Germanischer Lloyd

nonstop

The Magazine for Customers and Business Partners

EDITION 1 · 2008

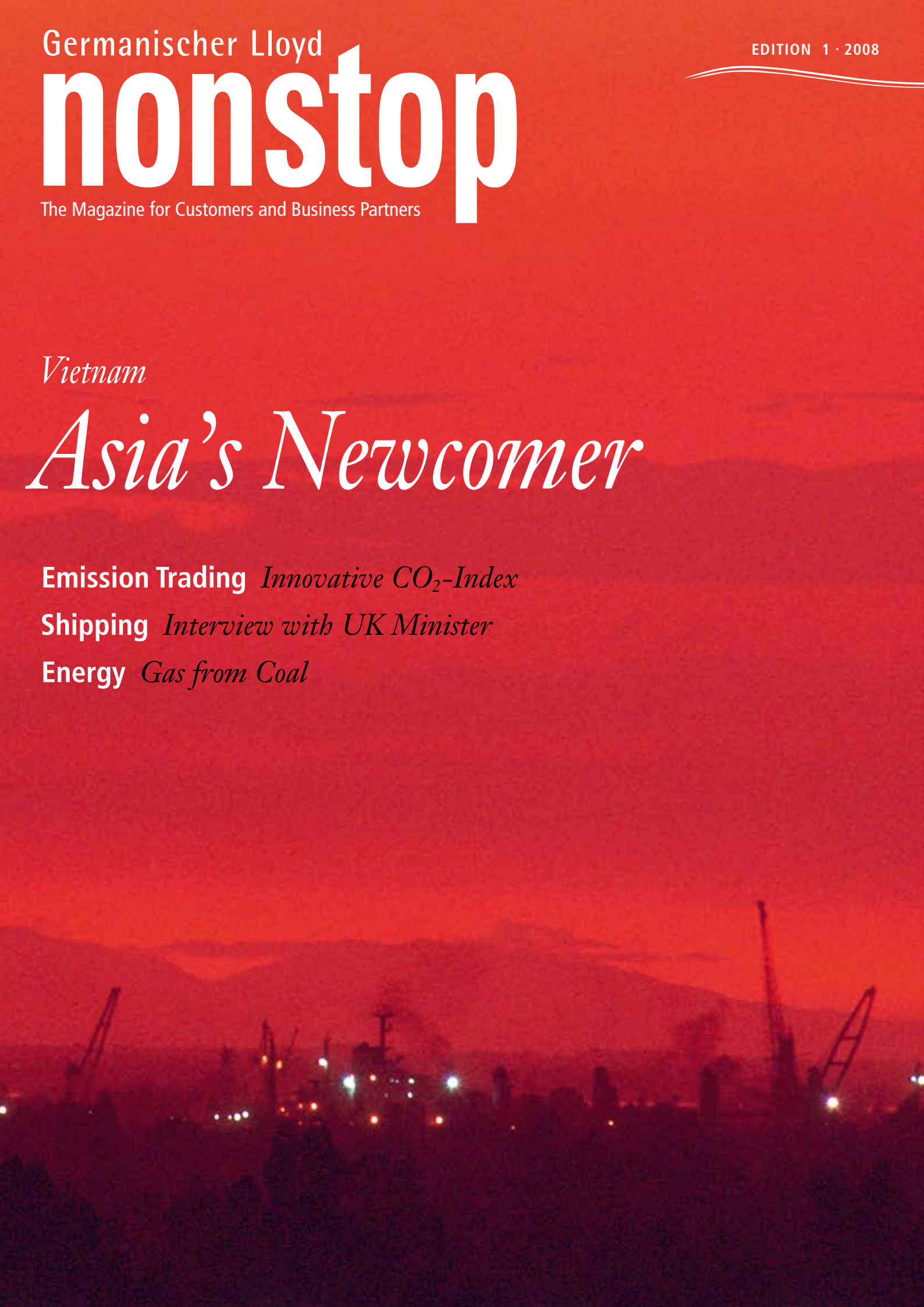
Vietnam

Asia's Newcomer

Emission Trading *Innovative CO_2-Index*

Shipping *Interview with UK Minister*

Energy *Gas from Coal*



First Class bulk carriers: a new perspective

TAKING BULKERS SERIOUSLY

At Germanischer Lloyd we focus on detailed structural solutions for bulk carriers. Our smart solutions ensure our customers can operate fit-for-purpose vessels. That's what we call a new perspective on bulk carriers. Why not contact us to find out how you can benefit?

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Dear Readers,

Dr Hermann J. Klein

The business textbook tells us that competition fosters new ideas and promotes innovation. It boosts the productivity of companies and entire industries, spurring them on to new peaks of performance. This in turn leads to a broader spectrum of services, lower prices and improved quality. In practice, the competitive pressure is enormous – between the transport firms, shipping companies, classification societies and yards as well as the shipbuilding nations. Vietnam, which provides the keynote theme for this issue of nonstop, is an up-and-coming maritime nation that is tackling the competition in the international shipbuilding industry. Foreign investors are becoming increasingly active there, not only in the maritime sector but also in the offshore production of fossil fuels. By joining the World Trade Organization, a wide vista of new trading opportunities has opened up for Vietnam. At the same time, the country is confronted with great challenges. Find out more by turning to page 14.

There are also plenty of challenges in the climate change predicted by environmental experts. The Fourth Assessment Report by the UN Intergovernmental Panel on Climate Change (IPCC) expresses little doubt about the great danger for the atmosphere posed by CO_2 emissions. Although shipping is not one of the main culprits in global carbon emissions, there are also feasible ways in which this efficient mode of transport can reduce the CO_2 burden. One of these proposals involves the trading of CO_2 emission credits by the international transportation sector. Here steps must be taken to ensure that future agreements do not exert a negative influence on the most environment-friendly transport carriers. Anyone wishing to trade will need dependable quantitative data. In this issue of nonstop, we present the prototype CO_2 index developed by GL. By offering a practicable way of determining the CO_2 emissions, it is blazing a new trail in implementing the emission trading concept.

Protection of the environment, emission reduction and the ecological use of resources are also in the focus of our "Industrial Services". With a view to driving the rapid development of this operating area, Pekka Paasivaara has been appointed to the Executive Board of Germanischer Lloyd. As an experienced manager and new Executive Board Member for GL's Industrial Services, he takes on responsibility for a business division that is enjoying dynamic growth. The demand for our technical expertise in the sectors of oil & gas, wind power and renewable energies, management systems, materials and failure analysis has increased all over the globe. With the escalating shortage of resources, the focus of our advisory services is more and more on the topic of plant safety and operational efficiency.

Germanischer Lloyd is well prepared to meet the future requirements of both the maritime industry and the industrial sector. How may we help you reach your goals?

Yours sincerely,

Dr Hermann J. Klein
Member of the Executive Board
Germanischer Lloyd

contents

14

Photo: Eberhard Pasold

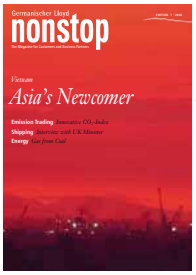
42

COVER STORY: VIETNAM

14 **Market:** Dynamic Dragon
A booming economy in Vietnam is driving political reform. Meanwhile, the shipbuilding industry is attracting international investment capital

18 **Interview:** MPC Marine prefers to co-operate and build up long-term partnerships in Vietnam

20 **Energy:** Successful Exploration
Joining forces with international partners, PetroVietnam is developing major oil and gas fields



Coverphoto: Asia Images

MARITIME SERVICES

8 **News**

24 **Interview:** "Pushing for Strong Action on Climate Change"
UK's Minister for Shipping Jim Fitzpatrick about global competition and growing environmental awareness

27 **Extra:** Emission Trading
A CO_2 index developed by GL proves emission certificates are both feasible and practicable

35 **Policy:** What's Sprouting in Brussels?
EU on course in maritime transport policy

36 **Cold Ironing:** Ships with a Plug
Struggling with air pollution, more seaports focus on land-based electricity. But the technology is hotly debated

41 **ERS:** When Urgent Help Is Needed
A new system of digital data management makes the service for container ships more efficient

42 **Cargo Safety:** Perfect Balance
Right way to stack containers: approval of the lashing plans is mandatory at GL

INDUSTRIAL SERVICES

48 **News**

50 **Gasification:** Volatile Coal
Gas from coal – an efficient and environment-friendly technology

52 **Certification:** Globalizing Comparability
A global quality standard help to improve the operating efficiency of container ports

55 **Wind Energy:** Among Sheep and Windmills
Options for mitigating climate change

56 **Mooring:** Ships in Shackles
GL model to analyse, assess and optimize the deployment of mooring systems

STANDARDS

6 **Perspectives:** The Oceans Are Waiting
Spectacular launch at Remontowa Shipyard

46 **Service:** Trade Fairs, Conferences, GL Academy, Rules and Positions

46 **Imprint**

58 **Insight:** "I had a dream"
Now, ships are built in Bangladesh – with GL class, of course

The Oceans Are Waiting

Polish shipbuilder Remontowa Group just opened a new chapter in its corporate history. In January 2008, its subsidiary shipyard Stocznia Północna, Gdańsk, launched the multi-purpose ship Eugeniusz Kwiatkowski, the first newbuilding for the concern's own shipping department.

This not only underscores the expanding newbuilding activities of Remontowa, traditionally the market-leading ship repair company, it also reveals ambitions in the shipping industry. Gdańskie Linie Morskie SA, a recent acquisition of Remontowa, manages and markets Eugeniusz Kwiatkowski. The vessel was named after a well-known Polish engineer and political visionary.

Germanischer Lloyd monitored the design and construction of the innovative, REM-120-type multi-purpose cargo ship and classified the vessel.

For further information: www.remontowa.pl

Photo: Remontowa


EUGENIUSZ KWIATKOWSKI
GDAŃSK

news

SIGNING THE CONTRACT. Alexander Klyavin (l), Assistant Secretary Deputy Minister of Transportation of the Russian Federation, and GL's Executive Board Member Dr Hermann J. Klein.

FLAG AUTHORIZATION

GL Puts on a Classy Show in Russia

In a milestone act, Russia granted Germanischer Lloyd, the first foreign society to receive this privilege, the authorization to perform official functions on behalf of the Russian government on ships sailing under the Russian flag. The authorization covers inspection, approval of drawings, and certification based on the international SOLAS (including ISM), Load Line, COLREG and Tonnage conventions, as well as MARPOL Annex I, II and IV.

Negotiations continued for roughly six months until completed successfully. They were supported by the German Federal Ministry of Transportation and See-BG. The Russian Maritime Register of Shipping has thereby been granted the same privileges as all other classification societies accredited in Germany.

More surveyors. Considering the current expansion plans of the Russian shipbuilding industry, the accreditation of GL could not have come at a better time. GL is systematically expanding its surveyor network. GL's fourth national office opened in Vladivostok in early December; another one follows in Novorossiysk soon. Says Country Manager Guido Försterling: "Being based in the immediate vicinity means our surveyors do not have to travel long distances. That is a major benefit for our customers."

For further information: Guido Försterling, Country Manager Russia, Phone: +7 812 346 8277, E-Mail: guido.foersterling@gl-group.com

AUSTRALIA

Successful Contract Renewal Down Under

The Australian Department of Defence and classification society Germanischer Lloyd have renewed their cooperation: both parties signed a maintenance-of-class contract for eight frigates of the Royal Australian Navy (RAN). The ANZAC vessels were brought under GL class in 2002 for an initial period of six years. That was a world premiere: for the first time ever, naval combatant ships were granted full class and issued statutory certificates.

New duties. The new contract includes the provision of one additional statutory certificate. The "Safety Equipment Certificate" was issued for the ANZAC ships following careful assessment of their safety arrangements.

GL Area Manager for Australia and New Zealand Georgios Spiliotis comments: "The Royal Australian Navy has been very professional in dealing with class-related issues. I hope this level of cooperation will be extended to other naval projects."

For further information: Georgios Spiliotis, Area Manager Australia/New Zealand, Phone: +61 2 92331119, E-Mail: georgios.spiliotis@gl-group.com

PARTNERS. Front row: Chris Eggleton (ANZAC SPO Director, l.), Georgios Spiliotis (GL); standing f. l.: Doug Crouch (ANZAC SPO), Piotr Sujkowski (GL), John Meldrum (ANZAC Alliance).

Photo: RAN

Photo: Hapag-Lloyd

EXAMPLE. Hamburg-based shipping company Hapag-Lloyd excels with high quality standards, setting new benchmarks in liner shipping.

CERTIFICATION

Star-Studded Standards at Hapag-Lloyd

Shipping must spruce up its image, at least this is what IMO Secretary General Efthimios Mitropoulos says. A great way for shipowners to demonstrate the safety and environmental compatibility of their ships is to have them certified to international quality standards.

"GL Excellence" and "GL Excellence – 5 Stars" certificates are independent, third-party credentials documenting a shipping company's voluntary commitment to continuous improvements in the areas of quality, environment protection, reliability, safety and social compatibility. The world's first container line service to be awarded a "GL Excellence – 5 Stars" certificate is Hapag-Lloyd.

Objective criteria. Among the prerequisites for certification are the implementation of occupational safety measures, as well as certification according to ISO 9001 (quality), ISO 14001 (environment), the International Safety Management Code (ISM Code) and the International Ship and Port Facility Security Code (ISPS Code). Adolf Adrion, executive board member of Hapag-Lloyd AG, explains: "A strong customer focus, comprehensive quality of service and high safety standards have always been an integral part of our corporate philosophy."

GL Executive Board Member Dr Hermann J. Klein confirms: "Hapag-Lloyd fully meets the stringent safety and quality requirements, thereby taking the lead in liner shipping."

DAMAGE STABILITY

Fact Sheet for Shipbuilders

The IMO has revised the SOLAS regulations pertaining to probabilistic damage stability calculations. To coincide, GL has published a "Leaflet for damage stability calculation according to SOLAS 2009". The document assists shipbuilders in designing vessels based on the new regulations and in preparing the required documentation and calculations.

The revised SOLAS regulations focus on the so-called harmonization of damage stability. In the future, the concept of a probability assessment will be applied to dry-cargo vessels as well as passenger ships with keels laid down from 1 January 2009 onward. The probabilistic concept bases on the assumption that two ships with the same attained index are to be weighed equally in terms of safety.

For further information: Christoph Peickert, Stability, Phone: +49 40 36149-3705, E-Mail: christoph.peickert@gl-group.com

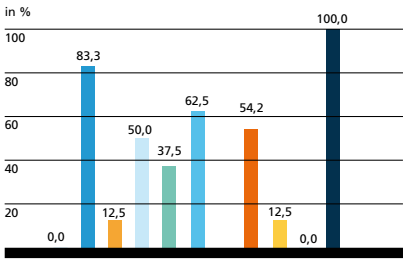
MARITIME TREND BAROMETER

Shipowners Ready to Invest in MegaBoxers

In spite of the increasing number of very large containerships in use, capacities are still limited, causing freight rates to soar. To eliminate bottlenecks, 80 per cent of shipowners are ready to invest more capital in MegaBoxers. This is one result of the "2nd Maritime Trend Barometer". The opinion poll was carried out by German HypoVereinsbank among leading shipping companies based in Germany.

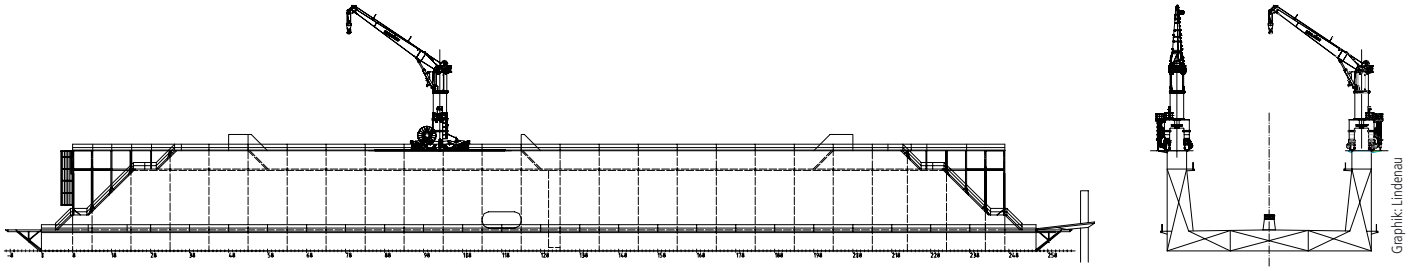
Beamy vessels. Future very large containerships are unlikely to use the new Panama Canal lock dimensions as points of reference. Half the respondents expect future MegaBoxers to exceed the width of the new locks. 83 per cent of the respondents said the current Panamax class will continue to operate feasibly. The shipowners also expressed their conviction that the Panama Canal will raise its fees upon completion of the expansion works.
www.hvb.com/globalshipping

PANAMA. At the "2nd Maritime Trend Barometer" organized by HypoVereinsbank, German shipowners voiced their opinions about the effects of the Panama Canal expansion.



Source: HVB

- Ships of the current panamax class will become very uneconomic as their specific usage sector will have gone.
- Panamax ships will retain their importance/their market.
- The future large container ships will all be orientated to the measurements of the new locks.
- In future container ships will be built which are even wider than the new locks.
- Round-the-world services will again win more importance.
- The current liner service structure with imbalanced cargo flows such as Asia-Europe and Asia-North America will be retained.
- The capacity in North American ports is not suitable for handling the larger container ships which will arrive via the expanded Panama Canal.
- The new ship sizes do not present a problem for North America's ports.
- Canal tolls will not rise after the expansion work.
- Canal tolls will certainly rise after the expansion work.



Graphik: Lindenau

CUSTOMER. The German Navy has ordered the floating dock.

LINDENAU

Floating Workshop

Repairs, inspection, paint jobs: ships of all size categories have to dry-dock from time to time for routine checks, reclassification or maintenance. But dock capacity is beginning to be in short supply.

Lindenau, a shipyard specializing in double-hull tankers and research vessels, recently adopted building dry docks as an additional product line.

Highly equipped. Lindenau's first dry-dock customer is the Kiel arsenal of the German navy. The Kiel facility is currently building a floating dock with an overall length of 164 metres, a height of 33 metres and a lifting capacity of 6,000 metric tonnes for the German Federal Department of Defence Technology and Procurement. The floating dock will feature two cranes, a fire extinguishing system and a centralized utility system providing electricity, compressed air and telecommunications.

CORROSION PROTECTION

The War on Rust

One thing is certain: there will be another conference on corrosion protection next year. Simply put: for builders and operators of older ships, as well as offshore and port structures, safeguarding against corrosion will always be the key challenge. At the seventh "Corrosion Protection in Maritime Technology" conference held in Hamburg in January 2008, more than 150 experts from the business, science and industrial communities discussed ways of addressing this issue.

Mutual standards. This year, however, the agenda mainly focused on current developments at the International Maritime Organization (IMO). An initial major breakthrough in establishing internationally-accepted standards for maritime corrosion protection was the passing in December 2006 of a coating standard for ballast water tanks in ships of all types. Another standard passed in October 2007, on a preliminary recommendation basis for tankers and bulk carriers only, addresses coatings of empty spaces inside ship hulls. In addition, the IMO is drafting a standard for maintenance and repair of coatings, as well as requirements for corrosion protection of permanent access installations.

CONCENTRATED. About 150 experts visited the conference on corrosion protection.

Photo: CSIS

CSIS

Container Lines Form Initiative

Whether it is bananas from Brazil, mangos from Mexico or clementine oranges from China – containerships are the most efficient and environment-friendly way of transporting fruit. Compared to air transport, ships emit 97.5 per cent less CO_2 and consume just over one per cent of the energy.

Strong alliance. To direct public attention to the achievements and environment-friendliness of ocean shipping, a new organization was established recently, called "Container Shipping Information Service" (CSIS). Among the founding members are 24 leading international shipping companies such as Hapag-Lloyd AG, Maersk Line and COSCO. Their new initiative endeavours to promote global public awareness of the importance of container shipping for our daily lives.

Studies have shown that information disseminators and opinion leaders are rarely aware of the part shipping plays today. Now the CSIS intends to educate the public and also provides online information on topics such as the environment, globalization, innovation and safety.

www.shipsandboxes.com

NOISE CONSULTING. Mega yacht Octopus, delivered in 2003, is GL's top reference project for ship acoustics.

