, system efficiency, etc.), but the "Container Handbook" suggests an average value of 3,600 W per TEU which sounds good to me.

Can solar aided refrigeration improve the sustainability of refrigerated transport?

Solar aided refrigeration system can represent a simple and feasible solution for improving the sustainability of refrigerated transport. The paper presents the design and the performance of an electric powered refrigeration unit integrated with photovoltaic generators installed on top of the refrigerated box of a light truck.

Can a solar system impact the energy balance of a refrigeration unit?

The system prototype has been tested in stationary conditions, demonstrating the capacity of the solar system to impact significantly in the net energy balance of the refrigeration unit. The system performance during an urban multi-drop delivery scenario and hot climatic condition are then assessed using a dynamic lumped model simulation.

Can a reefer be powered by solar?

Since it's impossible for the sun to hit every side of a container at once, powering an average reefer entirely by solar is just not possible. Unless we change the energy consumption of the system that is. Since there is no sense in covering the entire reefer in solar, let's consider just using the top.

What happens if a refrigeration unit exceeds Solar power production?

The refrigeration unit average power presents many peaks that exceed the solar power production. These can be associated to three different events. The first corresponds to the pull down of the insulated box at the beginning of the mission.

What is the difference between solar power and refrigeration unit power?

The refrigeration unit power input is reported in Fig. 11 in comparison with the power delivered by the solar panels. The refrigeration unit average power presents many peaks that exceed the solar power production. These can be associated to three different events.

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