

Germanischer Lloyd

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nonstop

The Magazine for Customers and Business Partners

Materials

Tough Testing

Cargo *Optimizing Capacity*

Liberia *Showing Quality*

Pipelines *Controlling Gas Pressure*





GL Industrial Services: a new perspective

Technical challenges as well as comprehensive, long-term and, above all, economical solutions are our business. Welcome to Germanischer Lloyd Industrial Services, your partner for support that ranges from consulting to testing and through to certification and inspection. Profit from the expertise of one of the world's largest service providers!

Dear Readers,

The international financial crisis and its negative consequences for the global economy are also making business difficult for shipping. The former champion of globalization is now battling against strongly reduced freight and charter rates. Orders are crumbling away in the ship-building industry. And, with reference to overcapacities, the banks are refusing to extend the credit necessary for ship financing to the issuing houses.

But every crisis bears within it the seeds of opportunity. Those who answer the margin pressure with efficiency increases in the planning, construction and operation of their ships today will belong to the winners of tomorrow. The medium-term prospects of the sector remain very promising: ships carry more than 90 per cent of the intercontinental flow of goods. This will not change in future, because tankers, bulkers and container carriers are not only the greenest but also the leanest mode of transport.

As soon as the economy gets back on track, the prices for oil and gas will increase again. What is more, the planned drastic limitation of the sulphur content in fuel will force ship operators to use diesel of higher quality – costing about 50 per cent more than conventional heavy fuel oil. The proposed CO₂ emission charges, the severity of which is as yet undecided, could also inflate the price per tonne of fuel.

Within the typical 25-year life cycle of a ship, the price must be expected to rise to a multiple of today's level.

This prognosis suggests that all the possible design and structural measures should be examined thoroughly for newbuildings, in order to maximize their energy efficiency. The time remaining until keel-laying should be used to subject the hull to a comprehensive optimization. Thanks to their lower running costs, energy-efficient ships can be operated with a competitive edge over a long period.

A fierce race for low-consumption ships is already in the offing. 90 per cent of today's world fleet was ordered and built at a time when the average price for a tonne of heavy fuel oil lay at 150 US dollars per day. These days are gone. Through a recent acquisition, GL has strengthened its expertise in the optimization of fuel consumption for ships. Interested customers can now obtain comprehensive energy consultancy for both newbuildings and fleet operations.

The fossil energy sources are also having a profound effect on the activities of the Germanischer Lloyd Group. The long-term price development dictates the profitability of exploration activities requiring great technological effort. Our business unit Oil and Gas is well positioned, not least through the takeover of the inspection specialist "Materials Consulting Services" with headquarters in Houston, Texas. Read in this issue how the international services and consultancy spectrum of Germanischer Lloyd is constantly meeting the demands of dynamic growth in the markets.

Here's wishing you a happy and prosperous 2009!

Yours sincerely,

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



Dr Hermann J. Klein

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Cover photo: Matthew Bowden/Dreamstime.com



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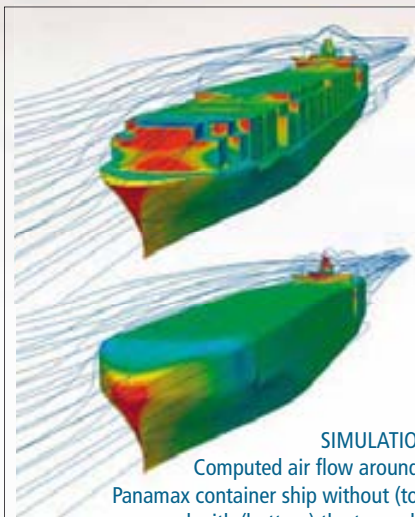
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SIMULATION.
Computed air flow around a Panamax container ship without (top) and with (bottom) the tarpaulin.

Go with the Flow

Storm winds at the touch of a button: air is blown out of a nozzle at force 10 into the measurement section of the wind tunnel. The model of a 4409 TEU Panamax container carrier is placed in the test zone. The special feature: the containers are covered by a tarpaulin. The purpose of the test is to show by how much the drag can be reduced through the use of a cover.

The background: "For the air resistance, the decisive factor is the shape of the above-water hull, including superstructures and deck cargo, i.e. the area on which the wind can act. Gaps in the stowage of the containers can increase the drag quite considerably," explains Axel Köhlmoos, Department of Fluid Dynamics at GL, who carried out the test in cooperation with Hamburg University of Technology (TUHH). The end result: through the use of tarpaulins, the air resistance can be reduced up to 66 per cent, depending on the wind direction and container stowage arrangement.



Photos: Michael Bogumil

PREPARATION.
Assembly of a
container stowage
setup with random
distribution.

news

13,800 TEU

Boxship Behemoth

Samsung Shipyard completes 13,800-TEU MegaBoxer: MSC “Daniela” is the biggest containership ever classed by Germanischer Lloyd. The vessel was delivered in mid-December by Samsung Heavy Industry Shipyard in Geoje, Korea. The Panama-flagged MSC “Daniela” has a length of 366 metres and a width of 51.2 metres. She was built for Swiss-Italian shipowner Mediterranean Shipping Company (MSC).

Smart Solutions. The design features major technical innovations, such as the separation of the deckhouse and engine room. The use of high-tensile steel (HTS) was a prerequisite for building the MegaBoxer. Using HTS plates allowed the designers to reduce the plate thickness necessary to keep the plate and stiffener dimensions within an acceptable range.



Photo: MSC

CLASSIFICATION

Poland Authorizes GL

Germanischer Lloyd is the first non-Polish classification society authorized to perform statutory duties on Polish-flagged vessels. Polish shipowners can now benefit from the society's global surveyor network and comprehensive expertise. The authorization covers surveys, plan-approval services and certification according to international conventions.

Full Range. The agreement was signed by Anna Wypych-Namiołko, Undersecretary of State, Ministry of Infrastructure, and Jens Schreiter, Head of Division Fleet Service, GL. Schreiter commented: “As providers of a full range of maritime services in Poland, we are now able to support Polish shipyards and owners even better, offering anything from newbuilding surveillance to ship-in-service inspections and certification.” GL Poland also trains marine surveyors from all over Europe at its Division Training Centre in Szczecin.

SHIP RECYCLING

Don't Go Anywhere Without Your Inventory List

The new IMO Convention on ship recycling is to be adopted in Hong Kong in 2009 and is expected to come into force in 2013. It will require all new and existing vessels above 500 GT to have a certified Inventory of Hazardous Materials (IHM) document on board, listing all hazardous materials present in their structure and equipment. To avoid the rush for certification that will undoubtedly


occur once the convention has come into effect, shipowners should insist on IHMs being included in each newbuilding contract, and take into consideration the implementation deadlines for ships in service.

Act Now. In addition, shipowners should be careful to distinguish between the future IHM and the old Green Passports which cannot be converted into an IHM certificate,

given the substantial differences between the two approaches.

Shipowners who order their IHM today will thus be well-prepared and avoid the headaches associated with possible delays in certification.

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Germanischer Lloyd

SMM 2008

China Ship Fund Relies on GL

For the new China Ship Fund (CSF), the decision to rely on the expertise of Germanischer Lloyd was an easy one: with more than 13 liaison offices and almost 400 employees in China, GL is one of the leading providers of classification services. The corresponding cooperation agreement was signed recently at the world's largest shipbuilding fair SMM in Hamburg by Mr Xu Hui, Chairman of Centrans

Ocean Shipping Logistics Group, and Dr Hermann J. Klein, Member of the GL Executive Board.

Less Emissions. Through this strategic agreement, GL will support CSF in all stages of the ship design and building process. The specific focus will be on ship efficiency analyses during development in order to reduce fuel consumption and hence emissions during the operational phase.

AGREEMENT. Xu Hui, Chairman of Centrans Ocean Shipping Logistics Group, and Member of the GL Executive Board Dr Hermann J. Klein (l.).

CSF was founded on the initiative of the Centrans logistics group together with the government of the Chinese city of Tianjin, with the aim of meeting the growing demand for oil and gas transport through all kinds of ship investments. The China Ship Fund will concentrate especially on the ship segment of tankers and bulk carriers, in which GL has recorded considerable growth in orders.

ISS 2008

High-Level Meeting in Mumbai

In October 2008, more than 500 maritime experts from 21 countries met in Mumbai for the India Shipping Summit (ISS) to discuss the latest developments in the maritime industry. India's importance as

a shipbuilding nation has been on a steady rise, with orders for bulk carriers, multi purpose and offshore vessels as the main drivers of this development.

The efficiency and environmental compatibility of ships were major topics of GL presentations at the ISS. In his lecture about ship emissions, Dr Volkmar Wasmansdorff, Germanischer Lloyd Senior Vice President Asia/Pacific, presented a new GL consultancy service called GL FuelSaver. This includes the "CO₂-Index Data Analysis" and the "Operational Fuel Consumption Analysis". Both services help shipowners and ship managers to understand fuel consumption patterns and identify technical and operational means of reducing fuel costs.

LECTURE.
Dr Volkmar
Wasmansdorff
presented the "GL
FuelSaver".



More Efficiency. In addition, Germanischer Lloyd offers individual reviews and analyses of a ship's hull, machinery and operation to scrutinize the potential efficiency-enhancing measures identified, in particular with respect to their cost-benefits ratio.



PRESENCE. GL stand at the "India Shipping Summit".



FIELD APPOINTMENT. The members of the TCNS at their 4th meeting.

TCNS

Expert Conference in Singapore

After Melbourne, Hamburg, and Cape Town, the fourth meeting of the “Technical Committee for Naval Ships” (TCNS) took place in Singapore. Last November 36 experts from 14 nations, all representatives of navies or shipyards, met to exchange experiences in research and development, design and construction of naval ships.

Intensive Discussions. For the first time, there was also a workshop on GL Rules for Naval Submarines. A completely revised edition of the rules came into force on 1 June

2008. In-depth discussions by the committee members focused on new developments in naval regulation, electrical aspects of GL Submarine Rules as well as their background and philosophy. A visit at the “Changi Naval Base” of the Republic of Singapore Navy Facilities completed the meeting. The next TCNS Meeting will be held in Hamburg, Germany, in autumn 2009.

For further information: Lorenz Petersen, Head of Department Navy Projects, Phone: +49 40 36149-254, E-Mail: lorenz.petersen@gl-group.com

SOLAS

More Safety

For the first time, the International Maritime Organization (IMO) has defined performance requirements for essential systems on passenger ships in predefined casualty scenarios. The upcoming SOLAS requirements for “Safe Return to Port” require the application of new, more risk-based methods for predefined flooding as well as fire casualties.

Tough Rules. These requirements go beyond the prescriptive requirements in force today. The relevant amendments to SOLAS refer to both Chapter II-1 (new regulation 8-1) and Chapter II-2 (new regulations 21 and 22) and will apply to passenger ships constructed on or after 1 July 2010 that are 120 metres or more in length and have three or more main vertical zones.

At the 33rd Interferry Conference in Hong Kong, China, in October 2008, Germanischer Lloyd expert Dr Daniel Povel presented an overview of relevant IMO regulations and the international status of their interpretation for design and operation. Numerous experts of the maritime industry attended his remarks to receive up-to-date information on this topic.

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MARTECH 2008

Joint Training Initiative in South-East Asia



COOPERATION. Choi Shing Kwok, Permanent Secretary of the Ministry of Transport; Roland Tan, Director of SMA; Dr Volkmar Wasmansdorff; and Edward Quah, Deputy Principal of Singapore Polytechnic.

Maritime education and training, academic exchange and joint research and development projects in the Asia Pacific region are the key objectives of a new cooperation initiative of the Singapore Maritime Academy (SMA) and Germanischer Lloyd (GL). On occasion of the 8th biennial international conference and exhibition Martech 2008, Dr Volkmar Wasmansdorff, GL's Head of Region Asia/Pacific, and Roland Tan, Director of SMA, signed a Memorandum of Understanding (MoU) establishing the collaboration programme.

Time-Honoured Institution. Germanischer Lloyd is the first clas-

sification society ever to sign an MoU with the SMA. For over 50 years the Singapore Maritime Academy, one of Singapore's foremost maritime training institutes and a leading maritime academy in Asia, has been providing quality education and training in Marine Engineering, Nautical Studies and Shipping Management.

SMA director Roland Tan said the agreement now positioned the Singapore institute among the global players. In 2008, SMA once again received the prestigious “Best Training and Crewing Award” in the Lloyd's List Asia Awards, among other achievements.



EDUCATIONAL TRIP. The students from TU Hamburg-Harburg also visited the Chinese state-owned enterprise CSCEC in Nanjing.

TU HARBURG

Fledglings in the Far East

Two research assistants and 15 students from the Technical University of Hamburg-Harburg went on their first excursion to China and Korea. They were accompanied by GL's former Executive Prof. Eike Lehmann.

Colleagues to Be. The aim of the trip was to gain personal impressions of the situation at the yards and in the supply industry of both countries. The idea for this programme arose within the scope of the STG Annual General Meeting in 2006, and was initiated by GL Executive Board Member Dr Hermann J. Klein. As a matter of course, the fledgling engineers were invited to dinner by GL in Shanghai. Only one question remained open at the end: which of the guests from Hamburg would be seen again at GL in Asia – as the first new employees from the tour group?

NSB

Linking Asia With Europe

A brief visit at home: In late November, the largest container-ship sailing under the German flag, "CMA CGM Vela", came by in the port of Hamburg for her first-ever visit "home". The 11,000-TEU vessel was built by the Daewoo Shipbuilding and Marine Engineering (DSME) shipyard in Okpo, South Korea.

Fleet Keeps Growing. With a staggering length in excess of 347 metres, a width of 45 metres and a carrying capacity of 130,700 metric tonnes, CMA CGM Vela is one of the world's biggest container freighters of our time. Originally named "Conti Jupiter", the ship is operated by NSB Niederelbe Schifffahrtsgesellschaft and is chartered to the French liner company CMA CGM under a 15-year contract. She will be serving routes between Asia and Europe.

Owner NSB is currently managing 100 containerships, five gas tankers and five product tankers. The company plans to expand its fleet to a total number of 150 ships. 16 containerships and one tanker are currently under construction at German, Romanian and Korean shipyards for Germany's leading container shipowner.

VISIT. The containership "CMA CGM Vela" called at the port of Hamburg for the very first time.

Photo: Hasenpustsch



STATE OF THE ART. The new bulker "MV Blacky" was named in Montreal.

CANFORNAV

Six Bulkiers for Canada

A total number of six GL-classed bulk carriers are currently in the works at Chinese shipyard Shanhaiguan Shipbuilding Industry Co. Ltd for Canadian shipowner Canfornav Limited. The first vessel was recently delivered to the customer. Her maiden voyage in early November took her to the Great Lakes of North America. The naming ceremony of Canfornav's newest bulker "M/V BLACKY" took place in Montreal.

Modern Fleet. 185 metres in length and 23.7 metres in width, she boasts a gross tonnage of ap-

proximately 20,000 GT. The vessel marks the launch of a new Canfornav programme to replace the shipping company's current fleet with vessels relying on state-of-the-art design and technology. This means open-hatch, flexible ships equipped with fast-moving 30-mt cranes and fitted with bow thrusters.

"We are proud of these next-generation ships that will serve our customers even better in the St. Lawrence, on the Great Lakes and at sea," stated Canfornav President and Chief Executive Officer Michael Hagn.

IMS F - 35th AGM & International Conference
Maritime Simulation Centre Warnemünde
Sept 8 - 12, 2008/Germany



EXPERTS. More than 50 specialists met in Warnemünde, Germany.

IMS F

Common Standards for Simulation

Promoting worldwide, uniform standards for the categorization, performance and use of marine simulators in education and training is the objective of the International Marine

Simulator Forum (IMS F). The IMS F provides a platform for professionals and institutions involved in the advancement of maritime education, training, and research through the use of simulation. IMS F members are simulator manufacturers, users of simulators such as training institutes, universities and academies, as well as other interested parties.

New Edition. In September, more than 50 experts attended the 35th Annual General Meeting and International Workshop Conference of the

IMS F hosted by the Wismar University Department of Maritime Studies and the Maritime Simulation Centre in Rostock-Warnemünde, Germany. Reinhold Heller of the Marine Management Systems Certification Department at Germanischer Lloyd presented the 2008 edition of the GL Standard for the Approval of Maritime Simulators and Maritime Simulator Centres. The demand for GL certification continues to rise further.

In a presentation on GL's Shipboard Routing Assistance program (SRA), Christian Beiersdorf, Fluid Dynamics Department at GL, discussed potential future enhancements of simulation technology.

CONFERENCE. Olaf Quas, Head of Marine Management Systems Certification at GL, opened the IMS F.



TRAINING

Know-How for Korea

Welcoming Far Eastern guests: Close to 40 representatives of Korean shipyards came to visit the GL Academy in Hamburg to attend a two-week training programme. "In the face of 300 to 400 changes made to international regulations on ship safety and environment protection each year it is essential to stay up to date at all times," says GL Academy Head Hans-Ulrich Schulze.

Ambitious Schedule. "By engaging in a continuous dialogue with Korean shipyard engineers we want to further develop our collaboration," says Schulze. The agenda listed lectures,

workshops and discussions with experts. Intact and damage stability, medium voltage installations, design aspects of containerships and ship recycling were topics in which the Korean guests showed particular interest.

Every year in autumn, GL Korea and the GL Academy invite representatives from the biggest and most important shipyards worldwide to provide them with a comprehensive overview of current developments and new safety directives relevant for shipbuilding.

Further information: academy@gl-group.com



SINGAPORE

Golfing at 37 °C

Stifling heat greeted the nearly 60 golfers invited by Germanischer Lloyd Singapore to the Friendly Golf Tournament 2008 on 17 September 2008. Chan Fook Seng, Area Manager Asean/South Asia, organized the tournament at the Orchid Country Club in Singapore. At the award ceremony in the evening, this year's winner Yii Ming Sung, Managing Director of Highline Shipping Sdn., received his trophy from Dr Volkmar Wasmansdorff, Head of Region Asia/Pacific at Germanischer Lloyd (see picture).

FUEL CELL

Award for "FCS Alsterwasser"

Zemship, the world's first vessel powered by fuel cells, won the Silver f-cell Award 2008 in September. Sponsored by the State of Baden-Württemberg, Germany, this prize has been awarded annually since 2004 to honour outstanding and innovative achievements in fuel-cell technology and research.

The new passenger steamship "FCS Alsterwasser" was commissioned this year for sightseeing tours on Hamburg's Alster lake. Its trailblazing hybrid fuel-cell drive was manufac-

tured by Proton Motor. Anno Mertens, Project Manager Zemships at Proton Motor, was justly proud: "The f-cell Award is a wonderful acknowledgment of our efforts."

Fuel of the Future. With funding by the EU and under the patronage of Hamburg's Senate, a total of nine companies were involved in the implementation of the project, including Germanischer Lloyd, which for the very first time classified a fuel-cell system of this size for use on ships – surely the first of many more.



MAIDEN VOYAGE. "Alsterwasser" is the first vessel powered by fuel cells.

RARITY. Cruise like a sailor: the "Sea Cloud".

Photo: Hansa Treuhand

HANSA TREUHAND

Silver Jubilee

A quarter-century of success: founded in 1983 by Hermann Ebel, Hamburg-based Hansa Treuhand is now one of the leading and most experienced initiators for ship finance. Over 100 ship funds with an investment volume of some four billion euros and equity capital totalling about two billion euros have been managed by the firm during the past 25 years.

Its fleet is currently made up of 70 containerships, four refrigerated cargo vessels and six tankers. In addition, the five-star cruise liner company Sea Cloud Cruises with two tall ships and two river cruisers belong to the group as well. Also on the orderbook or under construction are eleven more containerships and the "Sea Cloud Hussar", the largest square rigger ever built to carry passengers.

Rapid Rise. The company started off with two full-time and one part-time positions. Today, Hansa Treuhand employs over 100 people just for shore-based operations. Added to this, there are about 3,000 employees on board. The Emission, Ship Management, Tourism and Brokerage divisions are all clustered under the umbrella of the Hansa Treuhand Holding.

Contact: www.hansatreuhand.de





POWER BOAT.
Ermis² boasts a top speed of 55 knots.

Photo: Newcruise Yachtproject & Design

ERMIS2

Award-Winning Superyacht

A great year for power boat ERMIS². Apart from winning placings at both, the World Boat Awards and the ShowBoat Awards, she also brought home a trophy from Fort Lauderdale, USA: At the International Superyacht Society Design and Leadership Awards, Ermis² won the title of Best Power Yacht 2008 in the 24-to-40 metre segment.

Rapid Acceleration. The 37-metre yacht was designed by Humphreys Yacht Design for a European owner, built by McMullen & Wing

shipyard, New Zealand, and delivered in late 2007. Her hull and deck are made of carbon fibre-reinforced composite material. Ermis² boasts a top speed of 55 knots, an accomplishment owed in part to her weight-optimized design.

The designers had to make sure the yacht would be strong enough to resist the enormous acceleration forces generated at such speeds. The required safety checks during the design and building phases were handled by GL.

CANADA

Successful Audit

Hand-over ceremony: Andrew Robertson, Business Development Manager at GL, presents the ISM Code Document of Compliance to Philip C. L. Koo, Vice President Orient Steamship (Canada) Co. Ltd., in Vancouver, Canada. Prior to the ceremony, the ISM Office Audit had been carried out by GL Station Manager Russell Bradley and his colleague Andrew Robertson. The cooperation between Orient Steamship and Germanischer Lloyd has a long tradition. Philip Koo's brother John, the President of Orient Steamship, is an active Member of GL's Canadian Committee.



SHAKE HANDS.
Philip C. L. Koo (r.) and Andrew Robertson.

SNAME

Up to Date Since 1893

In 2008, the New Jersey-based, internationally renowned Society of Naval Architects and Marine Engineers (SNAME) celebrated its 115th anniversary. Its original mission remains as compelling today as it was in 1893: To “advance the state of the art; to afford facilities for the exchange of information and ideas; to disseminate the results of research, experience and information among the members; to encourage and sponsor such research; to cooperate with educational institutions; and to promote the professional integrity and status of the members.”

Festschrift. A special “SNAME Turns 115” brochure has been published to honour SNAME and its outstanding role in the maritime industry, featuring stories from members, historical photographs and special commemorative contributions tracing back the organization's path of influence throughout the decades.

As an internationally-recognized non-profit, technical, professional society of more than 10,000 individual members serving the maritime offshore, naval and small-craft industries and their suppliers, SNAME administers and supports an extensive technical and research programme, joining efforts with government and regulatory agencies, scientific and research laboratories, academic institutions and the marine industry.

WORK ON BOARD

New Convention, New Seminar

An internationally uniform minimum standard applying to the working and living conditions on board: this is the objective of the Maritime Labour Convention, which is to enter into force in 2012. Adopted in 2006 by the ILO, it will be introduced twelve months after ratification by at least thirty ILO member countries with a total share of at least 33 per cent of the world's gross tonnage. Three flag states have already signed the agreement. Claim to fame: once the Convention comes into effect, it obligates the acceding states as well as the shipowners and operators to de-

fine and implement statutory requirements complying with the minimum standard of the Convention. It also covers the carrying out of inspections to enforce compliance.

Proactive Training .With its new seminar on the introduction and implementation of the ILO Maritime Labour Convention, the GL Academy is already offering a course, on which the participants are prepared for the new provisions relating to shipboard working and living conditions.

