

Environmental Performance Report, 2013

Yang Ming Marine Transport Corporation

June 2014

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Business Outline of Yang Ming

Yang Ming Marine Transport Corporation (hereinafter referred to as Yang Ming)

- Established: December 28, 1972
- Fleet:
At the end of December 31, 2013, Yang Ming had a fleet of 93 container vessels. With 4.9 million-D.W.T., Yang Ming transports more than 3.9million TEUs (Twenty feet Equivalent Units) a year.
- Office:
Yang Ming's headquarters is conveniently located in Keelung, Taiwan, R.O.C. with branch offices in the country's three other major ports: Keelung in the north, Taichung in central Taiwan and Kaohsiung in the south. Yang Ming's agents are scattered in major countries throughout the world offering comprehensive, global shipping services.
- Capital: TWD 28,187,131,230 (TWD for New Taiwan Dollars)



Company Ethical Standards of Yang Ming

Yang Ming's core values are "Teamwork, Innovation, Honesty, and Pragmatism." All employees shall behave in compliance with the principles stated below in order to realize the spirit of these core values.

- Comply with international/national/company's laws and regulations.
- Keep all business-related information and techniques confidential – revealing them to outsiders is strictly prohibited.
- Be honest and loyal to the company and do not take personal advantage from one's responsibilities.
- Find the best solution to problems and cooperate with other parties.

Environmental protection is an important part of Yang Ming's social responsibilities. All employees shall make their best efforts to protect the environment, avoid causing damage to the environment, treasure natural resources and strictly observe all of Yang Ming's environmental policies and principles.



CEO's commitment and Yang Ming's Environmental Policy



Care about the environment, treasure the earth

To protect the environment is our enterprise's social responsibility. Because we have only one Earth, we must try our best to avoid damaging its environment and wasting its resources. We must leave to our descendants a clean and healthy living space.

To achieve the goal of implementing the environmental management system, we have established the following principles for our staff to follow and adhere to.

- Complying with domestic environmental laws/regulations and international conventions in order to prevent pollution and to preserve marine eco-systems
- Economizing the consumption of resources and avoiding unnecessary waste of resources
- Strengthening and improving control of the root causes of pollution in order to prevent environmental pollution.
- Endeavoring to reuse and recycle resources in order to reduce unnecessary waste.
- Establishing an environmental management system to continuously improve the performance of environmental management.
- Strengthening environmental education and promotion to enhance employees' awareness and capabilities to safeguard the environment.



Frank F.H. Lu
Chief Executive Officer

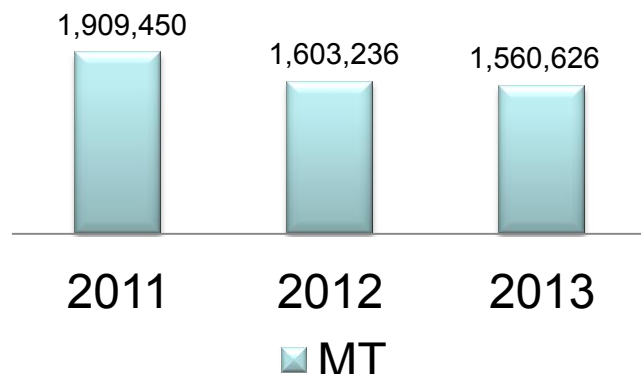


Possible Impact on the Environment

Use of Natural Resources

Fuel is a major expenditure of a shipping company. And we try to reduce fuel consumption annually.

Fuel Consumption



Air

When a vessel's engine burns fuel oil, Nitrogen Oxides (NO_x), Sulfur Oxides (SO_x) and CO_2 are emitted into the air. NO_x and SO_x cause air pollution and acid rain while CO_2 leads to global warming. The emissions from our 86 owned and chartered vessels in 2013 are listed below:

Emission from Engines	Emissions in 2013	Unit
CO ₂	3,923,635	Ton
SO _x	62,655	Ton
NO _x	105,187	Ton

CO₂ Emission:

CO₂ emissions are based on the total annual fuel consumption. [CO₂ g/TEU*Km].

