

# Green gauge

How are cruise lines, suppliers and destinations rising to the environmental challenge? From recycling to cold ironing, here are 100 examples. **Anne Kalosh** reports

**1.** A number of ships from Princess Cruises, Holland America Line and Norwegian Cruise Line are hooking up to shore power while alongside in Juneau, Seattle, Los Angeles and, soon, San Francisco.

Switching from diesel to cleaner shoreside electric power reduces emissions. The Port of Los Angeles estimates that a vessel can cut NOx by one ton and take more than half a ton of SOx out of the air each day.

Princess began cold-ironing in Juneau in 2001, followed by Seattle in 2005. The technology is now available on eight Princess

ships. In addition, Princess and the Port of San Francisco have won a \$1.9m grant to build a shoreside power system.



Three Holland America ships use cold ironing.

NCL's Norwegian Star has been equipped to plug into shore power in Los Angeles in 2008.

San Diego and Stockholm are among the other facilities that have looked at the feasibility of cold ironing for cruise ships.

Siemens Power Transmission and Distribution launched a cold ironing solution, Siplink, enabling ships to connect to the medium voltage network of the local power supply company, offering potential energy savings of 25-30%.

**2.** Holland America's sales force is transitioning to hybrid cars.

**3.** Rolls Royce customised propeller blades on the 1990-built Empress of the Seas, resulting in a 14% reduction in fuel consumption.

**4.** 2007's AIDAdiva entered service with the most advanced Deerberg environmental protection system at sea. The zero-discharge Deerberg Multi-Purpose Waste Management System handles solid waste, food waste, biosludge, sludge oil and recyclables.

**5.** Since 2001, ICCL (now Cruise Lines International Association) member lines have adhered to a host of environmental standards that in many cases exceed

regulatory requirements. Details are downloadable at [www.cruising.org](http://www.cruising.org).

**6.** A growing number of lines are achieving ISO 14001 certification for their environmental management system.

**7.** Port Everglades installed new energy-efficient equipment in its cruise terminals and office buildings to cut greenhouse emissions by approximately 9.8m pounds annually.

**8.** Fourteen business organisations in Norway are establishing a private sector NOx fund allocating Nkr500m annually to NOx reductions.

Companies signing the agreement will be exempt from paying NOx tax for three years in return for committing to reduce their NOx emissions.

**9.** Regent Seven Seas signed a three-year extension of its partnership with environmentalist Jean-Michel Cousteau, which began in 1999. Cousteau lectures on select sailings and his Ocean Futures Society counselors lead Ambassadors of the Environment programs for young cruisers.

**10.** Many lines collect photo copying and laser printer cartridges for recycling.

**11.** Celebrity Cruises has given nearly \$300,000 to support conservation efforts in the Galapagos Islands since 2003, and customers donate \$160,000 annually to local conservation projects.

**12.** Australia's Captain Cook Cruises is in the process of obtaining Ecotourism Australia accreditation for its paddlewheeler

**4. AIDAdiva: zero-discharge waste management system**



Murray Princess, which involves tree planting on the Murray River and other initiatives. Passengers are given a fact sheet and briefed about protecting the reefs when they join cruises in the Fijian islands.

**13.** Explorer of the Seas carries atmospheric and oceanographic laboratories affiliated with the Rosenstiel School of Marine and Atmospheric Science. Research includes tracking pollutants and measuring the flow of currents to understand the distribution of heat on the planet.

**14.** Fred. Olsen Cruise Lines is building new offices with environmentally friendly technology, including options for solar control, thermal installation, energy savings and water recycling.

**15.** Star Clippers is designing its newbuild to qualify for the Det Norske Veritas Green Passport rating.

**16.** Holland America's Half Moon Cay was developed according to guidelines of the Business Charter for Sustainable Development established by the International Chamber of Commerce. Much of the island serves as a migratory bird reserve and only 2% of the acreage is developed.