Next course: 4 February 2009, Hamburg, Germany
Registration: academy@gl-group.com

Photo: iStockphoto



SEAMEN. Minimum standards for safety on board.



OPEN DAY. "Rush-hour" at GL's headquarters in Hamburg.

CAREER

Attractive Opportunities

The call for a dialogue between engineering students and Germanischer Lloyd was heeded by over 200 young people studying at universities throughout Germany. At this open day, which took place at Head Office in Hamburg, GL experts were on hand to answer the

questions posed by students, to report on their activities and to describe the career opportunities available to budding engineers. In this way, the students were given an ideal opportunity of getting to know GL as a potential employer.

Keen Demand. Illustrative content was provided in the form of interesting lectures on topical subjects. "The career entry possibilities for university graduates are wide-ranging and attractive," says Friederike Vieth, Head of Recruiting. "To follow up this successful start, we will certainly be holding events like the open day again in future."

DISCUSSION. GL experts answering student's questions.



POLAND

The Next Chapter

Polish shipbuilder Remontowa Group has opened a new chapter in its corporate history. A subsidiary of the group, Gdańsk shipyard Stocznia Północna delivered its first vessel built for the new Remontowa shipping company Gdańsk Sea Lines: the multipurpose cargo vessel "Eugeniusz Kwiatkowski". A second newbuilding project, "BBC Gdańsk", is to follow soon.

Close Collaboration. GL monitored the design and construction of the REM-120-type multi-purpose cargo ships and classified both vessels. The collaboration is for the long term. Remontowa and GL signed a five-year framework agreement covering classification and statutory supervision of GL-classed ships run by Gdańsk Sea Lines. GL has been represented in Poland since the late 1970s. Today, more than 50 GL employees work at the Szczecin, Gdańsk and Katowice offices. In addition, the Division Training Centre located in Szczecin trains future surveyors.



PARTNERS. Remontowa Chairman Piotr Soyka (2nd f. l.), Zbigniew Andruszkiewicz (l.), General Manager of Gdańsk Sea Lines Tomasz Oledzki (GL) and Uwe Diepenbroek (GL, 2nd f. r.).

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Geislinger

to Stamp

With its alternative product certification (APC), GL authorizes companies – like the Austrian coupling specialist Geislinger – to test their own products. This new approach saves time and money

The hammer hits the stamp with a mighty blow. Two blows are all it takes and there is a lasting and easily legible impression of the GL seal in the metal of the damper. This is the very last time that Helmut Tajmel, Country Manager Austria at Germanischer Lloyd, will perform this official act at Geislinger, the world's market and innovation leader in the field of torsional vibration dampers and torsional elastic couplings for large diesel engines and gas engines, with headquarters in Hallwang near Salzburg, Austria. From now on, the company is authorized to test, document and issue test certificates for its own products – all approved by GL because these activities will take place in compliance with the relevant GL guidelines.

Alternative Product Certification (APC) forms part of the modular certification system that makes this procedure possible in the first place. The customer can decide whether his maritime components and assemblies are to be certified through the conventional survey of a GL expert, as before, or whether he prefers to have the production processes audited for conformity. Alternative certification →



SEAL. Helmut Tajmel, Country Manager of Germanischer Lloyd in Austria, hammers in the stamp.



KNOW-HOW. Technically skilled employees at Geislinger.

→ procedures are increasingly in demand because the testing and inspection effort required for the certification of marine systems is relatively high. Amongst other factors, this is due to the rising pressure of costs and the unavoidable interruptions in the workflow. An important aspect here is that the prescribed product quality for manufacturers, shipowners and yards can still be safeguarded.

The aim of APC is to have the testing procedures extend beyond the components to be manufactured, so that they also include the manufacturing processes. Over and above classification-related component certification, a ranking and benchmarking system can be used, so that the process certification can also be used for applying supplier rating to the manufacturers. Thus for the first time, GL offers an auditing tool that can help ensure quality and safety across the entire global supply chain, both within and beyond the scope of classification. The arrangement excludes procedures for GL type testing, testing and certification of products and services provided by suppliers to the manufacturer, as well as testing and certification within the scope of repairs, overhauls and reconditioning.

Successful Pilot Project

Geislinger is one of the pilot partners of GL in this project. At the SMM 2008 in Hamburg, the agreement was signed concerning alternative product certification as well as an outline agreement for all services offered by GL. The company passed the process audit with flying colours, after which it was granted the certificate on its qualification for alternative product certification.

The pilot customers also include the companies Körting Hannover AG and Vigot GmbH. Both firms signed – likewise at the SMM in Hamburg – an agreement on alternative product certification and an outline agreement for all GL services. After a successful conclusion to the process audit, it was attested that the manufacturer of jet ejectors and vacuum technology and the maker of moulded parts and hose products were qualified for alternative product certification. ■ SG

INTERVIEW – MATTHIAS GEISLINGER

“APC helps to accelerate the process”

nonstop: In 2008, Geislinger celebrated its 50th anniversary. How has your company developed in the more recent past?

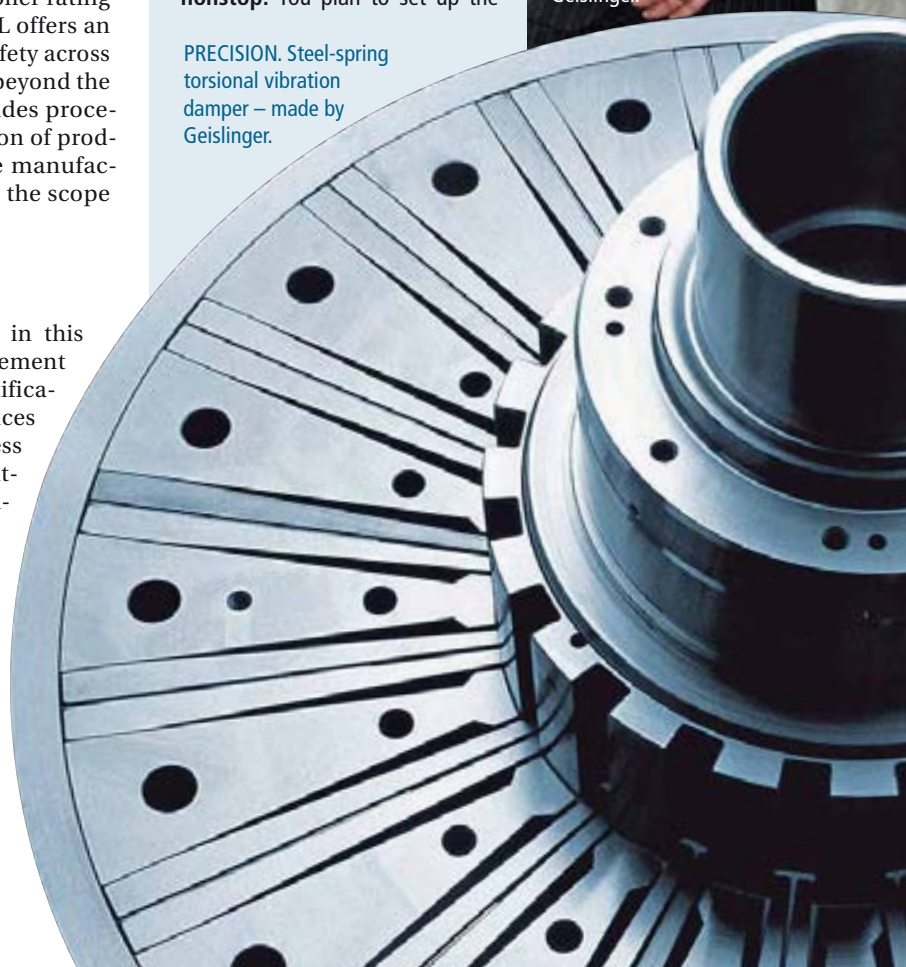
Geislinger: The last five years were characterized by strong growth. In 2007, turnover rose by 26 per cent, and in the year before that by 48 per cent. This is certainly most gratifying, but at the same time it presents a challenge, because of the considerable capital expenditure. For instance: in March, we will be completing a new assembly hall at our headquarters in Hallwang, near Salzburg. At this main facility, we now employ a total of 150 workers. All the individual components for our products are manufactured in our second and larger factory at Bad St. Leonhard in Carinthia; some 350 people are employed there. Besides these, we have sales subsidiaries in South Korea and Japan, as well as manufacturing facilities in China and the USA. From all these bases, we serve the international market for couplings and dampers.

nonstop: You plan to set up the



CHIEF TECHNICAL OFFICER. Matthias Geislinger.

PRECISION. Steel-spring torsional vibration damper – made by Geislinger.



Geislinger Academy. What will its function be?

Geislinger: We intend to establish a training centre where our staff, and also customers, can receive the necessary tuition – not only of a theoretical but also of a practical nature. With the aid of actual workpieces, we will demonstrate what is most important for the products.

nonstop: In what region of the world are your activities concentrated?

Geislinger: The focus is clearly on Asia, because most ships are being built there nowadays. Our clientele includes the engine manufacturers, e.g. MAN, MTU, MBM and Caterpillar, who – like us – are positioned worldwide and are active in the same markets. Since the greatest power-output levels for drives are demanded in shipbuilding, most of our products are sold in this sector.

nonstop: What are the distinguishing features of your products?

Geislinger: We are really specialized in the niche sector “products for the drive train”. Such a drive train may be intended for a ship propulsion plant or for a generator set, as is mounted in diesel locomotives, or for the gas engines used in gas compressor units, mining equipment or dump trucks. We are familiar with all types of large engines developing a high level of power – everything above the truck range. Several years ago, for example, we also delivered the world’s largest torsional elastic coupling, in this case for the propeller shaft of a Japanese ship.

nonstop: What are the highlights of your product range?

Geislinger: We are the world market leaders with our torsional vibration dampers. These dampers, consisting of a primary and a secondary section, are located at the free end of the crankshaft. Their purpose is to minimize the torsional vibration arising in the crankshaft. When the exterior section mounted at the free end of the crankshaft vibrates in relation to the inner one, the vibration, and hence also the level of alternating stress in the crankshaft, is reduced. By adding a torsional vibration damper, a lighter material may be chosen or the crankshaft can simply be made smaller. This is of benefit for the entire engine design. It can be made more lightweight, smaller and more cost-effective because the bearing loads are reduced and the bearings themselves can also be of a smaller size.

For the torsional elastic couplings located on the flywheel side, we have for example the special option that the flywheel can be integrated into the coupling, i.e. we can offer solutions in which the torsional elastic coupling and the flywheel form a single component. This reduces the weight of the structure appreciably. Frequently, engines are mounted elastically, and so we combine the torsional elastic coupling with misalignment couplings. Owing to wave action, the engine moves in the radial and axial directions and also vibrates back and forth. In this case, an element is needed to balance out these movements between the drive shaft and the engine: this is where the misalignment coupling comes into play. The latest type is the composite coupling, for which we have GL certification. Upon their introduction to the market 15 years ago, we were the trendsetters.

nonstop: How is the cooperation with GL going?

Geislinger: We have GL type approval for the torsional vibration dampers, torsional elastic steel-spring couplings, composite couplings as well as for the Flexlink couplings and steel misalignment couplings. As the first class to do so, GL has now granted type approval for all items in our catalogue. What is more, GL attested our suitability for alternative product certification once we had



PRODUCTION. Crankshaft of a two-stroke engine fitted with a Geislinger vibration damper.

passed the process audit. This is a major advantage, because we are often faced with the challenging situation that coupling is ordered very late in the game. Then we have to reschedule at short notice. Thanks to the alternative product certification (APC), we can accelerate the process.

nonstop: Do customers ever approach you for special solutions?

Geislinger: That is actually our core business: finding new solutions together with the client, although we also do this on our own initiative. Our most innovative customers are based in Germany. They invest a lot of effort into research and development with the aim of making their engines smaller, lighter and more efficient, all with the aim of gaining a competitive edge. For these projects, we also work very closely with Germanischer Lloyd to identify, at an early stage, just what conditions have to be met for approval of the product. Time and time again, there is a need for optimization, for example when changes are made in the material selection.

nonstop: What sets you apart from your competitors?

Geislinger: We innovate right here within the company. We have our own specialists and are often the trendsetters with our products, which from a technological standpoint differ quite considerably from all the others in the market. Others use rubber for their couplings, we use steel springs; others have viscous dampers, we offer steel-spring dampers; others stick to conventional misalignment couplings, we create composite couplings. Our efforts are constantly focused on providing high-quality products that are durable and unique.

GEISLINGER: THE MILESTONES

- 1958 Founding of Geislinger GmbH by Dr Leonhard Geislinger, originally as an engineering office for torsional vibration analysis
- 1965 New product: the torsional elastic damper
- 1968 New product: Flexlink
- 1994 Launch of the Gesilco product line



Welding – a Hot Topic Gets Hotter

Without advanced welding technology, modern shipbuilding would be impossible. But that does not mean maritime welding technology is free of quality issues and other challenges. Experts from Germanischer Lloyd explain

The devil is always in the details. Welding is a complex and difficult process. Even the ISO 9000 standard for quality management systems refers to it as a “special process”. No matter whether you are working on the outer hull, building a rudder or welding the hatch covers. While the result of welding is visible immediately, the quality of a weld is not so obvious. In fact, assessing it is quite a difficult task. “This is why it is so crucial to know exactly what you are doing,” stresses Marcus von Busch, welding expert with Germanischer Lloyd.

Litmus Test

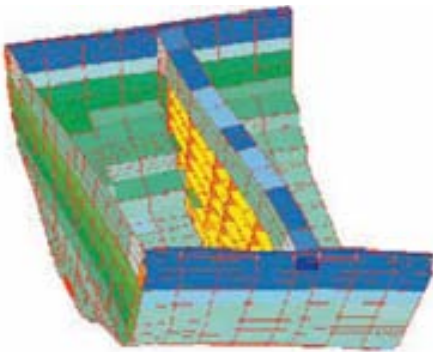
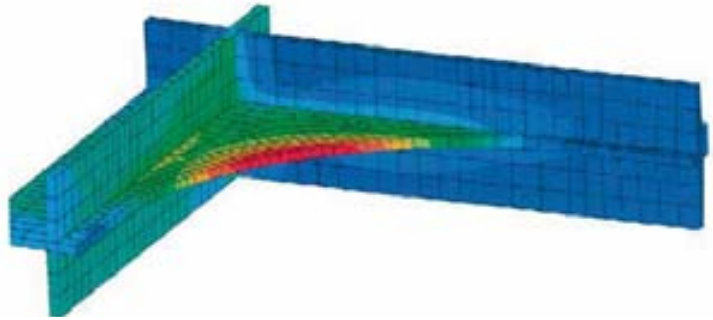
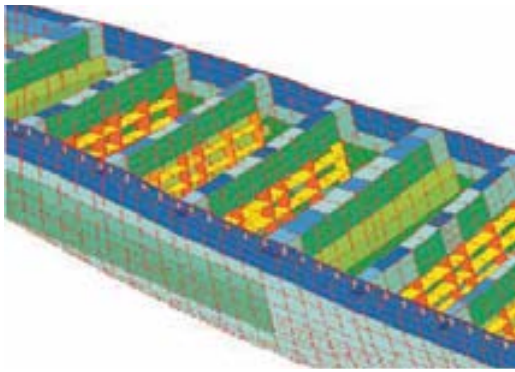
Before you can begin, the following questions should be clarified: “What kinds of materials am I going to weld, what kind of equipment and filler material will I need, and what will be the best method of joining the pieces?” Before beginning the actual assembly process, the selected combination should be tested. This welding procedure test, which is monitored and certified by technical experts from GL, scru-

tinizes the working processes that will be applied by the shipyard.

Each individual welding task is simulated in a welding procedure test. The results serve as a basis for defining the specific procedure for joining each individual plate to the ship. The findings are documented in a Welding Procedure

PREPARATION.
The quality of a weld is influenced by the way the seam is prepared.





SIMULATION. Ship movements cause stress affecting welds, including those in critical locations.

HATCH CORNER. This is an area subject to high stress. Welding should be avoided if possible.

Specification that also indicates the settings for the welding unit, the consumables to be used, and how each welded seam should be prepared. In the Welding Procedure Test prior to each new project, Germanischer Lloyd examines whether the welders of the shipyard are capable of producing high-quality welds based on the existing welding instructions. During the test, a sample is welded up in the presence of a GL surveyor. The sample is then expedited to a GL-approved, accredited laboratory for non-destructive and destructive testing. These tests deliver solid data on the quality of the workmanship. They also reveal whether the steel properties (such as toughness and strength) that the designer used to determine the plates' dimensions will be preserved after welding.

What complicates the matter is the fact that welding typically compromises the steel properties. For reasons of chemical composition, certain steel grades must be preheated prior to welding so they will cool down slowly after welding and maintain the desired properties. Cooling down too quickly will alter the internal structure of the steel: the steel will become harder and more brittle, both of which are undesirable characteristics in shipbuilding because

they will make the steel more susceptible to cracking. "Our objective is to define a welding technique that will minimize the negative effects on the material properties," von Busch explains. "Of course, the best solution would be a ship without any welds at all. But unfortunately that is impossible," he smiles.

Eyes and Ears

Apart from this Welding-Procedure test, all companies carrying out welding work for GL-classed ships must have an operating permit issued by the classification society. To obtain the permit, they must prove that they have adequate equipment, qualified welding supervisors, welders certified for the required processes, and that their welding processes have been audited and approved.

Aspects such as equipment, personnel and working procedures are audited by GL at regular intervals, usually every three years. In the event of a high churn rate of employees on a shipyard or a newbuilding project involving a new ship type, the tests may be performed more frequently. "For the on-site assessment of welding processes at the shipyards, our surveyors are our eyes and ears," says von Busch. "Back at headquarters we provide the welding technology expertise to our field surveyors and ensure we give them every bit of support they require. For every section of a ship we have a welding expert in-house to consult with – be it for building hulls, pipelines, pressure vessels or even engine crankcases or steam generators. We are planning to position welding experts in Asia, as well, so we can respond to customer requests even more quickly and directly," says von Busch.

Big Ships, Thick Plates

Today ships are built to cruise the seven seas for a minimum of 25 years. This is how long the welds ought to last – ide- →

ENORMOUS POTENTIAL

Last May, Daniel Engel, GL's Head of Competence Centre Materials and Products, and Marcus von Busch, Head of Department Welding and NDE, held several training sessions at Chinese GL inspection offices and customer sites. In Yangzhou, they discussed current issues in welding and materials technology with 120 customers. At several shipyards, the GL experts gave lectures to all of the welding quality staff and held open discussions with them on welding technology and GL rules.



WELDING EXPERT.
 Marcus von Busch,
 Head of Department
 Welding and NDE with
 Germanischer Lloyd.

→ ally, that is. Ship designs are getting bigger and bigger so they can transport ever larger amounts of goods. As a result, the steel plates used in shipbuilding are getting thicker and stronger, as well. Soon shipbuilders will begin using high-tensile steels with yield strengths up to 460 MPa.

The challenge about thick plate is that it is more difficult to weld than “thinner” plate. A thicker metal plate will cool faster after welding, a fact that makes it more susceptible to changes within its microstructure. This makes it necessary for certain types of steel plates to preheat a specified zone on each side of the seam to be welded. The resulting hot working environment doesn’t make the welder’s life any easier.

Additional rules apply to high-tensile steels: They must be processed with a specified heat input, i.e. limiting the amount of heat introduced into the material. This means the welder must weld a specific length of seam within a specified time (± 2 sec).

Material Under Test

What steel grades will be processed? What are their properties? And what would be the best filler material for the given steel grade? These questions must likewise be addressed before embarking on a new welding project. The GL welding experts will work together closely with their colleagues from the material technology department.

This cooperation ensures optimal, high-quality results – after all, each steel plate and each filler material to be used for a given GL ship is tested and certified by the classification society. As part of this process, manufacturers of filler materials must prove once a year that the quality of their wires and electrodes continues to fulfil the GL requirements. “Our field surveyor will take a sample of the filler material to have it welded and subsequently tested to see whether its properties are consistent with those of the initial approval test. If so, we grant the supplier an authorization renewal to supply welding filler materials,” von Busch describes.

Practical Rules, Rapid Developments

To define quality standards for welding, Germanischer Lloyd has issued procedural guidelines within the frame-

work of its technical rules. These guidelines explain how to avoid mistakes and flaws in welding, providing answers to questions such as: What should be the temperature of specific steel grades prior to welding? How should the welded seam be tested upon completion? Is it permissible to make any welds at all in high-stress areas of a ship, such as hatch corners or free edges? According to the GL rules, welding should generally be avoided in high-stress areas. An example would be the midship hatch corner on a container ship. Failure to follow this rule – e. g. welding in this location – would compromise the properties of the steel to such an extent that the enormous strain induced would cause cracking.

Welding technology is evolving at a breathtaking pace. New welding processes, materials and methods are emerging constantly. Today it is possible for robots to weld 85-mm steel plates in a single layer. Of course, this reduces the likeliness of defects of workmanship considerably, compared to a seam welded in several passes. The disadvantage: The intense heat introduced into the material can alter its properties more drastically. No matter what factors may influence or even perhaps revolutionize welding technology in the years to come, GL will be at the forefront of the research and development effort. ■ SG

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GL RESEARCH PROJECTS

Germanischer Lloyd supports research efforts in the field of laser beam welding as a cooperation partner, both in Germany and abroad. One such research project supported by GL jointly with BIAS, Bremen was carried out at Shanghai Jiao Tong University, focussing on laser-hybrid welding of ship hull plates.

The process was approved for lab operations by GL in November 2007. Other research projects are currently underway in Europe, co-sponsored by organizations such as the Thyssen-Krupp Marine Systems network of shipyards.

What's Sprouting in Brussels?

In 2009 a new European Parliament will be elected, and a new EU Commission will be appointed. *nonstop* dares to forecast, which proposals will be resolved in the current election period

Legislative end at in the EU: in summer a new Parliament will be elected, and a new EU Commission will be appointed in autumn. Time to review the EU's maritime agenda: which of the issues currently in the pipeline will be closed in due time. *nonstop* dares a forecast.

Third Maritime Package

On top of the EU's heavy workload is the controversial "Erika III Package" which contains eight legislative proposals. With a negative vote in September 2008 on six of the eight proposals, MEPs threatened to reject these six proposals if there is no final deal with the Council on the complete package.

As a result, the Council ceased blocking the two very controversial proposals on flag-state obligations and civil liability of shipowners. Instead, they watered them down drastically: the shipowner civil liability directive is now only an insurance directive, which obliging all ships in EU waters to carry insurance; all provisions aiming at lifting liability ceilings have been taken out. In its current version the flag states proposal only regulates flag state audits instead of transferring responsibilities for ratifying maritime conventions from member states to EU level. This minimal consensus paved the way for a wide-ranging agreement on all eight legislative proposals. Now, all EU institutions have to find a compromise on the other six proposals within a Conciliation Committee. But there are still about 25 controversial points to be resolved. Nevertheless, a final agreement in this power struggle is foreseen for December 2008.

Criminal Sanctions for Ship-Source Pollution

In March 2008, the EU Commission presented a proposal for a directive on ship-source pollution and on the introduction of penalties for infringements. The directive originates from the EU's concern about illegal operational discharges of polluting substances from ships at sea in the aftermath of major accidental oil spills.

