

**NYK-Nippon Oil Joint Project: Using Solar Power for Ship Propulsion**  
~Installation in car carrier scheduled to be completed on December 19, 2008~



As part of corporate efforts to reduce CO<sub>2</sub> emissions from ocean-going vessels, Nippon Yusen Kabushiki Kaisha (NYK; head office: Chiyoda-ku, Tokyo; president: Koji Miyahara) and Nippon Oil Corporation (Nippon Oil; head office: Minato-ku, Tokyo; president: Shinji Nishio) have agreed to jointly develop a system to partially utilize solar power to propel ships.

This full-scale installation of a solar power generator is a world-first, and will produce as much as 40 kilowatts of power (gross), which is expected to supplement existing power production on large vessels.

Against a backdrop of intensifying pressure on companies worldwide to combat global warming, NYK engaged in the research and development of next-generation eco-friendly ships including technologies to utilize recyclable energy for all aspects of ocean transportation.

On the other hand, Nippon Oil as a leading global total energy solutions company, has been working to cultivate the market for solar photovoltaic power generation systems, and has continued the development of related new products.

In order to work toward the mutual goal of fighting climate change, NYK and Nippon Oil have decided to establish a joint eco-project starting with the new car carrier planned to be completed on December 19, 2008.

The installation of solar power generators onto ships has been limited to use within crews' onboard living areas due to the harsh shipboard environment, which is subject to salt-water damage and constant vibrations. However, through this project, NYK and Nippon Oil will begin testing the 40-kilowatt solar generation system by installing it onto the car-carrier and connecting it to the onboard 440V electrical network.

In addition, as a part of its corporate strategy to reduce environmental burdens caused by the life cycle of automobiles, Toyota Motor Corporation (head office: Toyota City, Aichi Prefecture; president: Katsuaki Watanabe) has agreed to support this initiative as a shipper in order to reduce CO<sub>2</sub> emissions from the ocean transportation of finished cars.

## ● Overview of Joint Project

### 1. Test Purposes:

- i. To analyze the durability of solar photovoltaic modules while in a harsh shipboard environment and under stress from salt water, wind pressure, and vibrations.
- ii. To collect data on photovoltaic power generation and onboard electrical networks in order to optimize the implementation of large-scale generation systems.
- iii. To demonstrate the capability of reducing CO<sub>2</sub> emissions.

### 2. Ship:

Car carrier scheduled to be completed on December 19, 2008 at Kobe Shipyard and Machinery Works, Mitsubishi Heavy Industries, Ltd.

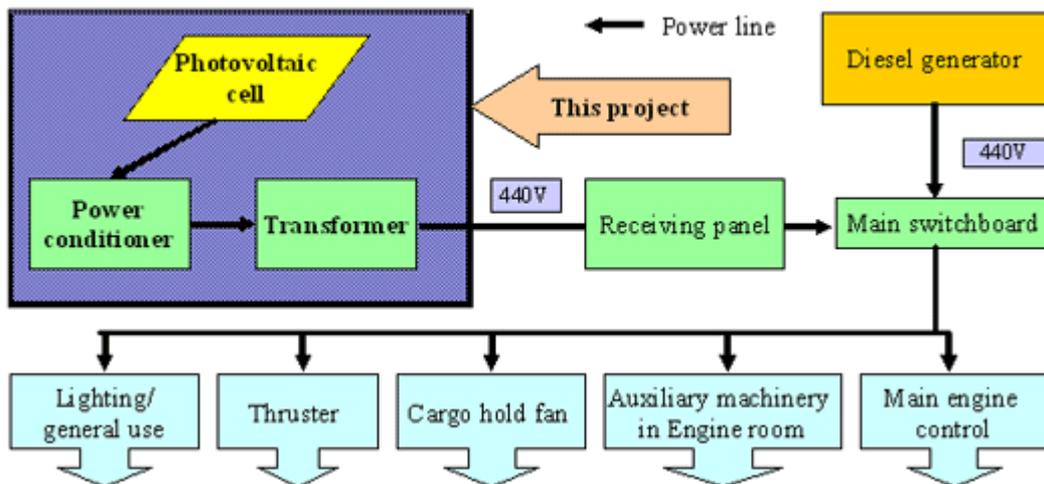
### 3. Energy output:

40 kilowatts (Number of modules: 328)

### 4. Electrical network:

The system will be connected to a 440V electrical network with the aim of utilizing the solar power generation system for ship propulsion in the future.

### 5. Images of Systems



### 5. Images of Installation



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