Photo: Thorongil

ACOUSTICS

Sound Barriers

Noise is a critical factor on all ships. If fundamental errors, such as non-compliance with sound level limits, fail to be detected during the design phase, correcting them at a later time can be extremely costly or entirely impossible.

Since November 2007, GL has been offering an acoustic design review service for the earliest possible project stage. This Noise Review is based on the existing master plan for the ship, the noise limits as specified in the building contract, as well as additional data on major sound-emitting sources. The results of the noise level estimates are compared with IMO limits for living and working environments and other applicable noise limitations.

Professional help. The ship acoustics experts from GL pinpoint the critical locations on the ship and prepare an estimate of the expected noise levels in dB on a preliminary basis. GL's Noise Review is intended to aid in the decision whether a detailed noise level assessment should be requested, including recommendations for noise-dampening measures.

For further information: Jürgen Jokat, Head of Department Acoustics, Phone: +49 40 36149-958, E-Mail: juergen.jokat@gl-group.com

CONFERENCE

Joined Together Underwater

Photo: Michael Bogumil

Joining and severing" – What sounds like the title of a self-help book for relationship issues actually deals with key processes of subaqueous engineering, which are indispensable for building and maintaining structures under water, including port structures, channels, dams, pipelines and platforms.

New forum. At the first underwater technology conference in Hamburg on 2 and 3 April 2008, experts will discuss applications, current technology trends and future perspectives for this discipline. Other related topics will include quality assurance and occupational safety.

The conference, organized jointly by the German Welding Society (DVS), the Training and Research Centre for Welding Technology, Hanover (SLV) and Germanischer Lloyd, offers attendees a platform for sharing knowledge both on a national and international level.

Underwater Technology Conference
2/3 April 2008, Hamburg, Germany
www.dvs-ev.de/UWT2008

LLOYD'S LIST AWARD

Greeks Ahead

Hellenic Seaways honoured: the Greek shipping enterprise received the 2007 Lloyd's List Award for the Best Passenger Shipping Company. GL COO Torsten Schramm presented the award to Konstantinos Klironomos, President of the Board of Directors of Hellenic Seaways.

Business success. Hellenic Seaways commissioned two new vessels in 2007. By streamlining its routes and increasing passenger loyalty, Hellenic Seaways was able to hedge against soaring fuel prices and improve revenues considerably. Greece's largest coastal ferry line owes its commercial success to its persistent pursuit of ambitious strategic goals, such as investing in speed, quality and improved passenger assistance through standardized services.

HELMEPA

Certificate for Training Centre

Early February the Maritime Sector of HELMEPA received the ISO 9001:2000 Certificate as a Maritime Training Centre. Coinciding with this, the revised version of HELMEPA's "Ship's Manual" was presented. This useful publication was jointly compiled by the association and Germanischer Lloyd.

The Manual has a long tradition. First completed in 1992, it was originally designed to support members of the Greek shipping community. The idea was to supplement international regulations in a clear and concise manner.

Useful addition. The updated version of the Ship's Manual therefore includes additional voluntary guidelines for the safe operation of vessels. Some of the new elements of the Ship's Manual are operational guidance for the management of ships' ballast water and sediments, basic elements of a shipboard occupational health and safety programme, a set of practical recommendations for maintenance and inspection of shipboard safety equipment as well as an integrated check list to prepare for Port State Control inspections. The Ship's Manual thus offers industry guidelines which are intended as additional, helpful advice complementing international SOLAS ISM requirements.

CEREMONY. Dr Hermann J. Klein, Member of the Executive Board Germanischer Lloyd, hands over the certificate to Christiana Prekeze, Head of HELMEPA's Maritime Training Centre.

KEEL LAYING. "Alsterwasser" is the first passenger ship propelled by a fuel-cell.

FUEL CELL

Full Power Ahead at Zero Emissions

Alsterwasser" – named after a river flowing through Hamburg – is the name of a so-called "Zemship", or Zero-Emission Ship that promises to herald in a new era in ship propulsion technology. Smokestacks and noisy machines will be a matter of the past – at least for this ship, the world's first fuel-cell powered passenger ship. Its keel was laid down in early December 2007. Its fuel, pure hydrogen, will be stored safely in shielded, pressurized tanks in the bottom part of the ship.

No pollution. Fuel cells will convert hydrogen and atmospheric oxygen into electrical energy. "Alsterwasser's" system is rated at about 100 kW of output power. The hybrid drive of the riverboat produces no emissions at all. Both the body of the ship and its fuel-cell system are GL-certified. The prototype is expected to inspire many more fuel-cell ship newbuildings around the world.

For further information: Dr Gerd-Michael Würsig, Engineering Services, Phone: +49 40 36149-621, E-Mail: fuelcells@gl-group.com

MTU

Engines for Nuclear Power Plant

To ensure safe operation, nuclear power stations must comply with the most stringent quality standards – including standards for combustion engines used for generating independent power for internal use. For emergency application, MTU Friedrichshafen used a new engine type V4000P63, a next-generation, common-rail injection engine type.

Continuous power. Germanischer Lloyd was asked to certify the new series based on Technical Safety Rule KTA 3702. Project head Ralph Michael, MPM Department, GL, confirmed: "This engine successfully passed the 100-hour continuous operation test from 21 to 25 May 2007."

For further information: Ralph Michael, Combustion Engines, Phone: +49 40 36149-7746, E-Mail: ralph.michael@gl-group.com

CERTIFICATE HANDOVER. From left: Dr Jürgen Triemel, Dagobert Heß, Torsten Kreidel, Peter Nocker (all MTU), Ralf Malakowski (GL), Robert Wagner (MTU).

YACHT DESIGN

Luxury Trip with a Violent Storm

When Francis Beaufort defined his scale for wind speeds, he could not imagine that a force 11 of this scale could be used to assess headwinds of a yacht. This wind speed is rated as "violent storm". "Ermis²" is a 37-m (121 ft) superyacht capable of blasting across the water at 60 knots per hour. This is about the same speed as a small race-tuned powerboat. From the board of Humphreys Yacht Design and launched on 29 September, "Ermis²" will possibly be the fastest non-turbine private yacht of its size in the world. It is GL-classed as a 100-A5 Motor Yacht.

HIGH SPEED. The superyacht "Ermis²" runs up to 60 knots.

High-tech. "'Ermis²' is powered by three MTU engines," says Walther Ziegler. The GL Country Manager Australia and New Zealand was in charge of the construction survey. Says Ziegler: "Vacuum infusion processes using carbon-fibre, Kevlar and foam composite were used to build the hull and superstructure."

Deck fittings and handrails were built from titanium where possible; and lightweight veneered foam panels have been used for the interior joinery, all to GL's class requirements and the Marine and Coastguard Agency's satisfaction.

For further information: Walther Ziegler, Country Manager New Zealand, Phone: +64 9 5730073, E-Mail: walter.ziegler@gl-group.com

FATIGUE

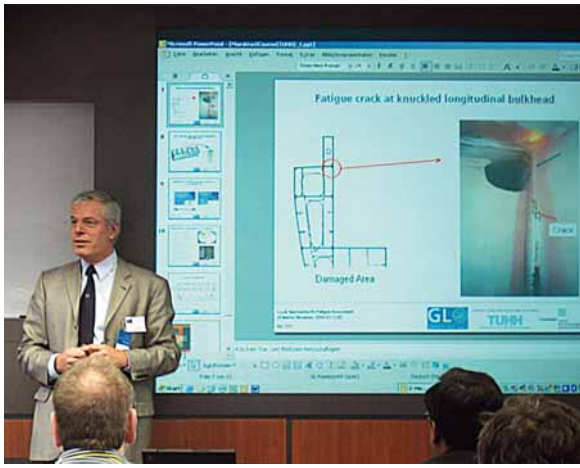
Life Time Prediction

Local Approaches for Fatigue Assessment of Marine Structures" was the title of a seminar held at GL's Head Office. The event attracted engineers and scientists from around the world eager to learn about new methods of estimating the life expectancy of ships and maritime structures. The 50 plus international experts from Europe and Asia discussed ways of tracking stress, strain and cracking phenomena.

Broad spectrum. Ships and maritime structures are exposed to cyclic stresses. Fatigue experts from GL, the Hamburg-Harburg Technical University (TUHH) Institute for Ship Structural Design and Analysis and the Fraunhofer Institute for Structural Durability and System Reliability (LBF) provided a comprehensive overview of current fatigue concepts based on nominal stress, stress hot-spots, notch stress, notch strain and crack growth.

"In the case of the crack growth concept, the seminar showed that there is an efficient tool available to estimate the life expectancy of maritime structures and calculate voids in welded joints," explained Dr Hubertus von Selle, Head of the Strength Group at GL's Structures Department.

The seminar, which was held in English, was organized by the European Commission-funded MARSTRUCT project.



PRESENTATION. Prof Wolfgang Fricke, Institute for Ship Structural Design and Analysis, Hamburg-Harburg Technical University, explaining the hot-spot concept.

Photo: Michel Zapf/SMM

SMM

Trade Fair plus Conference

Finally the time has come again! In September, the world's biggest shipbuilding trade fair, "Shipbuilding, Machinery & Marine Technology (SMM) 2008" will open its gates in Hamburg. More than 47,000 visitors from all over the world are expected to come and search the booths of 1,800 exhibitors for innovative technology.

New conference. For the first time, the international Maritime Security and Defence (MS&D) conference will be held concurrently with the SMM fair. "This conference will be the inaugural event for the new, independent trade fair MS&D to be held every two years as of autumn 2009, organized by Hamburg Messe," says Bernd Aufderweide, CEO of Hamburg Messe & Congress GmbH.

At the MS&D Conference, international experts will discuss the topics of security of sea routes and ports, as well as current and potential threats for military and civilian ships. In addition, they will examine possible ways of mitigating risk.

HAMBURG. SMM is the world's biggest shipbuilding trade fair.

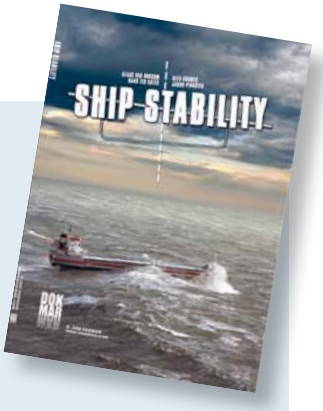
REFERENCE BOOK

Stability Reference

Will a passenger ship capsize if all passengers gather on the port side? Will rough seas or high winds make a vessel tip over? What gives a ship stability – and what compromises it?

Many questions. Exhaustive answers are provided by the expert authors of the current edition of "Ship Stability". In simple and comprehensible, yet detailed terms, completed by photos, drawings and diagrams, the standard reference explains all that needs to be considered when designing, building and operating a ship to ensure its stability. That much is clear: without adequate stability, a ship not only lacks seaworthiness but also jeopardizes human lives and the environment.

www.dokmar.com



STANDARD REFERENCE. Current edition of "Ship Stability", published by Dokmar.

Dynamic Dragon

Economic reforms in Vietnam are expected to accelerate, driven by market demand and WTO membership. But the country is struggling to keep pace with its own development

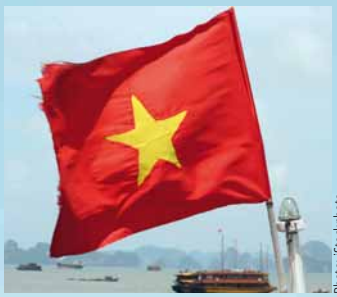


Photo: iStockphoto

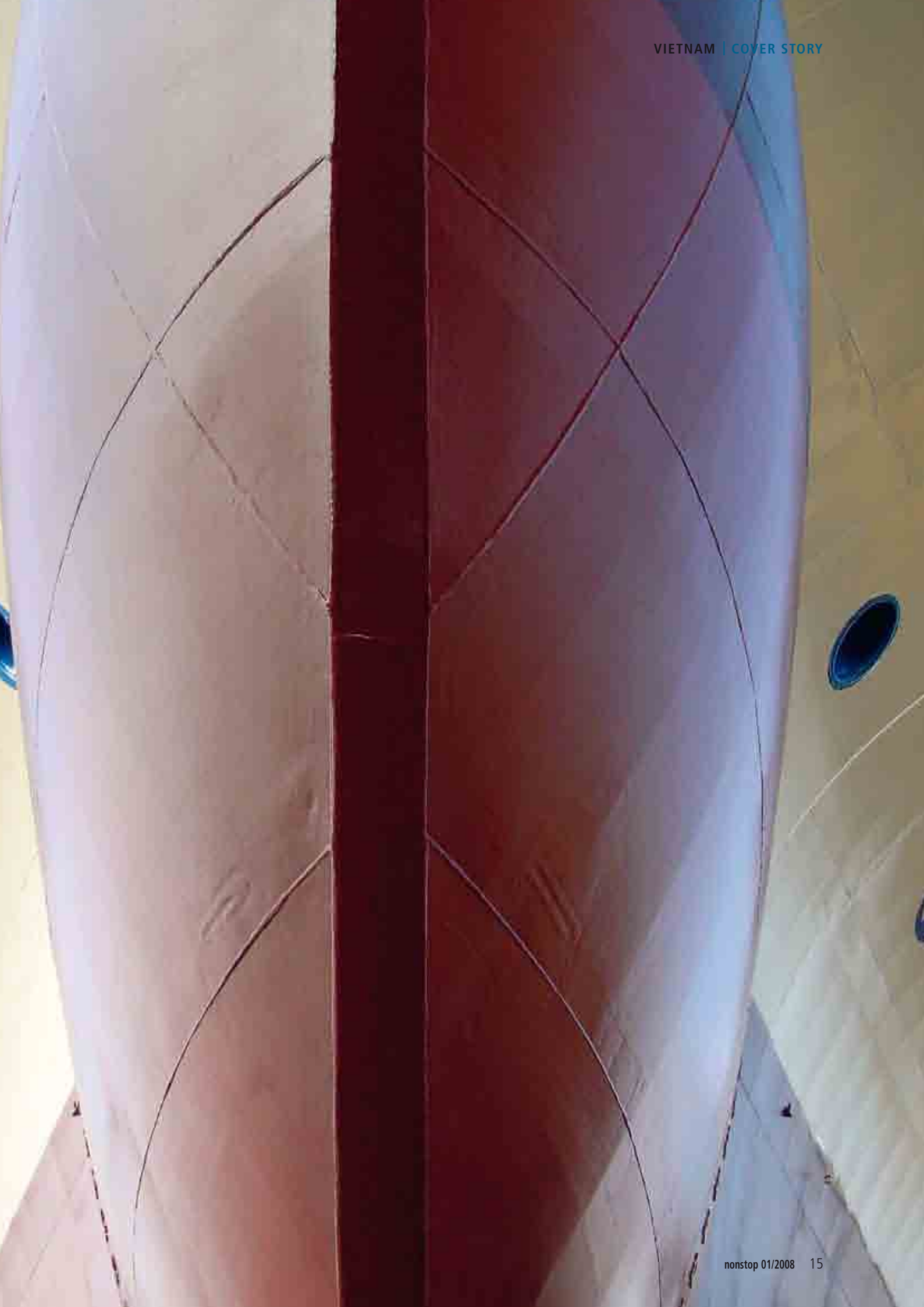
The year of the pig made good on its promises of prosperity and good luck. Vietnam's economy grew by 8.44 per cent. The country, one of the main petroleum exporters of the region, has been able to benefit from the skyrocketing crude oil price. Export revenues rose to US$ 48.4 billion, up 20 per cent from 2006. The foreign direct investment (FDI) in excess of US$ 20 billion was equivalent to the combined figures of the five previous years.

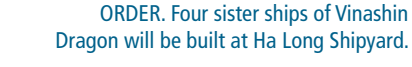
The availability of a young, low-cost workforce, coupled with government incentives to attract FDI, has made Vietnam an attractive manufacturing region in Southeast Asia. Accession to the World Trade Organization (WTO) in January 2007 has added impetus to a fast-paced development, encouraging market-friendly reforms. In addition, the government has declared an overhaul of its public administration system a top priority.

Big Challenges

The persistent boom of the Vietnamese economy brings about major challenges for the country, in particular the need to further strengthen the political backing and create a regulatory framework for a market economy. Furthermore, areas such as the education system or the energy infrastructure need to be developed to support sustainable economic growth. In the shipbuilding sector, the supply →

NEW RECORD. Up to now "Vinashin Dragon" is the largest container vessel ever built in Vietnam.





ORDER. Four sister ships of Vinashin Dragon will be built at Ha Long Shipyard.

Photo: MPC

→ industry is still in its infancy. Since the price of a ship is highly dependent on the cost of equipment and materials, the nation's shipyards cannot reap the benefits of the low cost of labour unless ship parts and components can be produced locally. So far, equipment and materials have had to be purchased abroad at high prices.

Booming Vinashin

In March 2007, the government-owned Vietnam Shipbuilding Industry Corporation (Vinashin) signed a joint venture contract with MacGREGOR Group to build a manufacturing complex in Haiphong, which will be the biggest of its kind in Southeast Asia. This joint venture was established in pursuit of Vinashin's plan to increase the ratio of locally-made vs. imported parts from currently 30–35 per cent to 60–70 per cent by 2010.

The first part of the new complex to go into operation will be a purpose-built hatch cover factory. The next investment phase will include manufacturing and assembly facilities for marine cranes and RoRo equipment.

Country	Vessels built*	Order-book	Order-book to vessels built in %
Croatia	247	62	25
Brazil	299	69	23
Philippines	527	108	20
Vietnam	*909*	*166*	*18*
India	1,110	207	19
Germany	1,276	221	17
Singapore	1,290	148	11
Romania	1,606	163	10
China	4,979	2,548	51
South Korea	5,358	2,003	37
Japan	31,247	1,376	4

* total number of ships of all types built and ordered in the country's existing shipyards

Source: Mc Quilling Services

2007 was a year of new records set in the shipbuilding sector. In November, Ha Long Shipyard, located in northern Quang Ninh province, launched the containership "Vinashin Dragon" with a capacity of 1,750 TEU, the largest container vessel ever built in Vietnam and the first ship of a series of five ordered by Vinashin Lines. Both the shipbuilder and the owner are member companies of Vinashin. The project is supervised by Germanischer Lloyd.

In addition, Ha Long Shipyard was selected as one of two shipyards to build a series of 54,000 dwt handymax bulkers under a contract between Vinashin and Graig Investments, UK. The first two vessels were handed over simultaneously by Nam Trieu and Ha Long shipyards last summer. Both yards are located in the northern part of Vietnam.

The first vessels from Vietnam to top the 100,000 dwt mark are three 105,000 dwt Aframax tankers that are currently on order for the domestic fleet. The first one will be handed over in March 2008. Number two and three are scheduled for delivery before the Dung Quat Oil Refinery goes on-stream in early 2009. PetroVietnam, the National Oil Company, has signed letters of intent for two 300,000-plus dwt vessels and is reserving further options.

INTERVIEW

"Meet the high requirements"

GL`s Country Manager Le Thanh Binh about excellent prospects in Vietnam

nonstop: Last year Vietnam became a WTO member. Can you already see any changes within your country?
Le Thanh Binh: With the membership, Vietnam continues its international integration. And the government very much supports the development, for example, with the implementation of new investment laws. The way for foreign investors is paved. 2007 was a record year concerning foreign direct investment. On the other hand the living expenses are rising very fast, space gets scarce and the traffic is getting more and more crowded. That is what you see in daily life.
nonstop: What would you call the advantages of doing business in Vietnam?
Binh: Vietnam has low wage levels and a high literacy rate, there is a high productivity among low-skilled workers, the political situation is stable and the government intends to push the economic development. Investors are being given favourable conditions. Further the country has an advantageous geographical location in the heart of Southeast Asia.
nonstop: That does sound very good. But in such a new market there must also be big challenges.
Binh: For sure there are also barriers to surpass. Concerning shipbuilding, delivery times must be secured. The quality of work as well as the training of the employees still has to be improved. It is difficult finding enough well educated engineers. And there is still some room for improvement within the management which I see as the key to success. But the industry is on its way. I believe that the new generation that is educated now will for sure meet the high requirements of the international market.
nonstop: In which ways do you support a positive development?
Binh: As a classification society we are to ensure the quality of a newbuilding. We do not supervise the work of the yard from a distant position but cooperate closely with the yard and through that support them to reach international standards and the high demands of foreign owners.