The directive aims at streamlining and further strengthening existing Community legislation regarding sanctions on those responsible for pollution by ships. Infringements are defined as criminal offences that are to be sanctioned by "effective, proportionate and dissuasive penalties, which may include criminal or administrative penalties". EU member states are obliged by the directive to ensure that companies be held liable for criminal offences committed for their benefit. The European Parliament's Transport Committee has only recently started to discuss the dossier; the Environmental and the Legal Affairs Committees will also have to give their opinion on the Commission's proposal. The vote of the Transport Committee on the directive is scheduled for January; the Parliament's plenary is expected to take a



LOBBYIST.
Dr Mary Papaschinopoulou.

decision in February. The directive does not appear to be facing strong opposition from within the Council.

European Port Policy

In its Action Plan on Port Policy, the EU Commission had announced draft guidelines on state aid to ports to be presented by summer 2008. The date has been postponed to early 2009.

In September the EU Parliament adopted an opinion on the Commission's Port-Policy Action Plan in which it urges the Commission to produce state-aid guidelines as soon as possible. MEPs and the port industry argue that public investments to develop ports must

not be seen as state aid where they are directly intended for environmental improvements, decongestion and economic, social and territorial cohesion.

In contrast to this traditional view on state aid for ports – which is supported by the European Sea Ports Organisation ESPO – the EU Commission is currently contemplating a more radical interpretation whereby any public funding of port infrastructure is apparently considered as government subsidies. This might put future investments in port capacity and hinterland connections at risk.

In addition, the EU Commission is also working on long-expected guidance on the implementation of existing EU environmental legislation in ports. European port stakeholders have been urging the EU Commission to create more legal certainty by issuing clear guidelines. What the Commission is actually preparing is a guidance document limited to Questions & Answers and Best Practices. A first draft was presented in October 2008; the final version is expected in January/February 2009.

Greening Transport

In July of this year, the EU Commission presented its "Greening Transport Package" including a "Strategy for the internalization of external costs" for all modes of transport. The proposed measure links the modes of transport directly to their respective social and environmental impact. How and when the effects of this policy initiative will be felt by the European maritime cluster is as yet unclear.

The EU Commission has begun work on a pricing system for road transport; it will deal with maritime transport this year. Moreover, the EU Commission plans to present a working paper on the definition and concept of "green transport corridors". At present, all that is known is that the concept of "green corridors" aims at promoting sustainable quality and efficiency of transport and logistics. ■ MP

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Facts About Bangladesh

Bangladesh is a fertile alluvial plain encompassing the deltas of three main rivers, the Ganges, the Brahmaputra and the Meghna. The country covers an area of 144,000 square kilometres and has a population of approximately 150 million, making it one of the world's most densely populated countries. Bangladesh is one of the world's poorer countries. Over 88 per cent of Bangladeshis are Sunni Muslims; the state religion is Islam.

State. First established as East Pakistan after the 1947 partition of India, the People's Republic of Bangladesh came into existence in 1971 after a "war of liberation" from Pakistan. In 1991 Bangladesh instituted a democratic parliamentary system of government (with a parliament of 300 directly-elected members).

Economy. A real GDP growth of 5.6 per cent was achieved in 2007. Sustained economic growth and inward investment have contributed to a gradual increase in the share of manufacturing in the GDP, and a decline in the share of agriculture. But Bangladesh remains an agricultural economy, with farming accounting for more than 23 per cent of the GDP, and employing over 60 per cent of the working population. The dominant crop is rice, making up as much as 70 per cent of the total output.



German Trade Show

What Germanischer Lloyd has to offer in Bangladesh with regard to Maritime and Industrial Services was presented by the team of Germanischer Lloyd Bangladesh at the "German Trade Show" in Dhaka. A seminar hosted by

Country Manager Mr Zaman gave an in-depth insight into the achievements and challenges of the emerging shipbuilding industry in Bangladesh. The cross-industry event organized by the Bangladesh-German Chamber of Commerce & Industry with the support of the German embassy and GTZ attracted exhibitors and visitors from the Bangladeshi and international shipping industry and maritime suppliers.

On the Move

Is Bangladesh a surprise competitor? *nonstop* examines the potential of the emerging shipbuilding nation of becoming a major player for small to medium ocean-going vessels on the international stage

Stella Maris" – Star of the Sea – is the name of the 3,000-dwt multi-purpose vessel handed over by Ananda Shipyard to Danish owner Stella Shipping in September. What makes this seemingly trivial statement noteworthy is the fact that Stella Maris was the first ship ever built for export by a yard in Bangladesh. And 27 more are to follow.

There are only a handful of companies building ships for export in the riverine country with its extended shorelines so frequently lashed by cyclones and natural disasters. Bangladesh has a significant local shipbuilding industry that has

produced ferries and small boats. In fact, nearly all of the more than 3,000 barges, oil tankers and cargo ships that ply their trade in Bangladesh's extensive waterways were made by national shipyards. Today, the country's shipbuilding industry is rapidly becoming a promising sector, having signed several contracts with Danish, Dutch and German owners to build multi-purpose vessels.

Not only Ananda Shipyard and Slipways Ltd. (ASSL) in Meghnaghat have ships on order for export. Chittagong-based builder Western Marine Shipyard Ltd. (WMSHL) has



PIONEER. "Stella Maris" by ASSL. The data: length over all 81.35 metres, breadth moulded 13.15 metres, depth moulded 6.20 metres. MAN B&W 8L21/31 engine (output 1,720 kW), CPP. The assigned class notation for the vessel is as follows: hull: + 100 A 5 E with freeboard 1.560 metres; SOLAS II-2 Reg 19 DBC; multi-purpose-dry cargo ship; equipped for carriage of containers; strengthened for heavy cargo. Machinery: + MC E AUT-16h.

won a contract from MK Shipping, Holland, for building up to twelve 5,200-dwt multi-purpose vessels with GL class. "The two orders have positioned these shipyards as serious players in the international shipbuilding industry in strong competition with Chinese and Vietnamese shipbuilders," says the Danish embassy in Dhaka on its website.

ASSL received their first order in 2005 from Stella Shipping and Sea Consult Ltd. of Denmark. WMSHL followed suit with a first export order in 2007. Other customers of the two shipyards are the Bangladesh Inland Water Transport Authority, the Chittagong Port Authority, the Bangladesh Institute of Marine Technology (BIMT), the Bangladesh Police, several local tourism and travel organizations, as well as international companies like Wessels Reederei GmbH and Komrowski Maritim GmbH of Germany. A market for shipyards focusing on producing smaller sea-going ves-

sels is emerging in Bangladesh. Industry leaders like China, South Korea and Vietnam go for larger containerships. Therefore, European buyers are now coming to Bangladesh for their smaller craft; shipbuilding in East Asian countries has become more costly due to steep wage increases.

Quality? Yes!

But before Bangladesh can establish itself firmly as an internationally-respected shipbuilding nation producing ocean-going vessels, there are some hurdles to take: yards must put international shipbuilding standards into practice and implement quality-management systems. Abundant access to coastal areas, infrastructure investments and skilled manpower are also necessary. Bangladesh has already made great progress in all of these areas. "As far as ship quality is concerned, I can say it is excellent", says →



→ Germanischer Lloyd's Country Manager Bangladesh, Choudhury Zaman.

Germanischer Lloyd has been represented in the country since the mid-1980's and has been supporting the shipbuilding industry ever since. Today the GL team oversees all of the country's newbuilding projects for international customers. The tenth anniversary of GL's exclusive representation will be celebrated in January 2009. Zaman is pleased: "We have achieved quite a lot since then. From a 'one-man show' we have evolved into a team of four fully-trained surveyors plus three trainee surveyors. The workload is increasing – instead of just surveying the fleet in service, we now also have newbuildings to attend."

A Long History, a Big Success

The flow of orders to Bangladeshi shipbuilders began on successful completion of comprehensive inspections of the ASSL and WMSH facilities by the shipping companies, followed by visits from European embassy representatives. The shipyards had to upgrade their infrastructure to meet the international standards that the shipping companies required. This included covered sheds even where the weather does not affect production, shipbuilding halls, state-of-the-art shipbuilding machinery, employee training as well as the introduction of environmental policies. Furthermore, safety measures such as compulsory use of helmets, goggles, gloves, boots and special suits on the premises were implemented.

Bangladesh actually has quite a long history of shipbuilding; there is also a pool of experienced workers: many workers in Singaporean and Dubai/UAE yards are from Bangladesh. Another advantage is the fact that many of the coun-



CEREMONY. Christening of ASSL's first export vessel. The "Stella Maris" was built for a Danish shipping company.

try's residents speak English. "Bangladesh does have a few technicians and engineers of its own, but we need to train more people. Maybe young people should study in Germany or other countries where shipbuilding industries have been established for a long period of time. In the meantime we will have to hire expertise from outside," Zaman comments the shortage of qualified personnel.

Traditionally Bangladesh has been known as a place for ship breaking rather than shipbuilding. But Dr Abdullah Bari, Chairman of Ananda Shipyard, is convinced that this will change: "We will soon appear as the shipbuilding harbour of the world. This is the start of the process to change things around."

INTERVIEW – DR ABDULLAHEL BARI

“We Are Very Cost-Effective, and We Have a Hard-Working, Well-Trained Workforce”

nonstop: Dr Bari, could you describe the development of Ananda Shipyard?

Dr Bari: The Ananda Group comprises nine companies. Apart from shipbuilding, we are also active in the textile industry. However, Ananda Shipyard & Slipways Ltd. is the flagship of the group. The group began operations 25 years ago, in 1983, with a focus on shipbuilding. We have built a considerable number of ships since then – about 300 in number – for rivers and coastal waters.

Building ships for export is something we began only recently. Our customers are based in Denmark, Germany, the Maldives and Mozambique. Currently the shipyard has an orderbook of about 58 ships, 24 of them for Germany: six units of 5,500 dwt, four units of 6,100 dwt and ten units of 7,250 dwt. In addition, we have four confirmed orders and four options for a 7,000-dwt multifunctional ship. The shipyard is also building four ships of about 3,000 dwt for a Danish owner.

Apart from this, the shipyard is currently producing six ferry boats for the

government of Mozambique, financed by the World Bank. In 2006, Ananda Shipyard built two fast patrol boats, bimetal ships capable of making 25 knots. The hulls are made of steel and the superstructure of aluminium. This vessel type has been very successful so far.

nonstop: How have you expanded your facilities?

Dr Bari: The shipyard covers about eight hectares. It has two slipways, each 225 metres long, with a light ship-weight capacity of 5,000 tonnes. The two slipways can be used simultaneously to handle a ship 30 m wide and 150 m long. The slipway is fitted with a gantry crane with a 100-t capacity and has two shipbuilding halls. Just recently we added a shipbuilding hall that is 140 m long, 37 m wide and fitted with gantries capable of lifting 10, 40 and 50 tonnes, respectively. Other usual shipbuilding amenities are provided, as well. The shipyard has also very recently added a priming plant and a CNC cutting machine. The priming plant has a capacity of 90,000 tonnes of steel per year. The CNC machine can cut 60 tonnes of steel per day.

Our shipyard is planning to build up enough capacity to produce 32 ships per year, including handymax vessels. So what has made all this possible in Bangladesh? We have a very hard-working, intelligent, well-trained workforce. This potential, coupled with sincere government support, positions us as a very cost-effective location for building ships.

nonstop: What is the value of the investment?

Dr Bari: We recently invested 15 million US dollars following a previous investment of 25 million US dollars. One of the best things that have happened in Bangladesh is that Germanischer Lloyd has taken a

SUCCESS.
Dr Abdullahel Bari, Chairman of Ananda Shipyard.

Photo: Ananda Shipyard



big load off our shoulders and taken the lead in guiding us towards achieving good quality. Not only by supervising our activities, but also by advising us what to do and how to do it. We have all it takes to make good ships in Bangladesh.

nonstop: Why is the offshore market attractive to you?

Dr Bari: Well, in its early years, the shipyard was mainly a builder of tug boats. They are not very big, but very successful. From the beginning the shipyard was relatively small by design but capable of making offshore vessels, tug vessels, supply vessels, things like that. Not very big in size, but they can be built! When I say the shipyard has a 4,000-tonnes lifting capacity, that means sustaining a 4,000-tonnes weight over a length of 60m. Therefore, the slipway can actually bear a load of 12,000 tonnes over a length of 150 m. In making all of these investments, we always made sure to keep open the option of building heavier craft.

nonstop: What will your shipyard be doing in five years' time?

Dr Bari: In five years' time we'll be delivering handymax and anchor-handling tugs up to 200 tonnes. Ananda Shipyard has a speciality: it can process aluminium, and it has experience in building fast boats. That is why we will be supplying many of these aluminium-built boats to customers in different countries. We plan to set up another shipyard along the bay near Chittagong, close to the sea, which will be ready to build ships of 100,000 dwt.



CONTRACT. GL's COO Torsten Schramm, GL's Executive Dr Hermann J. Klein (f. l.), Mrs. Afrooja Bari (Managing Director of ASSL) and Ananda's Chairman Dr Abdullahel Bari (r.).

An important step towards achieving this goal would be rigorous support – including financial support – from the government. “The cost of financing the building of a ship can be as high as 25 per cent of the total,” says Dr Bari.

In addition, bank guarantees from Bangladeshi banks are not accepted in Europe. “We are very hopeful that the government of Bangladesh, which is very keen to support export industries, will be coming up with support in this sector to avoid such excessive costs for buyers from other countries, otherwise our shipbuilding industry will lose its competitive advantage,” says Bari, emphasizing the prospects of new employment, foreign currency earnings and infrastructure investments for Bangladesh.

The fact that an entire group of shipyards is standing ready to enter the international shipbuilding stage became clear at the SMM trade fair in Hamburg last September.

Apart from Ananda, Bengal Shipyard Ltd. (Dhaka), Karnafuly Ship Builders Limited (Chittagong) and Khan Brother Shipbuilding Ltd. (Dhaka) all presented their capabilities; three additional yards attended the fair as visitors. “The SMM has been a great success for Bangladesh,” says Zaman. “The yards entered into serious discussions and negotiations with prospective clients from Germany and France.”

“Stella Maris” is a milestone not only for Ananda Shipyard, but for all of Bangladesh. “This is a landmark and a historical event for us in Bangladesh. The gates of opportunity in the shipbuilding sector are now open to us. The quality, everything is excellent. We just need more people to help us grow,” says Zaman. ■ SNB

For further information: Choudhury Zaman, Country Manager Bangladesh, Phone: +880 31 713759/728184, E-Mail: gl-chittagong@gl-group.com



Photo: RC 44



Photo: RC 44

PRECISION WORK. The open 40-foot box was designed and built for the transport of the one-design class RC 44.

Big Yacht in a Small Box

With the one-design class RC 44, sailing legend Russell Coutts has created his own racing series. For easy and rapid transport, even to poorly accessible waters, this high-performance yacht can be taken apart and stowed in a special container

For Russell Coutts as a professional skipper, the perfect regatta is above all a matter of timing: arrive, sail, leave – the three-times America’s Cup winner likes to set a fast pace. So Coutts, who for a long time has had a penchant for boat design, teamed up with the Slovenian yacht designer Andrej Justin to develop a boat that can be assembled and dismantled at least as fast as it sails: the RC 44.

The class designation is made up of Russell Coutts’ initials and the hull length in feet. The handling characteristics of this 13-metre yacht are intended to mimic those of the big America’s Cuppers because many Cup crews actually train on smaller boats. As a result, the RC 44 has been given a long, narrow hull with maximum weight in the keel bulb, and a powerful sail plan.

This design is intended strictly for racing, either match racing – duelling boat against boat – or fleet races – every boat against all the others. The crew of eight have to operate the sheets, winches, grinder and wheel in the big open cockpit without any cruising comfort. Although there is space for a guest on board, he is well advised to hold on tight when the competition is kept at bay with breathtaking tack and gybe manoeuvres. With this new one-design class, Coutts and Justin placed particular emphasis on developing a boat that would not only convey the sailing excitement of pure racing machines but also remain affordable for the owner. “This boat is easy to own – you can race it in summer and, if you wish, put it away relatively easily in winter,” says Coutts.

To meet all these requirements, the boat was designed to go into an open 40-foot container, so that it can be transported on trucks, trains and ships. The corresponding container

was designed to match. “This is the first time that logistics has played a role in yacht design,” Coutts declares proudly. Here the aim was, as far as possible, to be independent of external support and to get the boats ready for action within a short space of time.

Clever Packaging

But how do you fit a 44-foot yacht into a 40-foot box? Even sailing virtuoso Russell Coutts cannot work that sort of magic – at least not on shore. The answer is the removable stern part and bow “crash box”. “Then the boat does indeed fit into the 40-foot container,” explains Christoph Wähling, who was in charge of the project at Germanischer Lloyd. When the boat is ready to be lifted out of the water, its two-piece mast is detached and split up so that it too fits into the container. Afterwards a crane is used to hoist the yacht into the custom-fitted cradle of the open container. Only then are the keel bulb and the fin removed.

However, the ship is still too long, so that the bow and stern sections must be taken off and stowed under the main hull. Using a lifting gear, the yacht is lowered and swung diagonally into the container – now it fits perfectly.

INITIATOR

Russell Coutts (46) is one of the most successful skippers in the world. The father of four children won a gold medal for New Zealand at the 1984 Olympics, later he took the famous America’s Cup no less than three times (1995, 2000 and 2003).

He is also successful as a yacht designer. The racing series RC 44, which he developed in 2005, was an idea he had been toying with for some time: “It’s a dream concept I have long wanted to realize.”

Photo: Hautmann





Photo: ThMartinez



Photo: Hautmann



Photo: Hautmann

RACING SERIES. In matchraces – e.g. at the “Dubai RC 44 Cup” (see picture at the very top) – the boats in the one-design class all compete with each other. For the transport on trucks, trains and ships, a normal dockyard crane is all that is needed to drop the boat into the cradle, after which everything else can be done manually.

“The engineers had to ensure that the yacht was watertight even without the removable bow and stern,” says Christoph Wähling from the Special Craft Department at GL. Because the boats are dismantled and reassembled regularly, everything had to be extremely robust. “A tremendous idea,” says Bertrand Dutrannois, responsible at the logistics provider DHL for conveying the yachts. “Having to transport the boats without containers would complicate things enormously.”

Thanks to the special container, the RC 44 can be taken to places its bigger cousins could never reach. The logistics concept behind this one-design class is the key aspect. “With most classes, you could never sail at wonderful locations like

COUTTS' CLASS

RC 44s are pure-blood racers like the America’s Cuppers: a length of 13.35 metres, a beam of 2.75 metres and a draught of 2.9 metres. The carbon-fibre hull weighs about half a tonne, and the ballast about three.

The slender keel fin is fitted with a “trim tab”, a kind of second rudder, and a sliding cutter. If e.g. sea grass gets caught on the keel, thus slowing down the boat, the cutter is used to remove the hindrance. Powered by up to 300 square metres of sail, the yacht can reach a top speed of 25 knots.

The entire Championship Tour consists of 15 boats at present and weighs about 76 tonnes, including support equipment. Moving this “regatta circus” around does not come cheap; the ocean passage from Hamburg to Arrecife on Lanzarote, where the boats sailed in December, cost about 130,000 euros.



Photo: RC 44

this,” Russell Coutts says in Malcesine, Lake Garda, which was one of the stops on the RC 44 racing circuit in summer 2008. The yacht basin of Malcesine is typical of the RC 44 regatta: narrow approach streets, little space for manoeuvring in the harbour itself, and a scarcity of berths.

Special Design

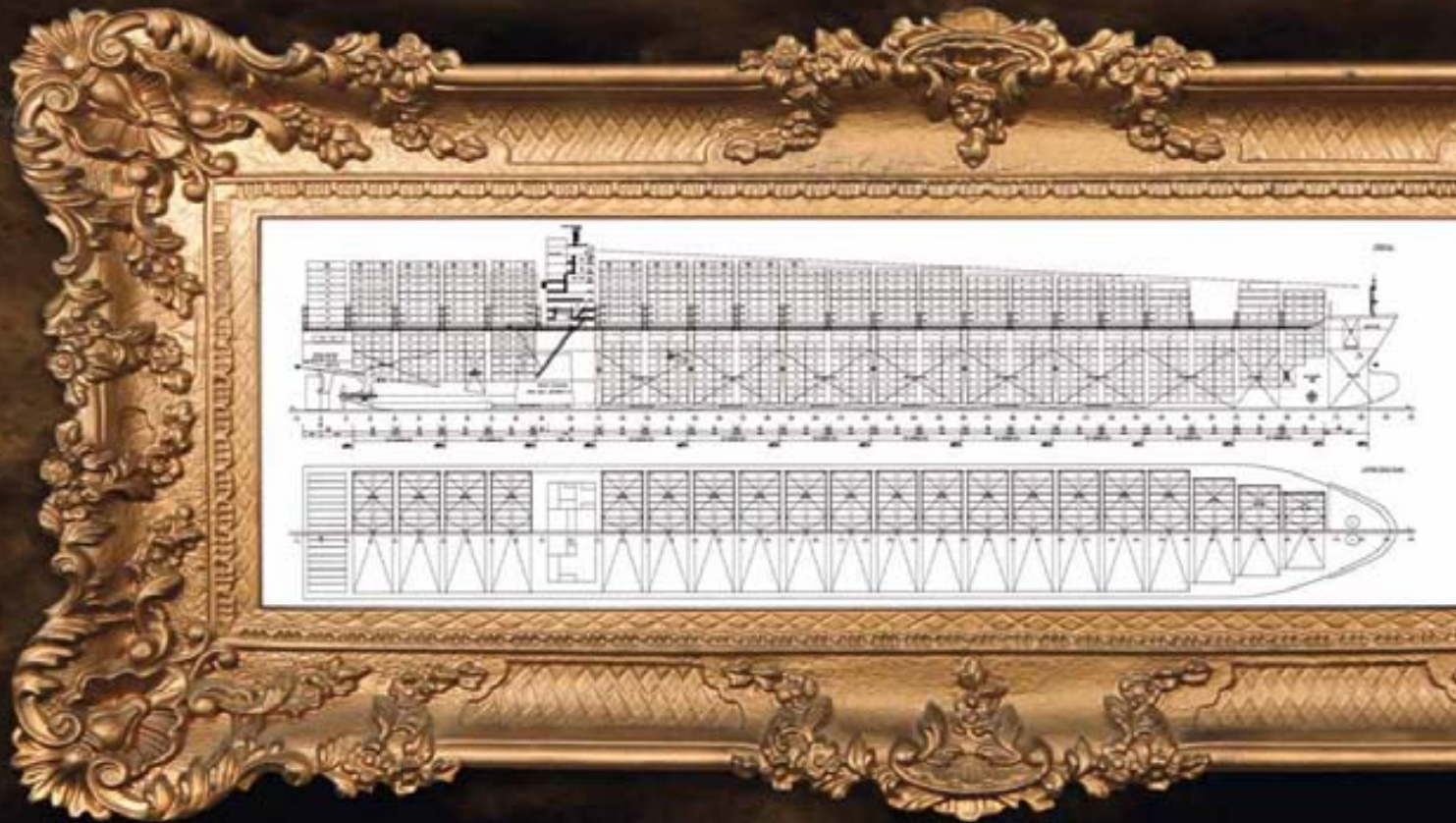
It would be a pity to miss such an opportunity for excellent sailing. The conditions prevailing at Lake Garda pose a particular challenge for the boats, crews and skippers. “The wind drops on us from above, because it descends down the mountain,” says Coutts. Besides Malcesine, the 2008 regatta series led to Dubai, Sardinia and Lake Traunsee in Austria. In October, the pros met off Trieste in the Adriatic, whilst the Canary Islands are on the agenda in December.

