Germanischer Lloyd

nonstop

The Magazine for Customers and Business Partners

EDITION 4 · 2007

Pipelines

Good Connection

Interview *EU-Commissioner Joe Borg*

Ship Technology *Perfect Propulsion*

Shipbuilding *Creative Korea*

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 inspection and through to certification. Profit from the expertise of one of the world's largest service providers!

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GL
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OPERATING 24/7

Dear Readers,

Dr Joachim Segatz

The oil prices are on fire. New records are being reported on an almost daily basis. The reasons for these price hikes are diverse; the statements of the energy companies about their remaining reserves are anything but encouraging. Not only will the strong demand continue, it will also increase considerably – with the corresponding effects on the prices. Discovering new oil resources and developing existing reserves is becoming more and more difficult. The technical challenges are mounting.

Through its operating area of Industrial Services, Germanischer Lloyd has already been active all around the globe with demanding projects on behalf of the oil and gas industry for a long time now. Structural analyses, process reliability, production know-how and inspections of safety-related components all belong to the recognized core competencies of Germanischer Lloyd Oil & Gas. Now we have considerably expanded our service portfolio and are establishing ourselves as an all-round provider for the entire life-cycle of oil and gas installations worldwide. In the late summer of this year, the British Advantica Group joined the GL family. As a supplier of technical services with 660 employees, Advantica is specialized in gas distribution systems and pipeline networks, advising customers worldwide with risk and safety analyses, plant concepts and operations optimization (see page 44). With the integration of the Canadian firm PV Inspection in November, which offers third-party inspections, quality and project management as well as feasibility studies through an American subsidiary, we have broadened GL's range of services, especially in the American energy market (see page 50).

In the business segment of renewable energies, we are also extending our expertise. Our cooperation with the Canadian market leader Hélimax Energy Inc. makes it possible for us to offer comprehensive services in the wind energy sector, which is booming worldwide. As an independent wind energy consultancy, Hélimax has particular strengths in the areas of wind resource evaluation, wind farm conceptualization, power yield forecasts, assessment of environmental influences, testing services and operations optimization (see page 60). In concert with GL Wind, the spectrum of services now ranges from site identification through the supervision of commissioning and up to ongoing support of plant operation.

Change processes must be seen as an opportunity for any company; neglecting them may turn out to be a great risk. Only those who proactively pursue change will succeed. From this viewpoint, directing an enterprise is certainly comparable to navigating in difficult waters. Judicious and continuous adjustments of course are needed, as are rapid decisions and resolute action at times. For some weeks now, I have been facing these tasks at Germanischer Lloyd. I look forward to the coming challenges and the future teamwork with you. For me, the spotlight is on having Germanischer Lloyd develop and offer an even wider spectrum in Maritime Services and Industrial Services – while reaching out to customers and upholding a high standard of quality and service.

Creativity and innovative energy, technical expertise and uncompromising quality: When may we show you what performance is all about?

Yours sincerely,

Dr Joachim Segatz
Member of the Executive Board
Germanischer Lloyd

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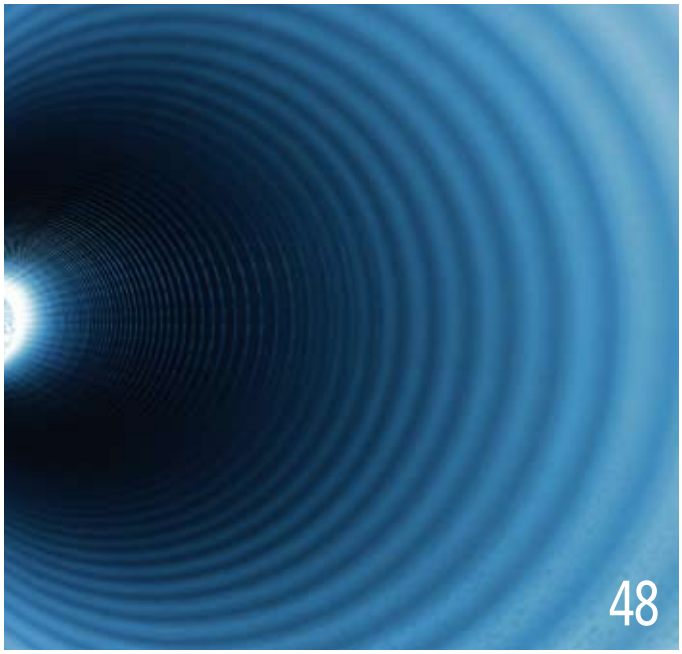
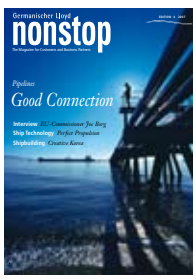


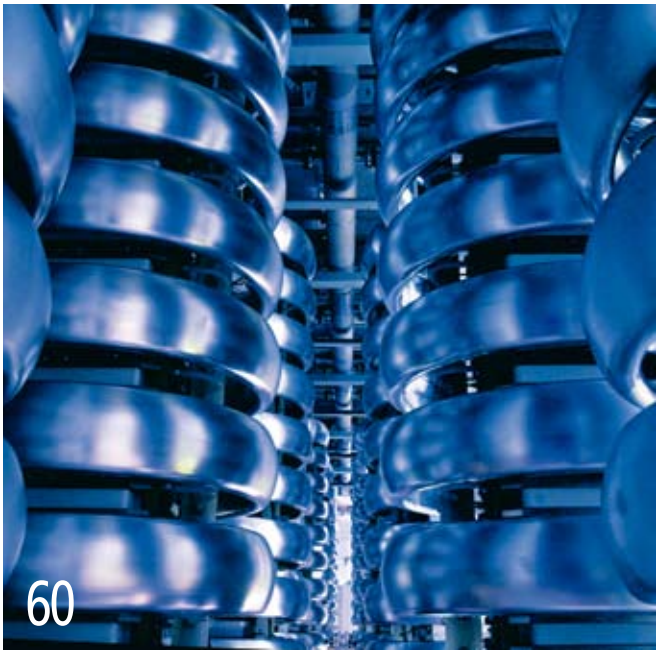
Photos: Dreamstime, YPS Collection, European Community, 2007, ABB

COVER STORY



Cover photo: Corbis

MARITIME SERVICES



Photos: Jim Burket, oceanfilmboat.com

Hamburg on the Fly

"84 km/h – Rocket Boat Tears towards Hamburg", "Around the World with Bio Diesel", or "James Bond Would Love this Craft", such were the media headlines in late August when powerboat "Earthrace" and her skipper, New-Zealander Peter Bethune, dropped anchor in Hamburg's marina. For the employees of Germanischer Lloyd, this was a special visit: The GL team had carried out reconstructive calculations of the structural integrity as well as fluid dynamics simulations for the futurist powerboat. The Earthrace crew is determined to break an official UIM world record in March/April 2008: The goal is to circumnavigate the earth within 65 days.

For further information: www.earthrace.net


BIODIESEL

news

TCNS

Exchange of Experiences in South Africa

All good things come in threes. After Melbourne and Hamburg, the Third Technical Committee Meeting for Naval Ships (TCNS) took place in Cape Town in November 2007. 44 experts from 13 nations, all of them representatives of navies or shipyards, met in South Africa to exchange experiences in research and development, design and construction of naval ships.

Reunion in Singapore. The committee members discussed quality assurance for platform and combat systems of naval ships, underwater acoustics and survivability as well as the role of classification in a safety case approach. A visit on board the 209 Class submarines, the first naval submarines classified by Germanischer Lloyd, completed the two-day meeting presided over by the new chairman, Rear Admiral (JG) Cobus Visser (South African Navy). The next TCNS-Meeting will be held in Singapore in 2008.

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

BRUSSELS

1st European Maritime Research Policy Conference

For the first time ever, an agenda for a conference organiszed by the EU Commission dealt with the maritime research needs within the European Union. In five sessions, experts examined the existing needs for maritime research, the importance of research and development with respect to competitiveness, the research policies of EU member states, as well as maritime research capacities on a European level. A European institute for maritime and oceanological research is scheduled to be established in 2008.

Advantage Europe. Maritime environment protection was one of the key topics at the conference. Reducing ship emissions was identified as an essential requirement and a potential competitive advantage for European shipbuilding and its innovative ability. The EU renewed its commitment to mobilizing and merging maritime and oceanological research activities as well as the respective agendas of its member states. A joint maritime research agenda for all EU member states will be announced in July 2008.

ANNIVERSARY

German Shipowners Association Turns 100

Verband Deutscher Reeder, the Association of German Shipowners, celebrated its 100th anniversary in November. The association was established in Berlin on 6 February 1907 to extend the reach of regional shipowners associations. Today, the organization with its 250 corporate members advocates the common economic and social interests of German shipping companies on a federal and state level as well as with European and international bodies.

The VDR offers its members advice on numerous subjects. It provides services such as legal protection and counsel in labour and social matters. Furthermore, the VDR negotiates labour agreements with German sailor unions on behalf of the members of the VDR Employers Association. The VDR enjoys an excellent reputation as a reliable partner of government bodies, in particular in supporting the goal of increasing the number of ships sailing under the German flag as agreed during the Third National Maritime Conference in Lübeck, Germany.

LEADERSHIP. VDR executives Frank Leonhardt (l.), Uta Ordemann, Dr Hans Heinrich Nöll.

Photo: European Community, 2007

HELLAS COMMITTEE

Shipping in the Brussels Pipeline

It took Dr Mary Papaschinopoulou only a few minutes to raise concerns among the numerous GL Hellas Committee members about the aspirations of the EU to be recognized as a maritime superpower. After all, the EU member states have a combined coastline of 320,000 km. More than 40 per cent of the EU member states' gross domestic product (gdp) derives from coastal regions, while up to 6 per cent of the gdp is contributed by marine-based industries and services. At the same time, 90 per cent of the EU's external trade volume, and 40 per cent of its internal trade volume are transported by sea. Europeans own and control more than 40 per cent of the world's commercial fleet. Thus, maritime issues are high on the political agenda, in particular after major ship accidents in recent years confirmed the urgency of taking action.

Hard control. The debate about a new set of draft regulations and directives is in full swing. At least seven EU proposals ("Erika III package") are passing through various phases of the decision-making process. Topics are compliance with flag state requirements, investigation of maritime transport accidents, ship inspection and surveying organizations, liability of passenger carriers, a maritime traffic monitoring system, port state control, and civil liability of shipowners. Furthermore the EU Commission is heavily involved in implementing a stricter emission control regime within the framework of EU Maritime Policy as defined in the Green Paper.

With a series of initiatives – ranging from an action plan for its policy on ports and logistics to a consultation on 'motorways of the sea' – the EU Commission aims at promoting cleaner modes of transport, including shipping. With the launch of a public consultation on a "European maritime transport area without barriers", the announcement of a White Paper detailing its maritime transport policy for 2008–2018 and an initiative to extend EU passenger protection to all modes of transport by 2008, the EU Commission demonstrates its willingness to build a new environment for the maritime industry.

Strong lobby. Given the broad range of political and legislative activities and their projected costs to the shipping sector, Papaschinopoulou urged the industry to make its voice be heard in the halls of EU decision-making.

The Hellas Committee was chaired by Capt. Vassilis Constantakopoulos, senior owner of Costamare. Athanasios Reisopoulos, GL Area Manager, Mediterranean/Southern Africa, drew attention to the impressive growth of the GL-classed fleet: within the last 18 months, Greek shipowners entrusted to Germanischer Lloyd as many as 50 container vessels with a combined capacity in excess of 300,000 TEU and over 60 ships of other types totalling more than three million dwt. In addition, several vessels in service were transferred to GL class.

TRANSPORTATION

"A Healthy Mix"

The relationship between climate protection and economic growth was the topic of a recent lecture and panel discussion event hosted by Deutsches Verkehrsforum, the German multi-modal industry association. The evening event focussed on the consequences of economic growth on the climate as well as the question how the traffic infrastructure can possibly cope with increasing demand. All representatives of the rail, road, waterway and air transportation industries present at the Berlin event agreed that an appropriately dimensioned, functionally sound infrastructure was needed in Germany as well as all of Europe. It would greatly help reduce emissions, they said.