Photo: Michael Bogumil

EXPERIENCE. Le Thanh Binh, Germanischer Lloyd's Country Manager Vietnam.

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These projects are boosting Vietnam's advancing production and technical capabilities. By 2010, Vinashin wants to be able to construct bulk carriers up to 80,000 dwt, and cargo vessels and tankers up to 300,000 dwt. Vinashin is also looking for partners for liquefied natural gas (LNG) carrier ventures.

The most important Vinashin yards – Ha Long, Nam Trieu, Pha Rung and Saigon Shipyard – are in the process of being modernized, and new yards are under construction throughout the country. Vinashin plans to complete ten new yards by 2010, raising the total number of Vinashin shipyards to 33.

Foreign-Owned Shipyards

In January 2007, Norwegian shipbuilder Aker Yards announced the construction of a shipyard in Vung Tau, a port city located in the centre of Vietnam's expanding offshore industry zone. According to Aker Yards, the new facility in Vietnam will strengthen the company's ability to serve its international customers in the region. The yard will deliver the first ship in 2009. Once fully operational, it will have an annual capacity of three to four vessels, depending on their type and size. The Norwegian enterprise, owner of a 70-per cent share in the yard, is partnering with the Singaporean Amanda Group, benefiting from the company's business experience in Vietnam.

The Norwegians are the second international company to pick up shipbuilding in Vietnam. In 1996, Korean company Hyundai Mipo formed a joint venture with Vinashin. The Hyundai-Vinashin Yard in the southern province of Khanh Hoa, capable of building vessels up to 100,000 dwt, is the largest repair yard in Southeast Asia.

Last year, Damen Shipyards of the Netherlands was the second European enterprise to enter the Vietnamese market. Under a joint venture agreement with Vinashin, a new yard will be built in the Haiphong area to specialize in tonnage under 10,000 dwt.

At a conference on ports and logistics held in Hanoi last autumn, Deputy Minister of Industry and Trade Nguyen Thanh Bien said the existing port development master plan as issued in 1999 was no longer in alignment with the country's development. "Many things have changed and we need a study and a new port development master plan to meet our economic development requirements," he said, pointing to forecasts of high volumes of goods to be processed in the nation's ports, as well as socio-economic factors, maritime law and Vietnam's accession into the WTO.

Seaports that are up to international standards will be crucial for Vietnam's ability to manage future economic growth. Container transportation has witnessed a 19 per cent annual growth rate over the last 10 years. In 2007, an estimated 170 million tonnes of cargo were handled by Vietnam's seaports, an increase of 16 million tonnes within just one year. Forecasts estimate the volume to grow to 250 million tonnes by 2010. →

CONSULTING. Shipyard employees and GL's Le Thanh Binh check a construction plan.

➔ There are more than 100 seaports along Vietnam's 3,200 km coastline. Thanks to the long and rather narrow shape of the country, goods produced anywhere in the country are never far from the seashore. However, according to the Vietnam Seaports Association (VSA) none of the domestic seaports are currently ready to receive medium-sized, 50,000 dwt or 2,000 TEU vessels.

Vietnam's key commercial gateway of Ho Chi Minh City, accounting for more than 70 per cent of the nation's container throughput, is facing the most serious challenges. The port of Haiphong is in a similar situation. Handling about 22 per cent of the national container volume, Haiphong is recording growth rates in containerized traffic of 25 per cent each year.

Private Investors Welcome

Due to the lack of deep-water ports, Vietnamese cargo must first be taken to foreign ports such as Singapore or Hong Kong for transshipment before being transported to international markets. The associated additional handling expense drives up the cost of Vietnamese products, offsetting the advantage of inexpensive labour.

Investment capital from all across the nation is being pumped into projects to modernize and upgrade ports. Over the next five years, the nation wants to invest US$ 4.5 billion. According to the Foreign Investment Department of the Planning and Investment Ministry, foreign investors willing to put their capital into Vietnamese seaports are offered favourable terms.

In the south of the country, the port of Ho Chi Minh City will be relocated downriver, in part to nearby Cat Lai and Hiep Phuoc, and in part to the Cai Mep-Thi Vai port complex in the neighbouring Ba Ria-Vung Tau province. These new port facilities will not only resolve the current space and traffic issues but also be more efficient, being situated amidst the region's industrial and export-handling zones.

For the northern part of the country, Vinalines announced the construction of the Lach Huyen deep seaport near Haiphong. Scheduled to go into operation in 2020, it will be the largest deepwater port in Vietnam. It is expected to accommodate ships up to 6,000 TEU or 50,000 dwt and handle 100 million tonnes of goods a year.

Provided that Vietnam succeeds in coordinating the planning and construction of an integrated seaport network with an adequate land-based infrastructure to back it up, analysts say the nation's prospects of becoming a major Asian shipping hub are excellent. The year of the rat, which began on February 7th with the joyous Tet Nguyen Dan Festival, might help pave the way: the rat, a symbol of good luck and wealth, is said to be energetic and intelligent. And the animal likes to know who is on its side, and will extend to its most loyal friends an extra measure of protection and generosity. ■ NL

INTERVIEW

Photo: MPC

PIONEER. Jürgen Hansen is Managing Director of MPC Marine.

"We prefer to cooperate and build up long-term partnerships"

MPC Marine is the first German company to order vessels in Vietnam. Managing Director Jürgen Hansen talks about his experiences, business development plans and new projects

nonstop: Why did you go to Vietnam in the first place?
Jürgen Hansen: Cooperation with Vietnam is a strategic target. We believe that a few years from now Vietnam will be a strong competitor on the shipbuilding market. Vietnam offers good facilities and highly trained people today. While the industry still has a long way to go, I am very confident it will receive generous support from the government and the people working at the yards.
nonstop: What has to be improved to make Vietnam reach its goal of becoming the fourth largest shipbuilding nation in the world?
Hansen: First of all, yards must improve their delivery reliability. Furthermore, Vietnam has to continue building its own supply industry. Low labour costs only benefit the price of a vessel if there is a local supply industry. So far, it has been necessary to bring in expensive equipment and material from abroad. Therefore, building up an efficient and state-of-the-art supply industry will be key to the future development of Vietnam as a shipbuilding nation.
nonstop: What about bureaucratic barriers?
Hansen: The process of setting up acceptable guarantees for newbuildings needs to be improved, and the financing arrangements on the Vietnamese side could be a bit more flexible.
nonstop: What do you do to support your Vietnamese partners?
Hansen: Together with the German Peene yard we offer our know-how. Vietnamese employees were trained directly at the Peene yard design office in Wolgast, Germany. Furthermore, MPC Marine has sent four permanent staff members to the Nasico yard in Haiphong to train local workers.
nonstop: In Germany, the transfer of industrial know-how is often criticized. How do you justify it?
Hansen: There is no way to prevent the transfer of know-how, and countries like Vietnam will join

the competition one way or the other. Therefore we believe it is better to co-operate and build up long-term partnerships. This way, both sides will benefit from each other.

nonstop: Are you planning further projects with the Southeast Asian country?

Hansen: We are in talks about newbuilding projects with several yards, both private and Vinashin-owned. These projects mainly cover tonnage between 2,300 dwt and 4,500 dwt that will be interesting not only for the European but also for local markets. Furthermore, we are in the planning process jointly with ThyssenKrupp and various Vietnamese shipbuilders to provide technical services, design assistance and supervision for the building of 2,500-TEU container vessels. These vessels will probably be for the Vietnamese fleet.

Photo: MPC

OFFICE. MPC Marine shows its colours in the Southeast Asian country.

MPC Marine in Vietnam

MPC Marine is a company of the Hamburg-based MPC group. Its worldwide activities focus on the development of newbuilding projects with shipyards.

Presence. To support its Vietnam business, the company opened an office in Ho Chi Minh City in 1991.

Assignment. In 2005, MPC Marine ordered six vessels from Vinashin: four 700-TEU containerships, with four additional options, from Nam Trieu Shipyard (Nasico), as well as two multi-purpose, 5,200-dwt vessels, with four additional options, from Saigon Shipbuilding Industry Company in Ho Chi Minh City. "11 vessels were ordered through MPC Marine on behalf of third-party owners," says Managing Director Jürgen Hansen. "The 700-TEU containerships are for a German owner, while the multi-purpose vessels will go to a shipping company in Canada." The first two vessels built at Nasico will be launched soon.

Services. MPC Marine also provides technical services to shipowners, from preliminary specifications for a vessel to its design, procurement, supervision, financing and project management. As an intermediary consultant, MPC Marine helps suppliers gain a foothold in Vietnam.

Perspective. As a shipowner, the MPC Group itself does not have any vessels on order in Vietnam at the moment. "Vietnam mainly focuses on basic tonnage like bulkers, containerships, heavy-lift ships and multi-purpose vessels," says Hansen. MPC Steamship, the business unit in charge of ship management and ship acquisitions within the MPC Group, currently focuses on high-tech vessels such as reefers, Hansen adds.

PIPELINE. A keen demand for production and distribution technology.

Photo: iStockphoto

Successful Exploration

Oil and gas exploration in Vietnam has been producing promising results. More and more international companies are partnering with PetroVietnam. What is still missing are refineries

Vietnam is the third-largest oil producer in South East Asia, trailing only Malaysia and Indonesia. In 2007, 16.4 million tonnes of crude oil were produced. According to the Ministry of Industry and Trade, there are known crude oil reserves of 550 million tonnes plus 10 billion cubic metres of natural gas.

Prime Minister Nguyen Tan Dung has asked PetroVietnam, the national oil company, to push ahead with ongoing major oil and gas projects. PetroVietnam has earmarked US$ 6.7 billion for new domestic and overseas exploration between 2006 and 2010. The budget for 2011 through 2015 amounts to US$ 9.7 billion.

Until recently, crude oil was Vietnam's most important export product and the driving force of the nation's economic growth. It was not until 2007 that textile exports took the lead. Lacking refining capacity, Vietnam has been among the leading crude-oil exporting countries of the region. But with several refinery construction projects in progress, crude exports have been kept short for the past three years.

Most oil exploration and production activities occur offshore in the Cuu Long Basin off the southern coast of Vietnam. As recently as October 2007, a plan to explore and produce crude oil in block 15-1 northeast of the Su Tu Den field in the Cuu Long Basin was approved. This project, representing a total investment of over US$ 713 million, involves the installation of an oil rig and a pipeline. The block is expected to begin pumping oil in December 2009.

In addition, Vietnam is preparing production from the Nam Con Son Basin. London-based Premier Oil is planning to develop deposits discovered recently in the southern ranges of the basin, which could yield up to 80 million bar-

rels (MMbbl). All previous discoveries in this region have been gas.

A country without refineries of its own, Vietnam has been exporting its crude production and importing fuels and petrochemical products. Apart from its own production, PetroVietnam's earnings include revenues from shares in the operations of various foreign contractors and joint venture partners. Russian operator Zarubezhneft has been a partner in the long-standing Vietsovpetro joint venture, which operates Vietnam's largest oilfield Bach Ho off the southern shore. Other leading foreign upstream companies in Vietnam are ConocoPhillips, BP, Petronas, Chevron, the Korean National Oil Corporation, and Talisman Energy. All of them operate as contractors to PetroVietnam under production-sharing arrangements. PetroVietnam's upstream unit usually takes a minority interest in foreign-led operating consortiums. To date, 29 licences have been granted involving foreign investment.

Refineries Urgently Needed

It is estimated that by 2020 the country will need at least three oil refineries with an average annual capacity of 6 million tonnes each to meet approximately 50 per cent of its distilled fuel demand. To satisfy its energy needs, Vietnam will require an estimated 19 million tonnes of refined oil by 2010, and 31 million tonnes by 2020. Major efforts are underway to achieve this objective.

PetroVietnam is building its first refinery in Dung Quat in Quang Ngai province on the central coast. Scheduled to begin operations in early 2009, the plant is designed to process 6.5 million tonnes of crude oil per year. Its products will include propylene, liquefied petroleum gas (LPG), unleaded petrol, diesel oil and fuel oil. PetroVietnam and Zarubezhneft each hold a 50-per cent stake.

In November 2007, Vung Ro Oil Company was granted an investment licence to build a refinery in central Phu Yen province. In an initial phase scheduled to be completed in 2011, the joint venture of UK Technostar Management Ltd and Russian Telloil will build an oil refinery with an annual output of 4 million tonnes of refined petroleum products. A subsequent second phase will expand the production capacity to 8 million tonnes.

PROFILE: PETROVIETNAM

State-owned oil company PetroVietnam occupies the dominant, if not monopoly position in all segments of the Vietnamese petroleum industry, including upstream, midstream and downstream gas and oil, plus the role of a governmental regulator. In the gas industry, PetroVietnam is both a gas aggregator and a pipeline operator. There is little competition from other state-owned companies in downstream retail fuel distribution. Recently PetroVietnam began producing agricultural fertilizers, as well.

Power generation is another area of activity. The latest government master plan calls for an increase in installed generation capacity from the current 12,000 MW to 51,000 MW by 2015. The government is encouraging state-owned entities such as PetroVietnam and the coal and minerals group Vinacomin to reinforce their involvement in power generation to help Electricity Vietnam meet those goals.

Established in 1975, PetroVietnam has more than 30 subsidiaries and affiliated companies today. PetroVietnam is by far the most profitable state-owned company of Vietnam. In 2007 the group is said to have generated record revenues of US$ 12.73 billion, up 13.1 per cent from the previous year. Its revenue accounts for nearly 18.3 per cent of the country's GDP. The headquarters of PetroVietnam are located in Hanoi.

www.petrovietnam.com.vn

The Long Son project to build an oil refinery complex in the southern Ba Ria-Vung Tau province is currently awaiting an investment licence. If granted, the first project phase is expected to be completed in 2011, and the second and final phase in 2013. The Long Son complex is designed to produce 10 million tonnes per year. PetroVietnam has been said to contribute 30 per cent of the total investment sum of US$ 3.7 billion. 70 per cent will be provided by two Thai partners, the Siam Cement Group (SCG) and Thailand Plastic Company (TPC).

For yet another complex planned in Nghi Son in the central province of Thanh Hoa, PetroVietnam is still looking for joint venture partners. The construction project comprises an oil refinery with an annual capacity of 7 mil- →

RONG DOI MV12. The FSO unit, installed in 85 metres of water, is capable of receiving 18,000 barrels of condensate per day.

→ lion tonnes of crude oil, a polypropylene plant with an annual capacity of 150,000 to 350,000 tonnes, and a polyester fibre plant expected to produce 260,000 tonnes a year.

Leveraging its strong domestic position, PetroVietnam has gone on a quest to position itself as a new force in the international energy market. Last June and July, PetroVietnam took up blocks in Cuba and Peru. The NOC is now bidding to take positions in Nigeria and Kazakhstan after having built up minority and upstream operating interests in Indonesia, Malaysia Algeria, Iraq, Madagascar, Venezuela and Mongolia. PetroVietnam is said to have signed at least six new oil contracts with foreign partners in 2007, bringing to 13 the total number of its overseas exploration and production projects. The ultimate goal is to ensure the nation's long-term oil and gas supply and avoid shortages.

Gas Highly Promising

The Vietnamese natural gas sector is expanding even more rapidly than the oil sector. The 2006 natural gas production totalled 6.8 billion cubic metres (bcm), and in 2007 the total output topped the 7 bcm mark. Most of the country's gas is associated with major crude oil fields such as Bach Ho and Rang Dong. The largest fields developed primarily for their gas deposits are Lan Tay and Lan Do in the Nam Con Son Basin. Their reserves are estimated at 2 trillion cubic feet (56.6 billion cubic metres). Talisman's new Bunga Orkid project, which straddles Malaysia, is expected to begin producing in 2010. Forecasts are predicting an output of 150 million cubic feet per day (4.2 million cubic metres).

Vietnam's gas production solely serves the domestic market, mostly power plants, fertilizer plants and the general industry. 39 per cent of the nation's electricity is generated by gas-powered plants, followed by hydroelectric

INTERVIEW

Raymond Haveron (46) gained experience in countries such as Italy, India and Japan.

"We need to be highly flexible"

Raymond Haveron, Country Manager for GL Industrial Services Vietnam, sees great prospects in industrial development.

nonstop: Which sector is the main focus of attention for Industrial Services, and what exactly do you offer?
Raymond Haveron: For the moment we are mainly working in oil and gas sector certification, inspection of wellhead platforms, pipelines, jacket fabrication etc. But we are also providing certification and inspection services for various other industrial sectors. A lot of new work is coming up, including projects such as fertilizer plants, refineries, and a new hot-rolled steel mill. There are further large projects planned for the petrochemical and electricity supply industry. The demand is there so we need to be flexible with our scope of activities.

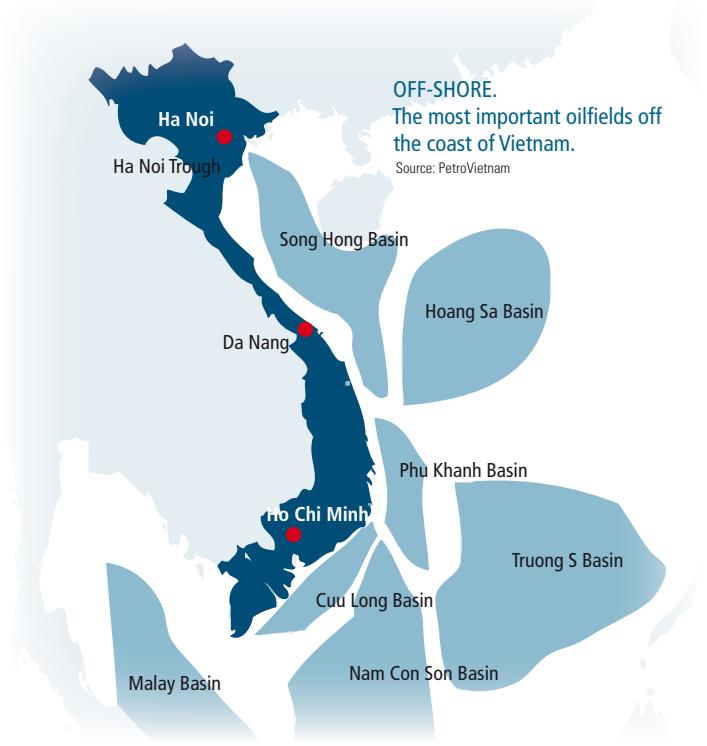
nonstop: How do you cope with that amount of projects?
Haveron: Industrial Services have been operating in Vietnam since 1996. First as a Representative Office, now as a Limited Company. But until just one year ago we were no more than four people. Today we have a competent, multi-skilled team of 26 employees based in a new main office in Vung Tau City. Recently a representative contact point in Hanoi was opened with two additional staff members.
nonstop: What is your forecast for the industry?
Haveron: Everything goes very fast here. The GIP reached VND 574,047 billion (US$ 34.73 billion) in 2007, an increase of 17.1% in comparison with the year 2006. And concerning the oil and gas market, it seems that new fields are discovered here on a regular basis. But there are big challenges to cope with, as well, first and foremost the infrastructure.

Photos: Ken Doerr

PRODUCTION. The PUQC topside (Production Utilities Quarters Compression-Platform) in the Rong Doi-Field about 320 kilometres offshore Vietnam.

power. The government hopes to have three additional gas-fired power plants with a capacity of 3,200 megawatts up and running by 2010.

PetroVietnam is planning to invest US$ 4.5 billion in exploration, pipelines and storage facilities between now and 2010 to boost its gas output. Nevertheless PetroVietnam Gas, PetroVietnam's business unit in charge of distributing and marketing natural gas to end-users, estimates the country may need to import substantial amounts of gas as early as 2015. Considering the rising demand for gas in the region, securing long-term supplies might not be an easy task. Since neighbouring countries will be facing the same gas shortage in the foreseeable future, building an LNG receiving terminal appears to make more sense than building pipelines from Malaysia and Indonesia to Vietnam, regardless of the need for substantial infrastructure development efforts to transport the gas to its point of use. ■ NL



OFF-SHORE.
The most important oilfields off the coast of Vietnam.
Source: PetroVietnam

As the economic development is advancing so very fast, the transportation system cannot keep up. Each one of the 80 million Vietnamese seems to own a motorbike, and street traffic is as chaotic as you would expect.

nonstop: Where do you personally see the biggest challenges for your work here?