NO_x emission:

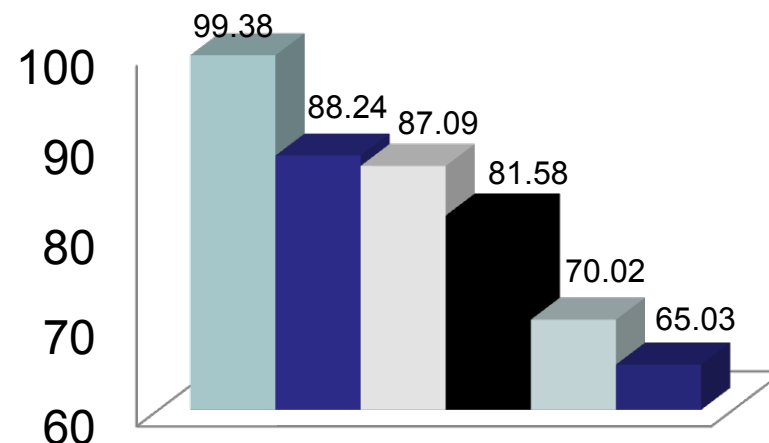
NO_x emissions are based on the total annual fuel consumption. [NO_x g/TEU*Km].

SO_x emission:

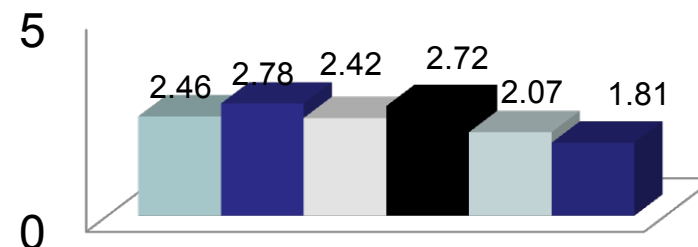
To provide total annual average SO_x emissions of our fleet based on total annual fuel consumption. [SO_x g /TEU*Km].



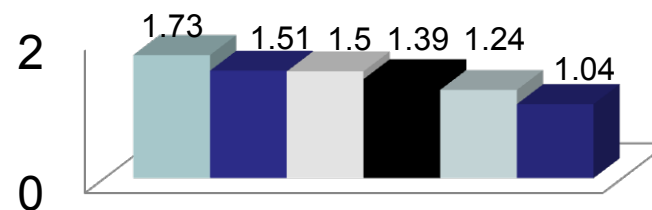
These include all fuel types and onboard consumption. Yang Ming achieved the goal of reduced CO₂ emission in the recently years.



CO₂



NO_x



SO_x

2008 2009 2010
2011 2012 2013

Emission for Each Trade Lane

Emission from Engines	String Emission for CO ₂	String Emission for SO _x	String Emission for NO _x	Unit
average for Asia--Mediterranean	57.45	0.95	1.6	g/TEU*km
average for Asia--Middle East/India	65.84	1.04	1.83	g/TEU*km
average for Asia--North America EC	68.18	1.14	1.90	g/TEU*km
average for Asia--North America WC	70.35	1.02	1.95	g/TEU*km
average for Asia--North Europe	54.80	0.90	1.52	g/TEU*km
average for Intra-Asia	78.46	1.32	2.19	g/TEU*km
average for Oceania	58.22	1.00	1.63	g/TEU*km
average for all trades	65.03	1.81	1.04	g/TEU*km

Ocean

- Fuel oil or chemical spills by accidents
Possible ship collisions or accidents might lead to spill of fuel oil or chemicals.
- Ballast water
Exchange of ballast water might transfer harmful aquatic organisms and pathogens in marine ecosystems. Or, if ballast water is oil-polluted, the exchange or drainage of ballast water on shore or at sea might pollute the ocean.
- Wasted oil, bilge, sludge and other waste/garbage
Wasted oil, bilge, sludge and other waste/garbage on board might cause pollution if they are not treated properly.