**17.** Royal Caribbean has teamed with vendors to study the programming of lighting in public areas to cut down on waste. Metres have been installed in galleys and air conditioning systems to analyse energy usage. 'We've looked at every area, down to how much power is required by ice machines and coffee makers,' says Rich Pruitt, director of environmental programs.

**18.** Crystal Cruises reimbursed employees and their guests for movie tickets to 'An Inconvenient Truth,' the film about global warming.

**13. Explorer of the Seas  
– research labs on board**

**19.** MSC Cruises and Costa Cruises are recycling aluminum on their ships in cooperation with Italy's National Consortium for the Collection and Recycling of Aluminum.

**20.** Results of Wärtsilä's two-year development project to test a scrubbing plant for removing SOx from the exhaust gases of marine diesel engines and oil-fired boilers will be known in 2008.

**21.** By consolidating its daily shipboard newspaper, Oceania Cruises cut paper consumption 25% to 40%.

**22.** Developing LED bulbs and fixtures that can withstand sea-going conditions is the goal of a new partnership between Miami-based Callenberg Engineering and Lighting Science Group Corp.

**23.** Royal Caribbean is moving away from perchloroethylene dry cleaning solvent to Ashland technology that uses an aliphatic hydrocarbon solvent in a closed loop system. Any residual is collected for offloading shoreside.

**24.** Holland America Line, the National Marine Fisheries Service and the National Park Service developed a training course on avoiding whale strikes in such habitats as Alaska's Glacier Bay. HAL made the module freely available.

**25.** Port Everglades employs a LEED-certified architect. The LEED program promotes a whole-building approach to sustainability by considering sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

**26.** Bermello, Ajamil & Partners is cutting travel by creating company-wide remote electronic presentation capabilities. Other initiatives include designing LEED projects and recycling.



**27.** A ground-breaking agreement to foster the sustainability of Cozumel – the world's busiest cruise destination – was signed by cruise lines, local government and the private sector. It sets into motion a major initiative aimed at preserving what scientists consider some of the most endangered biodiversity on the planet.

The Mesoamerican Reef Tourism Initiative springs from a 12-month partnership among Conservation International, Cozumel's Department of Tourism and the Florida-Caribbean Cruise Association.

The agreement provides a framework to facilitate the sustainability of cruise tourism through action by government, the private sector, civil society organisations and cruise lines.

Cruise leaders have agreed to work together to enhance environmental awareness among passengers, tour operators, service providers and the local community. They also agreed to help improve island management of tourism infrastructure, including traffic and waste management, to protect Cozumel's reef system and to promote consistent enforcement of regulations.

Already implemented is the production of an educational video for passengers and a recycling campaign aboard tour boats and offices of on-shore service providers.



## CONSERVATION INTERNATIONAL URGES

**A**s senior business advisor at Conservation International's (CI) Center for Environmental Leadership in Business, Jamie Sweeting leads initiatives with major companies. In 2003, he spearheaded CI's partnership with the Cruise Lines International Association to launch the Ocean Conservation and Tourism Alliance.

More recently Sweeting played a role in establishing the Mesoamerican Reef Tourism Initiative, bringing together government, the private sector, citizens and cruise lines to facilitate sustainable tourism in Cozumel, the world's most visited cruise destination.

In a conversation with Anne Kalosh, Sweeting calls for the industry to sharpen its focus on several environmental imperatives.

### What do you see as the critical areas facing the cruise industry in the years ahead?

It's quite likely the most significant issue of our time will be climate change – perhaps even more so than terrorism. The lines need to look at what they can do to reduce their carbon footprint and greenhouse gas emissions, and they're going to have to help protect those destinations that are most affected by climate change.

The sustainability and protection of the destinations the cruise ships visit is critical. The cruise lines are looking 30-35 years ahead when they're investing billions of dollars into new ships. They take a lot of risk management issues into account. One they need to seriously consider



is what are these destinations going to look like and what is the experience going to be for the passenger in the next 10, 15, 20 years and how will that effect their return on investment?