Fairness. Dr Hermann J. Klein, Member of GL's Executive Board, argued in favour of a global, cross-modal approach to emissions reduction: "What we need is a healthy mix of all modes of transport, along with well-performing logistics systems and optimized interfaces." Internationally consistent and comparable conditions are a prerequisite for emissions trading in the shipping sector, he emphasized.

Photo: Hinrich Franck

Photo: DVZ / Klaus Grimm

ARGUMENT. Germany's Permanent Secretary of the Environment Matthias Machnig (l.) and Dr Hermann J. Klein, Member of GL's Executive Board, discussed options for emissions prevention.

Photo: BILD Hamburg

CONFERMENT. Prize winners Dirk Lehmann, Becker Marine Systems (1st from left), shipowner Dr Bernd Kortüm (4th from right) with Hamburg's First Mayor Ole von Beust (5th from left).

HAMBURG

Harbour Medals Awarded

Becker Marine System, a supplier of rudder systems and other naval equipment, really got the twist. For the development of its "Twisted Leading Edge King Support Rudder" (TLKSR), the company has been awarded the 'Harbour Medal' in the Innovation category by Europe's biggest tabloid, the German BILD.

Success story. The Becker rudder not only weighs less and improves manoeuvrability. The twisted rudder also reduces material fatigue due to cavitation. In his eulogy, GL's Executive Board Member Dr Hermann J. Klein congratulated Dirk Lehmann, Managing Partner, Becker Marine Systems: "With its twisted rudder design, Becker is helping to make ships more efficient, and in particular, more environment-friendly." The first container vessel to be equipped with the innovative Becker rudder was the "Savannah Express" launched in 2005. In the meantime, 50 other ships have been fitted with a TLKSR globally.

Commitment. The owner of the "Savannah Express", Dr Bernd Kortüm, was also among the recipients of the Harbour Medal. The shipowner and owner of the Norddeutsche Vermögen group of enterprises was presented the medal in the "Social Commitment" category for many years of active social involvement. In his eulogy, Hamburg shipowner Peter Krämer highlighted the laureate's merits, such as providing financial backing for the Hamburg International Seamen's Club "Duckdalben". "Dr Bernd Kortüm has been doing something that all of us who live on the sunny side ought to do every day – remember those who are less fortunate," he emphasized.

SNAME

Renowed Expert

Over 100 technical papers on subjects such as finite element analysis, post buckling behaviour of structures, propeller induced hull vibration, fluid dynamics, cavitations, ship operations, and human factors in ship safety were published by Dr Hans G. Payer, External Affairs Advisor at GL. "Virtually all of his publications have been technically substantial, not merely descriptive, and comprise important contributions to the technical literature of the field. He lectures extensively on contemporary topics such as Green Ships, the Panama Canal Expansion, Global Integration of Transport, and Human Factors in Ship Design and Operation," the US Society of Naval Architects and Marine Engineers (SNAME) recognized his work.

Award. For this reason, SNAME awarded the "David Taylor Medal" to Dr Payer at their meeting in Fort Lauderdale, USA. Furthermore, Dr Payer and his co-author Raul Brostella, Panama Canal Authority, received the "Best Paper Award" for their paper on the Panama Canal expansion.

ROUND TABLE. The new Member of GL's Executive Board, Dr Joachim Segatz (fr.l.), meets pressmen in Hamburg and elucidates the business strategy of Germanischer Lloyd. Dr Segatz is successor of Rainer Schöndube.

Photo: STG

WELCOMING. Dr Hermann J. Klein, President of the STG and Member of GL's Executive Board.

1ST INTERNATIONAL CONFERENCE

Ship Efficiency: No Easy Answers Yet

Ship efficiency is becoming more and more important", this is one conclusion of the two-day expert conference of the German Society for Maritime Technology (STG) on "How to make ships more efficient?". More than 150 participants from all over the world attended the first international conference on ship efficiency in Hamburg. Increasing fuel prices and strong environmental concerns initiated the high ranking forum of naval architects, ship engineers, shipowners, ship builders, maritime institutions and suppliers, classification societies, financial analysts, investors, academics and media representatives.

Optimization. Seventeen presentations illustrated how commercial sea going ships could be designed, equipped and operated to burn less fuel. While the focus of each individual presentation highlighted specific perspectives, the overall petitum of the conference was clear. Rising oil prices and strict international maritime rules call for a continuous optimization of ship design and operation. Efficient power generation, alternative marine fuels and modern construction will help to reduce emissions substantially.

Dr Hermann J. Klein, president of the STG pointed out: "Shipping is the most eco-friendly means of transport. The public image, though, is somewhat different. Developing intelligent and efficient solutions is necessary, by making shipping both profitable and environmentally compatible."

ANNIVERSARY

120 Years Enhancing Safety at Sea

In 1887, German shipowning companies established an accident insurance society for sailors, called See-Berufsgenossenschaft (See-BG). Today, See-BG is a modern enterprise dedicated to enhancing safety at sea.

Big step. The objectives of See-BG since its creation have been to issue rules to improve safety on board and to ensure these rules are adhered to. For 113 years, Germanischer Lloyd has been supporting the organization by providing advice on all technical matters. When See-BG celebrates its next anniversary with a zero at the end, the organization will be facing a new future: its administrative board recently decided to integrate the organization into a newly-formed social cooperative society for professionals in the transportation and logistics industries. Congratulating GL's long-standing partner on this big step and the 120th anniversary, Dr Hermann J. Klein of GL extended his best wishes: "Times may change – but the close co-operation between GL and See-BG will continue."

Photo: See-BG

HEADQUARTERS. See-BG in Hamburg is a longstanding partner of GL.

ICETRAIN

Tackling the Ice Challenge

Photo: Eckard-Herbert Arndt

Increasing traffic in the Baltic Sea has created high demand for qualified crews, especially staff capable of handling winter conditions. But this is a limited resource. During a three-day ICETRAIN course for masters and deck officers organized by GL in Finland, crew members studied the interaction of ships and ice, ship design for ice operation, as well as leadership and legislative issues. They learnt about ice-related services, safety, emergency measures and survival techniques."The course focused on ice navigation, basic methods of keeping a ship in operable condition, and ways of reducing costs and saving time," said Matti Nuuttila of GL. With renowned lecturers and exercises using a computerized simulator, the seminar offered distinguished professional expertise. Further courses are scheduled for 2008.

For further information: Matti Nuuttila, Business Development Manager, Area Office Scandinavia, Phone: +358 207 598920, E-Mail: matti.nuuttila@gl-group.com

CHECKLIST

Maintenance Update

Port State Control (PSC) authorities are constantly expanding their activities worldwide – with considerable consequences for shipowners and masters whose responsibility is to keep their fleets compliant with standards defined by international conventions anytime and anywhere. GL's "Maintenance Checklist", a valuable reference and point of orientation, comprises technical as well as operational items to check for compliance with regulations, including the ISM and ISPS codes.

Reference. A new, updated version of the checklist can be downloaded and used as an electronic reference, or printed out for use as a hardcopy checklist. To download please go to: www.gl-group.com/maritime/fleet/3593.htm

For further information: Peter Graaf, Flag State Affairs/IACS, Phone: +49 40 36149189, E-Mail: peter.graaf@gl-group.com

BARCELONA

Cruises: The Mediterranean Beckons

Year after year, sun-seeking tourists feel drawn to the warm, mostly dry summers of the Mediterranean coast. But overcrowded beaches are commonplace. Cruise ships offer an attractive alternative to a holiday on the beach. In 2007, more than 1.4 million passengers travelled the Mediterranean aboard ships – and the trend is upwards. The Spanish 'Autoridad Portuaria de la ciudad condal' (APB) expects more than two million passengers annually by 2010.

Tough competition. The future of passenger shipping in the Mediterranean was the topic of a panel discussion held by the Asociación de Ingenieros Navales y Oceánicos de España (AINE) in Barcelona. The panel of top-ranking experts included Andreas Ullrich, Deputy Head of Department – Ship Safety at Germanischer Lloyd; Manuel Moreu, Dean of AINE and member of GL's Spanish Committee; as well as representatives of shipowning companies and various organizations.

The maritime experts discussed the competitiveness of Mediterranean vs. Caribbean cruises, as well as various cruise ship sizes and the rising number of low-cost offerings in the marketplace.

For further information: Andreas Ullrich, Ship Type Manager Passenger Ships, Phone: +49 40 36149-454, E-Mail: andreas.ullrich@gl-group.com

BRAZIL

Training in Santos

Coffee, cars, cotton: Santos is the main hub for Brazil's hottest exports to destinations all around the world. This industrial city in southeastern Brazil is home to the largest port in South America and an important location for Germanischer Lloyd.

New office. In late October, the new Area Manager, Thomas Böhme, and his team moved into a new office in Santos. From here they tend to the needs of the shipping industry, including the fleet of Brazilian ship-owning company Alianca.

In addition, the Santos station now boasts a new training facility where future surveyors from the entire Central/South America area will receive training in addition to the programme offered by the Hamburg training centre. Until recently, this was possible only in Rio de Janeiro and Valparaiso.

GL has been present in Brazil for many years. As early as 1870, the registry mentions a branch office in Rio de Janeiro, staffed with a consul and a surveyor. Apart from Santos and Rio de Janeiro, the classification society has an office in Sao Paulo, as well.

For further information: Germanischer Lloyd, Station Santos, Brazil, Phone: +55 13 32881608, E-Mail: gl-santos@gl-group.com

MAIN HUB. Santos, largest port in South America.

EXCHANGE OF INFORMATION. From left to right: Olivier Geboers, Operations Coordinator (Delphis), Jan-Olaf Probst, Jens Schreiter, Lutz Müller, Christoph Witte (GL), Alexander Saverys (Delphis), Eric Mille, Harald Seibicke (GL), Bart Rombouts (Delphis) and Williame Caenen (GL).

DELPHIS

Betting on Strategic Growth

The speed is breathtaking: Belgian container shipowner Delphis NV of Antwerp has been on the market for no more than three years. Yet, today the young enterprise is among the leading owners specializing in ships that carry less than 3,000 TEU. The purchase of feeder shipowner Team Lines in July 2006 made Delphis Europe's second largest feeder operator, currently running more than 65 vessels.

Survey of services. For the future, Delphis continues to bet on strategic growth, said managing director Alexander Saverys who was visiting the Hamburg headquarters of Germanischer Lloyd. Together with Delphis operations coordinator Olivier Geboers and operations manager Bart Rombouts, the entrepreneur had come to learn more about the classification society's broad range of services.

The programme covered topics such as specific aspects of container ship design, ice classing, ballast water management, environment-friendly ship operation or recent developments in fuel cell technology. Meetings were held to discuss joint projects in Korea and their prospective expansion in the future.

ICELAND. Excursion to the Langjökull glacier.

SCANDINAVIAN COMMITTEE

An Ice Cold Challenge

Taking a ride across Iceland's Langjökull glacier, the participants of the 5th Scandinavian Committee meeting got a little foretaste of the coming winter. Their snowmobiles took them through dense fog across the second largest glacier on the island in the North Atlantic. As much as 11per cent of the total surface of the island nation is covered by glacial ice.

Apart from their excursion into the fascinating glacial icescape, the committee members spent their time discussing the challenges involved in navigating ice-covered waters.

Market trend. GL executive Dr Hermann J. Klein explained the reasons behind the current high demand for MegaBoxers with capacities of 11,000 TEU and above, which had taken many market observers by surprise. Maritime environment protection or fuel types and their effects on global climate were other items on the agenda, as were the dynamics of the bulk carrier market and the excellent orders situation in the Scandinavian area.