Land

- Sewage
The dirty water for cleaning containers at depots might pollute the soil and water if sewage is not properly processed.
- Waste and garbage
The waste and garbage at offices and facilities might pollute the soil and water if they are not disposed of appropriately.

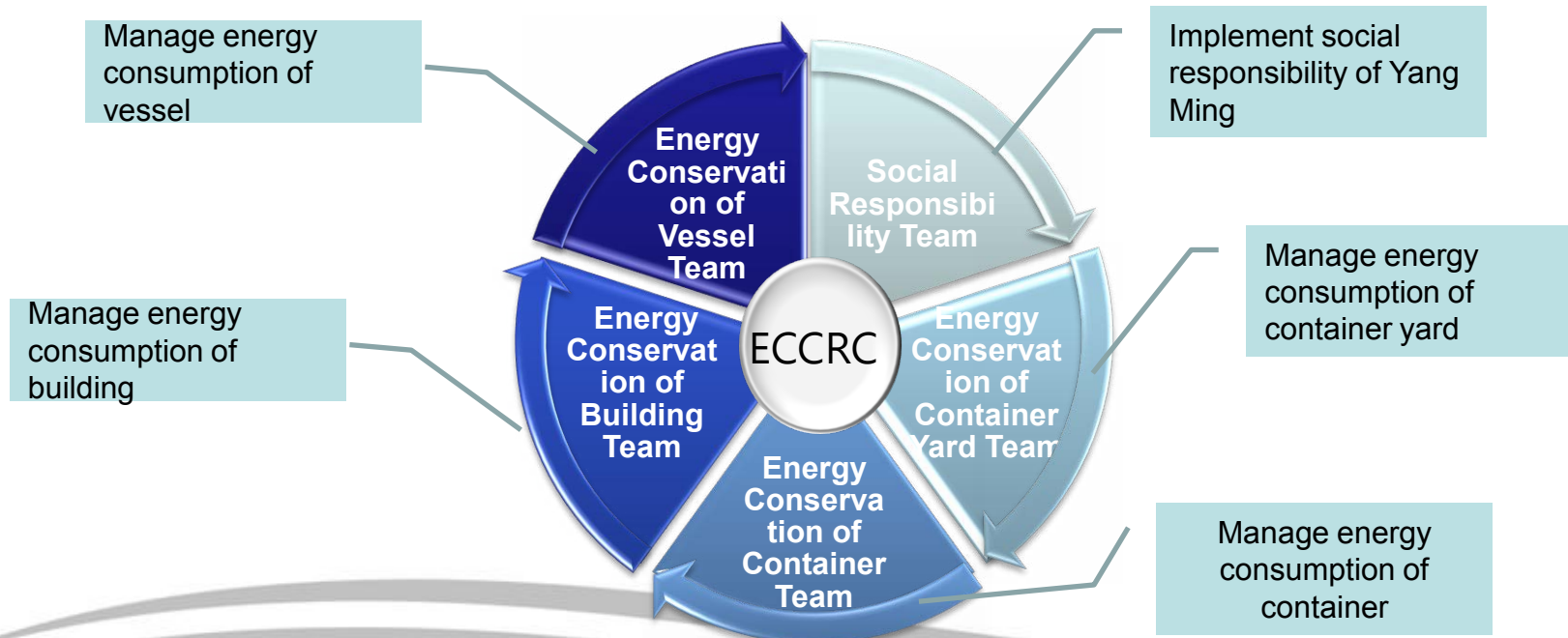


Energy Conservation and Carbon Reduction Event

Energy Conservation and Carbon Reduction Committee

In order to preserve more resource and develop new tech-knowledge of alternative energy source, we established Energy Conservation and Carbon Reduction Committee (ECCRC) in December of 2009, and the members came from different departments.

ECCRC has 5 teams, so each team can focus on specific events in a more detailed way.



