

Initiatives to mitigate environmental load

Environmental management indicator for certain types of vessels

Types of vessel	Environmental management indicator (Unit: g CO ₂ /ton-km)		
	2006	2007	2008
VLLCs	3.4	3.3	3.2
Car carriers	57.0	56.9	54.3
Containerships	14.0	13.2	12.8

A decline in the numbers means an improvement in CO₂ emissions per ton kilometer.

1 International Marine Organization (IMO)

UN specialist organization to promote intergovernmental cooperation and formulate treaties and protocols covering technical and legal questions in marine transport and shipbuilding

2 Sulfur oxide (SOx)

Toxic substance that has been identified as one of the causes of air pollution and acid rain

3 Forecast Ocean Plus Inc.

A private venture company engaged in applied research for the sustainable development of the global oceans. The company offers various solutions for research and development conducted in offshore operations.

4 Nitrogen oxide (NOx)

Toxic substance that has been identified as a key element of photochemical smog, which pollutes the air and causes acid rain

Introduction of environmental management indicators

In April 2006, NYK Line introduced environmental management indicators based on the guidelines issued by the **IMO**¹ to measure and manage targets for fleet CO₂ emissions. NYK's goal is to reduce CO₂ emission intensity by at least 10% by FY 2013, compared with the level in FY 2006.

Environmental management indicator (Based on IMO guidelines)	=	Environmental load (CO ₂ emissions from vessel transportation)
	=	Value added by the business (Mass of cargo in tons × transport distance in kilometers)

Fuel-saving activities: Save Bunker campaigns

The NYK Group considers the reduction of fleet CO₂ emissions to be at the core of its efforts to prevent global warming, and therefore places strong emphasis on activities that improve fuel efficiency. Since 2005, we have been working to strengthen activities under the Save Bunker campaigns and extend them throughout the group. These efforts include the proactive use of ocean-land communications to enable detailed route management, route optimization, and the development and installation of new environmental technologies.

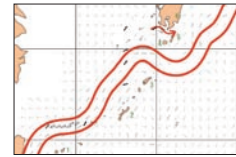
Low-sulfur fuel

Sulfur oxide (SOx)² is emitted during the burning of marine fuel oils that contain sulfur. NYK has adopted internal standards that are stiffer than the international regulations found in the MARPOL Convention (sulfur content of less than 4.5% in the global ocean area), and makes every effort to purchase fuel oil that has low sulfur content. Ships making calls at Los Angeles and Long Beach voluntarily use low-sulfur fuel oil in their auxiliary engines, and low-sulfur fuel oil is also used in the main engines of some car carriers.

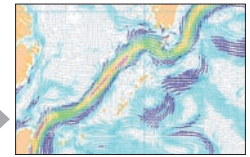
Using the Kuroshio Current to reduce CO₂ emissions

Using current forecast information developed by **Forecast Ocean Plus Inc.**³ makes it possible to monitor the speed distribution in the Kuroshio Current, an ocean current that is known for its fast flow speeds. We have verified that effective use of

this information can save up to 9% on fuel consumption and CO₂ emissions. We began using this technique with our very large crude carriers in April 2008 and are now planning to deploy it for other types of vessels as well.



Conventional current forecast information



Current forecast information developed by Forecast Ocean Plus Inc.

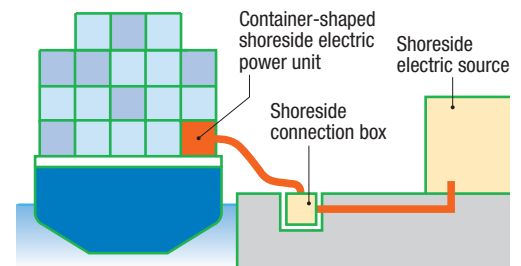
Electronically controlled engines

Electronically controlled engines installed on vessels electronically control fuel injection and exhaust valve opening/closing to optimize performance and reduce emissions of **nitrogen oxide (NOx)**.⁴ Compared with conventional engines, electronically controlled engines have better fuel consumption in the low-load range, making them a promising candidate for the environment-friendly engines of the future. NYK had 27 vessels with electronically controlled engines at the end of March 2009, with plans for their installation in an additional 28 vessels. The company will also be installing electronically controlled engines in newly built vessels.

Use of onshore electric power

Receiving necessary electric power from the shore while a vessel is in port helps to reduce the use of the vessel's own generator and cut down on emissions of pollutants. NYK plans to equip all its large containerships to receive power from the shore, including retrofitting 18 vessels currently in operation.

How it works



See feature

Details >>> p. 12-13

Development of more fuel-efficient vessels for the future

Other activities are described on the website.

- Initiatives in individual business lines

Access

CSR Activities > Environment