Keel-Laying: First of Four

Ashok Chowgule, Executive Director of Chowgule & Company Private Limited, at the keel-laying ceremony for the C-186 in Loutulim, Goa, India. The multipurpose vessel is one of a group of four vessels ordered by Shipcom, Germany. It has a cargo carrying capacity of 3,000 GT and will sail under the flag of Gibraltar. Delivery is scheduled for February 2008.

AENEAS VIEWER

Safety Upgrading

Escape routes, which shall ensure a safe getaway of passengers in case of emergency, can be found on every navigating vessel. But do they meet the expectations? – AENEAS, the software tool for yards, operators and authorities is specifically designed to perform evacuation analyses in compliance with IMO MSC/Circ. 1033. The software – developed by TraffGo HT and Germanischer Lloyd – is certified by the German flag administration See-Berufsgenossenschaft.

New perspective. The AENEAS software package has been enhanced. The new tool "AENEAS Viewer" is visualizes the progress of evacuation in a 3D surrounding. "This tool offers a completely new perspective in viewing our customers results'," says Dr Hubert Klüpfel from TraffGo HT. It is free of charge and the users are able to view the simulation results from any angle worldwide. "The Viewer gives us a comprehensible look at the process and why certain congestions are formed. Together with the customers and the authorities it enables us to find a satisfying layout for an effective evacuation concept," says Rolf Nagel, Manager of Product Development at Flensburger Schiffbau-Gesellschaft (FSG).

For further information: Dr Daniel Povel, Risk Assessment, Phone: +49 40 36149-7524, E-Mail: daniel.povel@gl-group.com

ST. PETERSBURG

Advanced Training

Germanischer Lloyd supports the Russian State Marine Technical University of St. Petersburg (SMTU). In September a "GL Auditorium" was opened at the Bureau for Innovative Projects. The centre for scientific excellence has been equipped with computer hardware as well as the latest version of GL's ship structural design and analysis tool POSEIDON. The cooperation will cover tutoring of degree students and interns.

ALLIANCE. Handing over of the badges for the GL Auditorium: Prof. Konstantin Borisenko, Master of the State Marine Technical University (l.) and Torsten Schramm, Head of Division Europe/ Middle East/Africa and Chief Operating Officer at Germanischer Lloyd (r.).

MALMO

Theory Meets Practice

Take up challenges, identify trends: During the seminar "Contemporary Challenges and Trends in Containerization" organized jointly by the World Maritime University (WMU), Malmo, and Germanischer Lloyd, GL Member of the Executive Board Dr Hermann J. Klein and the participants discussed the future of container shipping.

Reducing pollution. In his lecture "Shipbuilding Trends in Response to Environmental Issues", Klein gave an overview of the current situation and new developments in the area of ship sizes. The discussion focussed on ways of reducing environmental pollution caused by ships without jeopardizing competitiveness in the global markets. A feasible solution is offered by so-called MegaBoxers which benefits from efficiencies of scale while showing a better environmental balance than ships with a carrying capacity of 8,000 TEU.

HAMBURG

New Seminar: Fatigue of Marine Structures

Ships and other marine structures are affected to a large extent by stresses varying over time. These cyclic stresses are mainly caused by the seaway, but also by propulsion plant excitation forces and changes in loading conditions. During the past years, evaluation of fatigue life of marine structures gained significance because of the continuous trend towards lightweight and highly optimized structures as well as the intensified use of higher tensile steel.

SEMINAR. On "Local Approaches for Fatigue Assessment of Marine Structures", 21–22 January 2008, Head Office Germanischer Lloyd in Hamburg
Seminar registration under: www.gl-group.com/glacademy

Special focus. The seminar on Fatigue of Marine Structures at Germanischer Lloyd offers a systematic overview about the fundamentals and practical application of the various local approaches for the fatigue assessment of welded joints. The course for practising engineers and research scientists includes the nominal stress, structural hot-spot stress, the notch stress and strain as well as the crack propagation approaches. The progress made during the past decade regarding the local approaches and their applications is presented with special focus on ships and other marine structures.

GL is offering this seminar in English in co-operation with the Hamburg University of Technology and Fraunhofer Institute for Structural Durability and System Reliability LBF as part of the MARSTRUCT-Project, which is founded by the European Commission.

DIVING ROBOT. "Kiel 6000" passed the test at a depth of 1,870 metres.

ROV

Diving under the Date Line

34°52S/179°03E – these are the coordinates of a point in the South Pacific northeast of New Zealand. Here, close to the International Date Line, the remotely-operated vehicle (ROV) "Kiel 6000" of IFM-GEOMAR, the Leibniz Institute of Marine Sciences at Kiel University, was deep-sea tested under the supervision of Germanischer Lloyd. Between the Brothers Volcanoes, at a depth of 1,870 metres, experts scrutinized the interaction of all system components – electronic and hydraulic subsystems as well as other onboard equipment such as cameras and manipulators.

Diving deep. Seizing the opportunity, the team used the ROV to optically map the submarine volcanoes and take various samples. Before the end of the year the diving robot will have to prove itself one more time: during its final test in the North Atlantic, the ROV will descend to a depth of 6,000 metres. Upon passing all functional tests successfully, it will receive a certificate of conformity to the GL requirements for underwater equipment.

For further information: Harald Pauli, Head of Department, Pressure and Underwater Technology, Phone: +49 40 36149-365, E-Mail: harald.pauli@gl-group.com
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Photo: Björn Henke

PIECE OF LEGISLATION

Operational Safety under Scrutiny

Boilers, pressure vessels, pipes and filling equipment are constantly under high internal pressure, exposing their surroundings to immense potential danger. The higher the associated risk, the more extensive are the tests and routine inspections the equipment has to undergo before being commissioned and during its service life.

The Ordinance on Industrial Safety and Health requiring constant monitoring, in effect since October 2002, combines all the requirements previously scattered across multiple regulations into a single, comprehensive set of rules.This piece of German legislation now defines how equipment has to be deployed, operated and inspected.

New business area. As a consequence of the lifting of the monopoly for plants subject to mandatory monitoring, Germanischer Lloyd will be carrying out onshore tests of boilers, pressure vessels and filling plants as an Accredited Inspection Agency as of 1 January 2008. Its range of responsibilities will also include inspection of high-pressure piping for flammable, corrosive and toxic gases, vapours and liquids, equipment located in explosion-hazard environments, as well as storage facilities, filling terminals, petrol stations, airfield refuelling systems and discharging stations for flammable liquids.

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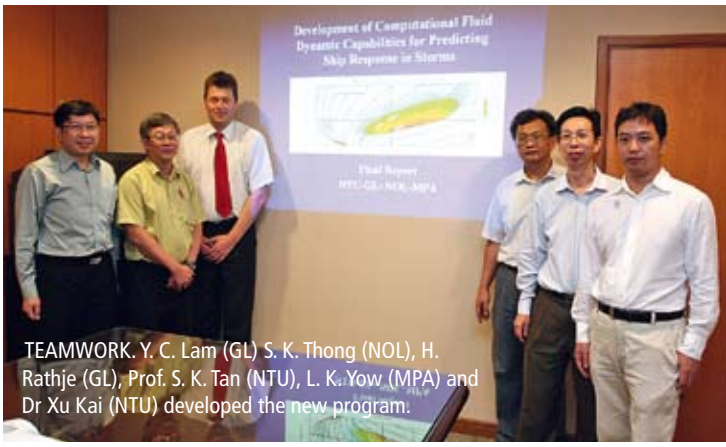
SIMULATION

Parametric Rolling

To develop a hybrid seakeeping program with focus on the prediction of the parametric rolling of modern container ships, Neptune Orient Lines (NOL), the Maritime Port Authority of Singapore (MPA), Nanyang Technological University (NTU) and Germanischer Lloyd joined the "Development of Computational Fluid Dynamics Capabilities for Predicting Ship Response in Storms" project.

Improved prediction. The team developed a new simulation program by applying the hybrid boundary element method. The program aims to offer greater robustness, flexibility and accuracy to predict nonlinear and unsteady interactions between the waves and ship response in high seas.



TEAMWORK. Y. C. Lam (GL) S. K. Thong (NOL), H. Rathje (GL), Prof. S. K. Tan (NTU), L. K. Yow (MPA) and Dr Xu Kai (NTU) developed the new program.

U.S. COAST GUARD

GL Authorized

The U.S. Coast Guard (USCG) has authorized GL to participate in the Alternate Compliance Program (ACP). As a consequence, U.S. shipowners can choose Germanischer Lloyd as a recognized organization, acting in lieu of the Coast Guard to provide statutory plan approval, survey and certification services.

Contract signed. GL is one of only three non-American classification societies that have been granted ACP authorization. At the USCG Headquarters in Washington on 7 September 2007, Jeffrey Lantz, Acting Assistant Commandant, U.S. Coast Guard and Jens Schreiter, GL's Head of Division Ships in Operation, signed the Alternate Compliance Program agreement.

NEGOTIATOR. Jeffrey Lantz (l.) and Jens Schreiter.

IMO

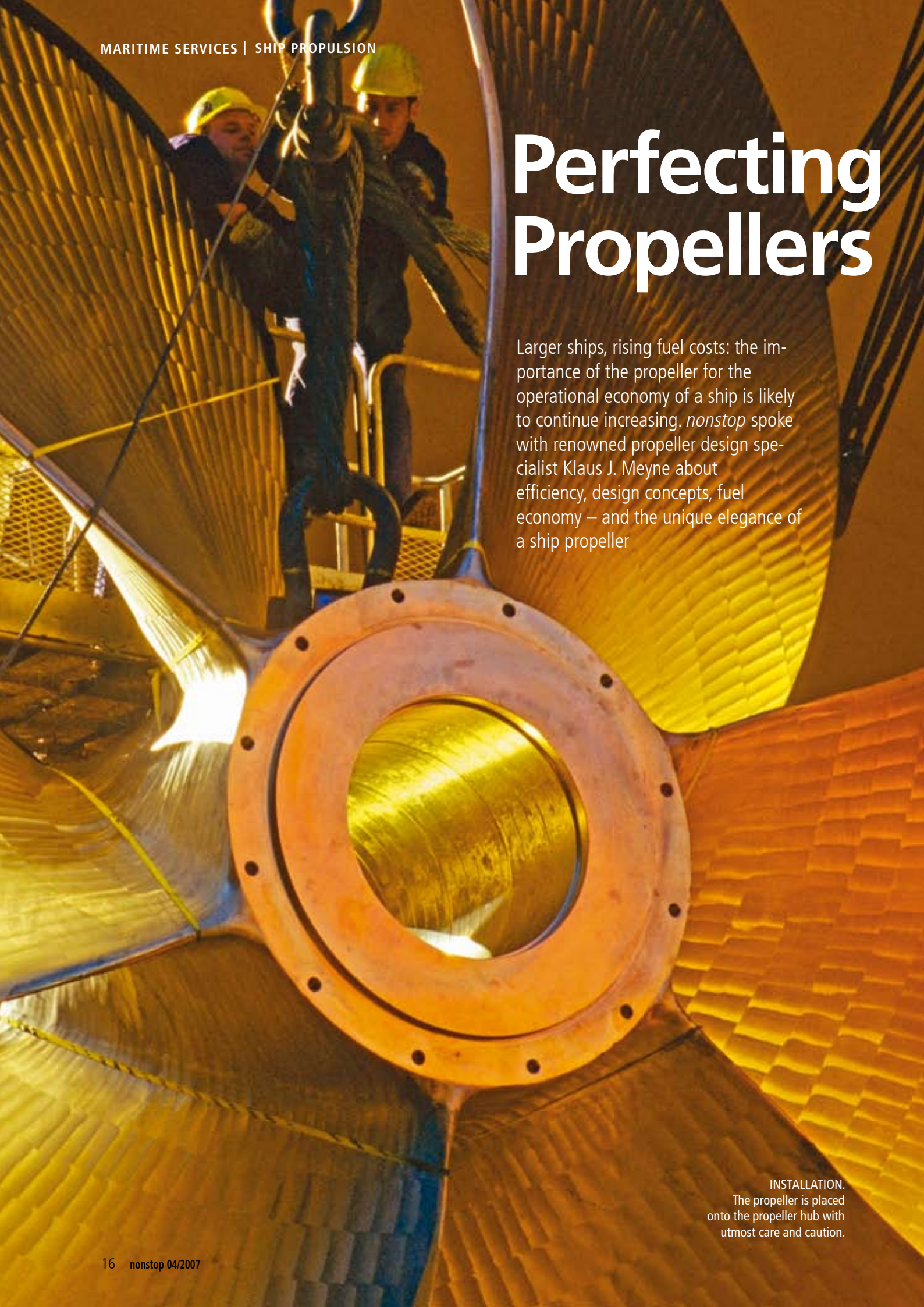
No More Toxic Coatings

17 September 2008 will be a milestone in marine environment protection. Now that Panama, the 25th nation to join the Antifouling Convention of the International Maritime Organisation (IMO), has ratified in September 2007, the convention will become effective following a one-year transition period. Antifouling hull coatings containing organic tin compounds such as tributyltin (TBT), known to be harmful to sea life, will be banned as of that date.