Ensuring that the entire racing troupe reaches all these locations and the boats are properly put together again every time demands a lot of preparation and hard work. The teams have to unrig their boats and pack them for transport, fill out customs declarations, order the cranes and low-loader trucks, and organize berths in the various ports. In addition, the crews need space for their gear and, during the time spent not sailing, they also have to eat and sleep somewhere. There is no space for that on the yachts – everything is fine-tuned for top performance.

“It really is something very special,” muses Christoph Wähling. But the construction set works: GL was responsible for reviewing the stability of the yacht as well as the structural details of the lightly stiffened hull, deck, keel and rudder blade. With the aid of finite-element models, the integrity of the bottom structure with the chainplates was also examined.

■ DH

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A Masterpiece from China

How do you best accommodate 10,000 containers on a ship? To find an economical and environment-friendly answer to this question, Dalian Shipbuilding Industry Co. Ltd. (DSIC) and GL are collaborating in the development of a new design for a very large containership

In a pioneer project, Dalian Shipbuilding Industry Co. designed its first 10,000-TEU container vessel based on GL rules. This opens up an entirely new dimension for the company. “Up to now, we have mainly built containerships with a capacity of up to 6,600-TEU,” says Ma Yingbin, Vice Director of Design Department at DSIC. “Now, with the new design, we can enter the market of very large container vessels.” The current portfolio of the shipyard largely consists of 1,800-TEU, 4,250-TEU and 6,600-TEU containerships but also of 76,000-dwt, 110,000-dwt and 300,000-dwt oil tankers. In the bulk carrier segment DSIC primarily builds 180,000-dwt and 300,000-dwt ore carriers.

Ambitious Plans

Dalian Shipbuilding Industry Co., named after the city of Dalian, is one of China's leading shipbuilders. Established 110 years ago, the state-run company has ambitious goals for the coming years: DSIC expects to increase its total annual output from last year's three million dwt to six million dwt by 2010, eight million dwt by 2015 and 10 million dwt by 2020, respectively.

To achieve these goals, DSIC is ready to strike new paths in the very large container vessel market. “Together with Germanischer Lloyd, we developed the design of a 10,000-TEU container vessel according to the latest international rules and regulations,” explained Ma Yingbin. Both parties have been collaborating for years and have completed a

number of joint projects, such as design studies for 8,300-TEU and 6,500-TEU vessels.

10,000 Containers and More

The objective of the new project was clear, and the challenges were formidable. The new containership design had to be flexible and comply with the latest rules and regulations, e.g. MARPOL Fuel Tank Protection and SOLAS 2009 Damage Stability Regulations. Some initial reviews of structural drawings have been completed, and the first re-

DALIAN – THE MOST BEAUTIFUL TOWN IN CHINA

Photo: Paul Louis



“The city has a beautiful scenery, a long coastline, a splendid natural deepwater port, a glorious shipping history and a population of six million enthusiastic people,” Dalian's Mayor Xia says describing the city. Dalian is known as China's northernmost ice-free seaport and has been a major harbour since ancient times. Subsequent infrastructure investments enabled Dalian to become the

primary Asian port for Russia. After the Russians left the country in the middle of the 20th century, China further developed the Dalian area and established a major shipbuilding industry. Today, the city is an important centre of international trade.

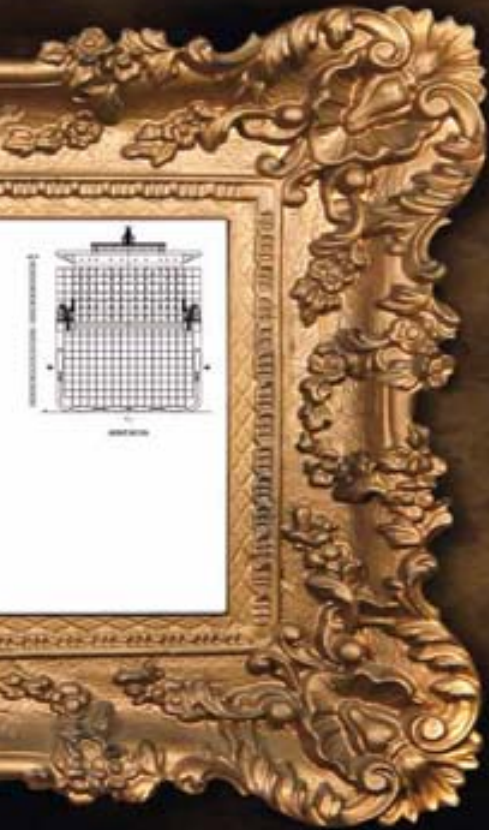
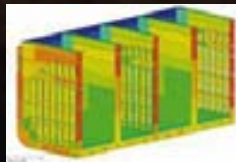


Photo: Dreamstime

DALIAN SHIPBUILDING

Established in 1898, Dalian Shipbuilding Industry Co., Ltd. (DSIC) belongs to China Shipbuilding Industry Corporation (CSIC). DSIC evolved into a multi-industrial entity including industrial production, foreign and domestic trade, real estate development, hotels and restaurants, shipbuilding and labor services, as well as technical development.

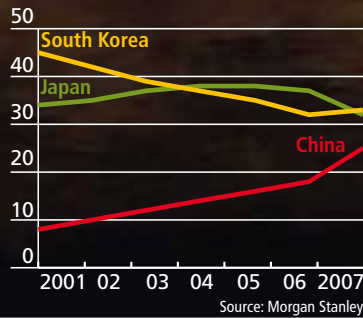
In shipbuilding, the capabilities of DSIC comprise design, manufacture and repair of domestic and foreign civilian vessels as well as marine engineering and equipment. The ship portfolio includes



GRAPHICS. Structural design of the container giant.

tankers, chemical and product carriers, containerships, LNGC as well as engineering and offshore platforms. DSIC was China's first shipyard to build a 300,000-dwt VLCC (very large crude carrier), which was delivered in August 2002.

CHINA. Eating into the market share of South Korea and Japan.



sults were discussed by representatives of both companies during a meeting in Dalian in September 2008.

The scope of the cooperation agreement comprises the conceptual layout of the ship, key structural plans, local scantlings of longitudinal structure members according to GL Rules, as well as Finite Element Method (FEM) cargo hold analysis. In addition, GL will also hold a number of in-house workshops for employees of the shipyard, such as training courses and lectures on structural characteristics, software operation, and model building.

By Shipbuilders for Shipbuilders

The new ship design was developed using POSEIDON ND, the computer-based structural design and analysis tool for shipyards, design offices, owners and operators. POSEIDON ND was developed by GL in close cooperation with

clients. "The design tool supports the entire engineering process and makes it possible to model and analyse complex ship sections," says Jan-Olaf Probst, Senior Vice President, Ship Newbuilding at GL. Structural changes can be implemented easily on the fly to optimize the design. Capable of generating a finite-element (FE) model of a ship's structure automatically, the software provides special modelling functionality for symmetric and asymmetric hull structures or ice-class reinforcements, as well as features enabling hatch-cover assessments. The software helps engineers to improve the quality of newbuildings, speed up approval times and cut the cost of the structural design process. ■ SG

For further information: Jan-Olaf Probst, Senior Vice President, Ship Newbuilding, Phone: +49 40 36149-537, E-Mail: jan-olaf.probst@gl-group.com



PARTNERS. Cai Zhuji (DSIC, front left) and Werner Enning (GL) – behind Jan-Olaf Probst (GL).

GERMANISCHER LLOYD IN CHINA

Classification society Germanischer Lloyd has been present in the Asia/Pacific region for over a century. Today, GL has a strong network of nearly 550 experts serving shipyards, the supply industry and shipping companies. More than 1,500 container-ships, multi-purpose vessels, bulk carriers and oil/chemical tankers are presently in the GL new building orderbook in the Asia/Pacific region. In Dalian, GL opened its first office ten years ago. The range of services offered includes newbuilding supervision, inspections of ships in service, ISM, ISO and ISPS certification, quality management certification, approval of workshops/shipyards as well as training activities.

Best Wishes, IMO 60

For the past 60 years, the IMO has been the principal maritime organization securing safety of seafarers and ships and the protection of the marine environment. A success story

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Seafaring is dangerous.” That has been a God-given fact for centuries. It was not until the nineteenth century that this somehow heroic attitude towards the dangers of seafaring began to crumble. On the one hand, the invention of the steam engine meant that ships were less at the mercy of the weathers. On the other hand, maritime commerce was increasing and suddenly masses of people were moving over the oceans. However, greater numbers, speed and size led to more accidents. During the winter of 1820 alone, more than 2,000 ships were wrecked in the North Sea, causing the death of 20,000 people.

Since the 19th century there was increasing recognition of the need to formulize international standards and to enact legal treaties. But, even by the mid-20th century, there still were comparatively few international treaties and those that existed were not accepted or implemented by all maritime states. The result was that standards and requirements varied or sometimes were even contradictory.

Therefore, when the IMO – originally called Inter-Governmental Maritime Consultative Organization (IMCO) – was first established, it filled a need for international standards to regulate the business.

Always Taking a Long View

The IMO set global standards without neglecting unique regional demands. Today, 60 years after the adoption of the IMO Convention, the organization has demonstrated how international standards – developed, agreed, implemented and enforced universally – are the most effective way to improve an industry as diverse and international as shipping. From today’s point of view, it is difficult to comprehend why so many shipowners were against setting up the IMO at first.

But in 1948 the world was a different one. Though fatigued by war, there still were strong nationalist tendencies. Furthermore, it was the colonial powers that were the major forces in shipping and trade. And, as the leading maritime



Photo: iStockphoto

Photo: International Maritime Organization



“Almost without exception, decisions within the organization are taken by consensus and, thus, all countries have a stake in those measures.”

**Efthimios E. Mitropoulos,
Secretary-General of the IMO**

technical progress. Even during the cold war it was possible to cooperate right across the political divide in order to apply technical solutions to marine safety problems.

To achieve the organizations' objective of "safe, secure and efficient shipping on clean oceans" the IMO has adopted some 50 conventions, supported by hundreds of codes, guidelines and recommendations covering just about every facet of the industry. The worldwide acceptance of the IMO and the strength of the organization is probably derived from two main factors: consensus and expert input.

"Almost without exception, decisions within the organization are taken by consensus," said the IMO's Secre- →

nations, they tended to create their own standards in regulatory terms. Many believed that having "others" participate would diminish their own influence. But then, luckily, wise and far-sighted people dominated at the historic meeting in Geneva where on 6 March 1948, the IMO Convention was adopted under the auspices of the United Nations.

Condition for the Convention coming into force was 21 member states, of which seven had to have at least 1 million GT of merchant ships. On 17 March 1958 Japan signed as the 21st state. In 1959 the members of the IMO first met in London. Today the organization has 168 member states and three associate members. Virtually every nation with an interest in maritime affairs, even several land-locked ones, are included.

Consensus and Expert Input

The IMO was designed as a technical body and its member states have always regarded it as a non-political vehicle for



INTERNATIONAL
MARITIME
ORGANIZATION

HEADQUARTERS. True to the motto "Safe, secure and efficient shipping on clean oceans", the IMO came into operation in 1959. 168 states are full members of the organization.

Photo: Mattes



PIONEERING ROLE.
The containership "CSCL Los Angeles" already complies with the prospective recycling requirements.



Photo: Nordcapital/Hasepusch

→ tary-General Efthimios Mitropoulos reflecting on the 60th anniversary of the IMO. "In this way, the natural reluctance one might feel at being asked to implement measures that one may not have espoused fully in the first place is circumvented. And, thus, the agreement by consensus means that all countries have a stake in those measures and a genuine desire to exercise the responsibility that comes with a sense of ownership."

The development of IMO conventions and regulations has always been a complex process of producing good, pragmatic and workable solutions speeded up by accidents and political intent. Specialists from all over the world and from all ship-related sectors are involved in decision-making.

For one, member governments send their experts to IMO's technical meetings. In this context, Germanischer Lloyd can also participate strongly and actively in the German delegation as technical consultant of the Federal Ministry of Transport of Germany. The IMO very much benefits from the contributions of specialists from interested inter-governmental and non-governmental organizations. This procedure allows for a constant flow of information and exchange of views to rely on.

Noteworthy is also the impact of the so-called Round Table of International Shipping Associations. The International Chamber of Shipping and the International Shipping Federation headed the first list of non-governmental organizations granted consultative status in 1961, with BIMCO, Intercargo and Intertanko joining soon after. Since then, their activities have been closely linked to IMO. As supporters of the principle of international regulation of an essentially international industry, the Round Table associations have pressed for a balance between regulation and self-regulation, recognising the need for effective controls as well as the dangers of stifling technological innovation.

Continuous Improvement

Shipping is an international industry that depends on a global regulatory framework to operate efficiently. But during its history, the IMO had to adapt to the changing structure of the global shipping industry. Today's major shipping nations and the financial contributors to IMO



LEADING FIGURE. The philosophy of the organization is mirrored in the seafarer memorial in the entrance hall of the IMO's headquarters.

Photo: International Maritime Organization

are different from those sixty years ago.

The IMO has seen many of its members changing from predominantly shipowning countries to "port state" countries interested mainly in the safety of visiting ships. Most unusual for an UN agency: the greater part of the budget comes from developing countries due to the introduction of the open registry system and the fact that the payment depends on the size of each country's merchant fleet.

To keep pace with emerging demands, the IMO not only adapted to changes of the industry but also continuously broadened its activities. Whereas at its outset the organization was mostly concerned with maritime safety, today its remit includes safety, environmental concerns, legal matters, technical cooperation, maritime security and the efficiency of shipping.

Especially environmental concerns are at the top of the organization's agenda.

The IMO has recognized the need to develop its own solutions rather than see regional emissions levels developed. For 2009 the industry expects the IMO to deliver a global decision for addressing the reduction of carbon emissions from shipping.

■ NL

BASIC WORK

Up to date and capacious: with the "IMO Pilot" Germanischer Lloyd provides a summary on the changes of the current IMO legislation. The guidebook offers an overview of all the major changes in technical and operational requirements of the IMO conventions (SOLAS, MARPOL, STCW, Load Lines etc.) since 2005. Free download under www.gl-group.com > download > IMO Pilot 2008



GL ShipLoad for Strength Analysis of Containerships

by Dr Jörg Rörup, Dr Thomas E. Schellin and Helge Rathje (Germanischer Lloyd, Hamburg)

Photo: Stockphoto

Introduction

For several years now, the dimensioning of complex ship structures has been based on finite element (FE) analyses of the entire ship [1–3]. Unlike the traditional rule-and-formula-based design, this method aims to reflect the actual loads computed for the ship.

GL ShipLoad was developed as a user-friendly software tool for efficient generation of realistic loads to enable a reliable global FE analysis of containerships [4, 5]. Based on the design-wave approach, this software identifies the most relevant load combinations for dimensioning a ship's structure. By performing first-principle hydrodynamic computations for regular waves, GL ShipLoad determines wave-induced pressure and ship acceleration values.

Structural loads result from the acceleration of masses (inertial loads) and from external (wave-induced) pressure. GL ShipLoad models the mass distribution of a ship and its cargo, computes hydrostatic and hydrodynamic wave-induced pressures, and combines both load types to generate balanced, quasi-static load cases.

User-defined selection criteria, such as the maximum total vertical bending moment or maximum torsional moment, specify the waves used for global strength analysis. By choosing loads specified by the Guidelines for Strength Analyses for Ship Structures with the Finite Element Method [2], the tool can create rule-based envelope curves of global sectional loads by approximation. A large number of wave situations must be analysed to identify the design waves needed. Roll contributes significantly to the initial torsional moment in the fore holds [6] and must be accounted for when analysing aspects such as hatch cover deflection and the corresponding hatch corner stresses.

Performing a structural analysis on this basis involves several tasks [5]:

1. **generating an FE mesh, capturing the structural properties of the hull**
2. **selecting two critical loading conditions for structural analysis, usually the maximum and minimum hogging moments in still water**
3. **adding grouped masses to the FE model, representing loads related to cargo and consumables**
4. **establishing hydrostatic balance for this loading condition**
5. **performing a linear calculation of ship motions and accelerations**
6. **computing wave-induced pressures acting on the ship's hull, accounting for non-linear adjustments**

Process Descriptions



Photo: Fotocollie

7. **generating dynamic balance for the FE model**
8. **performing a systematic analysis of different wave situations**
9. **selecting the critical design load cases**
10. **performing the structural analysis.**

Process Descriptions

GL ShipLoad was developed to provide a convenient software tool for performing all necessary steps of the load case generation process without requiring expert knowledge in hydrodynamics.

The hydrodynamic part of the processing cycle in GL ShipLoad, schematically represented in Fig. 1, begins with the application of a linear frequency domain strip theory to calculate ship accelerations and wave-induced pressures for the ship advancing at constant forward speed in an environment of regular, unit-amplitude waves of different lengths and directions. Hydrodynamic pressures are then adjusted to the wave contour of finite amplitude waves to account for effects of extreme bow flare and strong stern overhang, yielding non-linearly corrected (pseudo) transfer functions of wave-induced pressures in waves of various heights. Next, these pressures are inte-

Load Groups

Mass Distributions

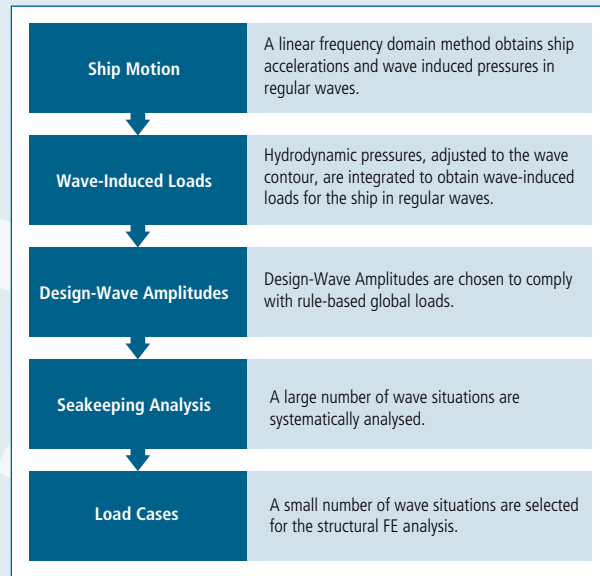


FIGURE 1. Key steps of hydrodynamic load generation.

CONTAINERSHIP. Typical excessive bow flare and stern overhang.

grated and combined with the inertial forces to obtain the global loads acting on the ship structure.

Design-wave amplitudes are chosen to comply with rule-based bending moments. From a large number of wave situations characterized by systematic variations of wave heights, wave lengths, and wave headings, a smaller number of regular design waves are selected to subject the hull girder to the required maximum loads.

Imbalances between pressure and inertial forces caused by non-linear corrections are compensated by adjusting the ship's accelerations. This ensures balanced global loading of the structural finite element model.

Load Groups

Any load case processed for the FE model is a combination of specific load groups. This approach provides an efficient repertoire of loads for many different wave conditions. All loads are assigned to one of the following load groups:

1. hydrostatic buoyancy loads
2. static weight loads
3. static tank loads

4. six inertial unit load groups resulting from the three translational and three rotational rigid body accelerations of all masses except the tanks
5. six inertial unit load groups resulting from the three translational and three rotational rigid body accelerations of the tanks
6. one hydrodynamic load group for each selected wave pressure distribution.

Combining the first three load groups produces balanced hydrostatic load cases. Inertial load groups must be multiplied by the accelerations relevant for the respective load case. Balanced dynamic load cases are then obtained by combining the results with the hydrodynamic load distribution.

Mass Distributions

For a containership, components of a mass distribution are typically grouped into assembled mass items that define reusable building blocks. These mass items comprise the steel weight of the hull, the equipment and accommodations (lightship weight), fuel oil, fresh →

Hydrostatics

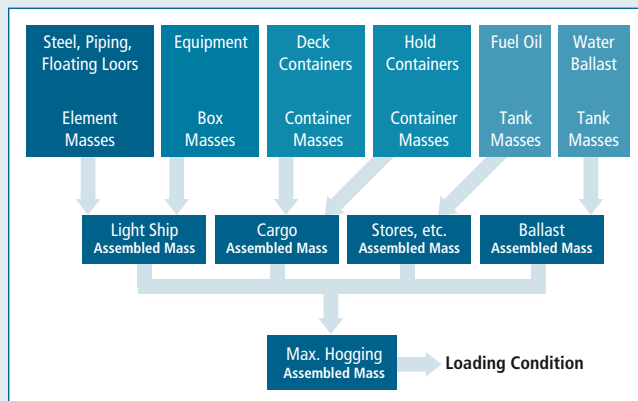


FIGURE 2. Typical masses grouped into assembled mass items.

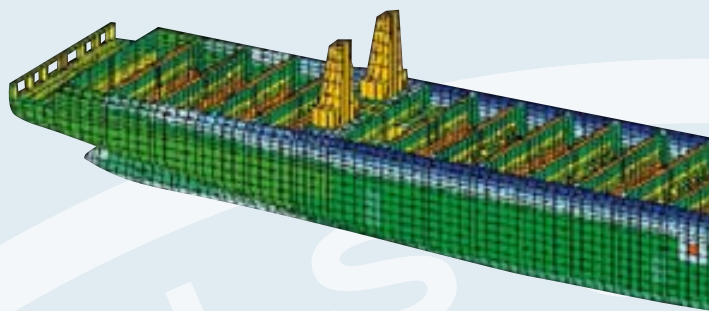


FIGURE 3. Global FE model.

→ water and other consumables (bunkering), water ballast and cargo.

While some mass components differ for each loading condition, such as bunkering masses at departure and arrival, other mass components remain the same for each loading condition, such as lightship weight. For ease of use and reuse in typical loading situations, the basic mass components are grouped into assembled mass items as represented in Fig. 2.

Basic and assembled mass items form a so-called mass matrix. A mass matrix assigns nodal loads to nodal accelerations derived from computed rigid body accelerations. Translational accelerations are directly applied to all nodes; rotational accelerations are converted into translational accelerations. The lightship weight of the hull is obtained by applying a material density to finite elements. It is common practice to scale element masses to account for structural components not included in the model, such as brackets. To meet a centre of gravity position specification for the weight of the hull structure, different material densities can be used for individual element groups.

The remainder of the lightship weight (machinery, hatch covers and outfitting) and the consumables are represented by a distribution of nodal masses in relevant regions according to their locations and centres of gravity using so-called box masses. Box masses distribute a prescribed total mass within a spatial region that is described by one rectangular box or by a combination of rectangular boxes.

The mass within each box, specified by two diagonally opposing points, is distributed as homogeneously as possible. A given centre of gravity may be entered. User-defined box masses

are also used to define tank geometries. Topologically closed regions in the finite element model, so-called closed cells, are used to identify tank loads. The tank masses are distributed among the relevant nodes of the tank based on a hydrostatic pressure distribution scheme that accounts for the fluid level and density.