There needs to be a more concerted effort by the cruise lines to invest in the long-term protection of the natural attractions in the destinations that they feel are critical to their business moving forward.

The lines are going to be affected by climate change most predominantly in destinations where they have snorkeling, SCUBA diving and beach activities because of the impacts of climate change on coral reefs. The direct impacts of passengers themselves on coral reefs is something that needs to be looked at.

### Is the initiative to foster sustainable cruise tourism in Cozumel a good model?

The whole point of the Cozumel initiative was to demonstrate how you can manage tourism in a sustainable manner in a very established resort destination that's also the world's most popular cruise destination. We worked to bring the cruise lines together with all the other stakeholders to ensure the longevity of the destination.

It's a great start, but this approach needs to be the rule rather than the exception moving forward.

### What does leadership look like in this sector compared to others?

In my view, the cruise lines are very much leading in the shipping sector. Certainly the way in which they manage their waste streams and wastewater is well in advance of ferries, yachts and cargo ships.

When it comes to tourism, there's a lot more competition. We're seeing significant

accountability. The voluntary report springs from RINA's BEST 4 integrated quality management system.

**34.** NCL ships at the Port of Miami are recycling used cooking oil by donating it to an organic farmer who converts the oil into bio-diesel for his farming equipment.

**35.** Chukka Caribbean Adventures, provider of nature tours in Jamaica, Belize, the Bahamas and Grand Turk, achieved certification for the second year under the Green Globe program. Chukka buys local goods and produce wherever possible and adopts community shops as refreshment stops. Energy-saving, recycling and emissions control are daily practices.

**28.** Abercrombie & Kent organised an expedition aboard Explorer II to deliver scientific equipment to researchers monitoring climate change in Antarctica. Passengers who pledged at least \$500 to Friends of Conservation were able to participate.

**29.** In 2007, three-quarters of Crystal Cruises' management and ships' officers completed an e-learning environmental course initiated by parent company NYK.

**30.** MSC Fantasia and MSC Splendida's passenger cabins will be equipped with systems that disable certain lights and electrical appliances when the room is unoccupied, to lower energy consumption by an estimated 30%.

**31.** Ecuador's Ecoventura became the first carbon-neutral boat operation in the Galapagos Islands in 2006. The firm buys carbon offsets for its fleet from NativeEnergy Travel Offsets, which applies offsets to renewable energy projects such as wind turbines.

**32.** The Royal Caribbean International and Celebrity Cruises Ocean Fund has awarded almost \$9m to 64 non-profit organizations working to protect the marine environment since the fund's inception in 1996.

**33.** Costa publishes a sustainability report on its website detailing the company's goals, standards and accomplishments in the areas of quality, environment and social

## THE INDUSTRY TO STEP UP ITS LEADERSHIP

activities from the airlines, particularly Virgin Atlantic, British Airways, United Airlines. Continental Airlines just announced a major carbon offset program.

We're seeing progress within the hotel sector too, with a lot of hoteliers looking at green buildings, as well as energy efficiencies and their carbon footprint.

The cruise lines have come a very long way, and I still think they get a bad rap from a lot of the press in terms of this old perception that cruise ships dump trash in the oceans – which

### What constitutes leadership on the environmental front?

A leadership position really starts with analysing your own environmental footprint. Leading companies take concrete actions to minimise their footprint and also make significant contributions to conservation in the places they operate.

A lot of the energy efficiency work that's being done is very impressive. It's good for the bottom line because it reduces the need for expensive oil but it also significantly reduces greenhouse gas emissions and the lines should be applauded for this.

### How has the industry performed on implementing the recommendations made by the Ocean Conservation Tourism Alliance Science Panel in 2006?

It's a work in progress. Individual lines need to address how they take on board the recommendations and apply them to their own practices and procedures.

