

CO₂ reduction goal (Medium to long-term environmental goal)

CO ₂ reduction per ton-mile	FY2015 base year	FY2030	FY2050
Vessel Ocean transportation		-30%	-50%
Ripple effect to the entire supply chain		-40%	-70%

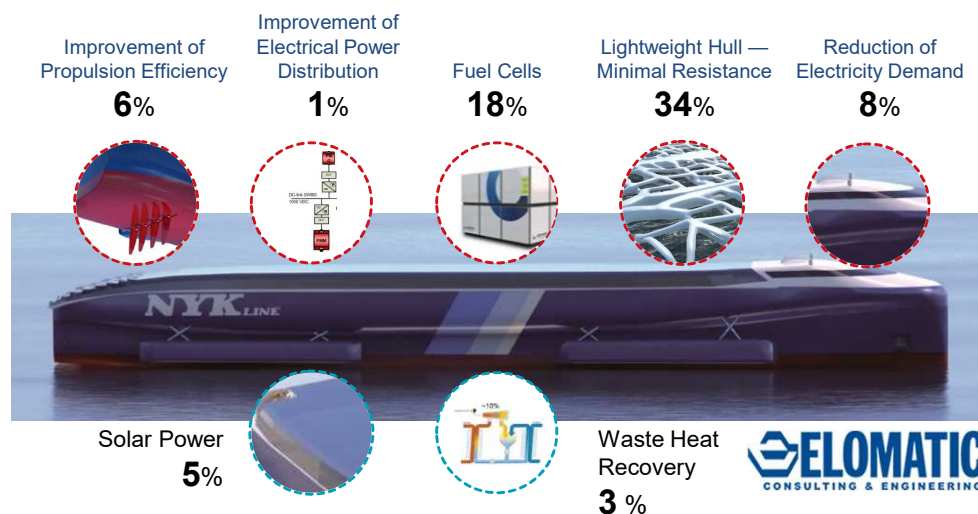
NYK Promotes Decarbonization Through Exploratory Design of NYK Super Eco Ship 2050

A new future concept ship has been designed by incorporating innovative technologies that will result in an emission-free vessel — the “NYK Super Eco Ship 2050.”

This concept ship has been crafted as a 2050-model pure car and truck carrier (PCTC). The power needed to operate the ship has been cut by almost 67 percent by remodeling the hull to decrease water friction, reducing the weight of the hull, introducing fuel cells for electric propulsion, and relying on other highly efficient propulsion devices. Instead of fossil fuels, power for the ship would come from solar energy and hydrogen produced from renewable energy sources, all of which would lead to a reduction of CO₂ by 100 percent and thus result in a zero-emission vessel.

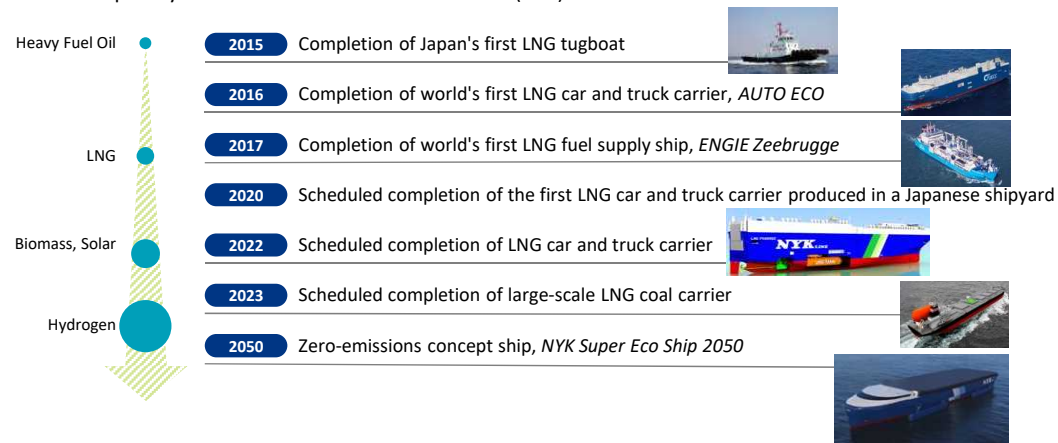
The NYK Group will promote decarbonization through technical development that contributes to energy savings and greenhouse gas (GHG) reduction. By applying this to actual vessels, through the concept of NYK Super Eco Ship 2050, the company will continue to contribute to the sustainable development of society and enrichment of the group’s corporate value.

67% reduction in energy derived from fossil fuels compared with a 2014-built vessel



Promoting a Switchover to LNG as Fuel

- By switching the fuel used in its ships from heavy fuel oil to liquefied natural gas (LNG), NYK will be able to cut CO₂ emissions by about 30%, reduce nitrogen oxide (NO_x) emissions by about 80%, and completely eliminate emissions of sulfur oxide (SO_x).



Expansion of “green business” by utilizing maritime technologies

- Offshore Wind Power**
 - Wind-power generation at finished-car logistics terminal in Belgium
 - Signed agreement with Van Oord (the Netherlands) for joint offshore wind power equipment installation business
 - Signed memorandum of understanding with Swedish company for worker transport business related to offshore wind power
- Hydrogen Carrier**
 - Leading the world in full-scale launch of international hydrogen supply chain proof-of-concept business (AHEAD)
- Ammonia**
 - Studying ocean transport of ammonia (for electricity demand)
 - Looking toward use as ship fuel as one solution toward decarbonization

Utilizing Big Data to Optimize Vessels

NYK is striving to ensure safe and energy-conserving shipping operations by making use of big data, such as information on the equipment and operations of ships during voyages. NYK’s Ship Information Management System (SIMS) is its platform for utilizing big data. By installing the system, NYK has been able to operate and assign vessels more efficiently based on highly accurate information about vessel speeds, fuel consumption performance, weather, and other factors. NYK is working to improve the system’s technologies and data analysis capabilities with a view to broaden the use of the system as an operational management platform tailored to the needs of each type of vessel in its fleet in the future.

Number of SIMS-equipped Vessels (as of March 31, 2019)