Haveron: First of all, it is very difficult to understand the local laws and regulations. And then it is necessary to understand that the personal touch is extremely important. You always need to know the right people. It is much easier to get results fast by engaging in personal talks than by relying on written correspondence.

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"Pushing for strong action on climate change"

Jim Fitzpatrick has been the United Kingdom's Shipping Minister since summer 2007. In an interview with "*nonstop*", he speaks about his goals, the public perception of ship safety and the UK's involvement in international ship regulation

nonstop: Mr Fitzpatrick, what sets the maritime economy and industry in the UK apart from other maritime nations?

Jim Fitzpatrick: The UK has a strong and proud maritime tradition. It is not so much a matter of what sets the UK apart as what binds us with the rest of the world. As an island nation the UK has always looked to the sea and depends heavily on maritime trade for its economic growth and well being.

The vast majority of the UK's imports and exports are transported by sea and the maritime industry also provides vital travel links for passengers, within the UK and abroad and particularly to our near neighbours. The maritime industry plays a key role in the UK economy contributing over £ 7 billion (EUR 9.4) in export earnings (2006) and a healthy net surplus of around £ 1 billion (EUR 1.34) towards the country's trade balance.

nonstop: What global trends do you see for the future of maritime trade and industry?

Fitzpatrick: Crystal ball gazing is not one of my usual skills. However, commentators all suggest that world trade will continue to grow strongly and that the demand for shipping and all the associated maritime businesses is therefore also likely to remain strong. Globalization will continue to bring major competitive challenges, and our maritime related industries will need to work just as hard in the future to maintain and hopefully increase their success.

nonstop: What goals have you set yourself for your term of office?

Fitzpatrick: I hope that I can establish a good relationship with the shipping industry and promote it and to assist its ability to continue to be successful. I would also expect to be shipping's champion within Government as well as its first point of contact. I have already established a good early working relationship with several other EU shipping Ministers and with the Secretary General of the IMO and I want to see this develop.

nonstop: How has the MSC Napoli influenced the public perception of ship safety?

Fitzpatrick: Sadly the only times shipping gets national media attention is generally when there is a problem or a tragedy. However, I believe that the UK's handling of the MSC Napoli has sent a very positive message about ship safety.

The successful way in which the MSC Napoli was dealt with demonstrates the effectiveness of our arrangements for handling incidents at sea and the professionalism of all of those involved. Our conduct of the MSC Napoli incident received widespread praise.

For example, a senior official at the European Commission was reported as saying that the efficiency with which the Secretary of State's Representative for Maritime Salvage and Intervention (commonly known as "SOSREP") dealt with MSC Napoli should be seen as a model for the rest of the European Union. The fact of the matter is ➔

PROFILE – JIM FITZPATRICK

Jim Fitzpatrick (55) has been the UK's Minister for Shipping and Transport since June 2007. As the so-called "Parliamentary Under Secretary of State at the Department for Transport" he is responsible for aviation, environment, shipping and road safety. Since 1997 he has been a Labour Member of Parliament for Poplar and Canning Town, an electorial district of Greater London. His political interests also span Anti Poverty, Regeneration, Anti Racism, and Fire.

Jim Fitzpatrick was born in Glasgow. He moved to London in 1974 and joined the London Fire Brigade, leaving in 1997. During his 23 years with the fire brigade, he was an active member of the union, and became increasingly involved with the Labour Party as a result. Mr Fitzpatrick is married to Dr Sheila Fitzpatrick and has one son and one daughter from a previous marriage. He is a devoted football fan and supports West Ham United, he also enjoys cricket, rugby and sports generally. In addition to this he supports a number of charities.

www.jimfitzpatrickmp.co.uk

PRIDE. The UK's Minister for Shipping and Transport lays emphasis on the British maritime tradition.

→ that the UK has a highly developed strategic approach to protecting the UK's seas and coasts from ship-source pollution, which involves all of the following:

- We have put in place a network of shore-based stations around the UK coastline to monitor vessel traffic, using Automatic Identification System technology.
- We have achieved agreement in the forum of the International Maritime Organization on ships' routeing measures which will reduce the risk of groundings or collisions.
- We ensure that powerful tug boats (commonly referred to as "emergency towing vessels") are available, so that they can go out and assist ships which lose motive power.
- We have established arrangements under which a ship which requires assistance, and whose condition needs to be stabilized, can be brought in to a place of refuge.
- We have a highly effective structure for command and control of an incident, in which the SOSREP plays a major role.
- We have a fully developed national contingency plan, consistent with the International Convention on Oil Pollution Preparedness, Response and Co-operation 1990 ("the OPRC Convention") and we participate actively in international assistance and co-operation arrangements of a bipartite, multipartite or regional nature, again consistent with the OPRC Convention.

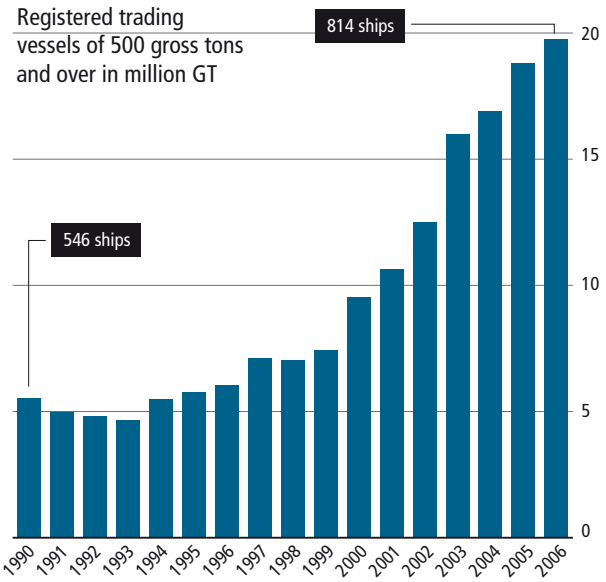
> "We have a highly effective structure for command and control of incidents"
>
> **Jim Fitzpatrick**

nonstop: What role does climate change and environmental protection play in your work?

Fitzpatrick: Climate change and the environment are key issues for the Government and for the UK maritime industry, and I have responsibility for both. Maritime transport, as we know, is a relatively efficient and benign way to move goods, but globalization and accelerating world trade means that the volume of transport movements is increasing significantly. This means that the environmental impact of transport increases accordingly.

As shipping is an international industry, climate change action can only be truly effective if taken forwards on an international basis. The International Maritime Organization (IMO) is the appropriate forum for doing this.

UK: Summary of Tonnage



In the IMO, the UK is pushing for strong action on shipping's contribution to climate change. We are not alone in this. We are working, in the IMO, with our EU partners and other international allies.

nonstop: China, Vietnam and India are continuing to expand their shipbuilding capacities. How should the European shipbuilding industry react to this?

Fitzpatrick: I do not have direct responsibility for the UK Government's policies on shipbuilding. As Shipping Minister, however, I acknowledge the importance of a competitive global shipbuilding industry capable of meeting the requirements of shipowners and operators, and the needs of expanding world trade.

I certainly hope that the European shipbuilding industry would identify and seek to benefit from the opportunities offered by such growth in the demand for ships.

nonstop: How does the UK remedy the shortage of engineers and maritime personnel?

Fitzpatrick: We are very aware of the predictions about continuing and increasing shortages of skilled seafarers world wide. What we once considered to be an issue largely affecting the most developed economies of the world now seems to be a growing phenomenon with ever greater potential global impact. In the UK we value highly trained seafarers both for the time they spend at sea and the skills they bring ashore to the many maritime associated industries.

The Government's Tonnage Tax core training commitment requires companies to train one officer cadet for every 15 officers in the fleet. That and the Support for Maritime Training Scheme (SMarT) have helped to boost the numbers of seafarer trainees over the last decade. For 2006–07, SMarT cadet intake was 658. By last September we had already reached 678 and that is before the January intake is included. This is real progress for us.

New initiatives like our "Foundation Degree" have added another route into seafaring so that we make this exciting career available to all those who wish to pursue it. The Merchant Navy Training Board and its partners' work is very important in continually promoting maritime careers. The global shortage of seafarers presents an opportunity to companies to opt for our top quality UK seafarers.

nonstop: How do you see the relation between the IMO and the EU and what role will the UK play in the future?

Fitzpatrick: The UK recognizes the global nature of the maritime industry and that the industry is best served by regulation that is agreed on an international basis. There is a very strong relationship between the IMO and the EU. The Member States of the EU, both individually and cooperatively, play an important role in the organization, working towards widespread agreement with other countries in reaching common positions on vital safety and environment issues affecting the industry.

The UK continues to have an important role as the host state to the organization; we are proud and very honoured to play this role to such a prestigious international body. In the future I foresee that the UK will continue to play a prominent role in the development of work at the IMO and in all discussions on the future direction of international policy within the organization. ■ SNB

Photo: European Community 2007

What's Sprouting in Brussels?

The EU determines its course of action in maritime transport policy independently from the IMO. Safety and ecology are topics ranging at the top of the agenda

Tough discussions are to be expected as the European Parliament prepares for the upcoming second reading of the "Third Maritime Safety Package". Often referred to as the "Erika-III Package", these proposals have been caught in the EU legislative process since late 2005. The package, the EU Commission's response to the "Erika" and "Prestige" tanker accidents, comprises eight individual proposals. Three of them are especially controversial:

Recast of current rules for classification societies. The present proposal for a directive and regulation would have a significant impact on classification societies. The classifiers are concerned that the envisioned harmonization of procedures, along with mutual recognition of equipment certificates, will result in more and more ships being built by non-EU countries, and fewer and fewer ships sailing under EU flags. In addition, the drive to innovate and improve quality, encouraged by competing classification societies developing their rules independently, would be in jeopardy.

MAJOR EU INITIATIVES IN MARITIME TRAFFIC 2008

Initiative	Scheduled for
Communication regarding the extension of passenger rights to maritime transport	First quarter 2008
Third Maritime Safety Package "Erika III"	2nd reading likely to begin in 2nd quarter 2008
Revision of state aide guidelines for maritime transport	Second quarter 2008
State aide guidelines in ports	Third quarter 2008
Green Transport Package: • Communication on greening the transport sector/ship emissions • Communication on the internalization of external costs of transport	June 2008
Maritime Transport package: • Communication on the future EU Maritime Transport Policy • Legislative proposal on a European Maritime Space without Barriers • Revision of the regulation establishing a European Maritime Safety Agency (EMSA)	October 2008

Civil liability of shipowners. The proposed directive intends to eliminate existing liability limits for shipping companies. In addition to the envisaged liability framework, shipowners are required to guarantee compensation of affected third parties. Several EU member states are opposing the proposal. Meanwhile the EU parliament is pressing ahead with the tightening of the shipowner liability rules.

Flag state responsibilities. National shipping authorities are to be charged with additional responsibilities so as to improve the quality of European flags. EU member states are therefore supposed to monitor ships sailing under their respective flags for proper implementation of existing international conventions. While the Parliament is in favour of this proposal, member states are wary of rising administrative costs.

Focus on the Environment

The EU continues to work towards full membership in the International Maritime Organization (IMO). As an intermediate step, the EU Commission claims observer status for the EU. But traditional seafaring nations such as Malta, the UK or Germany want to avoid politicizing the organization, saying that the IMO should be maintained as a purely technical institution. EU Commissioner for Transport Jacques Barrot has ordered an analysis of the costs and benefits of the EU's envisioned observer status. The EU transportation ministers might reach a decision on the matter as early as their next meeting in April 2008.

Notwithstanding, the focal point of EU maritime policy is the protection of the environment. In June of this year, the EU Commission wants to present a package of proposals intended to foster environment-friendly transportat. The proposals include specific recommendations towards reducing CO_2 emissions from ships. The EU plans to incorporate shipping into the EU Emission Trading Scheme (ETS) already in place for air transport. To date, ship emissions has been the sole domain of the IMO.

In autumn of 2008, the EU Commission intends to present its legilativ package on maritime trasport, outlining the fundamental concepts of its maritime policy for the next ten years and underscoring the importance of Europe's seaports as interfaces between land-based and maitime transport.

Among the key proposals in the package is a legislative initiative to implement a "European Maritime Transport Space without barriers", which intends to put shipping on equal footing with road traffic. So far, ships sailing between EU ports have been required to undergo much more complex and time-consuming administrative and customs procedures than trucks crossing EU borders. A true single market will improve the competitiveness of maritime transport, helping to move goods away from the roads and onto the waterways. ■ MP

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CO_2 Indexing and Emission Certificate Trading for the Shipping Industry

by Dr Pierre C. Sames, Germanischer Lloyd AG, Germany

Photo: Gary Blakely/Dreamstime

Abstract

The publication in 2007 of the Fourth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) pushed the CO_2 emission issue to the forefront of public attention. The report left no doubt that the world is very likely facing a change of climate.

The shipping industry must respond to this challenge, as all other industries have to, as well. While shipping is one of the lesser contributors to global CO_2 emissions, talks are underway to establish a CO_2 emission certificate trading scheme for the international transportation industry. The International Maritime Organization (IMO) has been put in charge of developing a CO_2 index for ships to provide a basis for a future CO_2 emission certificate trading system. To demonstrate the availability and functional fitness of this concept, Germanischer Lloyd recently introduced a prototype CO_2 index. ➔

Introduction

Introduction

Recent high-level publications have raised the alarm on climate change and its potential consequences. The Stern Review (Stern 2006) commissioned by the UK Treasury concluded: "There is still time to avoid the worst impacts of climate change, if we take strong action now." Any delay of necessary action could render illusionary the target of limiting the temperature increase to no more than two degrees by 2100. It is widely assumed that such a limited increase in global surface temperatures could keep the consequences within a manageable range, if with strong regional variations.

A systematic assessment of worldwide scientific publications on climate change was prepared by the Intergovernmental Panel on Climate Change (IPCC 2007), and subsequently updated by the so-called Fourth Assessment Report (AR4), which was published in four volumes:

1 Working Group I Report
"The Physical Science Basis"
2 Working Group II Report
"Impacts, Adaptation and Vulnerability"
3 Working Group III Report
"Mitigation of Climate Change"
4 The AR4 Synthesis Report
(to be adopted in mid-November at IPCC-27, Spain)
The IPCC reports are considered to be the definitive source of information on climate change and its potential consequences.

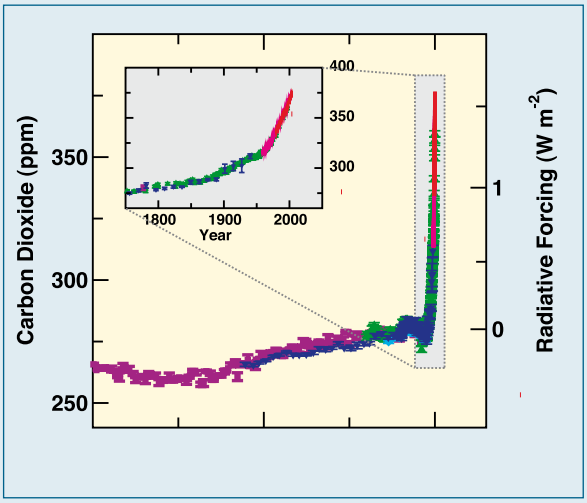

FIGURE 1. Changes in greenhouse gases from ice core and modern data (IPCC 2007b).

The Kyoto Protocol (1997) amending the United Nations Framework Convention on Climate Change (UNFCCC) defined the first-ever legally binding emission targets for Annex I (i.e. developed) countries for the post-2000 period. The affected countries committed themselves to reduce their collective emissions of six key greenhouse gases (GHGs) by at least 5 %. However, some key countries such as the United States of America have not signed the Protocol; developing countries are not included at all. The United Nations Climate Change Conference held in December 2007 discussed post-Kyoto Protocol regimes. In connection with the conference, there has been increasing international pressure to incorporate the transportation industry into future emission reduction agreements (after it had been omitted from the Kyoto Protocol).

In the wake of the Kyoto Protocol, the first steps towards an international emission trading regime were taken to enable industrialized countries to trade emissions credits. Two instruments known as "Joint Implementation" (JI 2005) and "Clean Development Mechanism" (CDM 2005) facilitate an optimal allocation of resources for effective emission reductions.

Heads of EU countries and governments decided in 2007 to accelerate the reduction of emissions responsible for climate change. It was decided to lower greenhouse gas emissions to 20 % below 1990 levels by 2020, and to increase the share of renewable energy sources in the overall energy mix to 20 %. Furthermore it was proposed that developed countries should reduce their emissions by 60 % by 2050. All things considered, there is now a strong momentum to reduce GHGs, and it is very likely – and indeed many politicians are demanding it – that international transportation (aviation and shipping) will be included in a future, post-Kyoto protocol. Therefore, the shipping industry is well advised not to wait but take action now.

The following chapters look at the extent of the challenge, examine a method to monitor CO_2 emissions from ships and discuss a proposal to implement a self-accelerating CO_2 emission certificate trading scheme for shipping.

The CO_2 Challenge

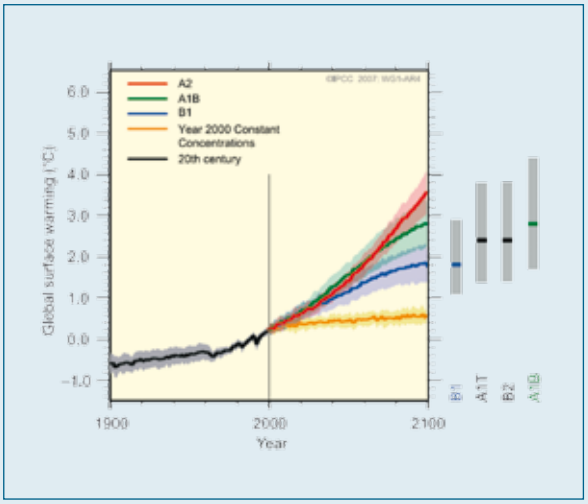

FIGURE 2. Multi-model averages and assessed ranges for surface warming (IPCC 2007b).

The CO_2 Challenge

"Global atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values determined from ice cores spanning many thousands of years (see Figure 1). The global increases in carbon dioxide concentration are due primarily to fossil fuel use and land use change, while those of methane and nitrous oxide are primarily due to agriculture." (IPCC 2007b)

A number of different emission scenarios are predicting that global surface temperatures will warm by about 0.2 °C per decade until 2030. Even under the assumption that concentrations of GHGs could be kept constant at year-2000 levels, the warming effect would still be about 0.1 °C per decade. On the other hand, continued GHG emissions at or above current levels will intensify global warming and induce many changes within the global climate system during the 21st century that will very likely be more severe than those observed during the 20th century. Figure 2 shows relevant emission scenarios (SRES 2004) and the resulting global surface warming, with 2000 marked as a reference year. The graph shows that a limited surface warming of only 2 °C by 2100 can be considered a rather optimistic scenario.

The share of GHGs emitted by shipping is relatively small compared with other industry sectors. While no exact figures exist, the following discussion presents two ways of estimating global CO_2 emissions from shipping in an attempt to assess the challenge. The first method is a top-down approach that takes total global CO_2 emissions as a starting point for estimating the share from shipping. The second, bottom-up approach uses data on installed power onboard ships to estimate average running times and predict yearly fuel consumption and the resulting annual CO_2 emissions.

In 2004, the amount of energy used by the transportation industry amounted to 77 EJ, or 26 % of the total global energy consumption; the transportation sector was thus responsible for about 23 % of the world's energy-related GHG emissions (IPCC 2007d). This corresponds to roughly 6.4 Gt of CO_2-equivalent. Figures for the year 2000 show an annual energy consumption of 7.32 EJ by the shipping sector, equivalent to 9.5 % of the total energy consumption in the transportation industry.

This would translate into ship emissions of about 0.6 Gt of CO_2 equivalent in 2000. Other available sources show that global CO_2 emissions in 2004 were about 27 Gt (IEA 2004), and that the share from shipping was about 4% of the global total, see Figure 3 (Economist 2007). →

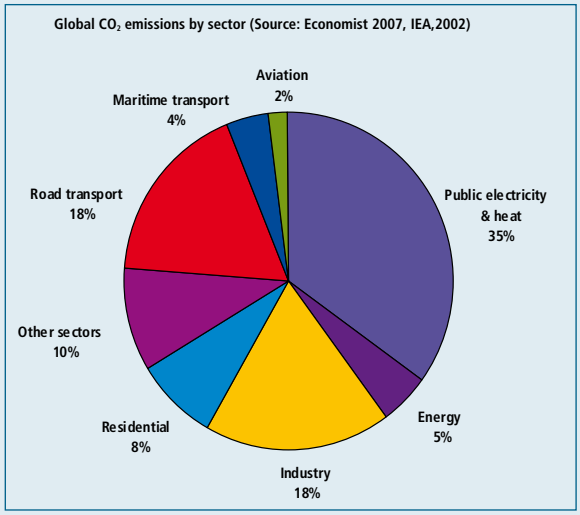

FIGURE 3. Sector shares of global CO_2 emissions.