Deadline: 1 January 2008. Notwithstanding the Antifouling Convention, applying organic tin compounds to ships sailing under the flag of an EU member state has been prohibited since 1 July 2003 under EU Regulation 782/2003 which went into effect on 10 May 2003. Existing coatings must be sealed. These stipulations will apply to all ships wishing to call at EU ports as of 1 January 2008.

Perfecting Propellers

Larger ships, rising fuel costs: the importance of the propeller for the operational economy of a ship is likely to continue increasing. *nonstop* spoke with renowned propeller design specialist Klaus J. Meyne about efficiency, design concepts, fuel economy – and the unique elegance of a ship propeller



INSTALLATION. The propeller is placed onto the propeller hub with utmost care and caution.

Making propellers had never really been a dream of his. But such is life – and now engineer Dr Klaus Meyne's claim to fame are propeller designs. The „culprit" is his former university teacher at the Institute of Naval Engineering at Hamburg University, Professor Dr Hermann Lerbs, whose lectures on propellers sparked Meyne's enthusiasm. Today his earlier dislike of this area of specialization is but an amusing anecdote in his biography.

A fine-tuned methodical approach, scientific testing procedures, field-proven designs, innovative shapes and maximal efficiency – those have been the ingredients of Meyne's success over decades of developing and optimizing propellers. Today Meyne, a technical consultant of shipyards, shipping companies and propeller manufacturers, mainly works for Mecklenburger Metallguss GmbH (MMG) in Waren, Germany. A senior thought leader in his discipline who continues to be highly active, he knows the answers to most questions – even the question why the development of container ship propellers has taken a direction that differs from the requirements of other ship types. The main reason is the steadily increasing propulsive power of these vessels.

The remarkable technology leaps in the manufacture, strength and hydrodynamic properties of propellers were ultimately all triggered by the shipowning community. The willingness of shipping companies to invest in ever bigger and faster ships has regularly confronted development engineers with new challenges. "In general, all an engineer has at his disposal to assess the feasibility of a solution is his current technical knowledge and expertise," says Meyne. The jumps in propulsion engine power made it necessary to conduct many new calculations and trials in order to answer the key question: "Can this be done?" It could.

While in 1968, engine power peaked at around 11,500 kW, today's MegaBoxer vessels with capacities of 12600 TEU and above are driven by engines that exceed 97,000 kW – and the upward trend continues. In other words, propulsion power demand has nearly quadrupled within the last four decades! Propeller development had to keep pace with this enormous increase in engine output. The evolution went from a comparatively "simple" design with a conventional vane contour to today's skew designs tailored to the wake and equipped with a high number of vanes.

Before developing a design, the developer has to sit down with the shipowning company, the shipyard and the engine manufacturer to pin down the basic specifications. All past experiences and all anticipated operational aspects of the future ship must be taken into consideration: draught, different loading situations, trim, routes, wind and wave conditions, wind loads when the vessel is carrying many empty containers, dock cycles, paint type and durability, times spent in harbour, limiting curves of the engine characteristic diagram, as well as energy consumption curves. The design point is then described in an engine diagram in terms of the parameters operational margin (OM), light running margin (LRM), revolution margin (RM) and sea margin (SM).

But, says Meyne, designing a propeller without considering the associated manufacturing processes would be doing the job by halves. "The design is one thing; but a propeller must be designed in a way that is feasible for manufacturing and casting, as well: the foundry must be able to implement the design."

So what role does the engineer take in all this? "The engineer must do his share to ensure laminar flow into the mould at all inlets during the casting process and to keep random factors in check as much as possible. This enormous responsibility of the engineer and the designer towards the foundry and the end customer requires utmost diligence," says Meyne. "It is the same thing everywhere – all that is different are the dimensions and the areas of responsibility."

DR KLAUS J. MEYNE

- **The engineer** was born in Berlin in 1933. Families evacuation and flight ended in Neubrandenburg in 1945.
- **Meyne began studying** naval engineering in 1953 in Rostock. Later he graduated in Hamburg.
- **His professional career** began with HSVA. In 1968, Meyne changed to propeller manufacturer Theodor Zeise, Hamburg. From 1980 until 1992, he worked for Ostermann Metallwerke, Cologne.
- **His career as a freelance consultant** began in 1993. Since 1994, he has been devoting most of his time to MMG, Waren.

Repeating One-Time Successes

Comparing this technology with manufacturing processes in the aerospace industry reveals striking differences. In aerospace, designs are run through complex tests requiring prototypes. Series production will not begin until all tests have been completed successfully. "This approach is not feasible in shipbuilding and propeller manufacturing. Here we have to be successful the first time," says Meyne, calmly referring to the enormous pressure to meet expectations and deliver.

But the challenges are not all equally tough. "As far as strength considerations are concerned, I believe the vast majority of the engineering and material-specific requirements are controllable," says the accomplished expert. Of course, these large castings must be manageable, their material properties must be known, and the specific cooling and hardening behaviour must be taken into account, he continues.

But in hydrodynamics, the picture looks different. "Our current calculation approaches are remarkable advances compared to earlier times, but they are by no means sufficient as yet. We have "models" for calculation. But more detail work is necessary to get a grip on a number of issues, such as a mathematical description of the formation and effects of the tip vortex or the origination, progress and behaviour of the inevitable cavitation on vanes. It should be influenced in such a way that the vibration it excites remains within the desired scope instead of causing erosion," says Meyne.

Experimental facilities play a key role in resolving questions such as these, helping to optimize the draft designs. Without tests – which can yield different results, depending on the equipment and philosophy of the respective research facility – it would be impossible to design propellers successfully. Tests, far more than just a confirmation of prior calculations, have always been an important step in the overall process.

Meyne is satisfied to have found again and again that →

Photo: YPS Collection/Peter Neumann

→ the cavitation effects associated with his propeller designs were controllable. "There is no reason to be scared of the cavitation phenomenon – you just have to take it as a challenge. This is the only way you will be able to come up with the best possible design parameters. A design engineer who hesitates to take charge of the creative process will run into difficulties with his designs," he states without a trace of vanity, yet proud of his achievements.

Modern propellers reach very high speeds of about 45 to 50 m/sec at the vane tip, which is equivalent to 175 km/h. This explains how the negative pressures generated locally in the process can turn the fast-flowing water into steam (an effect called cavitation). In the event that these steam bubbles collapse on the rotor vane surface once they encounter the following area of rising pressure, the vane surface will be damaged. At first it will be roughened by abrasion, then eroded and destroyed. To extend propeller life, the effects of cavitation must be lessened, or "optimized". Selecting and combining the metal alloy carefully is a major contributing factor, but to date, no material has been found to withstand the aggressive effects of cavitation.

"Engineers Are Children of Fortune"

Designing a propeller raises so many interesting questions and challenges that you never get bored, says the engineer, still full of enthusiasm. "Engineers are children of fortune".

But Meyne has not always been on the sunny side of life. In WW II, his parents' home in Berlin was destroyed in a bombing raid. His family was initially evacuated to Pomerania but soon had to flee to Mecklenburg. There in Neubrandenburg, eleven year-old Meyne, his two younger sisters and their mother found a new home as fugitives in 1945. But destiny hit the family a second time: Just two months after his return from the war, Meyne's father died, unable to recover from war imprisonment.

Young Meyne nevertheless pursued his goals single-mindedly, supported by his mother. Later in his professional career, he never allowed occasional setbacks to get in his way either. Following his grammar school graduation in 1953, he began studying marine engineering in Rostock, East Germany. But in 1957 he decided to leave the German Democratic Republic. He went to Hamburg where he was able to continue his studies as of January 1958, thanks to the personal intervention of Professor Georg Weinblum, head of the marine engineering department, a man he still speaks of highly today. Of course, Meyne's graduate and doctoral dissertations dealt with aspects of propeller calculation.

Following his first professional position at the Hamburg Ship Model Basin (HSVA) under the leadership of his teacher, Professor Hermann Lerbs, Meyne changed to propeller manufacturer Theodor Zeise, Hamburg, in October 1968. Until it went bankrupt in 1979, this company was Germany's largest ship propeller factory, manufacturing propellers up to a finished weight of about 65 tonnes and with diameters of up to 9,400 mm. Zeise was a worldwide leader in designing and calculating high-performance propellers, thanks to its staff of distinguished engineers (first and foremost, Hans Brehme). The Hamburg company was the first to develop propeller-to-shaft hydraulic coupling.

In 1980, Meyne changed employers again, hiring on with Ostermann Metallwerke, Cologne. When this time-honoured company had to yield to the forces of the market in 1992, Meyne began his career as a self-employed consultant, working mainly for Mecklenburger Metallguss GmbH (MMG).

In the past 15 years, the propeller manufacturer in Waren, Germany, has seen an impressive, downright breathtaking development. Today, MMG is the global leader in the manufacture of large propellers. MMG proved to possess the necessary expertise to cast and manufacture propellers with a finished weight far in excess of 100 tonnes, thus keeping pace with the rapid evolution of ship sizes and engine power. "There is no model testing available here – each casting must be a success," says Meyne. The youthful senior is still brimming with energy and enthusiasm for his field of expertise. There is no indication that his obsession with the fascination of ship propellers might diminish. "It is a pity I am so old," says Meyne.

High Efficiency

So what is it that makes a superior propeller? Asked about his recipe for success, Meyne chuckles. "The requirements for a good propeller are numerous: you want the highest efficiency possible, low vibration excitation, and cavitation control," the designer summarizes. Each one of these properties has propeller design requirements of its own. When designers in the seventies began placing the super-

GIGANT. The biggest propeller weigh about 130 tons.

THREE-VANE DESIGN. Propellers of this type were developed for dual-propeller containerships.

Photo: MMG

structure in the rear section of the ship, directly above the propeller and the engine room, the quest for vibration control understandably received disproportionate attention. This continues to be the case today, but priorities have shifted.

For a long time, improving efficiency was not a major topic. Says Meyne: "In the wake of the dramatic rise of fuel costs, the focus has completely changed in recent years." As for MegaBoxers with a carrying capacity in excess of 11,000 standard containers, structural considerations prompted the reintroduction of an old concept commonplace for decades: keeping the engine room and the superstructure away from each other. This has brought about a different scenario for propeller designers.

The issue of fuel efficiency has to be viewed in the context of the given vessel. The design of the submerged part of the vessel and the distances between the propeller and the stern or rudder, respectively, play a key role in optimizing the overall efficiency. The fact that the propeller, by principle, is an asymmetric entity due to its sense of rotation, gives rise to the question whether an asymmetric design of the underwater hull might improve the flow approaching the propeller and improve propeller efficiency.

Shipyards used to oppose such ideas, anticipating complications in terms of manufacturing rationale. But considering recent advances in production technology, that should no longer be a hindrance. But will the added effort pay? Cost-benefit-analysis is a constant companion of the industry. But when a change makes sense, there is no such thing as "too expensive". To date, about 280 ships have been built with an asymmetric afterbody based on E. A. Nönnecke. Other types of stern add-ons in front of the propeller are in use, as well, such as the Schneekluth nozzle, which relies on a different effect.