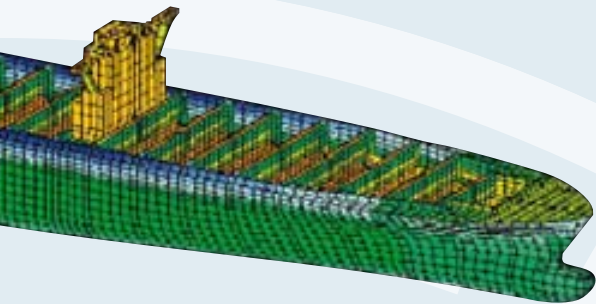
The location of each container is pinpointed by defining the locations of container bays and container tiers. An interactive graphical representation of the relevant ship cross-section and the containers to be accommodated ensures continuous visual control of the process. While the procedure for transferring container masses to the ship's structure is the same for hold and deck containers, they differ in terms of nodal degrees of freedom.

In the case of hold containers, all lateral loads in the longitudinal and transverse directions are applied to the fore and aft transverse bulkheads, while the vertical forces are transmitted through the corner fittings of 20' or 40' containers onto the inner floor of the hull or a deck supporting the containers. For deck containers, hatch cover specifications determine which nodes are subject to container loads. Vertical loads are applied to the fore and aft hatch coamings through the corner fittings of a 40' container, while horizontal loads act upon the stopper locations.

Hydrostatics

The ship's hydrostatic equilibrium in calm water determines its trim and heel. To achieve hydrostatic equilibrium, GL ShipLoad relies on a Newton iteration of draft, trim, and heel until

Hydrodynamics



buoyancy forces and moments are in balance with the mass distribution, whereby a finite difference scheme computes the Jacobian matrix required for the Newton iteration.

Then, integration of hydrostatic pressures over shell elements idealizing the hull yields buoyancy forces, and multiplying distributed masses with the gravity vector (in ship coordinates) determines gravity forces.

Hydrodynamics

Excessive bow flare and stern overhang are common features of modern containerships. For large ship motions that do not involve bow emergence or water on deck, the non-vertical sides at the ends cause non-linear ship response.

Accounting for these non-linear effects can lead to significant differences compared to linear wave-induced loads. Hachmann [7] formulated a computationally efficient method that extrapolates hydrodynamic pressures above the calm water level. This method is implemented in GL ShipLoad to obtain non-linearly corrected pressure predictions that extend up to the wave contour.

In assessing hydrodynamic loads, it is necessary to consider a range of sea conditions and headings that produce a critical response of the structure. For containerships, the following three global sectional loads are usually identified as critical loads:

1. vertical bending moment (VBM)
2. horizontal bending moment (HBM)
3. torsional moment (TM).

Additional load parameters may be specified. For example, if slamming loads affect the design, vertical accelerations at the ship's ends must be considered as critical load parameters.

Numerous wave situations are analysed by systematically varying wave length, wave crest position (phase angle of the wave), and wave heading. For every loading condition, about 20 load cases are finally selected for the FE analysis. Waves required for the strength analysis may also be selected manually by specifying the height, length, heading, and phase angle of the wave along with the ship's speed. Based on the global sectional loads listed above, GL ShipLoad facilitates an automatic selection of wave parameters. →

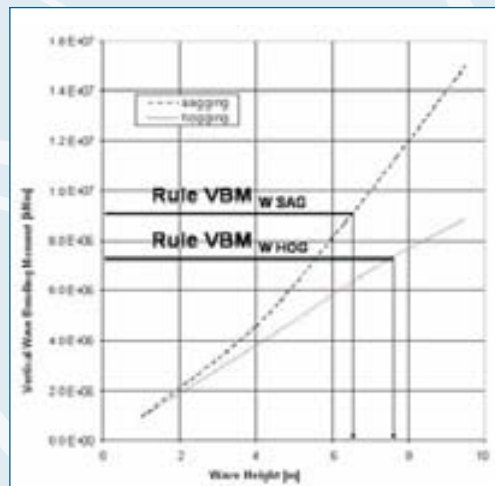
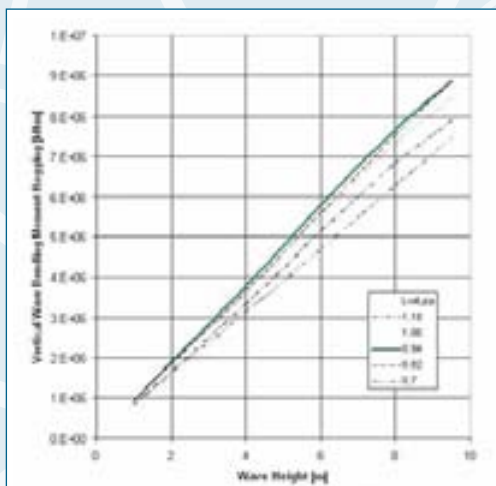


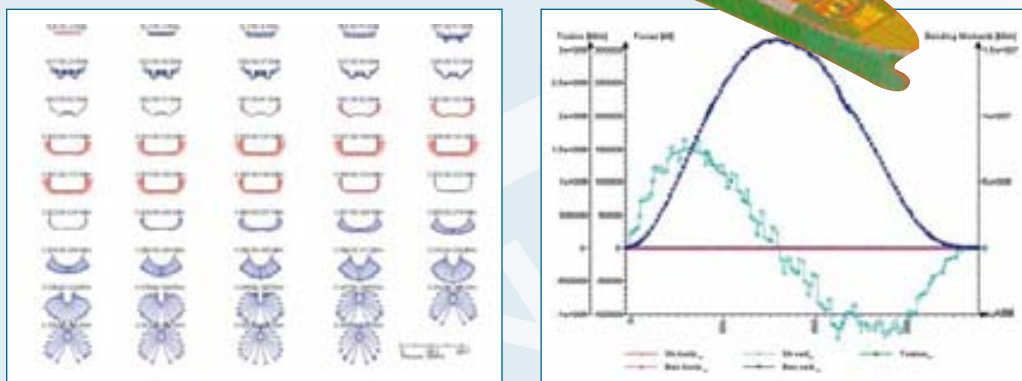
FIGURE 4. Vertical wave bending moment hogging vs. wave height (L_w = wave length, L_{pp} = ship length between perpendiculars).

FIGURE 5. Selection of the design wave height.

Equivalent Design-Wave Approach

Analysis of a Sample Containership

FIGURE 6. Hydrodynamic pressures, sectional loads, and hull deformation for the maximum bending moment.



→ Obviously, the wave height must be excluded from the variable parameters when searching for sectional load extremes since there would be no upper bound on hydrodynamic forces if the wave height were allowed to become arbitrarily large.

Instead, so-called reference wave amplitudes are derived from rule-based bending moments, shear forces, or torsional moments. The applied wave height is thus a function of the reference wave amplitudes for each wave length and phase angle.

Equivalent Design-Wave Approach

The equivalent design-wave approach is a compromise between the rule-based load approach and the physical-load approach. The underlying assumption is that if the ship is designed to resist loading caused by selected design waves, it will resist all loads expected during its lifetime.

The software tool GL ShipLoad implements this approach by selecting design waves that represent load combinations relevant for dimensioning the structure from a set of harmonic waves. Amplitudes of design waves are scaled such that only one wave causes the design load while none of the other waves cause larger loads.

Generally, these computations are extensive. Therefore, to expedite calculations, one

or more so-called dominant load parameters (DLPs) may be specified by the classification society. Based on previous experience with similar ships, such load cases represent critical wave loading conditions.

Analysis of a Sample Containership

We performed a global FE strength analysis for a 13,000-TEU containership. Table 1 lists its principle particulars; Fig. 3 shows our global FE model.

Loads applied to the FE model were broken down into appropriate load groups, such as deck containers, cargo hold containers, ballast and fuel oil, etc., and distributed among the nodes of the FE model based on the loading case under investigation.

A strip-theory-based code solved the linear problem of a ship advancing at constant speed in waves. We added viscous roll damping according to Blume [8] and corrected for non-linear hydrodynamic pressures in finite amplitude waves according to Hachmann [7].

To determine the design-wave amplitude, the first step was to establish the critical wave length that resulted in the maximum vertical bending moment at a given amplitude. The DLP according to [7] was the midship vertical bending moment in hogging under head and following sea conditions. In this case, the critical wave length was 0.94 times the ship's length (Fig. 4).

Enforced Roll

Length between perpendiculars	366,0 m
Molded breadth	54,2 m
Molded depth	27,7 m
Molded scantling draft	15,0 m
Design speed	26,0 kn

TABLE 1. Principal particulars.



FIGURE 7. Typical hatch-corner crack damage.

According to [2], the smallest wave height resulting in the maximum required wave bending moment (VBMWH) had to be selected as the design-wave height. For the ship under investigation, VBMWH values were $7.38 \cdot 10^6$ in hogging and $8.93 \cdot 10^6$ in sagging, and the corresponding design-wave heights turned out to be 7.82 and 6.34 m for the hogging and sagging conditions, respectively; see Fig. 5.

Wave lengths that were analysed to obtain global loads in regular waves ranged from 0.35 to 1.2 times the ship's length. Wave headings ranged from 0 to 180 degrees at 30-degree in-

tervals. For each combination of wave length and wave heading, 50 equidistant wave-crest positions over the ship's length were considered.

From a total of 9,500 situations of the ship in regular waves, 20 design load cases were selected for each static loading condition. They were selected by comparing the sectional moments for the vertical and horizontal wave bending and torsional moments to approximate the envelope curves for these moments as provided by the classification society [9].

Typical results of load computations are shown in Fig. 6 for the containership subject to the DLP that defines wave loads causing maximum vertical bending. Presented are hydrodynamic pressures acting on 44 cross sections of the ship, longitudinal distributions of total sectional loads (shear forces, bending moments, and torsional moments) that also include still-water loads, and the corresponding hull deformation. The illustration shows the deformation of the FE model with vertical exaggeration.

Enforced Roll

Large open hatch areas, characteristic of modern containerships, tend to weaken the torsional strength in the fore-hold area. Fig. 7 shows typical fatigue damage at a hatch corner of a post-Panamax container carrier. High torsional moments, especially in the →

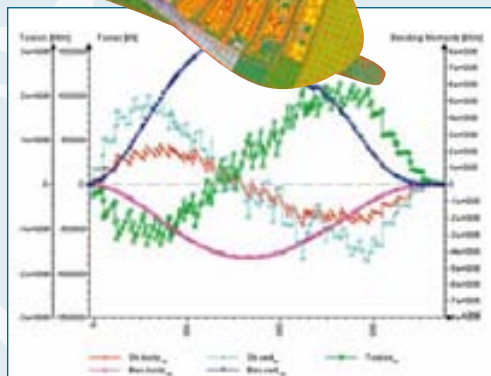
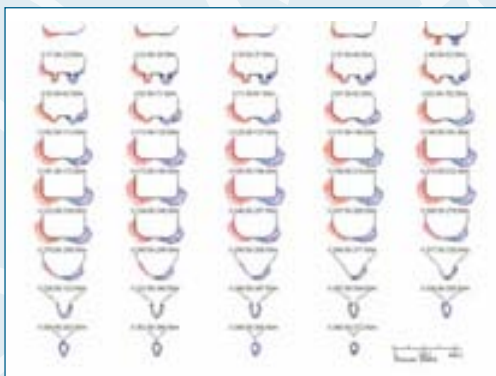
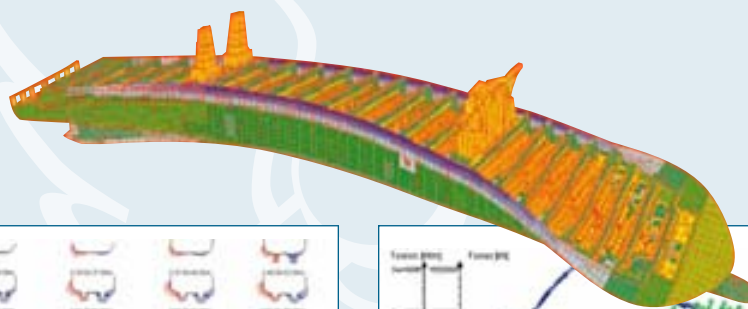


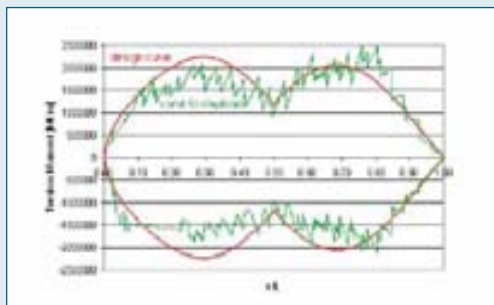
FIGURE 8. Hydrodynamic pressures, sectional loads, and hull deformation for the ship under maximum torsion and 16.0 degrees enforced roll to starboard.



Concluding Remarks

Acknowledgements

FIGURE 9. Envelope curves of torsional moments.



→ fore-hold area, are often related to roll motions. To allow realistic simulation of the effects of an additional, roll-induced torsional moment in the fore-hold area, we specified an enforced roll angle as an additional input parameter for a subsequent FE analysis with GL ShipLoad.

To obtain design-relevant load cases, we assumed that extreme roll angles and a maximum vertical bending moment do not occur simultaneously. For the enforced roll cases we therefore analysed the ship in reduced-amplitude waves according to the Guidelines for FE Strength Analyses [2]. We performed the analysis for the two enforced roll angles of 9.2 and 16.0 degrees to both port and starboard. For these roll angles, the wave amplitude was reduced to 86 and 50 per cent of the design-wave amplitude, respectively.

Fig. 8 shows results for an enforced roll angle of 16.0 degrees to starboard. In the fore-hold area, the torsional moment (green curve) reached its maximum value. Fig. 9 depicts envelope curves of the longitudinal torsional moment distribution. The jagged (green) curve represents GL Ship Load results; the smooth (red) curve, rule-based design values. These curves show that torsional moments generated using GL ShipLoad closely approximated the envelope curve of torsion according to classification-society rules.

Concluding Remarks

A reliable computation of loads based on the design-wave approach requires the selection of load combinations that are relevant for the dimensions of the hull structure. The GL ShipLoad software package was developed to generate design loads for a global structural FE strength analysis of seagoing displacement ships.

For large containerships, FE analyses with a global structural model are generally performed to confirm adequate structural properties while minimizing design uncertainties.

To account for all critical load combinations, the relevant design-load cases have been laid down in the applicable directive [2]. GL ShipLoad offers a convenient tool that enables users without expert knowledge in hydrodynamics to perform all steps necessary for comprehensive load case generation.

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 A red, three-dimensional 'ON AIR' sign is the central focus, set against a blurred background of a television studio. In the background, a man in a suit is visible, and a large 'BizTV' logo is partially seen. The overall scene is lit with blue and white tones, suggesting a professional broadcast environment.

A TV Station for Sailors

Marine BizTV is the world's first maritime TV broadcasting station. For founder Sohan Roy, a successful, multi-talented entrepreneur, entertainment alone does not top his agenda. His concept includes opportunities for training and continued education

If you ever see a filming crew at a maritime event, it would probably be Marine BizTV. Marine BizTV is the world's first 24-hour, free-to-air television channel exclusively dedicated to the maritime industry. An English-language platform, it offers education, information and business promotion. Marine BizTV is streamed via satellite and the Internet. Its online branch, Web TV, delivers concurrent streaming broadcasts and is equipped with a unique video-on-demand and archive-access facility (www.marinebiztv.com).

The founder of the maritime television channel is the CEO of the Dubai-based Aries Group, Sohan Roy. Apart from his proven talents as an artist, actor, lyricist, event manager, and award-winning director, the native Indian entrepreneur is a naval architect by training. He joined the Indian Merchant Navy and worked as a junior engineer and a marine surveyor. In 1998, Sohan Roy founded the Aries Group in Sharjah. Aries offers an impressive spectrum of services: ship-design consultancy and marine surveys, ultrasonic thickness gauging, non-destructive testing, project management, material testing, interior design, marine software, technical training, vessel brokerage, tourism and event management. In 2007, Roy added Marine BizTV to the existing bouquet of firms.

Great Numbers and Projects

Sohan Roy realized early-on that the maritime industry was lacking a common platform to share information and business. As a diploma holder in film direction as well, he proceeded to produce and direct events and programmes for the television industry.

46 maritime organizations with a combined membership of over 50,000 have joined the Marine BizTV platform. Sohan Roy has ambitious goals: "By the end of 2009, we would like to reach out to 365 maritime-related organizations and one million decision-makers." One way of promoting the broadcasting activities is to organize international conferences in conjunction with industry events – be it the Middle East Alumni of Naval Architects, Boat India

or the forthcoming ShipTek 2009 to be held in May 2009 in Singapore.

Sohan Roy had not forgotten his former life as a marine engineer and the frustration of not knowing what is going on in the rest of the world, when at sea. Internet, satellite telephones and other lines of communication are not always accessible and are expensive too. Thus, one pioneering feature of Marine BizTV was to offer convenient distance-learning programmes for seamen on board ships. "With Marine BizTV, I have been able to fill this gap by providing educational and entertaining programmes on board, also covering training sessions like safety, ISM/ISPS, and other regulatory regimes," says Sohan Roy.

Career Prospects for Seafarers

This concept is highly convincing. Crewing is an ongoing challenge for the maritime industry and demand has far outstripped supply. At the same time the average time spent on board decreases due to a shortage of attractive career prospects.

Sohan Roy's idea of a maritime e-university project would offer seafarers a chance to pursue career enhancement opportunities by learning while sailing. "We are already working on the maritime e-university concept of bringing the entire maritime institutes in the world under one umbrella. Maritime institutes and training institutions will be able to provide online certification courses to the global community of seamen," says successful entrepreneur Roy. Furthermore, cooperation among maritime institutions could pave the way to library sharing, an integrated syllabus, industry-sponsored scholarships, student-exchange programmes, a centralized quality evaluation system etc.

Sohan Roy's professional commitment will also help enhance the public image of shipping in these difficult times. His idea of founding an e-university appears to have established an excellent cornerstone to further his strategic vision of heightening the attractiveness of shipping for potential seafarers. ■ OM



Liberia's Drive to Compete with the Best

Combining entrepreneurial skill, strict quality and safety requirements, the Liberian registry LISCR has earned an excellent reputation in international shipping. Now the US-based enterprise wants the Liberian flag to conquer the very top of the charts

It was a long and arduous journey but in the end, the troubles were not in vain. As an open registry operated by private-enterprise principles, the Liberian flag today ranks high on the “White Lists” of international port-state MoUs. With a rigorous, highly successful quality and safety strategy, the Liberian flag is striving to compete with the best.

The Liberian Registry has developed its own recipe for success, combining innovation with advanced technical expertise as well as a healthy business instinct. Boasting a well-organized management team and employing accomplished industry experts instead of bureaucratic regulators, the flag state has done a lot to improve the reputation of so-called “Flags of Convenience”. In 2008, the year of its 60th anniversary, the registry has come to be known for quality and safe shipping and can be counted among the high-standard flag states in the world.

In 1948, former U.S. Secretary of State Edward Stettinius, the first U.S. Ambassador to the United Nations, was looking for ways to compete in international business and industry in general, and in the global maritime trade in particular. He had the brilliant idea of creating an independent ship registry, open to shipowners around the globe. Because of his personal ties with Liberian president William V. S. Tubman, and the traditionally strong relation-

ship between the Republic of Liberia and the United States, Stettinius decided to establish this open registry under the flag of Liberia.

In 1949, the Liberian International Ship and Corporate Registry (LISCR) started its activities. It is responsible for the registration, regulatory enforcement and safety of ocean-going ships as well as the enforcement of maritime treaties such as SOLAS (“Safety of Life at Sea”) and MARPOL

“It is very important that our organization is based on business principles.”

Scott Bergeron, CEO of the Liberian International Ship and Corporate Registry





PROFILE LIBERIA



INITIATOR. Former U.S. Secretary of State Edward Stettinius was the father of the Liberian Registry.

Situated on the west coast of Africa, and bordered by Sierra Leone, Guinea, the Ivory Coast and the Atlantic Ocean, the Republic of Liberia was founded in 1847 by a colony of freed slaves from the USA. In 1862, the country was declared the first independent African nation.

Close relationship. After World War II and during the Vietnam War, Liberia strongly supported U.S. interests at the United Nations. In return, the USA began investing in the Liberian economy.

This close relationship was decisive for the former U.S. Secretary of State Edward Stettinius in proposing Liberia as a new flag state. "He had a vision," says Scott Bergeron, Chief Ex-

ecutive Officer of the "Liberian International Ship & Corporate Registry" (LISCR). "Liberia got the chance to prosper and develop. And at the same time it was a possibility to realize a promising business idea."

U.S. marine law. Stettinius' suggestion was accepted by Liberia's president William Tubman, and in 1949 the Liberian parliament enacted a new maritime law which was similar to U.S. legal requirements for the maritime industry. In addition, there always remained a close connection with the U.S. government. The head office of the LISCR has operated from the USA since the inception of the register. Today it is located in Vienna, Virginia, near Washington D.C.

("Prevention of Pollution from Ships"). The head office of the LISCR has operated from the USA since the inception of the register.

Focus on Business

Greek shipowner Stavros Niarchos was the first entrepreneur to recognize the potential of the new concept. In March 1949, he enrolled the first vessel in the open registry of Liberia, the 29,000-dwt tanker "World Peace". Soon, Aristoteles Onassis and other shipping tycoons followed. "They benefited from the promise of a good flag, with close relations to the U.S. government and run by businessmen rather than bureaucrats," explains Scott Bergeron, Chief Executive Officer of the LISCR.

The Liberian Registry was the first shipping registry in the world that was contracted out to a private company, the American "International Trust Company", by its administration. "The idea was smart," says Bergeron. "Running a register as an enterprise in an efficient and business-like fashion while adhering tight internal quality standards." This concept is the main reason for the success of the Liberian Register, he continues. "It is very important that our organization is based on business principles," he says.

For Bergeron, the advantages of a separation between company administration and government are clear: "While

government does keep in touch, the customers profit from the professionalism of an organized business. Furthermore, the organization is not dependent on local politics; the terms of the contract do not change due to a change in the Liberian government."

The political autonomy of the Liberian Registry was helpful in maintaining stable growth during the eventful history of Liberia. While the Republic of Liberia went through ten years of military dictatorship until 1989, followed by nearly 20 years of civil war, the Liberian Registry was able to retain its economic independence and build on its success. In the mid-seventies, the Liberian fleet grew to about 75 million gross register tonnes, forming the biggest fleet in the world at the time. During the Liberian civil war in the nineties, the nation's government depended heavily on the maritime funds. The income of the Liberian Registry accounted for 70 per cent of the Liberian government revenues.

The political situation in Liberia first began to stabilize with the election of President Ellen Johnson-Sirleaf in January 2006. The former banker at the World Bank and director of the UNDP (United Nations Development Programme) is the first female Head of State in an African country. Under her leadership, and with the help of the UN Peace Corps, matters in Liberia took a turn for the better. Experts are →

Photo: iStockphoto

Photo: Office of War Information



Photo: iStockphoto



Photo: E.R. Schiffahr/Nordcapital

YOUNG FLEET. The average age of the ships under the Liberian flag is 14.2 years. The container vessel "COSCO BEIJING" was commissioned in 2006.

→ expecting an economic growth of ten per cent for 2008. With an annual income of about 20 million US dollars and over 1,000 newbuilding orders in 2008, the ship registry is a key pillar of the Liberian economy.

Today, more than 2,800 ships, or ten per cent of the world's ocean-going fleet, are classed under the Liberian flag. At 82.2 million gross register tonnes, this is the second largest fleet behind Panama. With an average age of 14.2 years, the Liberian fleet is the youngest national fleet. Besides, according to U.S. statistics, more than one third of American oil imports are transported by Liberian ships.