The CO_2 Indexing of Ships

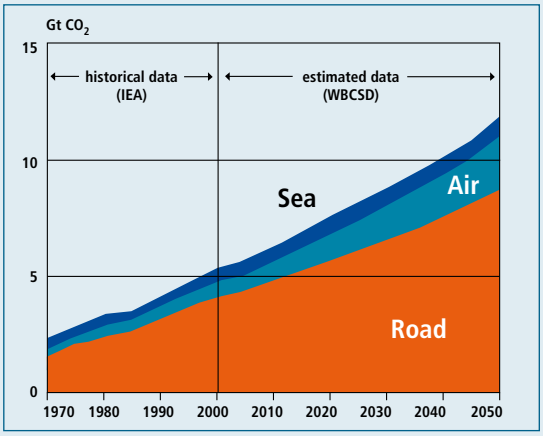

FIGURE 4. Historical and projected CO_2 emissions from transportation by modes (IPCC 2007d).

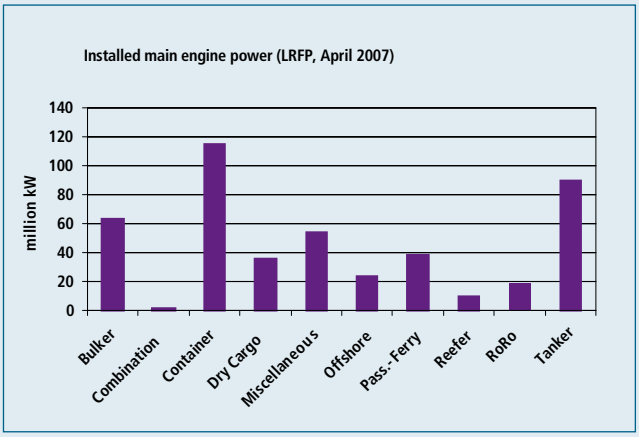

FIGURE 5. Installed main engine power onboard ocean-going ships (based on LRFP, 2007).

➔ This would correspond to about 1 Gt of CO_2 equivalent emitted by ships in 2004. The expected increase of transport-related CO_2 emissions as presented in Figure 4 shows that CO_2 emissions from shipping will increase until 2050. Installed power aboard ships has increased as the world fleet continued to grow. Ships often sail faster today than they did two decades ago. A query of the shipping database LRFP (2007) resulted in a total installed main engine power of 447 GW, with container vessels as the single largest contributor (April 2007).

Assuming 200 effective operating days per year and a specific fuel consumption of 180 g/kWh, the world fleet consumed about 0.39 Gt in 2007. (this estimate does not account for auxiliary engines.) As burning one ton of fuel produces approximately three tonnes of CO_2, we arrive at 1.16 Gt of CO_2 emitted by ships in 2007. This estimate by Germanischer Lloyd was confirmed by data in a recent paper by Intertanko (2007). This paper therefore bases its further calculations on the assumption that the world fleet emitted 1 Gt of CO_2 in 2007.

CO_2 Indexing of Ships

In 2003, UNFCCC asked the International Maritime Organization (IMO) to take initiatives that would lead to a reduction of GHGs emitted from ships. The assembly of the Maritime Environmental Protection Committee (MEPC) responded by passing an appropriate resolution (IMO 2003). Several IMO member states then performed scientific analyses (e.g. Germany in 2003).

Since no operational data was available at the time, published design data was used for this analysis. A key figure used in the calculations is the specific value VSP that is proportional to the specific main engine emissions per transport work, see Figure 6. A result common to all ship types was that emissions per transport work decrease with increasing ship size. However, results of

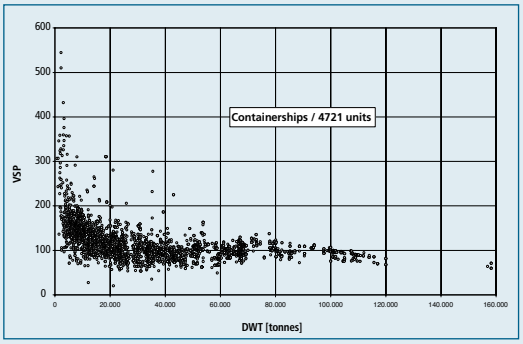

FIGURE 6. Specific value VSP (specific main engine work per transport work [kJ/t nm]) for container vessels, based on published design data (Germany 2003).

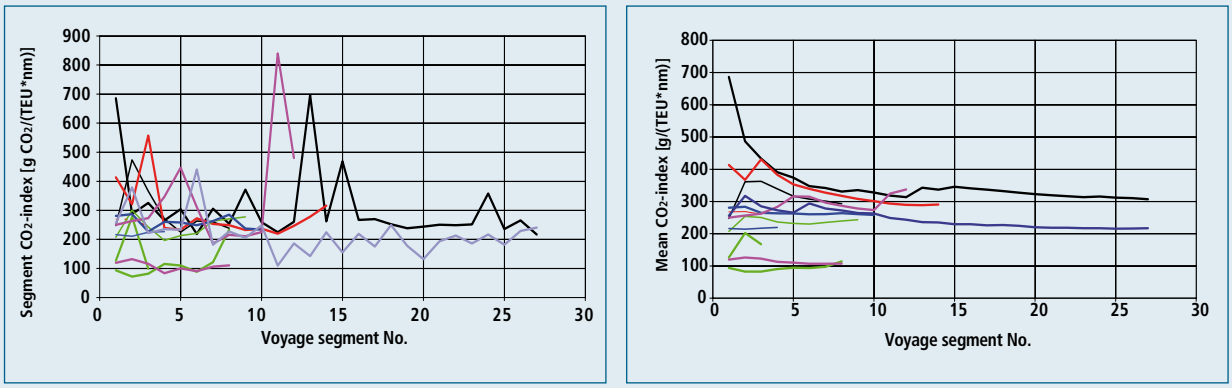

FIGURE 7. CO_2 index based on operational data from several container vessels.
Left: index for individual voyage segments. Right: Average index according to Eqn. 1.

this study show that there is considerable scatter in specific engine efficiency among the ships investigated, a fact that could not be properly explained by the deadweight of the ships, year of build, ship speed or several other ship design characteristics.

The study therefore concluded that designing a CO_2 indexing scheme differentiated by ship type and other ship characteristics requires in-depth investigation. The reasons for the data scatter need to be understood before such a system can be used in an incentive scheme.

As a consequence, MEPC developed a guideline (IMO 2005) describing a CO_2 index for voluntary use aboard ships. The index is defined as follows:

$$CO_2 - index = \frac{\sum_i FC_i \times C_{Carbon}}{\sum_i m_{\text{cargo},i} \times D_i}$$

with FC representing the fuel consumed, m_{cargo} the mass of cargo transported, D the distance sailed, and i the number of the voyage segment. C_{carbon} is a fuel-type dependent emission factor which is also specified. The CO_2 index is calculated as a moving average. Data gathered on existing ships during operation show that the CO_2 index stabilizes after a number of voyage segments, see Figure 7. (Note that in Figure 7 the CO_2 index as indicated is based on TEU instead of cargo mass.)

While a voluntary use of the index, along with reporting of the results of CO_2 emission indexing, may not directly lead to reductions in GHG emissions, it may well raise the general awareness and trigger certain initial moves towards 'self regulation'. It might also be a first step in the process of designing and implementing some of the other policy options. The routine of reporting the results of CO_2 emission indexing could thus generate a significant impetus to further develop and implement this index. It would allow crews, shipping companies and governments to gain experience in applying the CO_2 indexing methodology, including the reporting and monitoring procedures.

These consideration recently prompted GL to introduce a prototype CO_2 index for ships (GL 2007). The GL CO_2 index is implemented as described above based on IMO (2005) specifications. However, no certification of the CO_2 index is offered at the moment. For this reason, GL refers to it as a prototype index.

The CO_2 index is implemented as an online tool within the familiar GL fleet online environment (see Figure 8, next page). It will eventually be available as an onboard stand-alone tool. Data is input according to IMO (2005) specifications with the added voyage duration parameter. The display screen presents the CO_2 index both per voyage segment and as an average value (Eqn. 1). ➔

A Possible CO_2 Emission Certificate Trading Scheme

FIGURE 8. Implementation of the CO_2 index within the GL fleet online environment: Display of results.

➔ Entering data from several vessels makes it possible to compare CO_2 indices across an entire fleet. This function in particular is expected to trigger a learning effect by revealing differences in fuel consumption based on data associated with individual voyage segments.

A Possible CO_2 Emission Certificate Trading Scheme

The political future of CO_2 emissions from ships is currently being debated by two UN organizations: IMO, responsible for shipping, and UNFCCC, responsible for the implementation of the Kyoto Protocol. At IMO, all member states will be treated equally; decisions are made by majority vote. At UNFCCC, agreement can only be achieved by unanimous voting, and the results usually apply to specific member states only. A similar dualism of responsibilities and opinions exists at lower levels, for example within the EU Commission and between national ministries, typically those in charge of transport vs environment protection. In the medium term, to be more effective governments may consider the following strategy for implementing CO_2 indexing (IPCC 2007d):

1. Introduce indexing of ship operational performance on a voluntary basis and develop/adopt a standard over time;
2. Based on experience gained with the standard, implement it as a new functional requirement for newbuildings. This operational index will eventually result in specific energy efficiency rules shipowners have to comply with;
3. Differentiate en-route emission charges or existing port dues based on CO_2 index performance;
4. Use CO_2 indices of specific ship categories as a baseline in a (voluntary) baseline-and-credit programme.

It is item (4.) that this chapter focuses on. A future CO_2 emission certificate trading scheme for shipping is being discussed as one option for offering the shipping industry an incentive to reduce CO_2 emissions. Other options are to raise fuel taxes or increase harbour fees. Both are unpopular because they will likely intensify the competition among regions to attract traffic. It would be preferable to establish a certificate trading system that follows the "polluter pays" principle.

Such a system was suggested by Krapp (2007). It satisfies the boundary conditions of not restricting the international flow of goods in the global marketplace and not altering the conditions of competition while encouraging the introduction of cost-effective solutions and affecting fleets, logistics and locations in the same way. These boundary conditions were defined by the German Federal Ministry of Transportation as essential prerequisites for any future CO_2 emission certificate trading scheme (Törkel 2007).

In view of the above it would appear logical that the consequences of emissions should be borne by the respective importing nation. During an introductory period, the CO_2 emissions associated with the import volume of participating nations should be monitored. CO_2-emission limits should then be set in a consultation process whereby allowable CO_2 emissions are assigned to each importing nation. This step needs to be placed into the hands of UNFCCC. The government of each importing nation will distribute a corresponding amount of CO_2-emission permits to logistics companies, which will determine the transport modes for specific transportation tasks accordingly (refer to Figure 9).

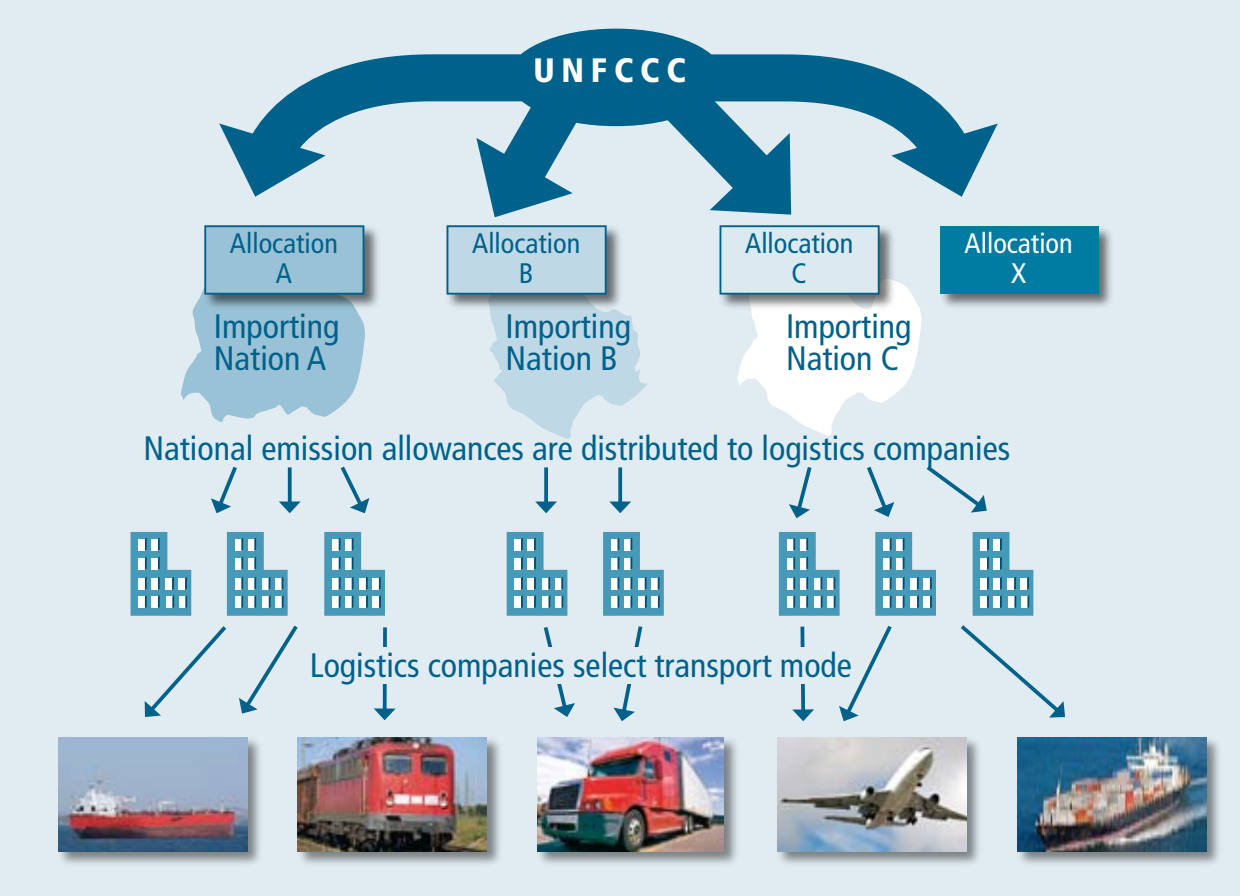

Photo: iStockphoto

FIGURE 9. Possible arrangements for allocating CO_2 emission allowances to the transportation sector.

One important element in the above-described system is the determination of the CO_2 emission performance, or CO_2 index, specific to individual vessels / vehicles. To reap the full benefits of this approach, an index should be determined for each individual mode of transportation. The standards for assessing the CO_2 emissions of ships could be set by IMO in an amendment to the existing guideline, based on experience.

The responsibility for enforcing certification and regular updating of ship CO_2 indices rests with the respective flag state. This shows that in essence all elements required to implement the described CO_2 emission certificate trading system are readily available. Since this system is based on import figures, it could be implemented regionally in a step-by-step process whereby each new region joining the process would make CO_2 indexing a prerequisite for ships to enter its ports when importing goods.

Going forward from the present developmental stage of the proposal, it would seem possible to extend the system from ships to other modes of transportation to eventually include general international transportation into existing national emission trading systems without having to create additional structures. →

Conclusion

References

Conclusion

Shipping has to face the CO_2 challenge much like any other industry on this planet has to. Shipping is likely to be integrated into any future emission-control measures once a post-Kyoto protocol is in place. This paper has argued that CO_2 emissions from shipping are likely to increase over the next decades, and that a practical solution exists today – in the form of the GL CO_2 index – to monitor CO_2 emissions from a typical ship. It has also been argued that CO_2 indexing will form the basis of any future trade in CO_2 emission certificates. The future assignment of ship emission rights, however, will continue to be discussed controversially. For the time being, the question which solution will prevail is a matter of speculation.

Acknowledgements

We gratefully acknowledge the valuable information on the subject with Dr Reihard Krapp.

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In this paper, the term Carbon Dioxide is abbreviated "CO_2"

Ships with a Plug

Seaports all around the world are struggling with air pollution. In six Californian ports, ships at berth will be required to use land-based electricity as of 2010. But the technology is still hotly debated, and the search for alternatives continues

ENERGY. The port of Los Angeles banks on AMP technology.

PIONEER. When docked at the Yusen terminal, Los Angeles, "NYK Atlas" receives electrical power from a leading-edge, land-based power grid.

Photo: Port of Los Angeles

In the 16th century, Portuguese explorer Juan Rodriguez Cabrillo named the area around present-day Los Angeles "Bay of Smoke" because of the fires of Native American hunters he saw burning on the nearby hillside. That name still fits today. The basin has some of the worst air quality in the United States.

Local air regulators claim that as much as 25 per cent of the air pollution in Los Angeles emanates from the adjacent ports of Los Angeles and Long Beach alone. Located in the San Pedro Bay region, they form the world's fifth largest port complex.

Most of the air pollution in and around the ports stems from a single source: diesel fuel emissions. Reducing emissions is therefore a major challenge, especially so considering the continuing expansion of the ports. More than 40 per cent of U.S. imports and 24 per cent of total exports are handled in San Pedro Bay. With Asian cargo volumes growing, forecasts suggest the amount of cargo moving through the Bay region, especially containerized cargo, will more than double by the year 2020.

First Steps

One of the proposed methods of reducing emissions from vessels docked at the port is the use of Alternative Maritime Power (AMP), often referred to as "cold ironing". Instead of running on diesel power while at berth, AMP-equipped ships plug in to the shore-side utility grid. This allows them to shut down their main and auxiliary engines when in port. The California Air Resources Board (CARB) estimates that the environmental benefits of a widespread use of AMP could be significant, potentially reducing emissions per ship by up to 70 per cent. A draft regulation introducing pollution-control measures was passed by CARB last December. "Residents from San Pedro to Oakland will breathe easier as a result of our aggressive actions to clean up diesel emissions from ports throughout the state," says CARB chairperson Mary Nichols.

Meanwhile, persistent pressure from local communities has prompted individual ports to take action on their own. As early as June 2004 the Port of Los Angeles and China Shipping Container Line announced the opening of the world's first container terminal to use cold ironing - the West Basin Container Terminal at Berth 100. "This pioneer project was a challenge. We were sort of building into the empty. The berth relies on a port barge floating close to the ship to provide the equipment for the shore connection, including the high- and low-voltage cable management systems, transformer and switchgear," says Eric Caris, assistant director of marketing with the Port of Los Angeles.

"This configuration was born out of necessity," he explains. "The equipment could not have been installed on shore owing to space constraints. Besides, only few ships have been specifically designed for alternative power solutions." →

CAAP

Action Plan for San Pedro Bay

Adopted in 2006, the San Pedro Bay Ports Clean Air Action Plan (CAAP) addresses ships, trucks, trains, cargo-handling equipment and harbour craft. The plan outlines specific, detailed strategies to reduce emissions from each category:

- Ships shall, besides using shore-side power, be required to reduce their speed when entering or leaving the harbour region, use low-sulphur fuels, and employ other emission reduction measures and technologies.
- Diesel trucks with high emissions shall be eliminated from San Pedro Bay cargo terminals within five years.
- All cargo-handling equipment shall be replaced or retrofitted to comply with the limits set by the strictest U.S. Environmental Protection Agency emissions standards.
- Switching locomotives operating in ports shall likewise meet the toughest U.S. Environmental Protection Agency standards for new locomotives, use cleaner fuels and employ exhaust treatment equipment.
- In addition, all new rail yards must use the most eco-friendly technologies available for locomotives, trucks, and cargo-handling equipment within their facilities.