We at Conservation International have been working with the lines on trying to develop a global discharge mapping mechanism. Our hope is that we can make that happen, and be in a position to be able to say by the end of the year that all of those recommendations are implemented in some manner by all of the lines.

### How can destinations foster sustainability?

It's important for destinations to get smart and not kill the goose that laid the golden egg. They need to work out what they have to do to look after these resources that attracted people to come in the first place.

If you don't address it, you end up suffering the tragedy of the commons and the destination gets run down, and the culture and the natural attractions that drew the cruise lines become marginalised and it's a boom-bust scenario.

I would like to see some significant investments by the cruise lines and governments, as well as non-profits and funding organisations, into the long-term protection of natural and cultural assets in key destinations.



*'Protecting destinations is something the cruise industry is going to have to wrestle with'*

is simply not true.

That said, on these other issues like global climate change and protecting destinations, that is something the cruise industry is going to have to wrestle with, as others in the travel industry are. I hope they will take the same leadership role that they have in other environmental matters.

### Is anybody in the cruise industry talking about carbon offsets?

I'm not aware of a major cruise company that is currently investing in carbon offsets. I think the lines can provide leadership by looking at what they might do to offset their own operational impact and also by providing opportunities for the passengers to have a carbon-neutral vacation.

**36.** Hyde Marine cyclonic separation and ultraviolet light ballast water treatment systems to fight the spread of non-indigenous marine species via ballast water are installed on four Princess ships and on Celebrity's Mercury.

**37.** Companies like Royal Caribbean are using NAPA Log software to improve fuel and energy reporting from ship to shore as a tool in reducing consumption.

**38.** Crystal Cruises spreads the word about its 'Crystal Clean' environmental practices with an article in its on-board publication, an embarkation-day video, signage on deck and a card about conserving energy in every stateroom.

**39.** The cruise industry, the Port of Seattle and the Washington Department of Ecology agreed to prohibit all wastewater discharges within the entire Olympic Coast National Marine Sanctuary.

**40.** Ecolab, a major supplier of cleaning, food safety and health protection products, lists sustainability as a core value. From concentrated, solid formulations to innovative packaging and dispensing methods, Ecolab aims to design products that use less water and energy, and reduce chemicals and waste.

**41.** Royal Caribbean International's longstanding Save the Waves program rests on three principles: reduce the

creation of waste, recycle as much as possible and ensure the proper disposal of any remaining waste. All crew are instructed about their responsibilities as soon as they join a ship and sign a pledge to protect the environment.

**42.** At least eight Holland America ships have converted from dry cleaning to Winning Brands Corp.'s SMART Wet Cleaning systems that work without the toxic solvent perchloroethylene.

**43.** Photography concessionaires industry-wide are switching to digital photo services, minimising the use of processing chemicals. Some companies report a one-third reduction in photo waste.



**44.** *Holland America donated \$12,000 to the Alaska Raptor Center in Sitka to purchase every item on its medical wish-list and support its public education program. The centre rehabilitates injured birds and releases them. HAL evp Rick Meadows, lower right, releases Misty, a juvenile bald eagle treated at the centre.*

**45.** Westmark Baranhof Hotel, a Holland America Line property, collects used cooking oil from businesses in Juneau to use for heating the hotel.

The cooking oil solution reduces the amount of fuel oil required by 9,000 gallons a year.

**46.** Image, the photo concessionaire, is testing ink jet printing technology as a potential replacement for processes using toxic chemicals.

**47.** The newly formed International Ship Recycling Association aims to foster strong environmental and technical standards for ship breaking. 'We want to show the world things can be done in a green, high-quality way and there can still be return and it is good business,' says chair Liu Guohong.

**48.** Royal Caribbean and Celebrity have conducted limited testing of biofuels on some of their eight gas turbine ships.

**49.** Disney Wonder was retrofitted with an interceptor engineered by Deltamarin to optimise the ship's movement through the water. Disney projects annual fuel savings of 2%.