Shared Responsibility

"It is indispensable for us to adhere to very high quality and safety standards," says Scott Bergeron. "We need to make sure we maintain the achievements the LISCR has made so far." A concern of prime importance is therefore the cooperation with classification societies. The registry's selection process for recognized classification societies follows strict rules. "All the classification societies that we are dealing with have to be in the International Association of Classification Societies and in conformity with the provisions of SOLAS regulation XI/1," Bergeron informs. "IACS membership is an operative benchmark. There is no commercial exclusion."

The ten recognized classification societies, all of the members of IACS, are responsible for conducting surveys

and issuing statutory certificates on behalf of Liberia. To keep in close contact with the classification societies and follow up on the impact of new regulations, the Liberian Registry holds annual meetings to address technical questions concerning the implementation of regulations.

For Bergeron, these conferences are an important means of ensuring trouble-free cooperation between flag states and classification societies. "We depend on each other. Class surveys and overlapping statutory requirements go hand in hand. Therefore we need to have an efficient partnership. Otherwise the collaboration would not work." Bergeron emphasizes the value contribution made by classes: "The class has the oversight, the expertise and the technical understanding. This is a great responsibility that needs to be shared with the flag state."

While Bergeron deeply appreciates the work of the classification societies, he admits that the views of flag states and classes may differ at times. "The challenge for both sides is to improve their communication, considering the areas of responsibility we are facing." He especially refers to port-state control procedures. "Of course it makes sense that the classes focus on their task of pinpointing the technical deficiencies of a vessel."

Multi-Tiered Quality Control

He is aware of the difference between statutory and class-related deficiencies. "Of course it is easier to look at a life

TOP 5. Liberia ranks among the most successful flag states. The registry lists 1,800 ships. In terms of tonnage, the Liberian flag with its 75.3 million GT takes second place after the Panamanian flag.

Rank	Flag State	Ships
1	Panama	6,015
2	Liberia	1,804
3	Malta	1,235
4	Bahamas	1,221
5	Singapore	1,196

Rank	Flag State	Million GT
1	Panama	165.4
2	Liberia	75.3
3	Bahamas	41.3
4	Hong Kong	35.8
5	Greece	35.6

as of: 31.12.2007

jacket or a life boat than checking ballast water tanks or sea valves. But nevertheless," he says, "all rules have to be enforced. International Safety Management and International Ship and Port Facility Security Code matters are just as important as corrosion in a double-tank structure."

Therefore Bergeron stresses the necessity of putting the best of everyone's abilities together: "If a flag has put a classification society in charge, there is a partnership that goes both ways. We may have a different perspective, but we are facing the same challenge."



NUMBER 1. The oil tanker "World Peace" of Greek owner Stavros Niarchos was the very first vessel to sail under the Liberian flag.

To guarantee the best possible safety of their ships, the LISCR does not rely exclusively on the inspections and survey reports provided by classification societies. Besides the regional offices in Vienna, New York, Hamburg, Hong Kong, London, Piraeus, Tokyo, Zurich and Monrovia, the flag state also has over 220 nautical inspectors and 120 qualified security and safety auditors of its own. "They conduct annual safety inspections on board Liberian-flagged vessels and attend fire and life-saving drills," Bergeron points out. "Basically, they are another layer of oversight." Complementing the work of class surveyors, they check health, environment and safety-relevant conditions on board as well as the ship's documentation.

The efforts made to ensure quality and safe shipping are clearly visible. Liberia has consistently been rated as one of the best-performing registries by the Paris MoU, Tokyo MoU or the U.S. Coast Guard. The Paris MoU is a consortium of 14 European countries that coordinates port-state controls.

These control authorities monitor compliance with international rules on safety, pollution prevention and living and working conditions for seafarers. For all these areas of control, the port state authorities draw up lists to categorize registries. As a consequence of very low port-state control deficiency ratios and high quality and safety standards, the Liberian Registry has been ranking high on the "White List of Port State Control Regimes", among other categories.

International Pioneer

Furthermore, the LISCR is a leader in introducing new standards and implementing new international codes and conventions, such as the International Maritime Organization's "International Ship & Port Security Code". In 2002, the Liberian Register was the first major flag state to ratify MARPOL Annex VI, an international convention to prevent air pollution from ships.

All these aspects are evident indicators of the successful management of the Liberian Registry. Yet this is not enough for Scott Bergeron. "We are always trying to find ways to improve our development and to expand. Lately our staff has been reinforced with a number of technical experts representing every area of the maritime trade."

In recent times, many retired U.S. Coast Guard employees have been working for the register. With an overhaul of its enterprise structure, the LISCR is taking another step in its development towards being competitive with the highest-ranking flag states. Bergeron is confident that Liberia is on the right way. "Now," he states with pride, "the organization is opening up. The head office and the regional offices are growing, and we have people with experience in ship management, class, finance, trade associations, masters and ship operators." ■ OM

Network for Safety

15 years ago, maritime nations of the Asia-Pacific region set up a port state control network: the Tokyo Memorandum of Understanding. The results and cooperation with other regional organizations is excellent

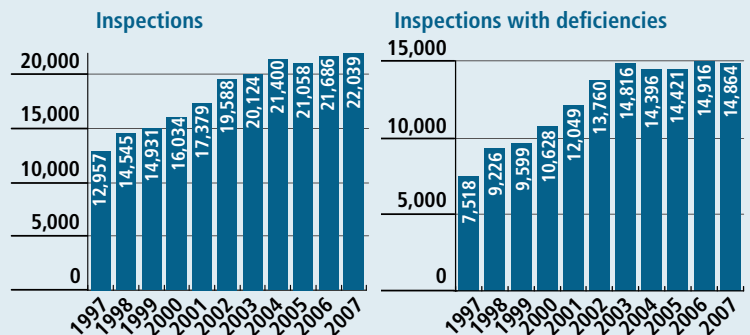
BOLLARD. Vessels with serious deficiencies must stay in the harbour. Last year, the number of detentions in the Tokyo MoU area accounted to 1,239.

TOKYO MOU – AN OVERVIEW

Member authorities: Australia, Canada, Chile, China, Fiji, Hong Kong (China), Indonesia, Japan, South Korea, Malaysia, New Zealand, Papua New Guinea, Philippines, Russian Federation, Singapore, Solomon Islands (not signed yet), Thailand, Vanuatu and Vietnam.

Observer organizations: International Maritime Organization, International Labour Organization, Paris MoU, Vina del Mar Agreement, Indian Ocean MoU and Black Sea MoU.

Observer authorities: Macao (China), North Korea and the United States Coast Guard.



Source: Tokyo MoU

Promoting maritime safety, the welfare of seafarers and the protection of the maritime environment, the Memorandum of Understanding on Port State Control in the Asia-Pacific Region (“Tokyo MoU”) came into effect on 1 April 1994. Its signatory countries, maritime nations in the Asia-Pacific region, endeavoured to strengthen cooperation and the exchange of information among maritime authorities within the region.

The agreement established rules for training inspectors, a common scope for inspections, specific grounds for detaining ships, as well as a database system for exchanging information about ships under survey. The MoU currently has 19 fully member authorities. The Secretariat, located in Tokyo, operates independently of the participating maritime authorities and other organizations but is accountable to the Port State Control Committee, the governing body of the MoU under the provisions of the memorandum.

The Right to Inspect

Can Tho, Vietnam. A multi-purpose vessel has just entered the port, shrouded in dense morning mists. Port state control inspectors board the ship for an unannounced visit. They are mainly interested in checking the ship’s documents for completeness and validity. Experienced and well-trained, the inspectors complete their task quickly. They have not found any deficiencies, so the vessel may sail on without any delay.

Coastal countries have the legal right to inspect ships navigating their national waters to verify that the condition of each vessel and its equipment, as well as its staffing and operation, are in compliance with the requirements of international regulations.

The shipping conventions adopted by IMO members contain provisions for the inspection of ships visiting foreign ports to ensure they meet the requirements. While the ultimate responsibility for implementing convention regulations rests with the flag state, port states are encouraged to do their share to support the safety network. Port-state control is regarded as a measure complementary to flag-state control. The inspector boarding a ship uses his expert judgement in deciding about specific actions to be taken. If he finds conditions that constitute a major safety and/or environmental hazard, he is entitled to detain the ship until the deficiencies have been rectified.

The IMO has encouraged the establishment of regional port-state-control organizations around the world. Today regional port-state control MoUs are in place covering all of the world’s oceans. The Paris MoU, signed in 1982, was the first such agreement. The US Coast Guard, while not a member of any MoU, is in itself a powerful port-state-control organization.

Tokyo MoU Makes a Difference

Experience has shown that port-state control can be more effective if organized on a regional basis. A ship entering port in one country will normally visit other countries in the region before embarking on its return voyage. The con-



CHECK. A Tokyo MoU Official inspects the safety systems on board.

tinued efforts under the Tokyo MoU to further develop and enhance port-state control activities in the region thus play a vital role in enforcing international regulations. The numbers speak for themselves:

In 2007, member authorities of the Tokyo MoU inspected a total of 22,039 ships registered under 98 different flags. This represented an increase of 353 ships, or 1.6 per cent, over 2006. The number of ships inspected under the MoU amounted to 66 per cent of the fleet operating in the region.

The inspections revealed 83,950 deficiencies on 14,864 ships. The two most frequent deficiency categories were life-saving appliances and fire-safety measures.

1,239 ships sailing under 58 different flags were detained. The detention rate of ships inspected was 5.62 per cent, a small increase compared to 5.5 per cent the year before.

Whereas the Black Flag list remained unchanged at 13 flags, the Tokyo MoU was happy to announce that the number of flags appearing on the White Flag list, which comprises consistently high-performing flag states, continues to grow, listing 30 flags in 2007.

Supra-Regional Cooperation

The Tokyo MoU cooperates with other regional MoUs. An important aspect of this partnership is the exchange of database information on the results of port-state-control inspections. Members of affiliated MoU’s can access this information to investigate the inspection history of specific ships. As a consequence, any ship entering the Asia-Pacific region will find it difficult to conceal its port-state-control history.

From time to time, members of regional MoUs agree to carry out coordinated inspection campaigns, usually for a period of three months. The Tokyo MoU collaborates closely with regional port-state-control organizations, such as the Paris MoU, the US Coast Guard and the Indian Ocean MoU, to support the global drive against substandard tonnage. In 2008 the Paris and Tokyo MoUs as well as other regional organizations launched an initiative to address non-compliance with Solas V (Safety of Navigation).

For 2009, major MoUs are planning a joint-inspection campaign focussing on lifeboat-launching arrangements, including their maintenance and records, operational safety, on-load releases, davits and winches, as well as drills. The Tokyo MoU Committee and the Paris MoU have established an intersessional group which is developing a questionnaire and related guidance. ■ NL

MOUS WORLDWIDE

Europe and the North Atlantic (Paris MoU), Asia and the Pacific (Tokyo MoU), Latin America (Acuerdo de Vina del Mar), Caribbean (Caribbean MoU), West and Central Africa (Abuja MoU), the Black Sea Region (Black Sea MoU), the Mediterranean (Mediterranean MoU), The Indian Ocean (Indian Ocean MoU), the Arab States of the Gulf (Riyadh MoU).

Trimmed for Precision

Electrical sheet manufacturing of the future: AEM in Dessau is one of the first makers of electrical machines to convert its production process to laser cutters – a success story

Photo: Dreamstime

Motors for steering gears, dredgers and conveyor systems; generators for shipboard power supply and small hydroelectric stations – the operational spectrum for the electric motors and generators produced by AEM – Anhaltische Elektromotorenwerk Dessau GmbH is broad indeed.

For all their applications, magnetic steel sheets are produced in large quantities – in a wide variety of shapes, batch sizes, diameters and degrees of complexity. Until now, it has only been possible to use laser technology for the production of electrical sheets in exceptional cases. For Rolf Rätzer, Managing Director of AEM, the introduction of lasers in this field represents a manufacturing milestone.

The Dessau works have been producing rotating electrical machines since 1949. Following the privatization of the company in 1993, AEM concentrated increasingly on making three-phase synchronous generators and three-phase asynchronous motors. “Our production is about 60 per cent synchronous and 40 per cent asynchronous,” Rätzer explains. The electrical machines are manufactured for customers all over the globe. Frequently, the units are made to meet specific requirements of the customer.

The main focus lies on the maritime sector: “We supply about 80 to 85 per cent of our generators to the international shipbuilding industry, of which 70 per cent has the certification of Germanischer Lloyd,” says Rätzer.

Striving for High Quality

But that is not the only connection to Germanischer Lloyd. This mutually beneficial partnership has existed for more than 15 years; AEM’s quality management system was already certified by GL in 1995. The end result: “All processes of the company are carried out under strict quality control and with great precision,” Rolf Rätzer declares. “Quality is the key to entrepreneurial success – from sales right up to final inspection,” he adds. “We keep a close watch on the reliability of our products to ensure that our customers are satisfied.”

A newly-established logistics centre is to help meet the high-quality demands. This corporate philosophy has played a significant role in enabling AEM to set new standards in the production of electrical sheets.



TECHNOLOGY. Machining a shaft from all sides in one step.



PRODUCTION. Ultramodern dual-head laser cutter for electrical sheets.

Photos: AEM



HEADQUARTERS. From its works in Dessau, AEM supplies three-phase asynchronous motors and three-phase synchronous generators of premium quality to customers all over the world.



WELDING. Precision cutting for three-phase synchronous generators.



Any company engaged in making electrical sheets nowadays is faced with many challenges. But AEM took the bull by the horns, rationalizing its sheet production processes two years ago.

Punch Meets Laser

The firm's strategy was clear: the enterprise had to reinvent itself as a manufacturer of special machines. However, this transformation called for greater flexibility.

"We were faced with the task of either replacing the old technology or looking for new possibilities. Punching is only worthwhile when using compound dies or for a large number of similar sheets," Rätzer explains. "You always have the drawback that they are bound to the particular contour determined by the tool in question." To allow effective and flexible production, the implementation of dual-head laser units was the logical choice. "Although this special laser technology is used in the production of electrical

machines, it is still in the 'mixed mode' with conventional punching. We are the first manufacturer to convert completely to lasers for all our product lines," says Rätzer, not without a trace of pride. In a new hall, the electrical sheets are manufactured with state-of-the-art laser machines "that also guarantee high productivity for a product batch size of one". Every year, about 1,200 tonnes of material pass through the factory and are converted to, for example, rotor and stator sheets.

With the new laser technology, the individual machining times may turn out to be longer than with punching. "At certain points, you have an added consumption of material and power. This is because we have to use inert gas, which is something you do not need with punches." For Rolf Rätzer, the way forward is quite clear: "The laser machine is a processing tool we absolutely depend upon to put our philosophy into practice. The benefits by far outweigh the drawbacks."

■ AH

INTERVIEW

"Specialized know-how is needed for building customized machines"

AEM Managing Director Rolf Rätzer talks about the growing demands on electrical machine production and his corporate strategy

nonstop: Mr Rätzer, what is your assessment of the current situation for your industry – can you still speak of a boom?

Rätzer: Actually, I think the outlook for our industry is very good. Electrical machines can be used to perform energy conversion with the highest efficiency. In future, it will still be necessary to use electrical machines in many applications. The strategy and use of laser technology is a response to the developments. In the light of the growing shortage

of energy resources, it is all the more important to achieve optimum operating economy.

nonstop: What does your strategic position – also in view of the competition from Asia – look like?

Rätzer: It is quite conceivable that business with standard machines will tend to shift completely over to international competitors. For special machines that require customized development, however, you will still require specialized know-how. This is clearly where our advantage lies, because AEM is increasingly moving into the field of specialty engineering. As a vertically integrated company with its own development, own design and own sales units, we can

cater to the needs of our customers and develop special machines that fully meet the requirements of the market.

nonstop: How do you see the future of AEM?

Rätzer: As a medium-sized enterprise, we are a respected business partner in many industry sectors. Our development has been especially positive in shipbuilding. To follow up the capital expenditure of the past few years – particularly in sheet production – we are planning further investment in modern technologies.



Photo: AEM



Photo: Eckardt-Herbert Amdt

LAUNCH. Heiner Dettmer (l.) and his wife Dorthe Kollo (2nd from l.) celebrated the christening ceremony of double-hull tanker "Bernhard Dettmer" with more than 130 guests. Also: Dr Günter Dettmer and his wife Bärbel.



Photo: Eckardt-Herbert Amdt

Double Skin

Single-hull inland waterway tankers will be allowed to ply EU waters until 2018 – after that, these ships must either be scrapped or converted. However, the chemical and petrochemical industry is already calling upon the shipping companies and owner-operators to use double-hull tankers

A practice that has been common in sea shipping for several years is now also gaining acceptance in the sphere of inland shipping: new tankers in the European Union are only being built with a double hull. No less than 175 double-hull tankers are already in service for German firms, shipping companies and owner-operators, because double hulls are prescribed for a number of especially dangerous goods or demanded by clients in the industry. Although 200 single-hull tankers are still under way on the inland waterways of Germany, their days are numbered. By 2018 at the latest, they will have to be decommissioned, unless they are converted accordingly.

The complete transformation of the German inland tanker fleet to double hulls represents a financial tour de force. Small firms in particular will be overburdened by their financing needs for ship newbuildings if low-interest loans are not provided, warns Germany's inland shipping organization, Bundesverband der Deutschen Binnenschifffahrt (BDB), in its annual report. It proposes a targeted programme of state support for the conversion or new fabrication of double-hull tankers.

But the financing issue is only one of the challenges. It is likely that the yard capacities in Germany and the rest of Europe will not be able to han-

dle the corresponding number of newbuildings or conversions by the cut-off date. This is the reservation expressed by Heiner Dettmer, Managing Partner of the Bremen-based Dettmer Group. Established in 1947, the owner-managed firm is now one of Europe's largest inland shipping companies.

In its role as a leading service provider for the European chemical and petrochemical industry, the company has made a considerable investment in the conversion of its tanker fleet. "As the European market leader for inland waterway tanker shipping, we aim to be one of the pacesetters. What is more, some of our major customers from the petroleum industry are already demanding the

highest possible safety standards, and these can only be met by double-hull ships," says Heiner Dettmer. His shipping company is therefore pursuing a two-pronged strategy: "older" tonnage is being refitted, while new ships are ordered with double hulls.

Off to a Good Start

In the middle of September 2008, the first double-hull tanker newbuilding of the Dettmer shipping company was named the "Bernhard Dettmer" in the Port of Hamburg. Costing about 5.5 million euros, the newbuilding is now the

THE DETTMER GROUP

By own account, Dettmer Group is Europe's largest family-owned shipping company for inland navigation. It forms part of a widely-branched logistics conglomerate consisting of 34 subsidiaries and affiliates.

Diversified company. The service portfolio covers the areas of logistics, cargo-handling and warehousing for sea and air freight as well as liquid cargo, disposal logistics and cruise shipping. In addition to 35 own vessels, Dettmer has chartered 200 tankers and dry cargo ships to augment its fleet.



"BERNHARD DETTMER"

With a length of 100 metres and a breadth of 9.50 metres, the "Bernhard Dettmer" can carry about 1,830 tonnes and sails under the German flag. Thanks to the high-performance machinery and very efficient equipment installed on board the ship, the crew of four is able to operate the vessel on a 24-hour basis.

The tanker will be used chiefly for transporting mineral-oil products from Hamburg to Magdeburg, where the company operates its own large tank farm with a capacity of about 65,500 m³. In December 2008, the Dettmer Group will be commissioning a sister ship, also with GL class.

Port of registry	Bremen	Number of tanks	10 (5 port/5 stbd)
Owner	B. Dettmer Reederei GmbH & Co. KG	Cargo-tank volume	2,180 m ³ / 97%
Yard	Hitzler Werft Lauenburg/Elbe	Discharging pumps	2 x 400 m ³ /h
Ship type	Double-hull tanker	Loading/unloading systems	2 separate systems with gas return line, operated by PLC from the wheelhouse
ADNR Class	Type N open Germanischer Lloyd	Tank heating	External steam
Length	100 m	Main engine	MTU 12V 4000 M 61R 1,550 HP/1,600 rpm
Breadth	9.50 m	Bow thruster	Volvo D 16 750 HP/1,900 rpm
Moulded depth	4.50 m	Construction costs	ca. 5.5 million euros
Tonnage	1,831 t. / 3.00 m draught		
Draught, light	1.30 m		
Draught, max.	3.00 m		

flagship of the medium-sized enterprise. An important partner of the shipping company for this project was Germanischer Lloyd, which, as classification society, provided comprehensive support, ranging from initial advisory services including plan approval and construction supervision through to final acceptance.

"This ship means a great deal to me," says the successful entrepreneur. Its name was given by none less than his father, Bernhard Dettmer, who founded the company in 1947 together with his brother Wilhelm. The christening ceremony for the new inland waterway tanker was performed by Heiner Dettmer's wife, Dorthe Kollo, with more than 130 guests attending. The obligatory bottle of champagne burst the first time it hit the steel hull – a good omen.

Dettmer is convinced that double-hull ships are much better able to survive accidents at sea. As he puts it: "This is a very concrete contribution towards environmental protection." This opinion is echoed by GL's expert Torsten Dosedahl. "Another aspect of the new safety standard is also that the bow anchors no longer rest against the outer shell, as was previously the usual practice. They are now located in an anchor pocket incorporated into the bow," Dosedahl explains. The "Bernhard Dettmer" is fitted with these new bow anchor pockets. "It costs a bit more, but is much safer," as the Bremen entrepreneur emphasizes. ■ EHA

For further information: Torsten Dosedahl, Special Craft, Phone: +49 40 36149-961, E-Mail: torsten.dosedahl@gl-group.com

service

Dates at a Glance

DECEMBER 2008

14.12. – 16.12.2008
Seatrade Middle East
Dubai, UAE
www.seatrade-middleeast.com

14.12. – 16.12.2008
Boat India
Kochin, India
www.boatindia08.com

JANUARY 2009

21.01. – 23.01.2009
SMM
Istanbul, Turkey
www.hamburg-messe.de/smm

21.01. – 24.01.2009
World Maritime Technology Conference
Mumbai, India
www.wmtc2009.com

29.01. – 30.01.2009
SEE WIND ENERGY
Istanbul, Turkey

FEBRUARY 2009

25.02. – 27.02.2009
Maritime Vietnam
Ho Chi Minh City, Vietnam
www.maritimeshows.com/vietnam

MARCH 2009

03.03. – 05.03.2009
DTA
Singapore, Singapore

16.03. – 19.03.2009
Seatrade Cruise Shipping
Miami, USA
www.cruiseshipping.net

16.03. – 19.03.2009
EWEC

Marseille, France
www.ewec2009.info

24.03. – 25.03.2009
Green Ship Technology
Hamburg, Germany

25.03. – 27.03.2009
Colombiamar
Cartagena, Colombia
www.cotecmar.com

25.03. – 28.03.2009
Europort Eurasia
Istanbul, Turkey
www.europorteurasia.com

APRIL 2009

21.04. – 23.04.2009
Sea Asia
Singapore, Singapore
www.sea-asia.com

22.04. – 23.04.2009
Welding in Shipbuilding and Civil Engineering
Hamburg, Germany
Registration:
tagung-schweissen@gl-group.com

27.04. – 28.04.2009
SAFEDOR, Final Conference
London, UK
www.safedor.org

MAY 2009

04.05. – 07.05.2009
OTC
Houston, USA
www.otcnet.org/2009

13.05. – 15.05.2009
Intertanko
Tokyo, Japan
www.intertanko.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 > Rules & Guidelines

I – Ship Technology

Part 1 – Seagoing Ships

Chapter 5

Structural Rules for Container Ships 2008-09-23

Chapter 22

Guidelines for the Construction of Polar Class Ships 2008-11-01

Part 3 – Special Craft

Chapter 4

Guidelines for Lifeboats and Rescue Boats 2008-11-01

VI – Additional Rules and Guidelines

Part 3 – Machinery Installations

Chapter 4

Guidelines for Equipment on Fire Fighting Ships 2008-12-01

Chapter 6

Guidelines for Construction, Equipment and Testing of Closed Fuel Oil Overflow Systems 2008-09-01

Part 7 – Guidelines for the Performance of Type Approvals

Chapter 8

Test Requirements for Components and Systems of Mechanical Engineering and Offshore Technology 2008-10-01

CD-ROMs

GL Wind Guidelines 3.1

Guidelines of Germanischer Lloyd Industrial Service GmbH, Wind Energy 2008

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Staff Changes

In addition to his position as Country Manager Morocco **Najib Labrini** has been appointed as Station Manager Casablanca.