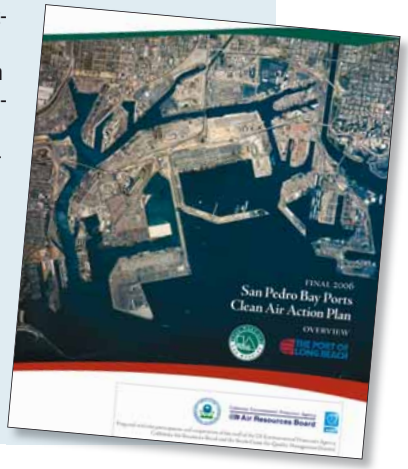

Photo: Port of Los Angeles

➔ Since the middle of 2007, NYK Line's "NYK Atlas" has been using the AMP facilities at NYK's Yusen terminal, the first of its kind built to AMP specifications. The Yusen terminal features next-generation AMP equipment with a direct tie-in to the landside power grid.

Ambitious Local Action Plans

It is difficult to discern the borderline between the neighbouring ports of Los Angeles and Long Beach. For miles and miles you see nothing but stacked containers and fast-moving gantry cranes along the shore. Still, "the Ports are two competing ports with their own boards of harbour commissioners," says Caris.

The more commendable it is that they succeeded in working out a common strategy for reducing emissions. The result, the San Pedro Bay Ports Clean Air Action Plan (CAAP), was approved by the ports in late 2006. "As part of the plan, all major container cargo and cruise ship terminals at the ports will be equipped with shore-side electricity within five to ten years," Caris cites one of the primary objectives of the agreement. "The Port of Los Angeles will facilitate shore-side electricity for ships at 15 berths by 2010," he promises. The Port of Long Beach aims to develop land-based power supply installations for ships at 10 to 16 Long Beach berths within five years.

One primary implementation method that both ports agreed on is the incorporation of pollution control measures into lease requirements. These control measures will be tied to each lease or permit. To ensure compliance, failure to implement them will be considered a violation. "Further, whenever any modifications are done on a wharf from now on they must include cold ironing," Caris explains.

The first-ever environmental programme in San Pedro Bay to be tied to a terminal lease is the New Port Lease Agreement for the Matson Long Beach Terminal, pier C. Under the agreement, the port will invest $ 7.3 million in dockside electrical infrastructure for cold ironing. In return, Matson, whose example will be followed by other shipowners, will retrofit five of its newer vessels for cold ironing or use technology that is at least 90 per cent as clean as cold ironing.

Although everybody at the ports keeps talking about cold ironing as the only possible way of cleaning the air, there are in fact alternative approaches. "If some achieve the goals in other ways than with cold ironing we are not closing the door," says Caris. Possible options are still being examined.

Photo: André Lützen

PROTOTYPE. Some of the AMP equipment at LA's West Basin container terminal was riding on a barge.

CLEARING THE SKY. The Port of Los Angeles reduces diesel fuel emissions.

Photo: Port of Los Angeles

PRIMING. Cable set for AMP.

Matson Management for example announced that while they support the ports' objective they are exploring ways of satisfying the terms of the agreement through technology other than cold ironing. Matson believes that the use of selective catalytic reduction systems in combination with the use of low-sulphur marine gas oil during port stays is superior to using shore-side electrical power. The argumentation of ocean carrier Matson: It will make its fleet more environmentally proactive at all port facilities instead of only those that are retrofitted for shore power.

Technical Challenges

Photo: Bigstockphoto

Ben Chavdarian, Senior Electrical Engineer at the Port of Long Beach, is an enthusiastic supporter of cold ironing. "Yet, there are a thousand technical challenges," he says. Apart from unresolved judicial issues, there are questions such as who will be liable for possible blackouts in the area caused by cold ironing. "You cannot just put a power outlet somewhere and have the sailor plug in."

British Petroleum (BP), for example, initiated a project at Long Beach Port to install shore-side electrical power at Berth T-121 as well as wiring and plugs on two of their BP tankers. One of them was expected to be "cold-ironed" by December 2007. T-121 is a multi-purpose berth. Since it must handle vessels of many sizes, the location of the cable management system platform had to be designed not to obstruct berthing vessels of various sizes.

What further complicated the matter was the task of designing a platform to accommodate the deep-water berth. The platform had to meet Marine Oil Terminal Engineering and Maintenance Standard (MOTEMS) requirements and be able to withstand accidental impacts by docking vessels. Finally, the power supply for tankers, which use significant amounts of electricity, had to be designed to maintain a relatively constant voltage over a large operating range. This requires the on-shore step-up transformer to have a load tap changer to be controlled by the respective vessel's power management system. At both the Long Beach and Los Angeles ports, the technical installations are well under way.

But these are only isolated applications. What is needed is a global solution. Current on-shore and on-board power systems are not necessarily compatible. "And there is no international standard yet for the ship-to-shore connection," says Chavdarian, who is personally involved in the development of a formula for tankers. He expects it will take another two years until the International Electrotechnical Commission (IEC) and ISO will have standards in place.

A major challenge for the "standardizers" is the fact that a number of major ports are examining AMP technologies independently. As a result, each port may insist their solution is best. The North American ports of Houston, Richmond (Virginia), New York/New Jersey, Seattle, Oakland, Tacoma, Vancouver and Philadelphia have indicated their interest in alternative power solutions.

Other initiatives to provide shore power have spread from the German port of Lübeck to other ports on the Baltic Sea. Quite recently, the Japanese government an- →

COLD IRONING

Strict Rules, New Standards

The new rule passed by the California Air Resources Board (CARB), the state's air regulatory agency affects 31 terminals at 6 ports in the state (Los Angeles, Long Beach, Oakland, San Diego, San Francisco and Hueneme in Ventura County).

Appliance. Initially, it will apply to fleets that make more than 25 visits to a Californian port, requiring their ships to use shore-side power from January 2010 wherever it is available at berth.

Strengthening. The requirements will get more stringent in 2014 as ports continue to develop their infrastructure, requiring 50 per cent of visiting ships to use cold ironing. This quota will increase to 70 per cent in 2017 and to 80 per cent in 2020. Alternative compliance methods capable of achieving equivalent emissions reductions will be allowed.

Conflict. Earlier in 2006, CARB introduced its auxiliary engine fuel regulation, which is being enforced although the rules have been challenged by the PMSA in court.

Continuation. The appeal will be heard in February. Regulations requiring the use of distillate fuel in main engines and boilers of ships are currently being drafted by CARB.

Competitor. Besides the ports of San Pedro Bay, other major North American ports considering AMP technology are Houston, Richmond (Virginia), New York/New Jersey, Seattle, Oakland, Tacoma, Vancouver and Philadelphia. In Europe, several ports on the Baltic Sea have indicated their interest in requiring the use of shore-side power, as have the Japanese ports of Tokyo, Yokohama and Nagoya.

SAN PEDRO. The port complex Long Beach and Los Angeles.

➔ nounced its first forays into cold ironing at the ports of Tokyo and nearby Yokohama. An initial project at Tokyo Port next year will involve the installation of a 6,600-volt unit to provide electricity for containerships. Nagoya is likewise looking into introducing cold ironing.

In the absence of an internationally co-ordinated approach to cold ironing, shipowners investing in AMP technology are taking a risk with respect to international compatibility.

A Controversial Issue

While at the ports, everybody seems to have their minds set on cold ironing, the feelings of the shipping industry are mixed. "I do not believe cold ironing to be reasonable," says T.L. Garrett, vice president of the Pacific Merchant Shipping Association (PMSA). "PMSA supports the use of cold ironing, but only where it makes environmental and economic sense for the ports, terminal operators and vessels." Are there enough resources for peaks? Is the shore-side power 'green'? Do vessels call often enough at AMP compatible ports to justify the costs of retrofitting vessels and ports? What are the costs of cold ironing? And how can we use our resources best? So far, all these questions have not been answered, Garrett says.

Installing cold-ironing technology is said to average $ 1.5 million a berth. But it could also be much more. The BP project alone will cost the port $ 18 millions. And BP Shipping estimated the retrofitting costs for one of their vessels to be just over $ 1 million plus an additional $ 2 million in administrative, construction support and additional design and engineering costs. Garrett calculates: "Say, you need seven tonnes of fuel in 24 hours at the dock – compared to 220 tonnes at sea. Even if doubling the price for better fuel at dock, it is still better than paying for cold ironing. I believe it to be more necessary to clean up the vessel for the entire voyage, to improve the global environment, not only California. Let's not spend all resources on cold ironing. Cleaner fuels are easier." Garrett further recommends gradually replacing the existing fleet with ships equipped with cleaner technology.

AMP. GL`s expert Jens Altmann warns of premature investment.

"Do not get a Rolex when there is no need," he politicizes. There are other ways to get the job done, he indicates. "PMSA member companies are already proactively working to reduce emissions by exploring the use of clean-burning bio fuels, employing new 'clean diesel' technologies, and experimenting with other fuels such as propane and natural gas-fuelled terminal equipment." After all, that is exactly what the Clean Air Action Plan was intended to do: challenge companies operating in the ports to come up with better, cleaner ways of doing business.

Jens Altman, Germanischer Lloyd's AMP expert, warns of premature investment before the global shipping community agrees on a common course of action. "As long as ports do not force owners to invest in AMP technology right now, owners are advised to be prepared but delay installations for the time being," he says. To minimize the expense of retrofitting equipment whenever clear regulations are in place, owners should prepare newbuildings now to allow for smooth installation later on. Key measures include installing an upgradeable power control panel and leaving enough space so containerized power supplies, cable reels, switchgear and other equipment may be added at a later time. ■ NL

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When Urgent Help Is Needed

To save lives and the environment in emergency cases at sea: that's the aim of the Emergency Response Service (ERS). A new system of digital data management makes the service more efficient for containerships

For 15 years the Emergency Response Service (ERS) of Germanischer Lloyd has been assisting ships in distress. The dedicated service hotline is available around the clock. Within a few hours, the GL experts can issue rescuing recommendations based on computer models to help safeguard people at sea as well as the maritime environment. In an emergency, the load distribution on a containership plays a critical role. In the past, loading information always had to be entered into the GL computers manually. But recently the ERS team announced a breakthrough: a new process has been developed that will allow data to be transferred digitally from a ship's loading computer. This will help save precious time in the future – and possibly, lives.

"So far, exchanging data at this speed has been impossible since we have been relying on data transmission by fax or e-mail," explains ERS specialist Hanns-Otto Schott. "There was no interface between the loading computers on board ships and HECSALV, our specialized salvaging software." Long lists of data detailing information on every single container had to be transferred manually in a painstaking, labour-intensive process. "When dealing with a 'Mega-Boxer' with over 10,000 container locations, that would border on the impossible," says Norbert Kray, Head of Department, Technical Support. But that is going to change.

The new system, slated to go into operation this year, will allow data to be picked up directly from the loading computer of the ship in distress. "This will not only save us time but also minimize the occurrence of transfer errors and other error sources," Kray emphasizes. The new digital interface uses a common international data format that can be used on all of the 400-plus container vessels registered with the Emergency Response Service. The system is now capable of giving the ERS experts an overview of the load distribution on the ship in a matter of minutes, helping them find quick answers to questions such as: How many containers are on board? Which slots are occupied? What is inside the containers? How do the contents influence the ship's centre of gravity? "This is exactly the type of information we need as a basis for our analyses and the resulting recommendations to the shipowner or the salvaging company," Kray points out. He and his ERS team know that every minute counts in an emergency. The new digital support will not only help them accelerate the rescuing process, it may actually save lives. ■ AM

Photo: iStockphoto

SECURITY ADVANTAGE. China Shipping Container Lines' "Xin Ya Zhou" is ERS certified.

Photo: Hasenpusch

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WHAT DOES THE ERS ACTUALLY DO?

Scenarios. A container vessel runs aground on a mud bank. A cruise ship scrapes a reef. A bulk carrier and a containership jam into each other. A fire breaks out in a cargo hold. The many different scenarios the Emergency Response Service (ERS) has to handle often put people and the environment in grave danger.

Service. The ERS provides competent, detailed stability and strength analyses and recovery recommendations for sea damages. It essentially relies on a computational model incorporating all the technical specifications of the respective ship. The GL ERS experts work with NAPA and HECSALV, a special salvaging software, as well as POSEIDON, the ship design tool developed by Germanischer Lloyd.

Rules. To date, international bodies such as IMO (MARPOL Convention) and INTERTANKO, as well as US authorities have required emergency system subscription for tankers only. Recent US publications indicate that this kind of service, which has been compulsory for oil tankers only, may become mandatory for non-tank vessels calling at Californian ports, as well. GL's list of ERS customers includes ships from all segments: While 60 per cent of all ERS certificates issued to date have been for container ships, 24 per cent of the registered vessels are tankers, and 16 per cent are other ship types such as bulk carriers, ferries or luxury yachts.

PERSPECTIVE. High stacks require a strong focus on safety.

Perfect Balance

The cargo on modern large container carriers is being stacked ever higher. To ensure that the towering boxes do not collapse like a house of cards during heavy weather, the lashing plans must be observed to the letter. Approval of these plans is mandatory at GL

PRECISION. Every container must find its ideal slot.

Photo: Hollmann

Protective, versatile and extremely cost-effective – without the shipping container, the global distribution of labour would simply grind to a halt. Industry and trade have come to regard the smooth functioning of ocean transport and the efficient processing at the "ship/terminal" interface as a perfectly natural occurrence. When pictures of ships with damaged and crushed containers on their decks pop up in the media, the consternation is all the greater. Although such events occur relatively seldom in relation to the absolute volume of containers moved, each individual case must be taken seriously.

As a classification society, Germanischer Lloyd plays a decisive role in maintaining a high standard of cargo safety on board. The rules of GL regarding the stowage and lashing of containers are regarded as trailblazing for the entire industry. The assessment of lashing plans, which is carried out centrally in Hamburg and is mandatory for all containerships with the GL class character "Containership" or "Equipped for carriage of containers", generally takes a few days to complete.

Vertical and Horizontal Stresses

On the one hand, it is essential to ensure that all materials and components for the cell guides, container foundations and lashing elements are supplied by approved manufacturers and also installed according to the regulations. In addition, a large number of forces that act on the stacked containers must be calculated. These can generally be divided into two groups: static forces, which result from the container gross weights from the ship movements; and dynamic forces, which result from the ship's pitching, rolling and heaving movements as well as the action of the wind.

In the final analysis, each individual box must withstand a multitude of vertical and horizontal loads without succumbing to deformation beyond the permissible extent. Below deck, cell guides offer a counter-support, via which the forces are transmitted into the ship. Such a horizontal support is not possible on deck. Twistlocks absorb the lifting, shearing and compression forces and pass them on to other structures.

Only the lowermost two to three tiers can be secured with stacking cones and lashing elements; above them, the containers are only interconnected by means of twist-locks and, additionally in the uppermost layer, crosswise with bridge fittings. Owing to the clearance at the cone adapters and the lower shifting locks, however, even the lower containers are not immune to displacement.

To prevent the cargo stack on deck from toppling or the containers from deforming under load, the necessary lashing and shoring forces as well as the admissible stack weights must be defined exactly. Such calculations require high precision, because every ship has its own special characteristics. The permissible stack weights depend primarily on the transverse acceleration forces, which must be applied in accordance with the ship's size and rolling behaviour. The feasibility limits are set by the containers themselves.

Most Important Parameters

According to the ISO standard, the deformation forces acting laterally on the transverse framework of the containers (racking load) must not exceed 150 kilonewtons (where one kN corresponds to 101.97 kg of force). The maximum load on the upper corner casting for containers produced in 2007 or later is then is then 942 kilonewtons (96.06 t). For older boxes, the limit is 848 kilonewtons. →

LASHING

Right Way to Stack Containers

For the safe stowage of containers on deck, thick rods of high-tensile steel with turnbuckles are used; these are attached crosswise from the ends of the lower two containers to the hatch covers.

To anchor the containers, there are special lashing plates ("pad eyes") on deck and on the hatches. Despite these measures, containers sometimes tear loose and are lost overboard in heavy seas. In a storm, the crew has no chance of checking and correcting the fastenings of the fifth or sixth tier – with the outer two rows totally out of the question.

In view of the lifting forces that arise from the rolling of the ship and are increased by the high stowage configuration and the high compression forces on the lowest deck containers, it is often only possible to carry empty containers in the topmost tiers.

Besides compliance with the admissible lashing forces, the stability criteria for the ship itself are crucial. The forces caused by the higher stacking and the effect of the wind and waves must be absorbed by the lashing system.

Photo: Eberhard Petzold

➔ "These are probably the two most important parameters," explains Frank Nitsch, container stowage expert at GL. Calculation and assessment of the lashing plans for the large and sluggish containerships, i.e. from the post-Panamax class and upwards, are particularly time-consuming. Owing to the transverse acceleration factors, says Nitsch, the formulae in common use can only be used to a limited extent, making it necessary to perform specific acceleration analyses.

Each classification society has its own assumptions and empirical values, which means that the guidelines and rules on stowage and lashing issued by the various IACS societies are not harmonized. The general aim is to achieve the best possible capacity utilization of the ships while observing all the safety standards – in other words: the optimum solution for both shipowner and charterer. Thanks to its decades of experience Germanischer Lloyd occupies a leading role in this field.

Photo: Hollmann

PROTECTION. On the bottom tiers, containers are reinforced by bolted-on cross braces made of high-strength steel.

The Limits to Loading

By now, the shipping companies and lashing equipment manufacturers have exhausted almost all the technical possibilities. With stacking heights of seven to eight tiers on deck, only empty containers can be carried in the upper zone, because the centre of gravity would be moved up too far.

For even greater stack weights, the containers would have to be reinforced adequately. At the International Standards Organization (ISO), the design requirements for sea containers are reviewed at regular intervals. For example, the permissible corner post load for new boxes was recently increased. "The elevation of the standard will only come into effect for everyday practice in a number of years," says Nitsch. "As long as millions of older containers are in circulation, the regulations cannot be changed. After all, there just might be a weakling right at the bottom of the stack."

Shipping companies are able to gain some leeway with the stack weights by installing additional lashing equipment. As a rule, the containers are lashed up to the second tier. The use of lashing bridges one or two tiers high enhances the effectiveness of the lashings. As a result, the pre-stressing can be reduced, and so the permissible gross weight of the boxes can be increased. However, the higher capital expenditure must be taken into account.

Stacking higher also means that the tolerances for error are shaved. If some heavy containers are stowed in higher tiers by accident incalculable risks arise. This is because truck scales with which the container weights can be checked are not always available in the ports. In practice, it has repeatedly been found that cargo weights are stated too low – partly by mistake but partly on purpose, because the shippers want to obtain lower freight rates. ■ MPH

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Photo: OPDR

Photo: Hasenpusch

TIME PRESSURE. Loading at the terminal is performed at high speed.

ORGANIZATION. In international shipping, you rarely see a freighter deck arranged as neatly as this one.

Short-Sea Transport in Need of Standards

Standard containers are primarily used in overseas shipping. On shorter routes, sizes are much more varied – a major challenge for loading experts

The shipping container is both a symbol and a driver for the evolution and simplification of multimodal transport. But not all containers are the same. Upon closer examination, it becomes evident that the standardization of dimensions and stability of these convenient cargo boxes is de facto limited to very large overseas transports. The 20, 40 and 45-foot ISO containers and their 'high-cube' variants, which are a foot higher, predominate in this world.

The picture becomes more diverse in the various regional markets, where the ocean containers have to rub sides on the same ship with local, exotic variants during their delivery at the different ports. The dividing line between feeder and short-sea transports is fairly blurred.

Confusing Complexity

For a more economical utilization, many short-sea shipping companies also take along feeder containers and vice versa. For US coastal traffic, 53-foot containers are the order of the day, whereas in Europe there are 2.50-metre-wide 40-foot containers, tank containers and, increasingly often, 45-foot containers (2.44 metres wide).

The latter type offers the same payload volume as the 13.60 metre long truck-trailers used on the road and is therefore well suited as an instrument for the onward carriage by sea.

Well Planned is Already Half Stowed

The only feature that all container types have in common is the 2,259-mm transverse distance between the hole centres of the corner fittings, into which the twistlocks are inserted. For the safe stowage of the different boxes, special arrangements must be made on the ships as a rule.

Some vessels are fitted with adjustable cell guides, while others carry the containers free in the hold and brace them with diverse securing elements, such as double cone adapters. On the whole, the stowing effort increases considerably as a result, although the processing in the ports always takes place under increasing time pressure.

Another difficulty is that the planning and execution of the transports has to take place through a large number of interfaces. The ships, which frequently belong to German funds, are managed by operating companies and chartered by feeder shipping firms.