There has always been a variety of approaches to despinning the flow within the propeller jet, such as Grim's guide wheel, or more recently, rudders with various types of twisted upper or lower sections (e.g. the "twisted spade rudder"), as well as a post-swirl stator. Grim's guide wheel is a freely-rotating wheel located behind the propeller. Its diameter is larger, and its rotational speed lower than those of the propeller. Its inner portion, in line with the propeller flow, has a turbine-type profile, causing the guide wheel to rotate. Its outer portion, located outside the propeller flow, is fitted with vane-like profiles that generate additional thrust. A guide wheel can increase efficiency by 3 to 15 per cent.

In the 1980s, leakage and strength issues caused Grim's guide wheel to be abandoned for the time being. The concept appeared too complicated and maintenance-intensive and not stress-resistant enough. But technology continued to evolve. Today, there are about 15,000 wind generators in operation in Germany that are facing similar bearing application issues. Meyne is convinced that a device (Costa bulb, post-swirl stator, etc.) ought to be installed behind most turbine rotors to improve efficiency and reclaim lost energy.

Unbeatable Propeller

Whatever approach may be chosen to overcome the challenges: the proven propulsion principle will not be replaced by anything else in the near future. "The propeller is unbeatable," says Meyne with conviction. A propeller achieves an efficiency that is unlikely to be exceeded by any other propulsion device in the foreseeable future. And new ideas will bring further enhancements such as specialized solutions for specific applications: add-ons or design modifications in front of or behind the propeller, or annular nozzle-type structures, etc.

In view of the importance of propellers for operating economy, the expert engineer warns of excessive budget cuts in the areas of propeller development and testing. "Each individual characteristic is the result of hard development work," says Meyne. In the face of steadily rising fuel costs, shipping companies will continue pushing for fuel efficiency. Finding ways to further reduce energy consumption will therefore be a key factor in designing tomorrow's propellers. As long as ship power plants – such as diesel engines – are based on the concept of transferring power onto a rotating shaft, the propeller will continue to be the preferred propulsion device. "And there is something else – nothing can beat the elegance of a propeller!" Even fifty years into his engineering career, Klaus J. Meyne still raves about his favourite subject. It is hard to prove him wrong. ■ OM

SCHNEEKLUTH NOZZLE. The asymmetric aft section with the 6-vane, skew-design propeller was developed in the 80s by HDW.

Photo: MMG

VISION.
EU Commissioner Joe Borg stands for a European perspective in maritime policy.

Photo: European Community, 2007

"Well Equipped to Face the Future"

Joe Borg has dedicated himself to creating an Integrated Maritime Policy for the European Union. *nonstop* met the EU Commissioner for Fisheries and Maritime Affairs in Brussels to discuss stakeholders' interests, Asian competition and environmental protection

nonstop: Mr Borg, only recently you presented the "Blue Paper" which sets out the vision for an integrated maritime policy for the EU. The Communication was preceded by the "Green Paper" and a one-year consultation period. This must have been an exciting year for you.

Joe Borg: Absolutely. After the publication of the Green Paper the fear was that there wouldn't be enough enthusiasm from the different stakeholders. In fact, the response from the institutions, the different regions as well as the private sectors was overwhelming – whether it's shipping, energy or tourism.

They have all come up with very concrete proposals themselves. For us this meant that we can look ahead – with some caution as well – to a future maritime policy for the European Union which will bring about much more stakeholder involvement and much more coordination.

nonstop: You have had some time to assess the feedback given by the different stakeholders. What was the general tenor?

Borg: There was almost unanimous agreement that we need to have an integrated approach. However, the integrated approach must respect the principle of subsidiary. Therefore, decisions at the European level should only be taken if it is absolutely necessary.

Also it is in the stakeholders' interest that they get to be involved in the process. We agree completely with this! If you really want a process to be formed and properly implemented, then those who are affected have to be part of it. Of course, there are also issues that have been identified as extremely divisive. Some topics have been highlighted by certain stakeholders as no-go areas.

nonstop: For example?

Borg: For example, the idea of a European Coast Guard, a European Flag or European Registry. The consultation showed concerns that a centralized EU-led Coast Guard could be proposed. It also showed that a large number of stakeholders, including a number of Member States, would be opposed to the creation of such a centralized service. No consensus was apparent.

nonstop: Can you think of any alternative measures to ensure cooperation of the member states?

Borg: The integrated maritime policy will promote improved cooperation between member states' coast guards and appropriate agencies. In this context, the Commission will also take steps towards a more inter-operable surveillance system, bringing together existing systems used for different purposes such as maritime safety and security, protection of the marine environment, fisheries control, control of external borders and other law enforcement activities.

This is a good example of an area where a cross-sectoral approach can bring both synergy and efficiency to systems previously handled on a fragmented, sectoral basis. A first step in this direction will be pilot projects, starting in 2008, on bringing together surveillance information →

PROFILE – JOE BORG

Prior to becoming a member of the European Commission responsible for Fisheries and Maritime Affairs, Joe Borg, 54, served as Foreign Minister of Malta, leading negotiations for Malta's accession to the European Union. Since 1979, Joe Borg has held various academic posts at the University of Malta specializing in company law, industrial law and European law. Dr Borg was elected member of the Malta House of Representatives for the Christian Democrat Nationalist Party in 1995 and served as parliamentary secretary within the Ministry of Foreign Affairs in 1998/99. He also held various posts as legal adviser to companies and corporate bodies in Malta and abroad and, in 1995, was the main author and drafter of the Malta Companies Act.

→ from different systems in a small area of the sea in order to create a common situation picture which will be made available to different users.

nonstop: How about the European Maritime Cluster: How will it contribute to technical progress and innovation?

Joe Borg: It is important to note that clusters are industry-driven entities. It is not therefore for the Commission to set up or manage clusters. However, what public authorities can do is to provide the right environment that encourages their creation and development. This is because there seems to be a link between the presence of clusters and regional economic performance. Clusters can help innovation as innovation is made easier when a critical mass of like-minded, highly skilled and knowledgeable people interact and share their expertise.

Europe's competitive advantage in many maritime sectors is largely based on its ability to provide the most advanced and innovative products and services. In today's knowledge economy, the creation of the most favourable conditions for innovation is therefore vital.

During the public consultation process on the Green Paper, many respondents confirmed the importance of clusters and endorsed the Green Paper's suggestions for support. The Commission's role in this context is mainly to facilitate and to promote by, for example, contributing to the development of career work within clusters by bringing together the different players who can then develop their own approach.

"First, we must ensure European excellence, in terms of technology, quality and sustainability"

Joe Borg

The Commission has already addressed maritime clusters in a Staff Working Paper. It will also undertake an in-depth analysis of maritime cluster activities, their value and what makes them successful. The potential of bringing together regional clusters and their expertise as a springboard to creating European or world-class excellence will also be examined.

This maritime cluster analysis and mapping and statistics will provide better understanding of the nature and potential of maritime clusters in Europe and contribute to the formulation of any appropriate action in the context of the general cluster policy which the Commission intends to present in a Communication in 2008.

nonstop: You just mentioned "Europe's competitive advantage". How can the EU remain competitive vis-à-vis the Asian shipbuilding competence and capacities?

Joe Borg: Since the Seventies, the rise of Asia's shipbuilding has gradually led to European shipyards moving out of the market segments for large but comparatively simple merchant ships such as tankers and bulk carriers to focus on the building of more complex ships, such as cruise ships, passenger and cargo ferries, naval vessels as well as on a wide range of specialized smaller vessels. The European shipbuilding industry has thereby sustained its position at or near the top of the world shipbuilding league in terms of turnover despite the fact that its output, in volume terms, is less than half that of both Korea and Japan.

This successful performance is based on technological excellence, continuous innovation, productivity and quality. Preserving the strong position of European shipbuilding relies on two key aims. First, we must ensure European excellence, in terms of technology, quality and sustainability and, second, we must also continue to work to establish an international level playing field.

nonstop: Any concrete ideas how to achieve this?

Borg: The Commission and the shipbuilding industry have jointly defined a strategy – "LeaderSHIP 2015". This strategy includes, among other things, efforts for fair market-based multilateral and bilateral trade rules, targeted public support for cutting-edge innovation, bringing together science and industry in the Waterborne Research Platform, securing a skilled workforce and protecting IPR.

Europe's highly-specialized shipbuilding industry is competitive, flexible, and well equipped to face the fu-

Photo: European Community, 2007

TEAMWORK. Commissioner Borg and Commission President Barroso presented the Blue Paper.

Photo: European Community, 2007

THE BLUE PAPER

On 10 October 2007, Commission President José Manuel Barroso and Commissioner Joe Borg presented the Blue Paper, a communication setting out a vision for an Integrated Maritime Policy. nonstop attended the press conference in Brussels and had the opportunity to conduct an exclusive interview.

The Blue Paper is accompanied by a concrete list of actions such as:

- A European maritime transport area without barriers
- A European strategy for marine research
- National integrated policies
- An integrated network for maritime surveillance
- A roadmap towards maritime special planning
- Promotion of a European network of maritime clusters
- A European Marine Observation and Data Network
- A strategy to mitigate the effects of climate change on coastal regions

HIS MOVE. As an experienced chess player, Joe Borg has a comprehension of strategy.

ture with confidence. Nonetheless, ongoing and unsustainable large increases in global shipbuilding capacity – mainly in Asia – are likely to make the trading environment for European yards even more challenging in the coming years.

nonstop: Talking about challenges: environmental protection is a major issue in shipping. What does the industry have to expect when talking about curbing emissions?

Borg: This is an area which is primarily moved by EU Commissioner Dimas. But obviously it is part of the whole maritime policy package. We need to see what realistically can be achieved in the short and medium term when talking about the reduction of CO_2 emissions. I think there is an understanding that if we really want to increase maritime transport – and there is a lot of potential in this respect – it has to be done in an environmentally friendly way.

nonstop: …and in a business friendly way.

Borg: Yes, but if we increase transport, that's already a big plus for businesses. But growth has to be accompanied by the development of more eco-friendly solutions. For example, within ports ships could use electricity rather than engine-generated power. Or one could introduce means of alternative fuels.

But such initiatives can only be realized within the parameters of the international front. Shipping is a global industry. Therefore, the prime mover of any legislation has to be the IMO. As the European Union we can try to take the initiative within IMO to establish international standards.

nonstop: In the end, this will mean more legislation. To put it frankly, industry and business are dreading even more regulations.

> "Sustainable use of the oceans constitutes one of the fundamental objectives"
>
> **Joe Borg**

Borg: You're right in pointing this out. On a purely sectorial level we already have enough regulation – if not more than enough. If you take transport or fisheries on their own, there already is a lot of legislation as it is. Therefore, in our view, legislation and regulation should be the exception and not the rule.

Of course, if there is a concrete strong reason which militates in favour of a legislative approach, then we should not shy away from it. But that should not be the objective. The objective should be trying to initiate – to facilitate growth in a sustainable way. To facilitate the adding of value to the way we do things today by, for example, creating tools like sea-mapping, like integrated networks of research entities, like maritime clusters.

nonstop: What will be the role of a classification society in this context?

Borg: Sustainable use of the oceans constitutes one of the fundamental objectives of the integrated maritime policy. Thus, every organization contributing to the achievement of substantial targets related to further improvement of maritime safety and protection of the environment, such as the classification societies, plays an important role in the framework of the maritime policy. This role should be safeguarded and strengthened so as to meet the real needs of Europe associated with these targets, without hampering the competitiveness of European shipping operators. ■ AM

Computer vs Paper

The process of reviewing engineering drawings for ships has always been associated with enormous amounts of paper – to date, that is. But now GL has begun digitizing the procedure in a new, software-based approach called Computer-Aided Approval (CAA)

Over-dimensioned drawings and drafts pinned all over the office walls and covering every square inch of desk space – this is the impression of a typical workplace of an engineer working for a classification society. But at Germanischer Lloyd, this scenery will soon be a matter of the past. For years, the 'paperless office' was nothing more than a vision of a distant future. Now there are technologies and software products available that enable digitized processes.