Certificates

Year	Accreditation
1996	1.ISO 9002 Quality Management System 2.ISM (International Safety Management) CODE
2003	ISO 9001 : 2000 Quality Management System
2004	1.All owned vessels are accredited for ISPS (International Ship & Port Facility Security) CODE 2.ISO 14001:1996 Environmental Management System (including Head office, Keelung branch and container yard, Kaohsiung branch and terminals #70/#120 and all owned container vessels)
2005	ISO14001:2004 Environmental Management System
2009	ISO 9001:2008 Quality Management System
2010	2010 Carbon Emission Reduction Award
2011	1. Green building certificate for Administration building of the 6 th Container Terminal 2. 2011 Carbon Emission Reduction Award 3. ISO 14001: certificate renew
2012	2012 Carbon Emission Reduction Award



* All certifications remain validity



Carbon Footprint Calculation

Yang Ming is working on carbon footprint on our website now. We want to provide our customers with more information about how much CO₂ emission we have reduced during the transport. You may go to our website:

http://www.yangming.com/english/ASP/about_us/Environment_Preservation/carbon_calculator.asp

Environment Protection

Environment PolicyGreen VesselGreen TerminalCarbon CalculatorClean Cargo Working Group

Carbon Calculator

From

North America
South America
Asia
Africa
Europe
Oceania

Location from

Taichung, Taiwan

To

North America
South America
Asia
Africa
Europe
Oceania

Location to

Rotterdam, Netherlands

Cargo Weight / Teu *

10

☐ Ton ☒ Teu

Search

Reset

Carbon Calculator : Result

The CO2 Emission from **Taichung** to **Rotterdam** / Cargo Weight : **10 Ton**

From	To	Service	Distance (km)	Mode
Taichung	Kaohsiung		--	TRUCK
Kaohsiung	Rotterdam	NE2	18,585	VESSEL

Total CO2 Emission (kg) **1020.13065**

From	To	Service	Distance (km)	Mode
Taichung	Kaohsiung	TBS	226	VESSEL
Kaohsiung	Rotterdam	NE2	18,585	VESSEL

Total CO2 Emission (kg) **1039.11465**

Calculation Formula:

$\text{EEOI (kg/ton-km)} * \text{Distance (km)} * \text{Cargo Weight (kg)} = \text{CO}_2 \text{ Emission (kg/km)}$

This formula is fit in with CCWC standard.



Environment Greening

Green Terminal

After Kao Ming Container Terminal (KMCT), Kaohsiung Logistics Center I and II use solar energy panels to produce electricity.

	Kaohsiung Logistics Center I	Kaohsiung Logistics Center II
Installed capacity (KWp)	451.6	411.7
Estimated total Capacity of Solar Panel in 20 Years (KWh)	9,364,720	8,537,323
Estimated CO ₂ reduction (kg)	4,982,031	4,541,856



Green Office

Replaced 50 W
Halogen lamps
with 3 W LED
bulbs



Reduce lamp
use in office
aisle



Additional
water-saving
tap



Additional two
-stage toilet
flush





Review of Environmental Management Program for 2013

Environmental policy	Goal	Purpose	Management	State of Implementation
Prevent Pollution	Reduce air and water pollution	Collect latest International and national conventions and regulations for our fleet	Periodically surf Internet for conventions and regulations or obtain them through the flag country for crew's information	Update and review quarterly
		Prevent onboard garbage contamination	1. Re-separate the garbage in 9 section 2. Cancel the 25 sea mile disposal regulation of pad material 3. Update the "Garbage disposal book"	1. According to the revision of MARPOL/V, we have updated our garbage management project and implemented since January 2013, distributed garbage disposal manual to fleet at the same time 2. Update and revise according to operation demand