The transport customers of the charterers are then overseas shipping companies, forwarders, major shippers and leasing firms. The loading and stowage planning process is organized by the ship planner of the charterer, while the actual work is supervised by the chief officer. There is also a ship planner at the terminal operator, who also has a say in the stowage planning.

Poor communication between the participants, the great variety of equipment, and the rising deadline pressure mean that the specifications of the lashing plan are sometimes "bent" a little. A glaring spotlight on the defects in cargo planning was cast by the accident of the 868-TEU carrier "Annabella" in February 2007.

Rules Mitigate Risk

On a voyage from Rotterdam to Helsinki, a stack of containers, which included hazardous goods, collapsed. In this event, the British Marine Accident Investigation Branch (MAIB) saw confirmation of its suspicion that the "safety of ships, crews and the environment is being compromised by the overriding desire to maintain established schedules or optimize port turnaround times".

In the MAIB's opinion, the work procedures in container transport must therefore be defined more precisely through a best-practice code for all players.

Photo: Hollmann

KNOW-HOW. Different container sizes require additional safety measures.

Photo: Team Lines

AN ART FORM. For short-sea shipping, many different types of containers must be stowed securely.

service

Dates at a Glance

MARCH

10.03.2008 – 13.03.2008
Seatrade Cruise Shipping
Miami, USA
www.cruiseshipping.net

10.03.2008 – 13.03.2008
Gastech
Bangkok, Thailand
www.gastech.co.uk

11.03.2008 – 14.03.2008
Vietship
Hanoi, Vietnam
www.cisvn.com

12.03.2008 – 13.03.2008
Marine Propulsion Conference
London, England
www.rivieramm.com/events
▸ "Operational Challenges: Reliability and Repair of Large Propellers – extension of propeller welding repairs for a higher availability of ships"
Lecture by Dr Andreas Junglewitz (GL), 13.03., 10 a.m.

31.03.2008 – 03.04.2008
EWEC
Brussels, Belgium
www.ewec2008.info

APRIL

02.04.2008 – 03.04.2008
Conference **Underwater Technology** (in German)
Hamburg, Germany

09.04.2008 – 11.04.2008
Sea Japan
Tokyo, Japan
www.seajapan.ne.jp/eng

20.04.2008 – 23.04.2008
Intertanko
Istanbul, Turkey
www.intertanko.com

21.04.2008 – 25.04.2008
Hannover Messe
Hanover, Germany
www.hannovermesse.de

MAY

05.05.2008 – 08.05.2008
OTC
Houston, USA
www.otcnet.org/2008/index

07.05.2008 – 08.05.2008
Conference **Welding in Shipbuilding and Civil Engineering** (in German)
Hamburg, Germany

21.05.2008 – 22.05.2008
Defence Technology Asia
Singapore
www.defencedirectory.com

JUNE

01.06.2008 – 04.06.2008
Windpower
Houston, USA
www.windpowerexpo.org

02.06.2008 – 06.06.2008
Posidonia
Athens, Greece
www.posidonia-events.com

10.06.2008 – 12.06.2008
Global Petroleum Show
Calgary, Canada
www.petroleumshow.com

24.06.2008 – 26.06.2008
Windpower Asia
Beijing, China
www.windpowerasia.com

25.06.2008 – 27.06.2008
Neftegaz
Moscow, Russia
www.neftegaz-expo.re/en

SEPTEMBER

09.09.2008 – 13.09.2008
Husum WindEnergy
Husum, Germany
www.husumwind.com

Rules for Classification and Construction

Our latest brochures, rules and guidelines are available on request. Order forms are available on the internet:
www.gl-group.com > Client Support > Rules & Guidelines

I – Ship Technology
Part 0 – Classification and Surveys

	2008-02-01

Part 1 – Seagoing Ships
Chapter 4

Automation	2008-02-01

IV – Industrial Services
Part 6 – Offshore Technology
Chapter 4

Structural Design	2007-12-01

VI – Additional Rules and Guidelines
Part 3 – Machinery Installations
Chapter 5

Guidelines for Design, Equipment and Testing of Gas Welding Installations on Seagoing Ships	2008-02-01

Part 11 – Other Operations and Systems
Chapter 6

Guidelines for the Preparation of Damage Stability Calculations and Damage Control Documentation on Board	2008-01-15

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Photo: Dreamstime

Staff Changes

Jörg Jahn has been appointed as Area Manager Southeast Europe and is responsible for the field of Austria, Bulgaria, Croatia, the Czech Republic, Hungary, Romania, Serbia, Slovakia and Slovenia. He follows Wolfgang Steffen.

Dr Holger Manzke is the new Country Manager Philippines. His last position was surveyor in Changwon, Korea.

Hee Eul Park is Station Manager Subic//Hanjin in the Philippines since October 2007 The Korean national was before Station Manager Yeosu/Daehan in Korea.

Dario Brkic is Station Manager of GL Geoje Samsung Station (incl. Sungdong Site Office) since October 2007. In Geoje the previous position of the Croatian naval architect was Deputy Station Manager.

GL Academy

Selected Seminars (in English) – information and registration: academy@gl-group.com

MARCH

11.03.2008
Damages to Hull and Equipment
Hamburg, Germany

18.03.2008
Damages to Machinery and Repairs
Hamburg, Germany

19.03. – 20.03.2008
Internal Auditor ISM/DIN EN ISO 9001 for Shipping Companies
Piraeus, Greece

APRIL

01.04. – 02.04.2008
Internal Auditor ISM/ISO 9001:2000 for Shipping Companies
Hamburg, Germany

09.04. – 10.04.2008
Implementation and Internal Auditing of an Environmental Management System in Shipping Companies
Piraeus, Greece

16.04.2008
Containerships – Technical and Operational Aspects
Hamburg, Germany

23.04.2008
Managing Newbuildings
Hamburg, Germany

24.04.2008
Damages to Hull and Equipment
St. Petersburg, Russia

MAY

05.05.2008
Maritime Casualty Investigation in Shipping Companies
Hamburg, Germany

19.05. – 20.05.2008
Company/Ship Security Officer (CSO/SSO) Training Course
Hamburg, Germany

25.05. – 31.05.2008
Certified Coating Inspector According IMO PSPC
Hamburg, Germany

28.05.2008
ISPS Internal Auditor for Shipping Companies
Hamburg, Germany

29.05.2008
US-Ports Requirements for Ship and Operator
Hamburg, Germany

JUNE

10.06. – 11.06.2008
TMSA Workshop – Risk Assessment, Change Management, Incident Investigation
Piraeus, Greece

26.06.2008
ISM for Ship Management Personnel
Saint Petersburg, Russia

AUGUST

28.08.2008
Latest Amendments to Maritime Regulations
Saint Petersburg, Russia

28.08.2008
Port State Control Basics
Saint Petersburg, Russia

OCTOBER

15.10.2008
Practical Aspects of Corrosion Protection for Shipping Companies and Shipyards
Piraeus, Greece

IMPRINT

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news

EXECUTIVE. Pekka Paasivaara is now responsible for GL's Industrial Services.

INDUSTRIAL SERVICES

GL Extends Executive Board

Pekka Paasivaara is a new Member of the Executive Board at Germanischer Lloyd AG. The Finn will be responsible for the strongly growing Industrial Services segment.

Experienced manager. So far, the 46-year-old Paasivaara has been Member of the Executive Board at Lenze AG, a manufacturer of drive and automation technology headquartered in the German town of Hameln. In this position he was responsible for all sales, service and marketing issues. Before that, the economist headed the Drive and Control Technology Department at Bosch Rexroth; he has also worked for ABB.

With GL's Industrial Services Paasivaara will be in charge of an extensively growing business segment. "I am looking forward to contributing effectively to the dynamic expansion for the Industrial Services," says Pekka Paasivaara. Both the shareholders and the Supervisory Board are delighted to have found a qualified manager who will advance the organic and inorganic growth of Germanischer Lloyd.

ENERGY

Making the Best of Your Budget

Power distribution models are used by utility companies in their planning, reliability assurance, operations and system protection activities. Large sets of data need to be collected to build these models. Where does the data come from? When is accuracy important and where are estimates sufficient? What are the benefits and drawbacks to models that are more and less granular? Is there an 80/20 Rule for collecting model data?

Accurate data. The collection and management of simulation data is expensive. In his paper presented at the DistribuTECH fair in the USA, Larry Trussell, Principal Electrical Engineer, Advantica Electric, shared some guidelines that can help assess the importance or triviality of general classes of distribution modelling data. He also discussed the instances when accurate data is needed.

Diverse samples of working utility models reveal the correlation between engineering results, such as voltage, loading, SAIFI or fault level, and the confidence intervals of key modelling parameters such as line length, load values, load placement, phasing, lateral detail, conductor coordinates, etc.

The intention of the paper is to share ideas about where the most benefit can be achieved within a given model building budget.

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Photos: Michael Bogumil

Photo: H. Grobe/AWI

ICEBREAKER. "Polarstern" rescued "Naja Arctica" which had been trapped in pack ice. Onboard the freighter was the German Antarctic research station "Neumayer III".

NEUMAYER III

Icebreaker "Polarstern" Clears the Way

Construction of the new Antarctic research station "Neumayer III" of the German national polar research foundation Alfred-Wegener-Institut (AWI) is now underway, four weeks behind schedule. On her way to Antarctica with a thousand tonnes of station components onboard, freighter "Naja Arctica" got trapped in pack ice. German icebreaker "Polarstern" had to be brought in to break through the pack ice up to 5 m thick so "Naja Arctica" could finally complete her mission.

GL-certified. In December 2006, AWI had asked GL to certify the entire accomodation and working complex for "Neumayer III", built of thermally insulated containers (nonstop 04/07). Apart from inspecting and testing the handling, safety and energy supply equipment, GL certified the 16 hydraulically-operated support posts, which allow the station to adapt dynamically to changing snow levels. The station is scheduled to go into operation in the spring of 2009.

GEARBOXES

Dynamic Loads

Wind turbine gearboxes must meet tough safety requirements. Besides stepping up the rpm, their job is to ensure maximum availability while withstanding high dynamic loads. At the Dresden Colloquium on Machine Elements (DMK) held in late 2007, Rainer Grzybowski and Dr Karl Steingröver of GL Wind Energy examined current requirements and international standards for wind turbine gearboxes.

More simulations needed. The drive train of a wind turbine is too complex to assess its operational safety by simply looking at the strength of individual components, they explained. Simulating the dynamic operation of the drive train is a much more promising approach. It will play a pivotal role in future standards and directives for wind turbines.

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GLP

Know-how for Experts

They came from all over Europe, from Asia and even from Africa: In January, GL surveyors joined for a training workshop to hone their skills in material and failure analysis. Continued education is standard practice at Germanischer Lloyd. Collaborating closely with GL's lines of business, subsidiary Germanischer Lloyd Prüflabor GmbH (GLP) offers training programmes with a focus on the practical aspects of destructive and non-destructive testing. Apart from routine testing using the latest methods and equipment, GLP provides failure analysis and assistance with issues and problems relating to materials technology.

Volatile Coal

Coal gasification is a time-honoured technology. But today's sophisticated approaches are high-tech, making this efficient, environment-friendly technology ideal for countries with rich coal deposits but few natural gas reserves

HISTORY. Car using a wood gasifier in the post-war era.

Photo: iStockphoto

During times of economic need between 1945 and the mid-50s, motor vehicles powered by wood gasifiers were a common sight on Europe's streets. The principle was simple: A solid basic material is converted into a combustible gas that can power an engine, boiler or turbine to generate energy for a variety of purposes. In the past, gasifiers were often rather simple by design, and after a few years, wood gasifier-powered cars and trucks disappeared from public roads.

Producing gas to generate useful energy has once again moved into focus. While the basic principle hasn't changed, the smoking gasifiers of the old days are now being replaced by highly sophisticated, high-tech systems. The basic fuel is no longer wood or organic waste but coal.

In recent decades, scientists and engineers have developed numerous methods of turning coal into gas. The raw gas produced can be purified and used directly as a fuel for generating electricity or as a raw material for chemical processes. Further processing can even convert it into Substitute Natural Gas (SNG).

High Efficiency

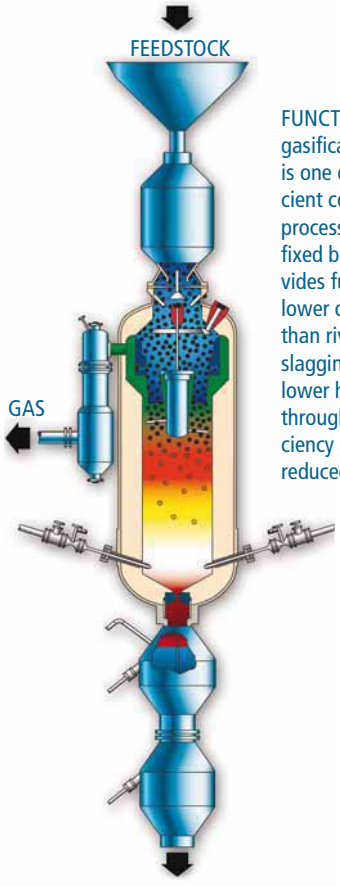
British enterprise Advantica, which became a subsidiary of Germanischer Lloyd on 31 August 2007, is joined licensors with German company Envirotherm of a promising technology the so-called "BGL Gasifier". "The process is highly efficient – it converts nearly 94 per cent of the energy content of coal into useable gas," says Mike

SOLID-BED PRESSURE GASIFIER: MAKING GAS FROM COAL

The BGL Process (named after the project partners, British Gas and Lurgi) gasifies chunks of coal no larger than 50 mm. Introduced from the top end into a pressure vessel, they drop down towards the bottom of the vessel against an upward flow of hot gas. The gas flow results from a combustion process in the lower part of the pressure vessel. A part of the coal drops all the way down into the combustion zone (the "solid bed"). In the combustion zone, these coal pieces burn in the presence of added oxygen to provide the required process heat.

But most of the coal never reaches the combustion zone; instead, it is converted into the desired mixture of carbon monoxide and hydrogen in the middle section of the pressure vessel, the gasification zone, under the influence of added steam. In the uppermost section of the vessel, the rising hot gas preheats the coal pieces as they fall down into the vessel, simultaneously causing volatile coal components to be expelled from the coal (devolatilization). The high working pressure inside the vessel, ranging between 25 and 70 bars, promotes the gasification process. The same method can be applied for gasifying other organic solid basic materials, as well.

PLANT. The BGL gasification technology is one of the most efficient coal gasification processes available.



FUNCTIONALITY. BGL gasification technology is one of the most efficient coal gasification processes available. The fixed bed operation provides fuel flexibility and lower oxygen demand than rival processes. The slagging process in the lower half offers greater throughput, higher efficiency and dramatically reduced steam usage.

Pritchard, head of Advantica's coal gasification department.

The German-British cooperation in the BGL process has a long tradition. The process is the result of a joint research and demonstration programme launched in the 70s by British Gas and Lurgi Energie und Umwelt GmbH in response to the crisis on the oil market at the time. The development project produced a gasifier only 120 cm in diameter, yet capable of processing 200 tonnes of coal per day. This delivered proof that a combined gas and steam turbine power plant with integrated coal gasification (a process officially named Integrated Gasification Combined Cycle, or IGCC) can be operated very flexibly, economically and with low environmental impact.

This result can be put to use immediately: "The BGL technology is going to be installed in a coal gasification plant in North Dakota, USA," Pritchard explains. "We are technical consultants for the project." The plant will produce syngas, an option that will boost further development of the technology in the USA where the gas will be used to power IGCC power plants.

A demonstration plant has been operating in China since 2006. In this installation, Advantica technology has been combined a gasifier designed in recent years by a local partner. The purpose of the plant is to demonstrate that local brown coal can be gasified both efficiently and with low environmental impact. "China already has more gasification plants than any other country," says Pritchard. "More than 25 projects are in the development stage right now."

New Uses for Coal

Experts say the technology is especially attractive for countries that are rich in coal but poor in natural gas reserves. It will be used primarily by the chemical industry for processes such as methanol synthesis, rather than for generating power. Pritchard also anticipates growing markets in Europe: "A variety of possible uses is being discussed here at the moment."

Advantica is a major player in the field: The company not only has technology of its own, it also has the expertise to model various gasification processes for use in power plants and to evaluate their comparative efficiency. "Just recently we were able to put this know-how to use for a major customer in the UK, preparing comparative studies of various different gasification plants across the full bandwidth of the technology," Pritchard reports. ■ JI

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A TECHNOLOGY WITH A FUTURE

Coal gasification methods are currently experiencing a revival. Experts predict a great future, since the gas it produces can be used directly as a fuel for power generation – in a process that is much less damaging to the environment than coal-burning power plants. Gasification can therefore contribute to climate protection. The gas produced in the gasification process can also be used as a basic material for many chemical applications, including synthetic automotive fuels and oil substitutes. The demand is rising.

The same technology can be applied to gasify other carbon-containing materials, as well. A major field of application is gasification of domestic waste and wood. Great hopes placed in underground coal gasification in recent years have lead to a surge in research and development efforts. As with other alternative energy sources, rising, volatile energy costs and the approaching "mid depletion point" in global oil and gas reserves are the driving forces. Technically complex processes are becoming feasible. In underground coal gasification, water and oxygen are forced into low-lying coal seams, whereupon the gasification process is initiated by artificial ignition.

PRECISION.
Not least, the quality of container distribution is a question of punctuality.

Photo: iStockphoto

Globalizing Comparability

As containerships get bigger and more efficient, port logistics have a hard time keeping up. For both ships and ports, speed, safety and cost-efficiency are key issues. A global quality standard is needed to provide a basis for comparative assessment of container ports – and to help them shed their negative image of being the weakest link in the logistics chain

Twenty years – this is how long it often takes from the development of an initial concept through the planning and construction stages until a new container terminal can finally go into operation. That is too long if you consider the rapidly increasing numbers of containers that need to be handled and forwarded by these terminals. Indeed, there is an enormous discrepancy between the observed increase of container volumes and the commitment of investment capital for new terminals and the necessary infrastructure, including integration with the hinterland. Time delays, excessive truck waiting times and frustration among employees and customers alike are the results of congested container terminals and organizational bottlenecks.

Optimizing container port operations is therefore among the top priorities on the agenda of the international shipping industry. The new "Container Terminal Quality Indicator" (CTQI) is a major accomplishment for the shipping world. This standard is the result of an unprecedented global collaborative effort of a variety of peer groups with one common goal: To make container port performance more transparent. By developing indicators as a means of quantifying and comparing terminal quality, the authors of the standard created a basis for assessing container port performance.

Global Growth

Only the best terminals will be able to keep up with the growing demand in the long term: Between 1986 and 2005, global container traffic increased from about 50 million TEU to 425 million TEU. The 20 largest terminals boosted their throughput from 126 million TEU in 2002 to 208 million TEU in 2006 (refer to table). The world's leading ports in terms of containers handled are six Asian ports. But a look at Baltic Sea ports can be quite revealing, as well. St. Petersburg, for example, recorded a sixfold increase between 2002 and 2006 to 1,450,000 TEU; Kaliningrad experienced similar growth from 27,871 to 151,047 TEU. In Poland, Gdynia nearly doubled its throughput to 461,170 TEU, while Klaipeda, Lithuania tripled its figures to 231,548 TEU.

These sometimes triple-digit growth rates have been far ahead of earlier forecasts. And the numbers are expected to continue rising at impressive rates during the coming years. In its ocean traffic forecast published in May 2007, the German Federal Ministry of Transportation anticipated an increase of the container volumes handled by German seaports from 10.8 million TEU in 2004 to 45.3 million TEU in 2025. Clarkson Research expect international container traffic to increase by more than 50 per cent between 2006 and 2012 to total approximately 650 million TEU by the end of that time period. The driving forces in this development are the Asian nations, especially China.