Reviewed, Checked, Copied, Dispatched

A vision is becoming reality: shipbuilding engineers reviewing engineering drawings of ships on-screen instead of on paper. In October 2007, Germanischer Lloyd, joined by several customers, initiated the pilot phase of its computer-assisted engineering drawing review process called "Computer Aided Approval" (CAA).

For the first time, the classification society offers the entire design review process based on digital documents that can be examined on a computer screen. Tobias Vorberg, Head of Department, e-Business Portals at Germanischer Lloyd, emphasizes the benefits: "For customers and GL employees alike, this is yet another step towards optimizing our processes, increasing efficiency and improving transparency." To date, shipbuilding engineers have had to scrutinize every detail of a given ship design – whether tanker, bulk carrier, container vessel or passenger ship – on paper printouts. The number of individual drawings to review, check, copy and dispatch could easily top 1,600 for a single ship. Each year, GL experts went through up to one million sheets of paper.

The resulting effort was tremendous, both logistically and in terms of workflow and readability. The need for optimzation was obvious. By introducing its online platform "globe" in 2005, Germanischer Lloyd laid a foundation for enabling digital processing of ship drawings. The online service allows shipyards, engineering companies and suppliers to submit their engineering documents to the classification society in a digital format and retrieve reviewed copy in the same manner. 25 per cent of this data is currently received by GL via globe, and the trend is upwards.

PROJECT LEAD. Tobias Vorberg, e-business expert with Germanischer Lloyd.

Secure and Legally Valid

Until recently, digital processing of drawings submitted in electronic format was possible only in very limited cases and thus not a general option. This is going to change, thanks to "Computer Aided Approval" technology. Facilitating

PILOT PHASE.
GL employees testing the functionality of the CAA system.

DRAMATIC REDUCTION OF EFFORT

OVERHEAD.
In a traditional reviewing process, reviewers have to shuffle enormous amounts of paper.

On screen, not on paper. Without CAA, the customer receives a stack of drawings with editing marks in red ink that the customer must identify and evaluate. With CAA the customer receives PDF files with standardized electronic comments inserted in a list format. The list can be processed one item at a time, and annotations can be commented by the customer before the revised files are transmitted back to GL. This only requires Acrobat Reader software. The file size of vectorized drawings remains the same. A 30-inch screen can display up to 45 percent of a vessel 300 metres in length.

design and type approvals were the most immediate concerns that led to the development of the new service offering. The advantages of digital data processing are obvious: The drawings arrive on the reviewer's screen securely, directly and in a legally valid form.

What truly makes a difference is the fact that in most cases, no printouts are needed for further processing. This greatly simplifies the administrative process. In addition, documents are transmitted much more rapidly. From now on, GL engineers will be able to examine any detail of any drawing directly on their computer screens.

The software works with the platform-independent Adobe PDF file format. All suggested changes, annotations and comments by the reviewing experts are captured in a list within the PDF document and saved with the file. "The elimination of hand-written notes enhances the readability of reviewer comments," explains project lead Vorberg. Following the comprehensive review process, the commented digital drawings are transmitted back to the customer. "The customer can see at a glance which segments need correction or further attention," Vorberg continues. The comments, accessible in a list format within each reviewed document, can be edited directly and integrated into the client company's internal workflow. Once the entire approval cycle has been completed, an electronic seal can be attached to each document.

Multiple Benefits

Processing the engineering drawings digitally also improves data quality and streamlines archiving since media breaks – switching from the digital format to paper and vice versa – are eliminated. "Fast availability and global accessibility of drawings and reviews are further advantages of the new system," says Vorberg.

Further functional enhancements of the "Computer Aided Approval" software are in the planning stages. The current version allows viewing digital model files in addition to the drawings under review, with designs represented as 2D or 3D models. This feature provides GL engineers with additional, semantic information about the ship under scrutiny.

At its headquarters in Hamburg, Germanischer Lloyd is currently setting-up a number of new work stations equipped with high-resolution screens where reviewers will soon be examining digitized drawings. In a design review process using vector graphics files, these special screens offer enhanced resolution capabilities, revealing far more detail than a rendition on paper.

Enhanced Process Quality

The GL stations in Shanghai and Busan will introduce the new electronic reviewing method, as well. The "Computer Aided Approval" process will revolutionize the working routines and workflows at GL. A challenge indeed – but one well worth the effort. The age of information technology has arrived at the desks of drawing reviewers – for the benefit of all parties involved. ■ SG

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Creative Korea

Competence, capacity, creativity: Korea is well positioned as a worldwide leader in shipbuilding. Last October, the international shipping industry met for the "Marine Week" in Busan. A review

The trade volume keeps growing, share prices soaring, and new orders keep pouring in: there is probably no place quite like South Korea when it comes to the general sense of euphoria in the shipbuilding business. The growing league of companies ready to operate mega-containerships has been joined by some of the world's leading shipowners. The port of Busan aspires to become a transshipment hub for Northeast Asia, and it looks as if it is going to succeed. But it is the shipbuilders who seem to be facing the brightest future, having bagged orders for close to 100 container vessels larger than 11,000 TEU. In addition, they are working on LNG carriers never known in this size and number.

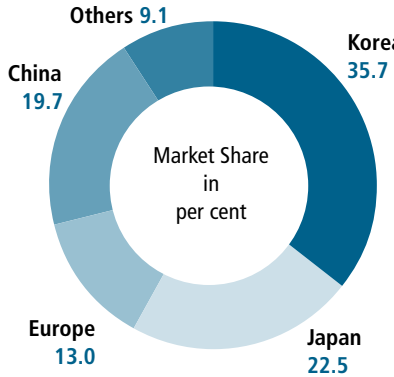
Shipbuilders in Korea continue to build bigger and faster units than their international competitors. In disciplines like management process and quality assurance, Korean yards are at the top of the league, as well. With a backlog of orders to keep them busy for the next three years, their main problem is that the best delivery slots they can offer their customers are from 2011 onwards.

To satisfy the enormous demand, the Koreans have to expand – and come up with some creative solutions. Hanjin Heavy Industries is a good example: The company recently expanded into the Philippines. the main reason: the docks at home are too small, and the confined area around Busan offers no room for expansion. Shipbuilding is limited to ships up to 6,500 TEU at this location. By establishing new facilities at Subic Bay on the Philippines, Hanjin is taking a new approach. "On the Philippines we will be able to build 12,000-TEU container ships," said a Hanjin-Manager. "In fact, steel cutting for the first one is scheduled as early as autumn 2008." More than 20,000 people have already been recruited for upcoming shipbuilding and repair projects. The South Korean yard is relying on a task force provided by the Philippine government to handle this enormous challenge.

As early as 2005, the yard found a creative way to optimise the use of its facilities, developing a method of building a 325 m long ship in a 300 m dock. The "DAM" system is a two-stage approach whereby the main hull is built in

MARKET LEADER KOREA

The volume of orders for 2006 (gwt) clearly shows the lead of Korean shipyards over other shipbuilding nations. The ships delivered statistics confirm this result.



Source: Lloyd's World Shipbuilding Statistics

SHIPBUILDING KIT. At Hanjin Shipyards, a ship is being assembled applying the "DAM" system. The main hull and the bow section are completed as separate units, then welded together, allowing the shipyard to build ships larger than the dock.

the dock and the bow section on the pier. Once both part of the hull have been completed, main part (aft part) of the hull is floating-free within the dock and forward part is than connected using „DAM" system and floating crane. This construction technology was first used for the Hanjin Nb. N-128 („MSC MAEVA").

Busan Fair

In late October, the Busan "Marine Week" trade fair provided Korean and international shipyards and suppliers with an opportunity to highlight their competencies. More than 1,000 companies, about half of them Korean, exhibited their services. Under the umbrella of the "Marine Week", three distinct exhibitions have been brought together, the "Kormarine" for merchant shipping and shipbuilding, as well as the "Naval & Defence" and "SeaPort" fairs. The "Marine Week" took place for the 15th time this year.

South Korea has about 120 shipyards, roughly 30 of which are start-ups from the past three years. But looking at the overall output statistics of shipbuilding country number one, the same names keep popping up. Nine shipbuilding companies are responsible for more than 95 per cent of the domestic ship production. More than 90,000 people earn their living building ships today – nearly twice as many as in 1999. The ship machinery and equipment industry alone feeds a workforce of roughly 70,000 people.

STX-Shipbuilding broke the news at the beginning of the exhibition that they are now the biggest shareholder in Norwegian-owned shipbuilder Aker Yards. The Korean shipyard thus not only increased their production capacity but, more importantly, seeks to buy-in European cruise ship expertise. Apart from Samsung, who have delivered ferries to European customers, South Korean yards have not been involved in the passenger ship market so far. This acquisition is another move of the Korean shipbuilding industry to fend off competition, especially from China. The Chinese industry is aiming to overtake South Korea as the world's biggest shipbuilding nation by 2015.

Four times the size of an average soccer field and a cargo carrying capacity of 2.2 million 29-inch TVs: these are the specs of a new, 16,000-TEU container ship design Samsung is now developing. The shipbuilder is currently constructing a special floating dock 400 m in length for this purpose. Work on the first vessel will begin during the first half of 2009. Samsung's present orderbook lists 37 vessels of 12,600 TEU and 13,300 TEU, respectively, accounting for 31 per cent of the world market volume.

The company believes these to be the standard ship sizes of the future. "Due to continued high oil prices, it is becoming a market norm to place orders for ultra-large container ships that will carry the largest quantity of cargo possible," says a Samsung Manager. The shipbuilder has also expanded into China. In Rongcheng City, Shandong, a Samsung hull block factory will soon be making 10,000-tonne ship sections, each 150 m in length. The so-called "tera-block" system enhances construction capabilities considerably, enabling the company to build as many as ten →

EYE-CATCHER: TANKER WITH ICE-CLASS

A large model of the tanker "EBERHARDT ARCTIC" at the GL booth appealed to many Kormarine visitors. The model exemplifies GL tanker expertise in the areas of collision strength and ice class. In 1984, Germanischer Lloyd was the first classification society to introduce the COLL notation system to indicate the collision resistance of a ship.

Collision strength remains a topical issue, given that tankers are being built in increasing numbers once again. With new oil and gas wells in northern regions gaining importance, ice-class tankers are in high demand. Germanischer Lloyd currently attends to some 2,600 ice-class ships, including 243 tankers.

→ additional ships each year. The finished sections will be moved to Geoje, Korea for final assembly. To reduce the logistics overhead and transporting time, the company will tow the ship blocks directly through the water, rather than loading them on barges. Blocks with special requirements, such as engine rooms and the pilothouse, will be manufactured in Geoje.

In June, Hyundai Heavy Industries announced the development of the first Korean Dual-Fuel Diesel-Electric (DFDE) propulsion system for LNG carriers. This system can be fuelled with either oil or gas, depending on the situation. The actual propulsion unit is a large electric motor similar to those used in large cruise ships and submarines, as opposed to a steam turbine, the traditional propulsion system for LNG carriers. The DFDE propulsion system is comparatively expensive, costing two to four per cent more than traditional steam-turbine systems. According to Hyundai, however, the savings in fuel costs within the first five years will more than make up for the extra investment. The DFDE system is said to save over ten per cent more fuel efficient than traditional propulsion systems. The vessel "British Emerald" was the first ship equipped with DFDE technology.

Proven Partnership

With an innovative design study for a 13,400 TEU-container ship, Germanischer Lloyd and Hyundai Heavy Industries showed as early as September 2005 just how big container carriers will be in the near future. It was not just an idea – the study resulted in a "ready to build" ship. All the relevant calculations had been made, and the entire design was approved by Germanischer Lloyd. Hyundai Heavy Industries was ready to accept orders. The container ships ordered this summer implement the concept presented in 2005: the separation of the deckhouse from the engine room.