**50.** The IMO is drawing up a Convention on Safe and Environmentally Sound Ship Recycling. Once implemented, it will be mandatory for ships to carry a continuously

updated Inventory of Hazardous Materials incorporated in the vessel, for eventual use at demolition.

**51.** Hobart worked with cruise lines to develop technology like the PREMAX series dishwashers which use up to 50% less water and require 30% less energy and 80% less detergent than conventional machines.

**52.** T. Mariotti ordered Thordon seawater lubricated COMPAC propeller shaft bearing systems for Seabourn Cruise Line's newbuilds, the eleventh and twelfth Carnival Corp. & plc-owned ships fitted with the product. 'No aft oil seal and no oil means lower in-service costs of the shaft line and, as important, no pollution worries,' says Carnival's Chris Joly, principal manager, marine engineering.

**53.** V.Ships' corporate environmental policy includes a host of initiatives such as reducing sulphur emissions, responsible ship scrapping, ISO 14001 certification across management offices, environmental awareness training, office recycling and environmental management teams in each regional office.

**54.** Vickers Oils offers a line of Ecosure biodegradable hydraulic fluids.

**55.** AirTech Solutions 4u Corp. designed water-based, environmentally friendly nanotechnology to eliminate norovirus, MRSA, e-coli, salmonella and more than 100 other viruses, bacteria, germs and allergens.

**56.** Convotherm markets a hot air steamer for healthful cooking of foods such as fish that uses up to 30% less energy and water.

**57.** Lines including Princess, NCL and Carnival have converted partly or wholly to electronic documents for passengers.

**58.** Wärtsilä Corp. designed an LNG ferry concept that it says could be applied to other passenger ship operations, such as expedition cruise vessels. According to Wärtsilä, LNG use eliminates SOx and reduces NOx by 80% and CO2 by 20%.

**59.** The newly created Lindblad/National Geographic Fund supports conservation,

education and sustainable development initiatives around the world, with special focus on the destinations served by Lindblad Expeditions.

**60.** At Scandic Copenhagen Hotel, a member of Cruise Copenhagen Network, 97% of everything in guest rooms is reusable/recyclable, and all coffee is organic/fair trade. Scandic Hotels – Scandinavia's largest lodging chain – has committed to eliminating CO2 emissions from its properties by 2025.

**61.** Experts at the 'Hotels Afloat' session at Seatrade Europe in late 2007 agreed that hotel suppliers across the board are working to develop more efficient, environmentally friendly products as energy savings at sea becomes a hot topic. 'Ten years ago, nobody spoke about energy savings in the galley,' observed SeaKing's Sakari Krouvila.

**62.** The Port of Seattle adopted the Northwest Ports Clean Air Strategy, a wide-ranging, joint effort with the Port of Tacoma and the Vancouver Fraser Port Authority to reduce seaport-related air emissions.



**63.** *Carnival Fantasy has been using a prototype PyroGenesis plasma-based incinerator since 2003. Carnival reports the system is running successfully and the line is evaluating potential application for newbuilds.*



**64.** *Ships are switching to non-toxic, fuel-saving antifoulants, such as Ecospeed by Subsea Industries for Disney Wonder (above, being painted at BAE Systems Norfolk) and Intersleek 900 by International Paint for Carnival Victory and Carnival Valor as well as MSC Poesia.*

**65.** In a drive to reduce plastics, Crystal Cruises substituted fabric laundry, dry cleaning and shoeshine bags, paper cups for styrofoam, wood lint brushes for disposable plastic lint removers and stainless steel ice buckets for plastic.

**66.** At the Ports of Stockholm, NOx and SOx have fallen by approximately 40% and 60% respectively in 10 years, even though there are more ship calls today. There has long been a discount system for vessels that use low-sulphur fuel, and cruise ships are recognised for outstanding environmental initiatives.