Environmental policy	Goal	Purpose	Management	State of Implementation
Prevent Pollution	Reduce air pollution (2% of annual CO ₂ emission for fleet)	Reduce exhaust gas emission of ships	Reduce CO ₂ emission of fleet and compile super slow steaming	Average CO ₂ emission of fleet is 65.03g/TEU*km.
		Execute EEOI statistic project in coordination with company policy of CO ₂ reduction	Collect, compile and announce data and statistics and monitor EEOI data of fleet for timely correction of errors	Implement carbon-cutting plan for YM owned vessels. CO ₂ emission reduction rate: 2013: 17.50g/ton*nm
Save Resources	Reduce consumption of energy and natural resources	Control fuel consumption	Reduce fuel consumption by controlling daily noon report and analyzing vessel speed and arrival time to avoid reducing the speed too early and lengthening the time of anchorage	<ol style="list-style-type: none"> 1. Provide daily noon report and vessel speed report for fuel-saving team to study and observe 2. Update software and system and trace operation of systems to meet the calculation of CO₂ emission, totaling 161 voyages for YM-owned vessel and 82 voyages for chartered vessels 3. Ensure correction of vessel reports, daily checking vessel reports totaling 1,252 voyages

Environmental policy	Goal	Purpose	Management	State of Implementation
Save resources	Reduce consumption of energy and natural resources	Reduce fuel consumption	Periodically monitor operation and lubricant consumption of vessel M/E and secondary engine and make timely correction if necessary	<ol style="list-style-type: none"> 1. Correct telex, totaling 227 mails 2. Correct telex for fuel consumption issues, totaling 47 mails 3. Correct 129 mails for chartered vessels that didn't follow the rule of system
		Install Bulbous bow on vessels to save oil	Discuss with Hyundai and CSBC Corporation Taiwan the design of M type to see if there is any progress	Due to limited performance, postpone this project
			With regard to newly designed ES Bow of U/E type vessels and see if they have passed the exam in order to confirm the effect of oil saving measures	Have approved this project and process in construction
		Develop and implement energy saving and carbon reduction projects for ships	Collect information of Rudder Skeg energy-saving data and continue to communicate with Hyundai and CSBC Corporation Taiwan to get blueprint	Have obtained the working plan of Rudder Skeg for M type vessels.

Environmental policy	Goal	Purpose	Management	State of Implementation
Save Resources	Reduce consumption of energy and natural resources	Collect and analyze every month and quarter the consumption of MFO/MDO/L.O /Cylinder	Reduce the consumption of C oil to less than 1.70 million tons	Accomplishments of the whole year: MFO: 1076469.56 tons MDO: 23514.92 tons L.O: 2184477 litres Cylinder oil: 5755664 litres
		Analyze the main engine fuel consumption and cylinder oil combustion per hundred nautical miles	Collect and analyze statistics every month and every quarter the information about self-owned vessels passing the high risk areas (HRA) like the Gulf of Eden and the hiring of guards and the way to save fuel consumption by adjusting the speed of navigation	Accomplishments of the whole year: W-bound: 51 voyages E-bound: 66 voyages, totaling 117 voyages, save 20,403.7-ton fuel, or about USD9.28 million.
		Continue to promote environmental protection and energy saving	Assist “carbon reduction team” to manage the performance and continue to save energy	Continue to request Headquarters and subsidiaries to maintain average unit usage of electricity, paper and water as previous year, because there’s some business promotion in subsidiaries, Headquarters and most subsidiaries can reach this target

Environmental policy	Goal	Purpose	Management	State of Implementation
Promote and fulfill the policy of environmental protection	Promote the Group's green competitiveness	Publicize the Group's plan for energy saving and carbon reduction and promote relative activities	Promote the Group's green competitiveness	<ol style="list-style-type: none"> 1. Strengthen energy saving and carbon reduction, circulate a total of 9 articles in "YM you and me " 2. Promote activities like turn off office light when you don't need it, reuse the copy papers, etc. 3. Collect 2,204 waste batteries, 1028 ball-point pens and 1267 compact disks 4. Continue to promote activities like saving water, electricity, using LED and cutting down on environmental ink and paper consumption in MOME 5. Urge our fleet on energy saving and carbon reduction