GL has been a regular Marine Week exhibitor since 1989. Thanks to 30 years of close collaboration with Korean

"GOOD BUSINESS PROGRESS" – INTERVIEW WITH STEFAN HÖNER

Stefan Höner has been Germanischer Lloyd Area Manager for Korea since September 2006. nonstop asked three questions about recent achievements and new plans.

nonstop: Mr Höner, what were the main challenges when you started a year ago?
Höner: My predecessor had built up a huge network of business partners for Germanischer Lloyd in more than 20 years. My first challenge was to introduce and position myself inside our community of shipyards, shipowners and material and component manufacturers. Furthermore, it was and still is very important to establish GL as one of the leading class societies not only in container shipbuilding, but also in the tanker and bulker business in Korea.
nonstop: What have you achieved and how have your goals changed?
Höner: At the end of last year there appeared to be a downturn on the Korean container ship market. This has changed since last summer; many super post-panmax container vessels have been ordered since, and several shipowners and yards rely on GL's advanced experience and services in this segment. I am also happy to say we have made good progress in the tanker business, having received orders for chemical tankers, VLCCs and bulkers from Korean shipyards.
nonstop: What are you doing in terms of long-term quality assurance?
Höner: For us as a service-oriented society, the most important aspect of our quality-assurance efforts is our employees and their training. Therefore GL introduced the new Surveyor Excellence Network. One cornerstone of this initiative is our new Division Training Centre in Busan. We offer training for new staff as well as follow-up training for our surveyors in Korea. Another important step for our quality programme is the extension of modern office technology into our administrative processes. In particular, I would like to mention TRON, our Technical Reporting Online Network for ships in service, newbuildings and the certification of materials and components.

Photo: Michael Bogumil

AREA MANAGER. Stefan Höner represents GL in Korea.

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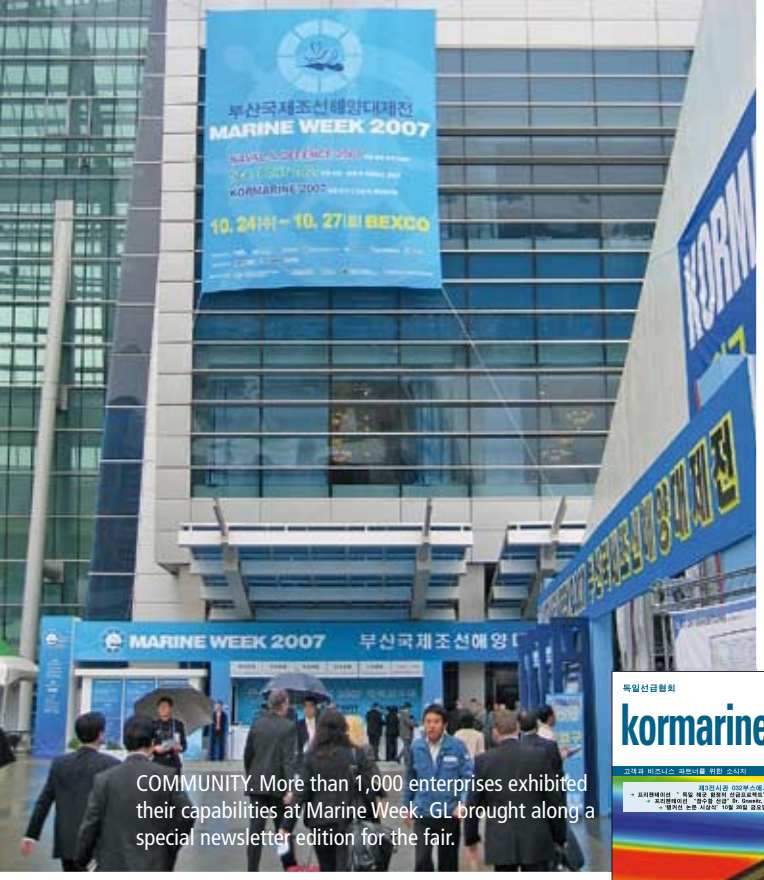

COMMUNITY. More than 1,000 enterprises exhibited their capabilities at Marine Week. GL brought along a special newsletter edition for the fair.

AWARD WINNERS. During Marine Week, Germanischer Lloyd presented GL Awards to several young scientists.

shipyards, suppliers and shipowners, the current GL order book in Korea lists 334 ships totalling more than 20 million GT. "Since the beginning of the year, 48 ships with GL class have been delivered in Korea," said Dr Volkmar Wasmansdorff, Head of GL's Division Asia/Pacific, at a press conference. "In the past five years, an average of 60 GL-classed ships have been completed annually." Germanischer Lloyd also certifies the world's most powerful diesel engines, which are built in Korea and sold as main propulsion units to shipyards here and abroad. More than 130 employees at 11 GL locations serve the Korean industry.

Supporting Young Scientists

In an award ceremony during "Marine Week", the classification society demonstrated its commitment to supporting local young professionals of the maritime industry. Three graduate students from Busan National University and Korea Maritime University, respectively, were decorated by Germanischer Lloyd with "GL Awards" for outstanding academic work on modern tankers. B. H. Lee from the Naval Architecture and Ocean Engineering Department at the graduate school of Busan National University received the first award for his thesis on "Numerical Simulation of Impact Loads Using the Particle Method".

The second award was accepted by S. Y. Lee from the Department of Shipping Management at the Korea Maritime University graduate school. He wrote his thesis on "Port Development in Relation to The Economies of Scale in Tanker and Container Shipping". Y. H. Yun from the Division of Ocean System Engineering at the Graduate School of Korea Maritime University was recognized with the third award for his thesis "A Study on Double Bottom Structural Criterion of Small Oil Tankers".

"The maritime industry depends on experienced and highly qualified personnel," said Stefan Höner, Germanischer Lloyd Area Manager in Korea, at the award ceremony. "Every industry member needs to do something. For Germanischer Lloyd, training and further education are high on the agenda. It is our greatest pleasure and honour to support these renowned universities by establishing an intense and fruitful exchange of thoughts and know-how." Earlier this year, Germanischer Lloyd had agreed to co-operate closely with State Marine Technical University, St Petersburg (SMTU). Another academic institution the classification society enjoys close ties with is the World Maritime University Malmö, Sweden. Students and lecturers are exchanged on a regular basis.

The three award-winning Korean graduate students were selected by a panel of experts based on their academic credentials. The selection committee consisted of Dr S. Y. Kim, Professor at the Busan National University Naval Architecture and Ocean Engineering Department, Dr J. S. Park, Professor at Korea Maritime University and Director of the Asia LNG Education & Training Center, Dr B. S. You, Head of the Research and Development Team of Hanjin Heavy Industries & Construction, H. U. Lee, General Manager of SK Shipping Co. , Ltd. , and E. H. Jung, Germanischer Lloyd Country Manager, Korea.

Navy Know-How

Two presentations from the navy department were Germanischer Lloyd's contribution to the "Marine Week" conference programme. The construction and in-service phases of submarines are a complex subject matter that Dr Lars Grünitz shed some light on in his presentation called "Classification of Submarines". Due to the susceptibility of the technology to technical failure, navies benefit from thorough technical supervision during the construction and throughout the lifecycle of a vessel.

By ensuring technical safety through classing naval submarines, a classification society can be the ideal partner for a navy. The South African navy had asked Germanischer Lloyd to class their three submarine newbuildings.

Joachim Wacker whose presentation "Classification projects with the German Navy Fleet" focused on the existing German auxiliary fleet and current newbuilding projects, showcased several examples of the classification society's recent work in this area, providing just a glimpse of GL's wide range of service offerings. ■ SN

Photo: iStockphoto

Like a Viking

An entrepreneur from Iceland is following in the tracks of his ancestors. With the reconstruction of a Viking boat, he is making a dream come true – and hoping to fill a new niche in the market

When the long winter comes down over Iceland and the days grow shorter in the coastal town of Stykkishólmur, business at Skipavík yard becomes less hectic. At this diversified company located almost 200 kilometres north of Reykjavík, ships are repaired, houses built and aluminium components manufactured. More than 100 employees work there at peak periods. When things are busy, there is no time for the pet project of yard owner Sigurjón Jónsson – not like now, in the quiet phase: the construction of a modern Viking boat.

Back to the future? For four years now, the successful businessman has been working on making his dream a reality. "The model for this hull is the Gokstad ship," says Jónsson. With these longships built in Norway 1200 years ago, the Vikings went out on their voyages of conquest. After its discovery and excavation, the Gokstad ship was restored for display in Oslo's Viking Ship Museum. "Even today, it is one of the most beautiful vessels ever built," enthuses the 57-year-old Icelander.

The idea of building a seagoing Viking yacht with modern conveniences and materials came to Sigurjón Jónsson during a long sailing trip. In every port, he saw the same dreary picture: "Plastic boats in the same old style," sighs Jónsson. After two years of sailing about in the Mediterranean, he had seen enough – the decision was made. The bustling Icelander, who had already gone into retirement, was convinced that he had discovered a new market niche and promptly returned to working life.

18,000 Hours Invested

Armed with his first sketches, Jónsson contacted Paul Spooner. The renowned designer at the British Fairlie yard, a specialist firm for historic sailing ships, was asked to assist with the hull and rigging design of the new Viking ship. "Paul liked my idea," says Jónsson. And from the very beginning it was clear that the ship would be executed to the very highest standard of workmanship. Hull, rig and propulsion were to be classed by GL. "An important factor for the later marketing of the ship," the experienced businessman points out.

Only a few months remain, and then the modern-day Viking will be launching his dream boat, but later than planned. GL surveyor Hafsteinn Jonsson had already invited the owner with his new ship to attend the meeting of the Scandinavian Committee of Germanischer Lloyd in September this year. However, some components of the cold-moulded wooden yacht (mahogany, Douglas fir) had to be recalculated. The high workload of his yard was another obstacle to timely completion. And yet Jónsson is optimistic: "In May 2008,

MODEL. The modernized Viking ship is being constructed at the Skipavík yard in Iceland.

we will raise the mast."At present, three boatbuilders are putting the finishing touches to the Viking replica at Skipavík. When the ship hoists its gigantic square sail – with an area of 96 square metres – for the first time, no less than 18,000 hours will have been invested in the project at Jónsson's yard, with the major portion being manual work. If the class turns out to be a success, the enterprising Icelander plans to build three boats a year. The high-tech Viking raider will not be a giveaway, however. Says Jónsson: "The price tag will be around 1.7 million euros." But for all that, the new owner will be getting a yacht of superlative quality and eye-catching lines. Whereas the Vikings took hemp, seal leather or walrus skin for their shrouds and stays, the rigging of the modern longship will use high-quality Liros ropes. The mast, standing 15.5 metres above the deck, is made of carbon fibre, not wood. The standing rigging was manufactured by Formula Spars. The expertise of the British company is undisputed; the mast for the German America's Cupper was also made in Lymington.

In fact, the names of all the suppliers are bywords for quality: "The sails are from Bank Sails. And both yards for the sails have also been ordered in England," says Jónsson. There the spar specialists at Collars have used a glue-laminated construction method to achieve the perfect curvature for the square sail – an important precondition for reaching the high speeds of original ships. An exact replica of the Gokstad original with a length of 23 metres overall attained a speed of a little more than 20 knots. "With our more modest size of 16.7 metres, we expect a speed of 14 knots," says Jónsson.