**67.** The North West CruiseShip Association was instrumental in finalising a memorandum of understanding for environmental protection with the state of Hawaii. Cruise lines agreed to exceed regulatory requirements to protect tropical reefs and the Humpback Whale Marine Sanctuary.

**68.** Harland and Wolff Heavy Industries and environmental management consultancy Golder Associates joined forces with V.Group subsidiary V.Navy to provide environmentally sound ship recovery and recycling.

**69.** NCL Corp. recycles oily residues through programs in Alaska, Hawaii, British Columbia, New York, Miami and Charleston. The waste oil from sources like fuel oil separation, lube oil separation, the treatment of oily bilge water and spent lube oil from the main engines is sent directly to the secondary oil market via partners like

Peninsula Waste Water Services in Victoria, BC, and Cliff Berry, Inc. in South Florida.

**70.** In purchasing and provisioning, Holland America says it takes an aggressive approach to minimising the use of packaging, especially plastics. The line buys products manufactured from or packaged in recycled packaging and uses recycled paper when possible. Ships stock paper or washable cups, wooden stirrers, paper bags and glass or metal packaging, with bulk dispensers for individual condiments and cream.

**71.** Many cruise ships post notices asking passengers to consider re-using towels to cut down on the use of water, detergent and energy.

**72.** HVAC systems, probably the costliest energy consumers after propulsion, are being updated for greater efficiency.

**73.** Regent Seven Seas discontinued dolphin encounter programs, taking a stand against what it called 'the wanton capture and use of marine mammals for the amusement of travellers.' 'Sadly, under the guise of communing with nature or advancing our scientific understanding, dolphin encounter programs too often overlook the way dolphins actually exist and interact with each other in the wild, rather than respecting their natural place in the marine ecosystem,' says Darius Mehta, Regent's director of land programs.

**74.** Palacrociere cruise terminal in Savona, managed by Costa Cruises, received RINA's BEST 4 certification, testifying to high quality of services, environmental protection, safety and social responsibility.

**75.** Hamburg-based SkySails aims to reduce fuel consumption of modern shipping by using wind energy. The company has developed a towing kite wind propulsion system now in testing with cargo ships and super-yachts.

**76.** Responding to concerns about air pollution and crowding, Norway's Geiranger is restricting the number of cruise calls per day starting in 2008 to one to two ships and 5,000 passengers in total.

**77.** Cruise operators are reducing direct mail and paper brochures in favour of email campaigns and electronic brochures. Many also provide e-marketing tools for travel agent partners.

**78.** All of Holland America's on-board materials are printed with environmentally friendly soy-based ink.

**79.** To avoid energy dumping, Fincantieri is undertaking a study to determine the most efficient design and operation modes for the recovery of energy from power generation. Functions will be included in automation systems to adjust for different operating conditions and meet the most efficient pre-determined condition.

**80.** To prevent the release of mercury into the environment, lines are safely disposing of spent fluorescent and mercury vapour lamps and recycling when possible.

**81.** Siemens developed a new type of propulsion motor for all-electric ships. The synchronous machine is part of an electric propulsion system based on high temperature superconducting technology (HTS). Siemens lists HTS technology benefits such as greater engine efficiency, significant weight and volume reduction and design flexibility that allows a more energy-efficient ship.



**82.** *More and more cruise ships are installing or looking at advanced wastewater treatment systems from such manufacturers as Hamworthy, Rochem, ScanShip, Zenon, Hydroxyl, Navalix, Evac-Zodiac and WABAG. Hydroxyl is supplying CleanSea systems for Royal Caribbean International's two Genesis newbuilds at Aker Yards Finland (RCI president and ceo Adam Goldstein at the keel-laying, above).*



**83.** *Recognised as a top ecotourism destination, Tobago protects large nature areas, and most shore excursions are nature-oriented. Tourism Secretary Neil Wilson vows the island will develop 'in a very eco-conscious way. We will not compromise the integrity of the environment.'*

**84.** Morgan Furniture became one of the first contract furniture manufacturers accredited by the Furniture Industry Sustainability Programme, launched with the aim of promoting sustainable development as a strategic business issue within the UK furniture industry.