Robert George Leyden is the new Country Manager for Country New Zealand and new Deputy Area Manager of Australia/New Zealand.

Sören Lindved has been appointed as Country Manager of Denmark. **Ove Ehleresen** is Deputy Country Manager.

Alexander Ryzhkov is the new Quality Representative for the Area Northeast Europe.

Hans-Dieter Beltschany takes over as Station Manager of Station Hamburg, replacing Burkhard Schiwkowski who has resigned from GL.

Dejan Petrovic has been appointed as Deputy Station Manager for the Station Office Sydney, Australia.

Dirk Desmet is responsible for the Station Office Antwerp, Belgium, as Station Manager.

Raymond Najjar is the new Deputy Station Manager for the Station Office Antwerp, Belgium.

GL Academy

Selected seminars in 2009 (in English) – information and registration: academy@gl-group.com

JANUARY

29.01. – 30.01.2009
Consideration of Local Ship Vibration in the Design Process
Taipei, Taiwan

FEBRUARY

01.02. – 07.02.2009
Certified Coating Inspector acc. IMO PSPC
Hamburg, Germany

14.02.2009
Basics of ISO 9001:2000 for Industry and Service Providers
Szczecin, Poland

16.02.2009
Seakeeping
Tokyo, Japan

16.02. – 20.02.2009
Lead Auditor ISO 9001:2000
Szczecin, Poland

18.02.2009
Shipbuilding Basics
Kobe, Japan

18.02. – 19.02.2009
Company/Ship Security Officer (CSO/SSO) Training Course
Hamburg, Germany

19.02.2009
Update on Ship Stability
Kobe, Japan

23.02. – 24.02.2009
Internet Auditor ISM/ISO 9001:2000 for Shipping Companies
Hamburg, Germany

MARCH

30.03.2009
Basics of Maritime Accident and Incident Investigations
Hamburg, Germany

31.03.2009
Advanced Maritime Accident Investigations and Analysis
Hamburg, Germany

APRIL

01.04. – 02.04.2009
ISM/TMSA Workshop – Risk Assessment, Management of Change, Incident Investigation
Hamburg, Germany

07.04.2009
ISPS Internal Auditor for Shipping Companies
Hamburg, Germany

MAY

13.05.2009
Damages to Machinery

and Repairs
Hamburg, Germany

14.05.2009
Damages to Hull and Equipment
Hamburg, Germany

18.05.2009
Basics of ISO 9001:2000 for Shipping Companies
Szczecin, Poland

19.05.2009
Basics of ISO 14001:2004 for Industry and Service Provider
Szczecin, Poland

25.05. – 26.05.2009
Implementation and Internal Auditing of an Environmental Management System in Shipping Companies
Hamburg, Germany

JUNE

19.06.2009
Calling at U.S. Ports – Requirements for Ships and Shipping Companies
Hamburg, Germany

22.06. – 23.06.2009
Internal Auditor ISM/ISO 9001:2000 for Shipping Companies
Hamburg, Germany

IMPRINT

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news



Photo: Shell

INSPECTION. GL works closely with Shell China.

SHELL CHINA

One Hundred Years of Experience

Shell's business relations with China date back more than a century – as is the case with Germanischer Lloyd. Recently GL and Shell China Ltd signed a Procurement Arrangement for Services agreement that includes Quality Assurance (QA) and Quality Control (QC) audits, inspections and also as field expediting services in China for Shell's global procurement.

Broad Spectrum. On behalf of Shell, GL now provides auditing services to qualify pre-selected manufacturers as suppliers. In addition, GL has been put in charge of inspect-

ing products at final suppliers' sites. GL China is now one of Shell's authorized third-party inspection agencies. GL Industrial Services has been active in China for many years, delivering its full range of services in inspection, testing, certification and consulting, with regard to oil and gas, petrochemical, wind power, management systems and materials testing industries as main areas of activity.

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TRANSPORT

Cool Cargo, Fresh Taste

Refrigerated cargo is a delicate commodity. There is always room for improvement with regard to the functional principles and the handling of the cooling systems on containerships. How to get it right is explained by Chilukuri Maheshwar in a book entitled "Container Refrigeration".

As a marine engineer and training superintendent at the "Fleet Management Training Institute" in Mumbai, the author provides detailed insight into the technical prerequisites and control points of the various reefer systems.

Trailblazing Concept. Further key topics include explanations and data on refrigeration technology and the coolant cycle in containers, as well as the targeted diagnosis of malfunctions and their rectification.

TROPICAL FRUITS. During containerization the cold chain may not be broken.

Another step towards increasing the efficiency of the supply chain for perishable commodities is provided by the "360 Quality Code", which defines voluntary standards for reefer shipping companies and their suppliers. The concept was developed by a number of reefer ship operators and, according to Maheshwar, points out the future of reefer logistics worldwide. Germanischer Lloyd certifies according to this standard.

www.witherbyseamanship.com

MANUAL. Author Chilukuri Maheshwar explains functional principles and handling of cooling systems.



Photo: Dreamstime

CAST SHADOW.
Wind turbine
operators have to
offer new services.

EEG

Constant Monitoring

Voltage control, voltage buffering under fault conditions, reactive power: These are system services German producers of renewable energy must provide as of next year. The revised German Renewable Energy Act will go into effect on 1 January 2009.

At the WindEnergy trade fair in Husum, Germany, expert Kai Nohme of WINDTEST Kaiser-Wilhelm-Koog GmbH discussed the changes in the new law and the resulting requirements for monitoring the grid interconnections of renewable-energy power plants.

Proof of Compliance. Over 30 wind-energy experts listened to the required measurements to be taken on grid tie-in points. Wind turbine operators will use these measurements to demonstrate their units' compliance with the legal stipulations for power-

plant operation. Independent data capture and evaluation processes covering the entire project lifecycle will mean that the customer can be sure that reliable monitoring of the grid connection requirements of the EEG 2009 has taken place.

For further information:

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Power Quality,
Phone: +49 4856 901 43
E-Mail: kai.nohme@wtk.windtest.com

MEASURING. Key operational data is recorded continuously on wind turbines.



HISTWIN

Wind Turbines: New Joints for Stronger Tower

Optimizing steel towers for wind turbines with a special focus on tower segment joints is the main topic of the research project HISTWIN. In November, 25 wind experts met in Hamburg to discuss the status of the ongoing project.

Tests in Portugal. Presentations included an interim report on investigations into the possibility of replacing "classic" flange connections with friction joints to reduce production and assembly costs, as well as results

from scale tests performed at the technical universities of Aachen (Germany) and Luleå (Sweden). The tests will continue on an 80-metre tower of a 2-MW wind turbine in Coimbra, Portugal. The installation of measuring equipment on the tower was completed recently. Measurements will be taken until the end of 2009. The HISTWIN consortium consists of representatives of four universities, a steel producer, a tower manufacturer and Germanischer Lloyd.

MURPHY OIL

Go for GALIOM

Interaction, practice and further development of skills were on the agenda when Germanischer Lloyd hosted a GALIOM "hands-on training" workshop for Murphy Oil in Malaysia. As part of the asset integrity contracts, the participants from both the deepwater and shallow-water divisions were trained by Robert Sandham, Technical Manager GL Malaysia, and Mathews Varkey, IT Project Manager for GALIOM development and implementation, assisted by the AIM project team. The course aimed to en-

TRAINING. The participants of the workshop in Malaysia.



hance the staff members' proficiency in adapting GALIOM, GL's Asset Integrity Management software tool.

Theory and Practice. The tool is available worldwide as a plant operation support service designed to ensure system integrity and deliver value-oriented maintenance driven by risk-based status evaluation of individual

components. Following each training module, the participants performed a "hands-on" exercise which enabled the facilitators to evaluate the newly-acquired skills.

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EXPLORATION. MCS tests equipment on offshore oil platforms.

Advancing Further into the Oil and Gas Market

With the recent acquisition of Materials Consulting Services, Inc. (MCS), a vendor and site-inspection company based in Houston, Texas, serving the oil and gas industry, the GL Group has again expanded its services portfolio for oil and gas

Photo: MCS



TRANSPORT BY SEA. Preparing equipment for safe shipping.



TRANSPORT BY LAND. Large assemblies are carried on special low-platform trailers.



PIPELINES. An MCS expert performing quality tests on pipes.

The deal was done, but the final act nearly fell victim to bad weather. Just as hurricane Ike got ready for its assault on Texas early last September, Germanischer Lloyd managed to hold a last-minute press conference in Houston to announce the expansion of its Industrial Services division. “With MCS, the GL Group adds significant expertise in the tubular and downhole equipment sector to its offerings,” explained Pekka Paasivaara, member of the Executive Board of Germanischer Lloyd. “Together with Advantica and PV Inspection, MCS will operate from the GL Group’s oil and gas skills base here in Houston.”

Superior Expertise

Headquartered in Houston, Texas, Materials Consulting Services, Inc. has additional offices in Lafayette, Louisiana, Muskogee, Oklahoma and Dubai. The company’s own 160 engineers, inspectors and consultants are supported by roughly 150 external contractors.

Since its formation in 2000, MCS has been highly successful on the U.S. oil and gas markets, providing quality assurance and quality control, project consulting and other services to the industry. The company’s main focus is on the upstream sector.

The MCS experts enjoy an excellent reputation as specialists in downhole equipment and tubular goods. They

gathered experience in numerous projects in the United States and the Gulf area, the Middle East and Southeast Asia. As a result of their international commitments, they have built an extensive network of local contractors and contacts within the industry. MCS consultants are familiar with international regulations as well as local requirements and stipulations in oil producing countries around the globe. This enables MCS to provide comprehensive assistance to customers in preparing and planning projects, meeting statutory requirements and identifying qualified local staff wherever a client chooses to do business.

MCS technicians monitor all stages of the manufacturing and quality assurance process for critical products needed for oil and gas exploration and production. They test pipes, valves, wellhead equipment, drill stem segments, downhole accessories, completion equipment, pressure vessels, heat exchangers, tanks, vessels, compressors, electrical equipment and controls as well as internal and external plastic coatings and paints.

Global Expansion

In addition, MCS develops customized quality and inspection schedules, conducts quality audits of manufacturers and suppliers, monitors the proper handling of drilling and production equipment on site, and trains and certifies local technicians needed for quality- and safety-sensitive work. In addition, Materials Consulting Services, Inc. has substantial experience in areas such as project management, process documentation, manufacturing, processing, NDT and training. In short, MCS fits the GL expansion strategy like a glove, adding crucial capabilities to the third-party inspection services portfolio of Germanischer Lloyd.

Through its strategic acquisitions in the UK, Canada, the United States and Malaysia during the past twelve months, Germanischer Lloyd Industrial Services has expanded its range of services as well as its global reach significantly.

It took a cyclone like “Ike” to temporarily halt the post-merger integration process right after the acquisition of MCS had been announced to the public. The hurricane damaged the roof of the MCS office building, and torrential rains destroyed various items of the company’s equipment. It took over a week to restore electricity service to the building. But now the integration process is well underway, and GL and MCS are preparing for their joint future. ■ SG

GL INDUSTRIAL SERVICES

The Industrial Services division of Germanischer Lloyd is a leading provider of comprehensive technical consulting services as well as feasibility studies, certification and inspection service and third-party design reviews.

The holistic service offering is mainly directed at owners and operators of complex plants and installations, both onshore and offshore. Complemented recently by the British Advantica Group, PV Inspection in Canada and the United States, and Kuala Lumpur-based Trident Consultants, the GL Group’s range of oil and gas services covers the full asset life cycle.

With the additional expertise of MCS, Germanischer Lloyd will be able to further extend its network and services portfolio, especially so in the US and the Gulf region.

Photo: Dreamstime

Clean Power from Chill Winds

The Canadian renewable-power market is growing. *nonstop* spoke with Innergex managers Normand Bouchard and Peter Grover about the difficulties of operating wind turbines in cold climates, the importance of engaging the public, lobby work and the future of wind energy

The climate is the greatest challenge by far. “There are huge variations between the summer and winter season, and even between day and night. But winter time presents the most serious challenges,” says Normand Bouchard. He and his colleague Peter Grover are both members of the management team of Canadian enterprise Innergex Renewable Energy Inc. Innergex, one of the most active companies in the North American renewable power industry, specializes in developing and operating hydroelectric and wind power plants.

Subpolar climate zones call for expert knowledge. Snowfall, cold temperatures and ice are very persistent problems. Depending on the location, altitude, humidity and temperature, both rime ice and freezing rain are common problems facing the wind turbines at certain times of the year.

“Turbines must be capable of adjusting to constantly changing ambient conditions,” says Innergex VP Bouchard. One of the main challenges to wind turbine performance in cold climates is ice build-up on the rotor blades. What is more, accessing machines in need of service over rough terrain and through snow drifts pushes the crews and their equipment to the limits: “It is not so easy to do inspections or maintenance when there are four metres or more of snow on the access road to the wind farm,” says Bouchard. “Without a combination of snowmobiles and larger, tra-

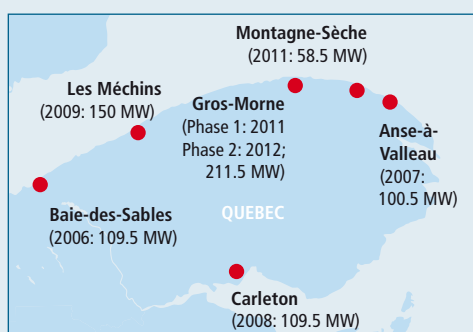
cked snow vehicles, it would be impracticable to service our units.”

Enormous Potential

In such an extreme environment, wind turbines are exposed to high mechanical loads from the cold, dense air, which can aggravate the risk of an untimely component failure during the season of highest winds and cause severe financial losses. “As an operator of wind farms, we are obviously interested in a high degree of availability of our turbines during these months,” Innergex VP Peter Grover emphasizes. “As a consequence, as we plan each new project in the Gaspé Peninsula, we determine how we will best provide year-round access and what will be the required means of transportation. Our plan is to only open the roads if heavy equipment is required to perform a major repair. Last year, during the first winter of operation at our Anse-à-Valleau wind farm, we had difficulty finding transformers that were hidden by four metres of snow. We had to post signal flags to ensure that snowmobiles would not fall into the space hollowed out by the warm transformer,” says Grover.

Indeed, Innergex cannot afford to leave anything to chance. Every project harbours its own safety risks. Therefore all service personnel must take part in cold-weather survival training. Seasonal restrictions with all the as- →

CARTIER WIND ENERGY



Canadian Wind-Power Company. Cartier, headquartered in Longueuil, is jointly owned by TransCanada and Innergex.

Projects. Cartier Wind Energy has won contracts to build six wind farms (refer to map) on the Gaspé Peninsula by 2012. These projects represent an overall installed capacity of 739.5 MW, and an investment volume in excess of US\$ 1.1 billion.

Partners. TransCanada Corporation, a leading North American energy enterprise, holds a 62 per-cent interest in the Cartier Wind Energy projects. Innergex Renewable Energy Inc. holds a 38 per-cent interest in the Cartier Wind Energy Carleton, Les Méchins, Montagne-Sèche, and Gros-Morne projects and Innergex Power Income Fund holds a 38 per-cent interest in the Cartier Wind Energy Baie-des-Sables and Anse-à-Valleau projects.

WINTER.
Wind turbines on
the Gaspé Peninsula,
Canada, have to
withstand extreme
temperatures.





BAIE-DES-SABLES. This wind farm in Saint-Laurent in Quebec generates up to 109.5 MW.

→ sociated headaches are not limited to winter. During spring, the Canadian wind farm operator – who often relies on the expertise of HéliMAX, the North American wind energy consultancy of Germanischer Lloyd – faces thaw conditions that soften the access roads and make them more likely to be flooded or washed out by small torrents fed from the snowmelt.

“Developing a project in these conditions requires a lot of planning and well thought-out clauses in the contracts with the wind-turbine equipment suppliers in case of an unexpected breakdown or functional failure,” says Normand Bouchard. But Innergex does not rely on long-term contracts alone. “We constantly review performance to optimize the machinery. We are continuously studying and implementing adjustments to maximize the output, efficiency and availability.”

The Carleton wind farm is no exception. Located near the town of Carleton-sur-Mer and the Regional County Municipality of Bonaventure, Quebec, the project went into commercial operation just a few weeks ago, following a construction phase of roughly one year. With 73 wind turbines, the wind park has an installed capacity of 109.5 MW and an estimated annual energy output of over 340,000 MWh. The Carleton wind farm is jointly owned by Innergex and TransCanada Corporation and operated by their common subsidiary Cartier Wind Energy (refer to insert). Headquartered in Longueuil, the Cartier joint venture entered

into a PPA with the electrical utility Hydro-Québec Distribution for the 20-year life of the wind farm.

Today, Cartier is one of Canada’s foremost providers of wind energy with 319 MW of wind energy capacity in operation. Cartier Wind Energy won a total of six wind energy projects to be installed on the Gaspé Peninsula between 2006 and 2012 in a call for tenders by Hydro-Québec Distribution. These projects represent an overall installed capacity of 739.5 MW, and an investment volume in excess of US\$ 1.1 billion.

All of the sites offer excellent wind resources and minimal environmental impact – an especially critical factor. Since Canada has few nationwide regulations for planning and implementing wind farms, the respective provincial government, the county administration and the municipalities all have a say in the process. In some cases, however, a lack of expertise in wind generation at the local level can result in authorities implementing bylaws and restrictions that can severely compromise the viability of the wind farm.

Increasing Public Awareness

In Canada, the public perception of a project is a very important factor. Many inhabitants of Quebec are concerned about the impact of wind farms on the scenery, even in thinly-populated areas. An additional source of apprehension for the majority of the population that has yet to visit an operating wind farm is the perception that wind turbines are noisy. For a project developer like Innergex, the resulting challenges are considerable: “We have to balance the expectations of the public with the technical requirements of efficient power production,” explains Bouchard. The Innergex management team believes a credible corporate philosophy is of the essence: “We do not build wind farms to sell them but to operate and maintain them for the life of the plant. This is a fundamentally different approach from some developers who build to sell. It is us who will have to live with the results and consequences of our decisions. So, from the beginning, we make sure that we develop sensible projects and provide tangible, lasting benefits to the host communities.”

Wind-power projects are highly visible, and so are the new power lines that are sometimes required to connect



INSTALLATION. The generators, supplied by General Electric, each have an installed capacity of 1.5 MW. The Baie-des-Sables site comprises 73 plants.



MANAGEMENT. Peter Grover and Normand Bouchard are Senior Managers of the Canadian enterprise Innergex Renewable Energy.

the projects to the main grid. As a consequence, a number of projects are the subject of heated debates among some residents. Peter Grover of Innergex notes: "Most of those who simply appreciate the difference between these clean, renewable energy projects and conventional projects with greater environmental impact are often silent in their support. Vocal support comes more from the local population who benefit from increased employment and business activity."

The Ministry of Environment permitting process is time-consuming. Many different aspects of building and operating a wind park are scrutinized, including the dismantling and disposal of the wind turbines at the end of their life cycle. Nevertheless, the permitting process in Quebec has the merit of following a prescribed timeline which is standard for large projects across all industries.

During the permitting process, it is essential to engage in a positive dialogue with the stakeholders to address their concerns. While public support for wind power in Quebec remains strong and municipalities are very interested in participating in the economic benefits of local wind farms, the unions of the publicly-owned utility have been trying to stir up support for the nationalization of all wind power-energy production or a moratorium on development of further projects by private power producers while land use and other issues are further studied.

As Canada's wind industry continues to grow, the number of wind projects that meet with opposition is increasing. In Ontario, for example, local opponents have been a factor in the cancellation of one project and delays of two others. In eastern Quebec, concern over the pace and density of wind development is spawning some organized resistance. "I think we have a challenge as an industry to ensure we are effectively engaging communities and providing the public with accurate information about wind energy as we propose projects in this environment," Normand Bouchard points out.

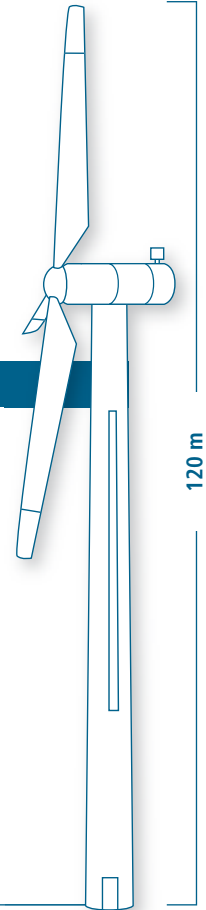
Building Trust

Thus, ensuring transparency and educating the local population are the keys to success. Innergex Senior Manager Bouchard cautions: "Developers should not try to rush projects through local processes. It takes time to develop a project. You can't do it quickly. It's still a project of electricity generation, even if it is wind. And with a project of electrical generation you get people reacting. In general, they don't want that in their backyard."

Becoming a part of the community, delivering a consistent message, connecting with opinion leaders, getting involved in policy and bylaw development, and sharing information from the outset are all key elements of a successful

BAIE-DES-SABLES WIND TURBINES

- The main components of the Baie-des-Sables wind turbines are
- **a rotor** with three blades (produced by LM Glasfiber in Gaspé), which converts the wind energy into rotational shaft energy,
 - **a nacelle** (enclosure) containing a drive train and a generator (assembled by Marmen in Matane),
 - **a tower** (built by Marmen in Matane), to support the rotor and nacelle
 - **electronic equipment** such as controls, electrical cables, ground support equipment, and interconnection equipment.



approach to any project, Bouchard stresses. It takes time to build trust with stakeholders. When selecting a site, developers should take care not to compromise views, and to avoid other sensitive areas. In densely populated regions, considerable project delays should be expected.

Yet, in Canada as elsewhere public concerns over conventional power-generation technologies continue to grow – for the benefit of wind power. "Wind energy is a proven electricity source that does not contribute to climate change, air and water pollution, destroy habitat, or generate solid, toxic or nuclear wastes. Wind energy can substitute other forms of power generation to decrease environmental concerns arising from the electricity sector," Bouchard points out.