Environmental policy	Goal	Purpose	Management	State of Implementation
		Continue to comply with the company's environmental protection and energy-saving policy in the 2nd phase construction project of the 6th Container Terminal of the Port of Kaohsiung	Proceed with the 2nd phase construction of Kao Ming Container Yard	Monitor suppliers' observance of schedule and supervise the quality of construction. All unqualified items have been improved as well
Promote and fulfill the policy of environmental protection	Submit the social responsibility book	Submit the social responsibility book and describe environmental activities	Announce 2012 environmental performance report and submit the corporation's second social responsibility report	<p>1. Have completed the Chinese version of social responsibility report and post it on Yang Ming website http://www.yangming.tw/traditional_chinese/csr/download/csr_2012.pdf</p> <p>2. Have completed the English version of social responsibility report and posted it on Yang Ming website http://www.yangming.tw/csr/download/CSR2013-Eng.pdf</p>



Environmental Management Program for 2014

Environmental policy	Goal	Purpose	Management
Prevent pollution	Reduce air pollution (2% of annual CO ₂ emission for fleet)	Reduce exhaust gas emission of ships	Reduce CO ₂ emission of fleet and compile super slow steaming
		Execute EEEOI statistic project in coordination with company policy of CO ₂ reduction	Implement the data collection and project maintenance for ESI (Environmental Ship Index), periodically send IAPP-certificate, (International Air Pollution Prevention certificate), EIAPP-certificate (Engine International Air Pollution Prevention certificate) and BDN (Bunker Delivery Note) to International Association of Port and Harbor.
Saving resources	Reduce consumption of energy and natural resources	Control the fuel consumption	Control daily noon report, analyze vessel speed and arrival time to avoid reducing the speed too early, lengthen the time of anchorage and reduce consumption of fuel oil
			Periodically monitor operation to reduce lubricant consumption of the vessel's M/E and secondary engine and make timely correction if necessary

Environmental policy	Goal	Purpose	Management
		Install Bulbous bow on vessels to save oil	Tracing the achievement of energy saving design
Saving Resources	Reduce consumption of energy and natural resources	Develop and implement energy saving and carbon reduction projects for ships	Make technical study in main engine de-rating and the design of energy-saving propeller
		Control the consumption of fuel	Implement the policy of fuel saving team
			Circulate Yang Ming's energy saving and carbon reducing policy to chartered vessels and ask them to follow up
			Control refuel C-oil within budget 2%
			Hire guards and use economical speed to reduce fuel consumption
		Publicize the Group's plan for energy saving and carbon reduction and promote relative activities	Ask Headquarters and subsidiaries to continue to implement the policy of saving electricity, paper, water and fuel
Promote and fulfill the policy of environmental protection	Promote the Group's green competitiveness	Publicize the Group's plan for energy saving and carbon reduction and promote relative activities	Strengthen the promotion of energy saving and carbon reduction, and plan recycling activities



Environmental Conservation Activities

Reduce consumption of fuel and cylinder oil

We upgrade or adopt new equipment/ systems or arrange maintenance for existing vessels to increase efficiency in fuel and cylinder oil consumption, and this includes equipping main B&W engines with ALFA lubricators, replacing hull paint with silicon-based paint and using tin-free SPC, arranging underwater polishing of propellers, using electronic engine control, equipping shaft generators, and equipping M-type vessels with pulse feed systems.

We implement an annual fuel saving plan. Our fleet is sailed at economical speeds when the schedule allows and use weather routing to reduce fuel consumption.



Reduce consumption of other natural resources

- Educating employees
 - Reducing paper use
 - Collecting all recyclable paper that can be reused instead of throwing it away
 - Continually replacing traditional lights with LED light
 - Setting up quantitative environmental targets to reduce consumption of fuel and electricity.
 - Encouraging employees to have vegetable meal instead of meat to reduce the emission of CO₂
- Using bamboo wood floor containers.