**85.** Royal Caribbean Cruises Ltd. was an early proponent of replacing halogen lights with LED lights. Rich Pruitt, director of environmental programs, says most halogen bulbs are 50 watts while LED are five watts. 'We're working with a company to get three watts,' he says, adding that LED lights have the added benefit of producing little heat, which reduces demands on air conditioning.

**86.** Hurtigruten forged an agreement with the United Nation's World Meteorological Organization to assist in raising awareness of the effect human activities have on climate change.

**87.** Numerous cruise operators pledged their support for the Venice Blue Flag agreement, a voluntary initiative aimed at reducing emissions from the ships that transit from the Lido Port to the Maritime Station.

**88.** 3M developed heat-reflecting window film that uses a ceramic rather than metallic base so the material doesn't oxidize and

obstruct viewing. Royal Caribbean Cruises Ltd. is among the companies installing the product. Riding crews have completed first phase installations in dining rooms and other areas with extensive glass and are moving to other spaces in a second phase.

**89.** In Hawaii all NCL vessels offload their used cooking oil for recycling into bio-diesel. The company recycled approximately 40,000 gallons in the state in 2006.

**90.** Costa is a partner of the World Wildlife Fund for the protection of marine eco-regions of the Mediterranean, Greater Antilles and Brazil.

**91.** Royal Caribbean International and Celebrity Cruises motivate crews with competitions for 'Environmental Ship of the Year' and 'Environmentally Innovative Ship of the Year.' An independent environmental audit and consulting firm determines the winners.

A handmade fuel filter cleaning system, recycling and reductions in solid waste have been among the winning concepts.

**92.** Many lines donate used furniture, appliances, gym equipment and electronics to charities in destinations they serve. Orion Expedition Cruises donates linen to a hospital in the Solomon Islands and clothing from old uniforms to villages in Papua New Guinea.

**93.** Australia's Solar Sailor says its hybrid marine power (HMP) and solar wing technology is suitable for ferries, tourist cruisers and yachts. Like hybrid cars, the HMP system combines the efficiency of electric drive with the power of conventional drives and adds renewable energy from the sun and wind via a solar wing device. Partners include Captain Cook Cruises, operating in Sydney Harbour.

**94.** The Port of San Francisco presents its 'Cruise Ship Environmental Award' to recognise excellence in programs to reduce air and water pollution while operating in San Francisco Bay.

**95.** Teak for Holland America's Eurodam comes from Thailand's Santi Forestry Group

and is shipped under coding Green Point 5, which means it comes from an ISO-certified plantation, where for every tree cut three new ones are planted. Santi Forestry says its trees are grown in managed and sustainable yield programs in line with the International Tropical Timber Organization, the Forest Stewardship Council and ISO.

**96.** Lines are tweaking itineraries to achieve fuel savings by slowing down. Sometimes even changing the port sequence can achieve greater efficiency.

**97.** Deltamarin provides 'big picture' training courses for officers and shoreside personnel on how various shipboard systems are built and how each device and function affects overall fuel consumption.

**98.** With the UN Climate Summit in Copenhagen in 2009, the city has decided to take a leading position against greenhouse gases and formulated a strategy aimed at becoming the world's leading environmental capital in 2015.

**99.** Cruise lines are taking care to safely dispose of unused and/or outdated pharmaceuticals.



**100.** *Holland America's Zaandam is testing a sea water scrubber system developed by Krystallon, a BP subsidiary. An in-depth feasibility study is under way in cooperation with local regulatory agencies, the US Environmental Protection Agency and Environment Canada to test the efficacy of implementing the technology aboard cruise ships. Using the Zaandam, Caterpillar, along with HAL, Environmental Canada and the ports of Seattle and Vancouver, is supporting a research project about the impact of scrubber technology on engine performance.*