So the future looks promising for Innergex. The new wind park was completed in time, and the generally growing demand for renewable, clean energy means wind power will be in high demand for years to come. ■ OM

INNERGEX RENEWABLE ENERGY

The company develops, operates and manages renewable power generation facilities, primarily in Canada. Innergex Renewable Energy Inc. also owns 16.1 per cent of the Innergex Power Income Fund, a publicly-traded income fund listed on the Toronto Stock Exchange, and acts as its manager under long-term management agreements. Innergex Power Income Fund owns 12 projects in operation, with a total installed capacity of 340 MW, in the Provinces of Quebec, Ontario and British Columbia, as well as in the State of Idaho, USA. The company headquarters are in Longueuil, Canada.

Dynamic Flow Control

The transport of gas through pipelines is a juggling act. Modern software solutions for transient optimization assure efficient, profitable and safe operation of pipelines

Oil and gas pipelines are in some sense an invisible industry. Consumers are well aware of electric lines as a means of transmitting energy, but pipelines are out of sight and out of mind. Nevertheless, far more energy is moved through pipelines than through electric lines.

Natural gas-transmission pipelines are large-scale endeavours and require large-scale returns to fund them. A modestly sized natural gas-transmission pipeline may span 2,000 km and represent a 1,000 million euros capital investment. The installed power at the compressor stations spread out over such a pipeline can be the equivalent of the shaft power of two Nimitz-class aircraft carriers. Efficient, profitable, and safe operation of such pipelines is therefore crucial.

Loads on transmission pipelines usually change continuously from hour to hour as commercial and residential use changes throughout the day. Gas can take several days to physically move from supply points to deliveries, so transient loads at particular spots are actually met in part by drawing upon gas mass distribution inside the pipeline (line pack). Enough line pack at the right spots at the right times is needed to prevent the pipeline from running dry from large off-takes, but too much at the wrong places and times can lead to unsafe pressure averages when loads drop.

Such situations can be managed by changing the line pack dynamically in location and time to continually shift

extra resources to where they will be needed. This is a juggling act that can sometimes be difficult for a human to do effectively. Just as a large ship cannot turn on a dime, hours can pass before a control change to engine power will begin to show up as line pack changes at nearby stations. Critically, since moving line pack to an area depletes nearby areas, operations at all stations must be coordinated to achieve the needed control.

Efficient Pack, Maximum Capacity

Transmission pipelines earn more by accepting more contracts to move more gas, including lucrative daily or hourly spot market contracts. Keeping the pipeline as fully loaded as possible is thus the key to high revenue. However, if operating conditions are both transient and near maximum capacity, continually manipulating the line pack within required operational limitations becomes increasingly difficult. A misstep may lead to under-delivery on a contract, or violation of minimum or maximum pressures, all of which can trigger large financial penalties.

Unfolding technology at Advantica gives users a tool to help with these difficulties. Given a pipeline simulation model and an estimate of upcoming load patterns, transient optimization software can recommend a schedule for changing the compressor station set points throughout the day. This schedule moves the line pack to where it



COMPRESSOR STATIONS. Optimization reduces energy consumption.



MAINTENANCE. Operators can bring the equipment up quickly.



MAJOR PROJECT.
Gas transmission pipelines require very efficient and safe operation to remain profitable despite large capital costs.

is needed in time to meet upcoming loads, and releases it precisely as needed. Pipeline pressures are kept within all required limits, and all compressor operating constraints are respected. In recommended controls, care is taken to retain enough line pack so that the next day’s operations are not compromised.

For a pipeline operator, one obvious use of the transient optimization tool is to run it at the beginning of every shift to generate a recommended operating plan to meet expected loads. Using such a plan can give the operator more assurance that the steps he takes early in the day will still leave him in a good position to make late-day deliveries safely.

When flow conditions are close to maximum, it may even provide an operating solution not attainable by hand. It can also provide early warning if the proposed transient load patterns are not actually achievable even in principle. With such early warning, the operators may have flexibility to bring up equipment that would otherwise be down for maintenance, or to shut down lowest-priority interruptible loads as needed, or take other action to mitigate the difficulty.

Minimize Risks

For the marketer, transient optimization can provide a tool for deciding which delivery contracts to accept. Currently he may reject any contracts that take system operation uncomfortably near throughput limits based on rules of thumb. But rules of thumb are only approximate, and often lead to unnecessary rejection of lucrative opportunities.

Worse, they can lead to acceptance of contracts that in reality are not attainable because of poor interaction with other transient loads. With transient optimization the guesswork can be avoided: for any proposed contract we can simply compute whether it is achievable without leading to unacceptable consequences later.

For a pipeline designer assessing adding new pipes or compression, transient optimization can be used as a tool to see how the new pipeline could actually be operated given various hypothetical load patterns. Moreover, operators traditionally rely upon past experience with their particular pipeline to make operational decisions. When pipelines are extended, reconfigured, or built from scratch, past experience can be a poor guide. Transient optimization can therefore be a tool for developing sensible simulation-based guidelines for operators given a variety of expected conditions, without using the physical pipeline as an expensive and risky test bed.

Lower Emissions

Pipelines do not always operate under the stressful situations described above. When loads are significantly less than maximum design capacity, other factors become increasingly important.

Pipeline compressor stations typically consume energy equivalent to 3 to 5 per cent of the energy they transport. Transient optimization can be used to reduce this significantly. Regardless of the load scenario, transient optimization can be configured to also minimize total system-fuel usage while ensuring the pipeline is left in a user-specified robust starting state to begin tomorrow’s operation.

Since fuel gas or electricity consumed by compressor operation translates directly into carbon emissions, by minimizing fuel we are also reducing our carbon footprint.

Advantica has developed transient optimization technology as a tool to aid natural gas pipeline operators in accurately steering their line pack even under stressful operating conditions. This can aid safe operation, help maximize revenue, reduce operational costs, and reduce carbon emissions. ■ RC

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Intelligent IT for Hungary's Gas Market

Advantica's technology has made a considerable impact on the Hungarian gas industry following a major software implementation within E.ON Földgáz Trade

With its office sitting on the prestigious Roosevelt Terrace giving impressive views directly over the city of Budapest and the River Danube, E.ON Földgáz Trade (EFT) is the biggest natural gas trader in Hungary. It supplies every Hungarian gas distribution company, thus, indirectly, every household customer.

Following a major implementation of its software within EFT, Advantica's technology has ultimately made a considerable impact on the Hungarian gas industry.

The liberalization of the Hungarian gas market started on 1 January 2004 and the journey with Advantica was to begin very soon after. In 2004, it was with EFT's predecessor, MOL Földgázellátó Rt, the public utility wholesaler and open-market natural-gas trading company, that Advantica had initial discussions. In April 2006, MOL was acquired by E.ON Ruhrgas International AG (ERI), becoming part of the E.ON Group, the biggest privately-owned power and gas company in the world.

The Need for a New System

Gas market liberalization brings with it stricter operation and fiercer competition as the market is unbundled to all suppliers in the country. The opening of the gas market to competition was the key driver in EFT seeking an IT system for the commercial management of its gas-demand portfolio. The need to implement an online system to manage customers' supply demands and provide accurate demand forecasts to reduce imbalance penalties within the regulated Hungarian gas market was vital.

EFT understood the need for much more than just a high-quality IT system implementation. They realized that the British model for market liberalization was the way to move forward and that use of key consultants to advise on best market practice with first-hand experience was necessary. Advantica's core strategy and business is delivering engineering consultancy and software solutions covering the entire gas-supply chain. The company has supplied business critical systems to the gas industry for nearly 40 years.

EFT and Advantica began the project in early 2006. In undertaking such a major IT project to support the commercial management of EFT's gas-demand portfolio, it was decided that a phased approach was necessary:

1. Implementation of Advantica's Forecaster solution to provide the fully-automated generation of daily and week-ahead demand forecasts, presented via web-based reports.
2. Provision of a replacement nomination-handling component to allow major consumers to submit their nominations and for EFT to nominate their gas requirements to the Transmission Network Operator (TSO).
3. Implementation of Gas Contract Optimiser to improve the decision-making process for obtaining gas from a variety of sources.

Throughout 2006, Advantica and EFT worked closely together. Access to IT systems was given, data cleansing undertaken and Advantica consultants thoroughly aligned the Forecaster system with the needs of EFT. Istvan Takacs, Head of IT, who worked on the project, stated that "the forecasting system brought experience to EFT which we just did not have". The first phase was implemented and provided:

- fully automated generation of daily and week-ahead demand forecasts;
- forecasts for 50 exit points including local distribution companies and total system load;
- renominations on request to the transmission operator within one hour;
- automation of previously time-consuming processes;
- EFT with the ability to manage the system with minimal assistance.

The benefits to EFT were immediate, including:

- increased efficiency through the automation of critical forecasting processes;
- improved accuracy to reduce imbalance penalties and improved decision-making;
- better understanding of forecast models and reduced risk.

In December 2006, the second phase of the project to introduce a nominations system began. This was more complex and required detailed configuration and customisa-



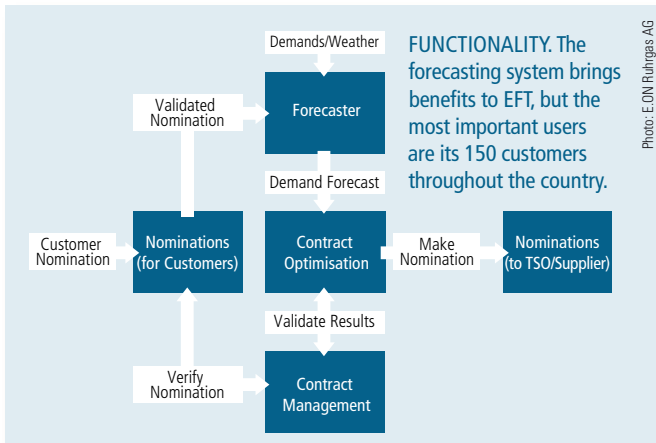


Photo: E.ON Ruhrgas AG



tion. The result was a highly efficient and flexible system that would make it possible for major consumers to submit their nominations and for EFT to nominate their gas requirements to the Transmission System Operator (TSO). In July 2007, the system went live. Takacs stated: "To deliver a bug-free, high-quality, customised system on schedule was a major achievement in the timescale given."

Customer Satisfaction Survey

As well as the key benefits the forecasting system brings to EFT, the most important users are its 150 customers throughout the country. In the summer of 2007, EFT's Marketing and Business Development department wanted to gauge the success of the implementation and how it was judged by its customers.

A survey was devised and subsequently conducted with questions about issues ranging from how much easier it made the customer's job, the ease of use, the speed of nominations, the structure of the program and the reduced risk of human error due to the improvement of communications between the customer and EFT. In all, eight questions about the system were posed and users asked to rate them, with 1 being the worst and 5 the highest score. The survey response rate was outstanding with customers keen to give their opinions on the system.

Key comments of EFT customers about the system included: "The system can be operated easily; its handling is simple"; "The application of the system results in a great improvement in the perspicuity of nominations and confirmations"; "Using the system means traceability is greatly improved". The overall response was excellent with an average score of 4.2. This is a tremendous outcome for EFT, who now aim to build on this result and serve its customers within the gas industry even better.

Photo: Shutterstock

As with all IT implementation projects, hurdles have to be overcome and key decisions taken to move things forward. One area which needed to be addressed was the provision of data, which had an impact on the timelines of the project. However, EFT and Advantica worked together to replan and ensure the data issues were resolved, resulting in a smooth testing phase.

The biggest obstacle was probably the cultural and language differences. The challenge for EFT was that initially first-line support was based in Advantica's headquarters in the UK. Advantica was quick to realize that an in-country presence was vital to give EFT the support it needed. The outcome was the establishment in 2006 of a dedicated "project office" based in EFT's building with native Hungarian speakers as the first-line support.

Future Developments

The final stage of this implementation is the Gas Contract Optimiser which aims to improve the decision-making process for obtaining gas from a variety of sources. The work undertaken with the E.ON Group is highly important to Advantica and a permanent Account Manager for the group has been appointed. He stated: "Advantica and E.ON have worked together extremely well to move this key project forward to its successful completion. It's pleasing to see the benefits that this solution is now bringing to such a high-profile client. As with any innovative company, we are always bringing new ideas and software solutions to the market and it is companies like E.ON, who are working closely with Advantica, who will be the first to benefit."

The final implementation of a fully-integrated Advantica solution at the end of 2008 means EFT will have a robust and powerful system enabling it to meet its customers' needs well into the future. ■ NS

BOOM TOWN. View over the city of Budapest and the River Danube: In Eastern Europe, Hungary is a forerunner in liberalizing the energy market.

Call of the Sea

In the wake of the wind-energy boom on land, more turbines are now to be built offshore. Worldwide, the potential in terms of available area is enormous

The bad news was received just before the start of the conference: installation of the offshore wind farm "alpha ventus", which is to lead German wind energy out onto the oceans at long last, will be delayed. But this message did not dampen the general interest in the wind sector. Some 200 experts met at the end of September for the Hamburg Offshore Wind Conference. "Offshore wind is big business," declared Frank Zimmermann of Siemens Wind Power in kicking off. "20 to 25 per cent of the Siemens installations are to be erected offshore." Siemens is one of the trailblazers for ocean-based wind energy. As early as 1991, the company, then still operating under the name Bonus Energy A/S, installed its first ocean units at the Vindeby site.

Influence of Water Level and Wind Speed

Before Zimmermann's promise can be put into practice, however, a lot of homework still has to be done. Building a wind turbine in the water differs completely from erecting one on dry land. The ocean makes its own rules. Waves, ice, seabed, currents and wind speeds vary greatly from time to time and place to place. Apropos waves: how the waves build up and what height and force they can develop was explained by Elimar Precht of DHI-WASY GmbH. "Water level and wind speed exert a significant influence on the wave height," said the project manager for wind energy and offshore technology. With the aid of impressive videos, he showed how waves slam against offshore wind turbines and may lead to damage. His advice is to save money and avoid unpleasant surprises through good planning. Building the foundation too solidly means you waste money, but making the structure too flimsy means you could lose it. In a nutshell: You have to be aware of the conditions prevailing at sea. Tests and model trials in test basins are simply indispensable.

Florian Biehl of Germanischer Lloyd put forward a similar view. He listed the relevant parameters to be observed: Where should the installation be erected? What type of turbine do we need? Where should it be assembled? What loads must it withstand? To answer all these questions, the so-called "metocean conditions" have to be considered.



TEST PLATFORM. The measurement station "FINO3" in the North Sea is supposed to deliver long-term data about the loads which turbines must withstand.

Photo: FFUE-Zentrum FH Kiel GmbH



TRAFFIC. Ferry near the offshore wind park "Lillgrund" in Öresund. Each of the 48 plants produces 2.3 megawatts.

These include the primary factors (wind, waves, ice, etc.), but subsoil conditions and events such as earthquakes, lightning or ship collisions must also be included. The scientists can obtain the corresponding data in various ways, for instance by using wave radar, measurement buoys and satellite imagery. Computational methods can also yield the required figures. In all cases, it is essential to conduct long-term measurement research, sometimes extending over many years. To harvest such data, the measurement platform FINO3 is being erected in the North Sea, with participation by Germanischer Lloyd.

KISS – Keep It Simple, Stupid!

While one may get the impression that the wind only blows in European waters, wind farms are flourishing far beyond the North and Baltic Sea – on paper, at least. "The potential in North America is huge," said Richard Legault of Hélimax Energy. No less than 1,000 gigawatts are possible in the USA alone. His forecast was that 50 gigawatts will be installed by 2030. Above all, the East Coast, West Coast and the Great Lakes areas appear to be very promising. The electricity grid is generally in good condition; as recently as 2007, the USA invested eight billion US dollars in the system. According to a study, however, an additional 20,000 line-miles still have to be laid. But here Legault issued a word of caution: the weather conditions prevailing in America's northern regions are gruelling, with ice being the main challenge. In the Gulf of Mexico, where turbines are also to be erected, hurricanes could make things difficult. Besides, there is still considerable capacity available onshore. The first sea-based projects will be implemented in 2011 at the earliest, Legault predicted.

Interesting plans have also been reported in Canada. Things are taking shape on the West Coast of British Columbia, where there are more bears than people, as Peter Hunter of NaiKun Wind Development noted. The NaiKun Wind Project will be Canada's first offshore wind farm and also one of the world's most ambitious, with a capacity of 1.75 to 2 gigawatts. Although Canada is able to cover 94 per cent of its electricity requirements with hydroelectric pow-

er, Hunter said that the demand is rising. British Columbia already has to import electricity. The grid is well established and very few additional lines need to be installed for wind turbines. Moreover, wind and water power fits well together: "When the water flow drops in autumn, the wind starts up." However, the conditions are even tougher than in the North Sea. Not only is the weather extreme, the subsoil on which the wind turbines are to be erected is also unfavourable. The region is very active from a geological viewpoint. To make matters worse, only five months a year are available for setting up the plants. Hunter intends to counter these negative factors with special methods. KISS (keep it simple, stupid!) is his magic formula. In contrast to usual practice, the wind turbines will not be arranged in a regular pattern, but just as the foundation soil allows. "A good layout is asymmetrical," says Hunter. ■ DH

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MITIGATING RISK

Wind turbines are exposed to multiple loads. Snow, ice, rain, high winds and the possibility of earthquakes all challenge land-based wind power plants. In addition, lightning strokes and short circuits can cause fire. Offshore turbines are frequently exposed to even tougher conditions, such as rough seas or potential ship collisions.

Capturing solid data. Wind turbines are generally designed for a service life of 20 years. Nevertheless, they must be capable of withstanding natural forces that occur at much greater statistical intervals. The new offshore measuring platform FINO3 will continuously collect meteorological and oceanographic data and measure a number of additional technical parameters such as wind turbulences, lightning strokes and the interaction between the foundation and the sea floor.



Photo: Fraunhofer FHO Kiel GmbH



AWARD. GL's Executive Dr Hermann J. Klein and COO Torsten Schramm with Peter-Gerhard Müller (NSB), Bozidar Petrovic (NSB), Uwe Bullwinkel (GL) and Lutz Müller (NSB) – from left.



DISTINCTION. Dr Klein with Harald Schlotfeldt, Managing Director of the F. Laeisz Shipping Group.



FIVE STARS. Dr Klein with Dr Ottmar Gast, Deputy Chairman of the Executive Board of Hamburg Süd.



PRESENTATION. Dr Klein (r.) and Alexander Schulte, Managing Director of Reederei Thomas Schulte.

“Excellence” in Series

Quality sets the pace: shipping companies that maintain high standards on a voluntary basis receive the coveted “GL Excellence” award. Six companies are already certified

Safety, quality, environmental behaviour, reliability and social responsibility: companies that consistently implement these objectives are candidates for the “GL Excellence” certificate of Germanischer Lloyd. This mark of distinction is awarded for the voluntary introduction of superior standards. The cruise specialists from AIDA Cruises kicked off the series in 2006, with six companies now certified – two only recently.

Ocean Shipmanagement, a subsidiary of the Hamburg-based shipping company Thomas Schulte, is the fifth company to receive the “GL Excellence” certificate. For “GL Excellence”, at least nine obligatory requirements must be fulfilled in the categories Management Systems, Safety, Environment, Operation and Comfort.

Ocean Shipmanagement had already been certified to ISO 9001 (quality) and ISO 14001 (environment) in 2006. In addition, the shipping company is also distinguished by its certification in accordance with the ISM Code (International Safety Management)

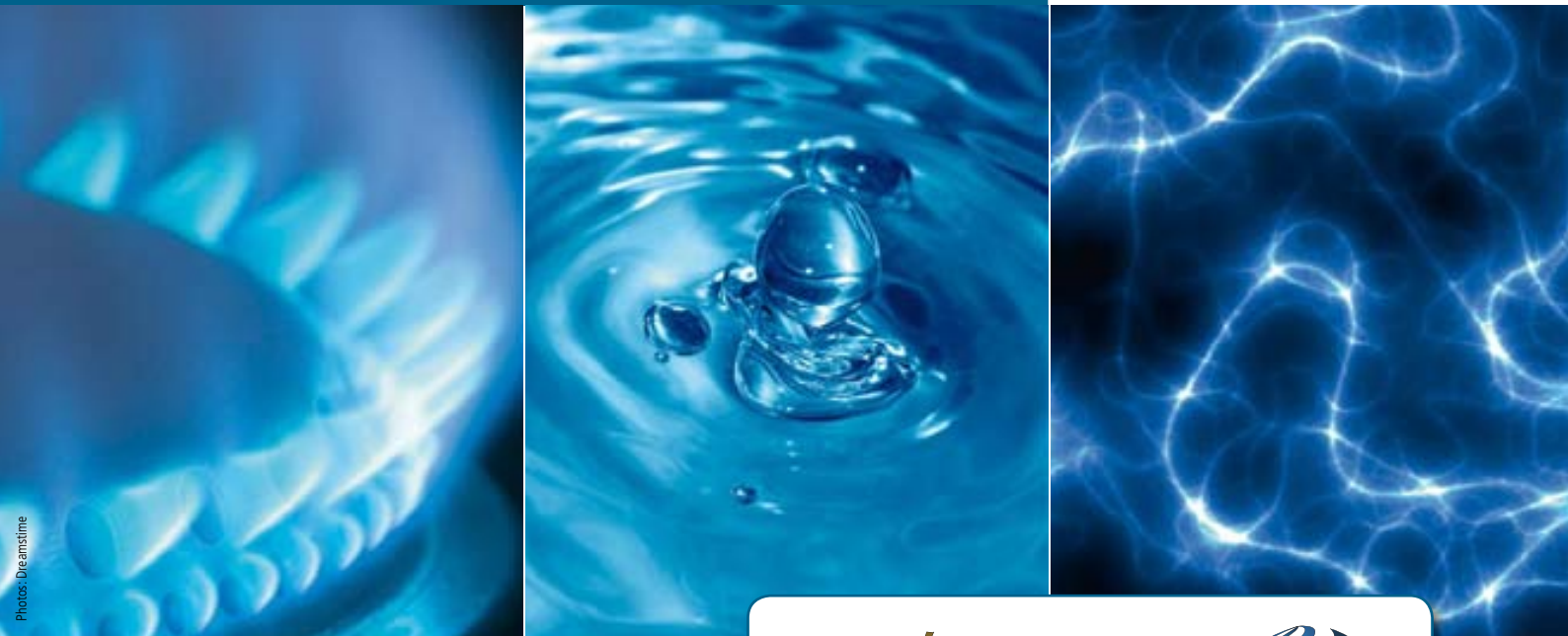
and ISPS Code (International Ship and Port Facility Security). What is more, the company conducts a practical ISPS exercises at the GL Academy, uses TBT-free coatings, and is registered in the Emergency Response Service (ERS) of Germanischer Lloyd.

NSB Niederelbe Schiffahrtsgesellschaft stands for the highest quality standards in container shipping. In November, this shipping company received the top certification, “GL Excellence – 5 Stars”. The management systems ISO 9001 and ISO 14001 as well as the ISM Code and ISPS Code have been implemented successfully on all NSB vessels. NSB has introduced an occupational safety management system and likewise uses the ERS. The underwater coatings of the ships are TBT-free. With its own NSB Academy, the shipping company also meets the criterion “Advanced Internal Training Scheme”. Standards are being set in ship recycling too. With the support of GL, NSB is implementing the future requirements of the International Maritime Organization (IMO) with regard to environmental ship recycling. ■ SG



PREMIERE. The first award went to the cruise liner “AIDA Aura” in 2006.

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