Reduce ocean, air and land pollution

- Strictly following IMO/ISM regulations to avoid collisions or accidents so that no spill of fuel or chemicals will occur.
- Ensuring that all 8,000-TEU vessels have environment-friendly and advanced designs, including AMP systems for using shore-side electrical power, air guard stern tube seal systems of propeller shafts, tin-free paint on hulls, main engine Alfa Lubricator, low-sulfur fuel oil storage, settling & service tanks, bilge primary tanks, cleaning bilge tanks, twin ballast water lines for each ballast tank, vacuum toilet system, one-man bridge systems, high efficiency main & generator engines, and box-type hatch coaming. We also ensure new vessels have suitable designs to meet the regulations governing CO₂ and NO_x emissions and each vessel is certified as meeting EIAPP (Engine International Air Pollution Prevention) and IAPP (International Air Pollution Prevention) standards
- Avoiding ocean pollution and reducing emissions, we upgrade/adopt new equipment/systems for existing vessels, such as equipping E-type vessels with new oily-water separators, adding bilge water primary tanks for the fleet, and replacing exhaust boilers for V-type vessels.

- Using low-sulfur fuel oil in our fleet according to the IMO MARPOL Annex VI standard. The maximum sulfur content in the fuel is not to exceed 1.0% (m/m) in SOx emission control areas (SECA), and the maximum sulfur content in the fuel is not to exceed 3.5% (m/m) beyond the SECA. From 2008 on, our fleet has been operated in USWC trade in cooperation with “Vessel Speed Reduction Program” of Port of Los Angeles, and “Ship Auxiliary Engine Regulation” of Ports of Los Angeles and Oakland by slowing down speed and using low sulfur fuel. Yang Ming also joined “Vessel Main Engine Fuel Incentive Program” to use low

Sulfur fuel in main engine and was rewarded a Certificate of Recognition by Los Angeles port authorities in January of 2009.

- Delivering all sludge oil to certified units on shore and keeping a complete record of such deliveries.
- Handling sewage with sewage treatment equipment, which shall be kept in functional condition at all times.



All ballast water change follows IMO Res. A 868 (20).

- Using HFC-free refrigerant in our reefer containers and refrigeration systems on board to avoid direct harmful impact on the environment, like the depletion of the ozone layer and the greenhouse effect and adopt R134a for reefer containers to avoid environmental pollution. Reefer containers are installed with energy-saving software DTMSSII to promote electricity efficiency. Also, we use no poisonous paint for newly built containers .
- Having already improved sewage processing systems at certain container yards.
- Implementing a garbage management plan on board and at land offices. Garbage minimization and sorting are encouraged. All ship garbage is handled as per the following steps on board:
 - Incineration: Records are maintained for all incinerating.
 - On-shore handling: The ashes and garbage are delivered to a certified unit on shore and a complete record kept.

- Implementing Cylinder Oil Drain Analysis program.
- Since 2009, Yang Ming has planned to implement the “Environmental Compliance Program” and executed the “Vessel General Permit program”.



Activities for Education on Environment Issues

- **Employee Training**

On-board training

Each ship's captain must arrange environmental training in annual on-board crew training programs and implement the training per 6 months. The anti-exhaust information is included in the crew training programs, which is enforced every half year. It is aimed to ensure that all crew understand how a vessel may pollute the environment and what should be done every day to avoid such pollution. They should also be educated to know how to reduce and classify garbage.

Pre-job training

Every new employee will be well trained in observing the company's environmental policy, targets, and procedures before he/she is on duty. Environmental & safety awareness training are also provided for our vendors working in our facilities.

- **Promotion of Environmental Requirements to Suppliers**

We request our suppliers/chartered vessels to comply with international environmental requirements.



- **International Cooperation**

We have joined the Clean Cargo Working Group (CCWG) to work with other companies for more responsible business practices, innovation and collaboration.

CCWG Membership 2014 – 40 Members



Carriers					
Shippers				Freight Forwarders	

- **Corporate social activities:**

Encouraging employees to take the stairs more and use the lift less; eat less meat and more vegetarian food; use reusable cups instead of paper cups; and join the flea market activity for exchange and reuse all products we have bought.

To cut down on carbon emissions, we have also encouraged our employees to actively do anything that is environmentally friendly. We encourage employees to care for the earth and instill in them the “get-up-and-go” concepts and go all out to enhance our competitiveness in the green shipping world.