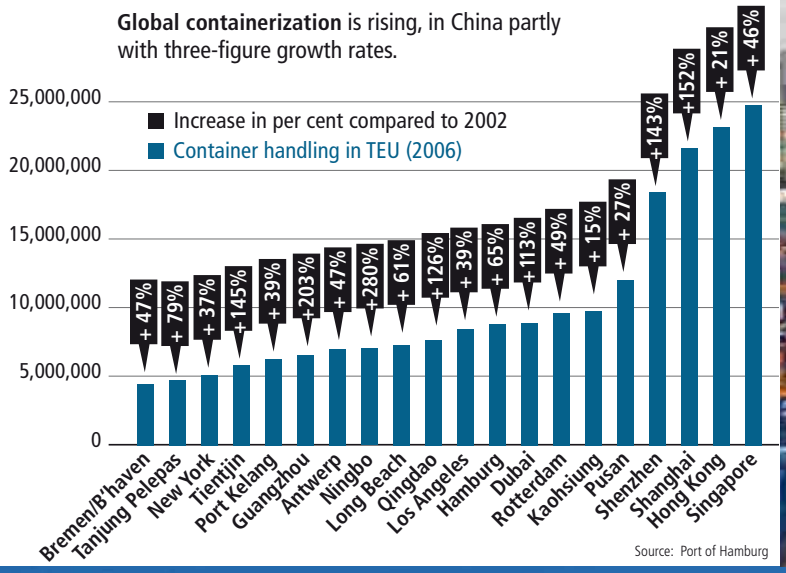
Measures such as expanding piers, adding cranes, terminal space and staff or upgrading port management will not be sufficient to accommodate these enormous growth rates. Providing an infrastructure that will allow containers to move smoothly between ports and the hinterland is just as essential. The German ocean traffic forecast predicts that rail traffic to and from the ports of Hamburg, Bremen/Bremerhaven and Wilhelmshaven will increase substantially between now and 2015. While a total of 349 trains served these ports each day in 2005 – 171 of them hauling containers – the forecast estimates that number to rise to as many as 633 trains per day in 2015, representing a 230 per cent increase.

Inadequate Logistics Drive up Costs

Studies conducted by the EU Commission conclude that inefficient logistics are impacting product prices and quality. Estimates vary by segment, attributing 12 to 20 per cent of the end price to logistics. The EU Commission has proposed more than 30 specific actions for the coming years to avoid a catastrophic breakdown of freight transportation on the roads, rails, waterways and in the ports of →

The Top 20 Container Ports

Global containerization is rising, in China partly with three-figure growth rates.



Source: Port of Hamburg

CHAMPION. Singapore defends its leading position in the container port ranking.

Photo: iStockphoto

→ Europe. To improve the quality of logistics services, the EU commission endeavours to eliminate 500 bottlenecks it has identified as unnecessary obstacles to efficient cargo transit. Under the programme, new port capacity will be created while existing capacities will be optimized.

EU and GIL Join Forces

As if by command, EU Transportation Commissioner Jacques Barrot and Kieran F. Ring, President of the New York Global Institute of Logistics (GIL) both publicly stated in the spring of 2007 that the performance and quality of container terminals were in need of critical assessment and improvement. The European Union presented an action plan, announcing legislative initiatives to address five key challenges: To increase the efficiency and productivity of ports, expand investment capabilities, modernize the international port system, ensure equal competition rules and account for the human factor as part of a renewed social dialogue. In mid-2006, GIL asked Germanischer Lloyd to draft a standard for measuring container terminal performance and quality.

Under the leadership of chief co-ordinator Wilhelm Loskot, head of the Shipping and Logistics Department with Germanischer Lloyd, representatives of the international maritime logistics industry – including organizations such as EUROGATE, Hamburger Hafen und Logistik AG (HHLA), Yantian, GIL, IPC, MTC as well as the European Shippers' Council (ESC) – got down to brass tacks and came up with a "Container Terminal Quality Indicator" (CTQI). "There had never before been such a standard applicable and acknowledged around the world. With our certification system we want to help make container terminal performance and quality standards quantifiable and transparent," says Loskot. This should correct the general perception of container terminals as the weakest link in the logistic chain in the foreseeable future.

There are roughly 700 container ports around the world. Germanischer Lloyd experts are anticipating an initial project phase comprising 100 container terminals to be certified. "These will be the absolute top-performing ports, the cream of the crop," says Loskot. But to be able to adorn their office walls with a CTQI certificate, terminal managers will have to have their terminals X-rayed in every detail, and build their organizational structures to ensure optimal effectiveness.

Measuring, Weighing and Assessing

Once all the requirements can be met, auditors will examine two main areas referred to as "Internal Factors" and "External Factors". They will scrutinize aspects such as the availability of properly-dimensioned cranes or the efficiency of loading and unloading container trains, trucks and river barges. The audit will include communication and planning skills and capabilities, as well as adequate transportation links with the hinterland and the inland waterway system.

The "Performance Evaluation" will result in a set of key performance indicators (KPIs), the core elements of the CTQI standard, reflecting the actual performance and quality level of a terminal. Seven aspects are assessed individually and weighed differently. A terminal can reach a maximum of 100 points. The final assessment includes the areas of performance evaluation, ship productivity, gross crane productivity, as well as the berth working index, ship service quality index, road service quality index, rail service quality index and barge service quality index.

The first certification audits are scheduled for the spring of 2008, says Loskot. "This will be the first time we will be able to do objective assessments. The Container Terminal Quality Indicator provides customers around the globe with unified, consistent criteria for gauging the quality of a container terminal." ■ JH

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COASTAL REGION. Wind energy plants belong to the scenery.

Among Sheep and Windmills

Experts around the world are discussing the options for mitigating climate change. One option – vigorous development of wind energy – was the object of study for a group of scientists

The weather was grey and stormy, rainy and dreary: Germany's north wasn't exactly showing off its sunny side when more than 30 delegates of the Intergovernmental Panel on Climate Change (IPCC) were welcomed at WINDTEST Kaiser-Wilhelm-Koog in mid-January. The wind definitely matched the agenda.

The scientists from the IPCC were able to spend the day before the beginning of the conference visiting selected renewable energy demonstration sites in the area. Many of them gladly accepted this offer before immersing themselves in the discussions and consultations about possible measures to fight global warming. Also on the agenda was a new UN Special Report that needed to be drafted. Invited by the co-chairman of the working group, Professor Dr Olav Hohmeyer of Flensburg University, a total number of 120 scientists from over 50 countries gathered in Lübeck to talk about the use of renewable energy sources.

The delegates visiting the WINDTEST Kaiser-Wilhelm-Koog site learned from Hohmeyer about the development and current status of wind energy generation in Germany. Germany is among the markets that have pioneered wind energy. It has an installed capacity of over 22.3 GW, followed by the U.S. (16.8 GW), Spain (15.1 GW), India (8 GW) and China (6.1 GW). The modern history of wind power in Germany got off to a dramatic start in 1983 with the installation and trial operation of GROWIAN, short for "Large Wind Power Plant". The first commercial onshore wind farm in Germany went on-line in August 1987.

WINDTEST was a perfect destination for an excursion since the experts enjoy an excellent reputation internationally for their research on wind energy systems, as well as for their expert consulting services on wind conditions, energy output and possible impacts – such as shadows and noise emissions – of wind power projects. The discussion with the IPCC scientists also brought up challenges associated with offshore wind farms, such as possible interference with marine organisms or power grid connection issues.

Different Renewable Energy Policies

Guest speaker Marten Jensen, Managing Director of the German wind power consulting firm GEO, began his presentation with an overview of prospective wind energy capacities in the North Sea and Baltic Sea areas. He highlighted perspectives and plans and explained potential repowering projects to enhance the output of existing onshore turbines. His speech was followed by a lively discussion among the IPCC experts about subsidies for renewables. It became obvious that renewable energy policies are very different from one country to another. Germany stands out, having introduced a new law in 2000 that established an efficient instrument for promoting renewable energy projects. The law intends to achieve a sustainable increase of the share of wind, solar, hydroelectric, biomass and other renewables in the nation's total energy output.

Later the scientists took another walk through the drizzle and wind outside to have a look at a WK 60 II nacelle tied down on the ground at the WINDTEST site. Inside the unit, Christoph Thiel, Business Development Manager at WINDTEST Kaiser-Wilhelm-Koog GmbH, explained to the experts the individual components of a wind turbine and their respective functions. The nacelle, part of the Western Coast Wind Farm EXPO project, used to sit atop a tower 50 metres tall, generating 1,200 kW of power. ■ SG

EXPERTS. Climatologists listened to wind energy specialists.

ABOUT IPCC (INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE)

The IPCC was established to provide decision-makers with an objective source of information about the climate change. The purpose of the organization is to assess on a comprehensive, objective, open and transparent basis the latest scientific literature produced worldwide relevant to the understanding of the risk of human-induced climate change, its observed and projected impacts, as well as options for adaptation and mitigation. IPCC reports are politically neutral while dealing objectively with scientific, technical and socio-economic factors including their political implication. The IPCC is a scientific intergovernmental body set up by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) in 1988. The organization shared the 2007 Nobel Peace Prize with Al Gore.

Ships in Shackles

Germanischer Lloyd uses a numerical model to analyse, assess and optimize the deployment of mooring systems

Theory cannot substitute practical implementation – but it certainly helps to understand it better. An important aspect of understanding the behaviour of a technical system is to apply mathematical and physical methods to analyse it and make predictions. Being able to observe the reactions of a system under a variety of conditions right from the engineer's desk has a certain appeal. Thomas Schellin, a GL engineer with a PhD who specializes in anchoring systems, knows about the power of such analyses. Under the right conditions, analyses can render many costly tests superfluous and ensure the resulting system will not be over-dimensioned just because the real-life requirements could not be determined accurately enough.

Thomas Schellin's area of specialization is Single Point Mooring systems (SPM). "Major research efforts have been made in recent decades to better understand the dynamics of these systems," he points out. He has developed a theoretical numerical model for studying the effects of currents, wind and waves on these mooring and loading systems.

Leading Evaluation

To give an example: In 2002, dry bulk operator Oldendorff Carriers installed the world's largest marine coal loading and unloading terminal in the Bay of Iskenderun off southern Turkey. The terminal has a handling capacity of 3.2 million tonnes per annum. The coal is brought in by a 240,000-dwt bulk carrier and transferred via the world's largest floating coal transshipment terminal to two barges, each over 100 metres long. In stormy weather, the barges and the bulk carrier each moor on a Catenary Anchor Leg Mooring [CALM] system, a type that has been in use for decades. While there is nothing novel about this technology, the designers had to answer the question what movements the barges and the transshipment terminal should be expected to make, and which SPM system would be optimal for the given case.

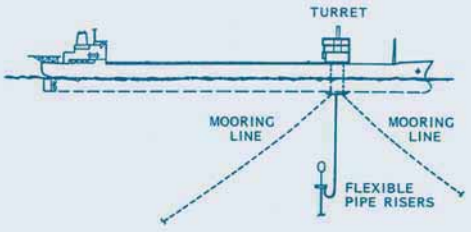
Schellin based his analysis on the assumption of a three-hour storm with wind speeds of 34 m/s and a significant wave height of 6.5 metres in the Gulf of Iskenderun. "Our model allows us to compare the safety and feasibility of all systems that are being considered for a given project," explains Schellin, underscoring the advantages of his approach. "It delivers valuable input for designing the system, helping us to avoid unreasonably over-dimensioned safety margins, chains or foundations."

Schellin's model has demonstrated, for example, that a tanker moored to an SPM buoy while exposed to a strong current can be kept relatively steady by simply offsetting the rope attachment point towards the mid-section of the ship, thereby reducing the stresses acting on the anchoring system. But analytics are not only helpful for designers. Analyses can also assist in the development of instructions for ship masters on how to minimize the forces influencing

MOORING SYSTEMS AT A GLANCE

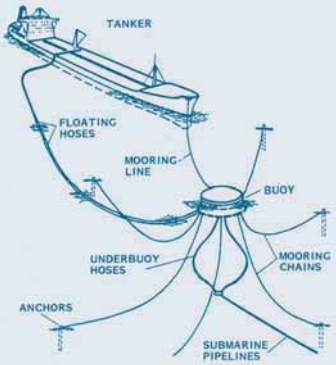
Maritime engineers categorize single-point mooring systems as "dual systems", consisting of anchoring and loading/unloading equipment. Experts discuss SPM systems mainly as a means for the oil industry to transfer oil from the well to the coast. There are three types of SPM systems:

Internal Turret Mooring (ITM):
The ITM system essentially integrates the buoy into the ship. The hawsers are attached to a revolving turret inside the ship body, and their mooring line ends are taken to the anchoring points by tugs. The ship is loaded using a riser that attaches to the underside of the turret.



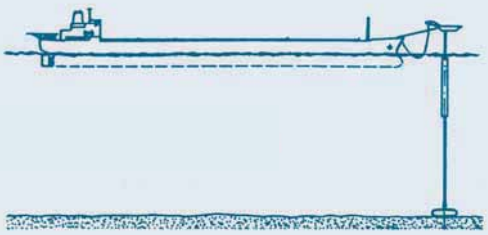
ATM. Filling a tanker at Russian oil field.

Photo: Sakhalin1-Project



Single Buoy Mooring (SBM):
An SBM system consists of a buoy anchored in a star pattern and equipped with a swivelling head that provides attachment points for the hawser as well as the floating hose coupling. The ship can freely weathervane around the buoy according to the local weather and current conditions. Both connections can be released quickly, an important feature in adverse weather. In addition, SBM systems can accommodate a variety of buoy or ship-based loading boom designs.

Articulated Tower Mooring (ATM):
The ATM system is a guided single-point mooring system. It is anchored to a piled foundation on the ocean floor by way of an articulated tower. Similar to a star-patterned anchoring system, ships can moor using bow hawsers or a boom-type structure. The articulated tower doubles as a riser terminal for loading and unloading.



the anchoring system by specifying clearly-defined operating states. "In the case of the tanker, we were able to identify two possible actions to take," says Schellin. "Placing the rudder into a certain position will reduce the forces acting on the anchoring system by two-thirds. And making the propeller run backwards will achieve a similar effect."

Marginal Fields Need SPM Systems

Especially the second option may not sound convincing at first. But Schellin's mooring analysis showed that peak loads on the hawsers are caused by the ship's swinging motion, which can be avoided by letting the propeller run backwards. Considering the growing number of SPM installations, the importance of this analytical model for the industry can be expected to increase over the coming years. "SPM systems are used wherever permanent, protected loading and unloading facilities are lacking and cannot be built feasibly," says Schellin. As marginal oil and gas fields are moving into focus that can be exploited using floating production equipment only, mobile, single-point mooring systems are gaining importance. ■ JI

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Photo: istockphoto

"I had a Dream!"

New ships from Bangladesh – with GL class, of course: For Choudhury F. Zaman, Germanischer Lloyd Country Manager, this is a highlight of a long career

Photo: Micheal Bogumil

CONFIDENT. GL Country Manager Choudhury F. Zaman is predicting a grand future for the shipbuilding industry of Bangladesh.

Bangladesh is not especially well-known for its shipbuilding activities. But in 2007, the country at the Bay of Bengal embarked on a new mission – to emerge as a major player in shipbuilding.

It all began when Ananda Shipyard, the largest shipbuilding and ship repair yard in Bangladesh, signed a contract for twelve new 5,500-dwt multi-purpose vessels in November 2007. All of them will be classed by Germanischer Lloyd.

Focus on Smaller Vessels

"This is a huge leap forward for us. If the trend continues, shipbuilding in Bangladesh will be the second largest exporter after garments by 2015," says Abdullahel Bari, chairman of Ananda Shipbuilders. While all this may come as a surprise to many, there is one man who foresaw this development long ago. His name: Choudhury F. Zaman, Germanischer Lloyd Country Manager for Bangladesh. "Several years back I had a dream that new ships would one day be built in Bangladesh," he recounts. It seems that his dream has come true: The country has moved into focus for companies interested in building smaller ocean-going vessels. Traditional shipbuilding nations, such as South Korea and China, have more or less abandoned that market in favour of building large ships. "The country has always had an adequate-skilled and low-cost workforce. Now it has acquired the know-how and facilities, as well," comments C.F. Zaman.

He is more than optimistic about the future: "I can easily foresee local shipbuilding emerging as a billion-dollar industry in four to five years' time. Bangladesh can easily become a global leader in building smaller-sized ships."

Ambitious Finale

After having worked as a non-exclusive surveyor, Choudhury F. Zaman officially joined GL in 1998. "From the mid-eighties until 2001, our station was a one-man show," he remembers with a smile. "Now we are three surveyors." One trainee joined the team in early February, and more will be recruited in the near future.

Choudhury F. Zaman has come a long way with his personal dream and ambition. What is left for him to do? "Now my mission is to bring more yards in line for newbuildings and to improve manpower and machinery infrastructure in the yards during the time left before my retirement," he says. Fortunately for GL, the Bangladesh Country Manager will stay onboard for another three years. ■ AM

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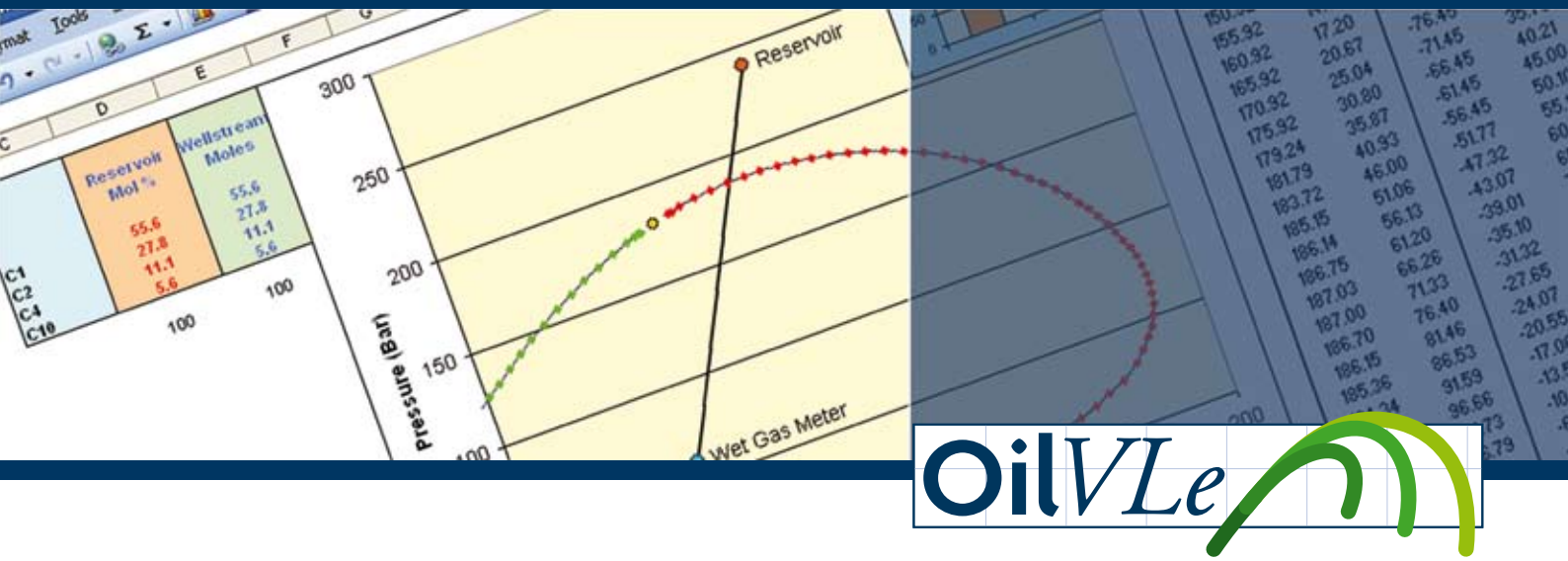
ADVANTICA
A Germanischer Lloyd Company

OilVLe – The phase behaviour and fluid properties calculator

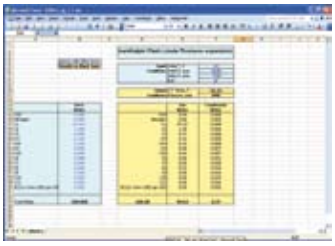


OilVLe

OilVLe is a powerful software application specially created for modelling oil and reservoir conditions. Designed by Advantica, using their extensive thermodynamics expertise, with the experience of Petrophase, who have a proven reputation in the oil and gas industry, OilVLe is capable of modelling standard PVT experiments and fluids under surface and reservoir conditions.

The application uses Advantica's industry proven advanced thermodynamics engine.

The Microsoft Excel™-based package is easy to use, flexible and extremely functional. It has been industry-tested by one of the world's leading oil companies ensuring OilVLe provides oil engineers with the features and benefits they require to work efficiently and accurately.



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