In addition, Sigurjón Jónsson is making every effort to optimize the cruising comfort: three cabins with double bunks, air-conditioning, heating and two engines are also on board. Like its historic predecessor, the futuristic Viking longship can also be sailed single-handedly if necessary. "I am really looking forward to putting the boat through its paces," says Jónsson. In June 2008, he will head for the open sea – and doubtlessly cause many a stir when entering port. ■

For further information: Hafsteinn Jonsson, Country Manager Iceland,
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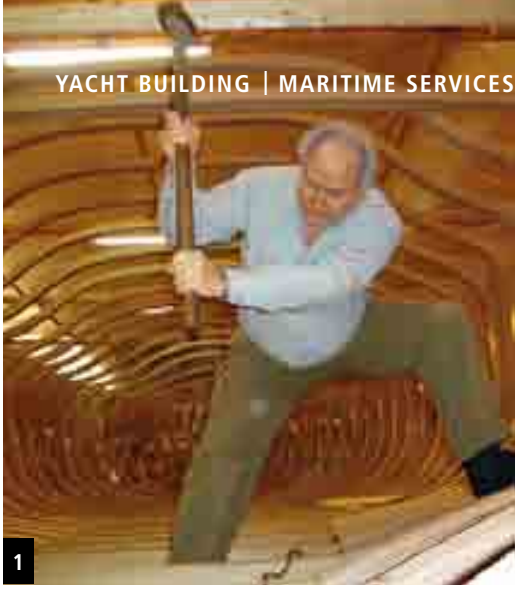
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Photos: Skipavík

SHIPYARD: THE BIRTH OF A VIKING SHIP

With plenty of his lifeblood, Skipavík boss Sigurjón Jónsson works on the completion of his modern-day Viking replica (1). The frames are bonded by hand, using screw clamps (2). The shell of the hull takes shape (3). The photo shows the varying dimensions of the laminated frames. The hull of the 15-tonne yacht consists of one layer of Douglas fir and four layers of African mahogany (4). In total, the hull will be given 14 coats of paint (5). Despite the modern coachroof, the typical form of the Viking ship with its pointed bow is unmistakable (6).

"Faster and More Innovative than the Competition"

For more than a year now, Dagmar Wöhrl has been the Federal Government's Coordinator of Maritime Policy. In this interview with *nonstop*, she speaks about the competition from the Far East, new opportunities for yards, shipping and marine technology through more environmental protection, and the shape of maritime cooperation in Europe

nonstop: Ms Wöhrl, what global trends do you see for the future of maritime trade and industry?
Dagmar Wöhrl: There can be little doubt that the significance of shipbuilding, shipping and marine technology will grow with the rising degree of globalization. The demands imposed on ship technology and logistics are increasing. With greater insistence, the general public is calling for an improvement in ship safety and better environmental protection on all the oceans of the world. The maritime industry must respond and indeed adapt to this situation. In my estimation, the German shipbuilding industry as well as the sea shipping and national port sectors have the innate ability to master these challenges. But this success will depend on being able to bring innovative system solutions rapidly to the world market and, above all, faster than the competition.

Here we must not neglect the dangers of antagonistic developments, especially those arising through the excessive expansion of yards for mass shipbuilding in the Far East. It is primarily our companies, but also the social partners and politics, that must lay out the right strategies to ensure that innovative enterprises and technologically advanced products are strengthened and supported to be both future-proof and competitive.

nonstop: What goals have you set yourself for your term of office?
Wöhrl: As the Coordinator of Maritime Policy for the Federal Government, I would like to contribute towards giving effective political support to the German shipbuilding industry, sea shipping, port industry and other important maritime sectors, so that they can increase their level of competitiveness and safeguard their future existence. Here my role is chiefly that of a moderator or facilitator, because a whole group of topics fall squarely within the scope of competence of, for example, the Transport Minister, the Environment Minister or even the governments of the coastal states.
nonstop: What have you accomplished so far?
Wöhrl: At the end of November 2006, the top-level workgroup "LeaderSHIP Deutschland" was formed under my chairmanship. It has been tasked with identifying the most important and the most implementable elements of a long-term strategy for the German shipbuilding industry. With over 1000 attendees, the 5th National Maritime Conference was held in Hamburg at the beginning of December 2006. The results comprise a whole sheaf of recommendations for action that are now being processed as a kind of "requirements specification" with clearly distributed responsibilities.

Early this year, a breakthrough was achieved with the establishment of a competitive German Commercial Interest Reference Rate (CIRR) system. Now the German yards will have the same general conditions as their international competitors in the financing of shipbuilding loans. The concept of an employment pool, developed by the shipbuilding industry and the IG Metall union with the aim of upholding the level of employment and qualification, has been in the process of implementation since May. This programme is being funded by the Federal Ministry of Economics.

In June 2007 – during Germany's EU Council Presidency – we held the first European Shipbuilding Conference in Nuremberg. Under the leadership of the Federal Ministry of Economics, we tackled the formulation of a national master plan for maritime technologies. Its objective is to concentrate the existing technological competencies to achieve the capability of system leadership for German companies operating in this area.

"The general public is calling for improved ship safety and better environmental protection"

Dagmar Wöhrl

nonstop: What role does climate change and environmental protection play in your work?
Wöhrl: This complex topic is currently being discussed with particular intensity. Climate- and environment-friendly shipping must not only be safe, it must also be economical: with the construction of ever larger ships that are more and more energy-efficient and cause lower emissions. A related requirement here is that these larger vessels must be effectively integrated into newly developed logistics systems, both global and regional. The aim must be to come as close as possible to the visionary target of "zero emissions" for navigation of the future. Besides the CO_2 emissions, the release of other pollutants (e.g. sulphur and nitrogen oxides) is naturally also of considerable importance.

The topic of climate and environmental protection enjoys a very high priority in my work. Within my sphere →

Photo: Andreas Schmidt-Wiethoff

SUMMING UP. Maritime Coordinator Dagmar Wöhrl looks back at a series of successful projects.

THE FACILITATOR

In November 2006, Dagmar G. Wöhrl (53) took over the office of Coordinator of Maritime Policy for the Federal Government. Her area of responsibility includes coordinating and focusing the measures of the Federal Government aimed at strengthening the international competitiveness of Germany as a prime location for shipbuilding, sea shipping, port industry and marine technology. The sum of 110 million euros has been earmarked for project funding. By 2009, this budget is to be stocked up to 150 million euros.

Politically experienced. Since 2005, Dagmar Wöhrl has been active as Parliamentary State Secretary for the Federal Minister of Economics, Michael Glos. Hailing from Nuremberg, she worked as a lawyer and entrepreneur after completing her law studies. In 1994, she became a member of the German Bundestag, and has been a member of the Executive Committee of the CSU Party since 1995.

Photo: Andreas Schmidt-Wiethoff

Meeting. Dagmar Wöhrl and Dr Hermann J. Klein, Member of the GL Executive Board.

→ of responsibility, which also extends to technology policy, I see the enormous innovation potential associated with "green" engineering. Technological leaders amongst the shipbuilding nations, such as Germany, are also benefiting here, as shown by the full order books of our yards.

The introduction of international regulations that, in the interests of safe shipping, are based on the latest technology is contributing towards the rapid transformation of research findings into marketable products. Here our maritime industry can capitalize on its strengths and show the world that our innovative concepts are really competitive and forward-looking.

nonstop: What research and development projects do you regard as being especially promising?

Wöhrl: The "zero emission" ship is a clear beacon for viable long-term research and development strategies. The possible scope stretches from reducing fuel consumption through low-emission drives and up to lightweight construction and the use of pioneering materials. What is more, the ships of the future will increasingly take on new tasks.

"More than ever before, we must regard shipbuilding as a European concern"

Dagmar Wöhrl

nonstop: Could you give us a few examples?

Wöhrl: Here I am thinking of oil and gas transports running through the Northern Polar Sea during the summer months, thus dramatically shortening the route between Europe and Asia.

A multitude of technical issues would still have to be solved, ranging from the profitability and technical safety up to optimizing the routes through the ice. These issues are also in the focus of the maritime research funding activities of the Federal Government, which have been grouped together with the promotion of shipbuilding innovation by the Federal Ministry of Economics since the end of last year. The key aspects of the current funding period of the programme "Shipping and marine technology for the 21st century" are product innovations for securing technological leadership, process optimization to reduce costs and increase productivity, the shifting of transportation to the waterways, and the promotion of system concepts in marine engineering – specifically in the field of offshore and deepwater technology.

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

Wöhrl: The European shipbuilding industry distinguishes itself as being a high-tech sector, an important economic and locational factor, and a trailblazer in environmental and climate protection. Within the scope of the European Lisbon Strategy, we must unlock this potential and make it sustainable for the long term.

With the "LeaderSHIP 2015" initiative, the European shipbuilding industry has kicked off an ambitious programme. It is a roadmap for securing the leading position in technology, for obtaining a stronger customer focus, and for achieving the transition to products, services and production processes that are even more knowledge-based. "LeaderSHIP 2015" combines both strategic entrepreneurial action by the shipbuilding industry and underpinning policy measures on the EU and national levels.

nonstop: What are the fundamental objectives of this initiative?

Wöhrl: With a view to the expansion of shipbuilding capacities in the Far East, it is vital to no longer regard shipbuilding as a purely national matter but more strongly as a European concern. A significant contribution has already been made by the first European Shipbuilding Conference. All the major players from industry and the unions, as well as political decision-makers on the EU and national levels, came together in Nuremberg. A Europe-wide dialogue on topical aspects of safeguarding the viability and competitiveness of European shipbuilding was set in motion there. The European shipbuilding countries must now implement the groundbreaking concept of "LeaderSHIP 2015" on a national level. In Germany, we are already well on the way with our "LeaderSHIP Deutschland" programme. ■ SN

Photo: iStockphoto

Satisfied Customers

Inspired by the results of a worldwide customer survey, Germanischer Lloyd boosts the strengths of its services portfolio

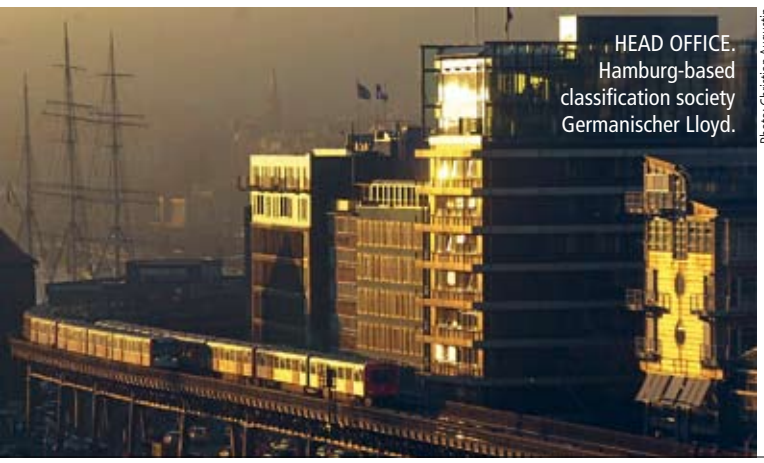
The customer is in the focus – that's what everybody says! Each company has to concentrate on its customers. Anything else would hardly lead to success at times of multifaceted competition which is not only based on price comparisons. The customer in the focus – this is a requirement and its company-wide implementation should be checked regularly. Germanischer Lloyd has done just that recently. "If the customers were not satisfied, they would be with our competitors," says Dr Hermann J. Klein, Member of the Executive Board. "But 'satisfied' is not enough. We need to find out: How can we improve our services?"

What are our customers thinking? Are they content with the services? Is the consultancy adequate? Do they always receive the support they expect or is there potential for improvement? Do our solutions lead to success or is more investigation required? Worldwide, 262 customers such as ship owners, shipyards and representatives of the supply industry have been confronted with these and other questions. "A large proportion of the contacted companies have used the opportunity to share their opinion – more than you would normally expect. This demonstrates a strong relationship with Germanischer Lloyd," reports Michael Lindberg, whose market research company Lindberg International carried out the customer poll. Executive boards, CEOs, directors and other managers provided unadorned feedback to Germanischer Lloyd by answering in semi-structured interviews. Their detailed answers were insightful since they revealed the motivation, interests and wishes of the customers.

Good Image, High Flexibility

After the qualitative evaluation of the customer-satisfaction data, new and precise suggestions are now being developed in order to further extend the strengths of the GL service portfolio particularly in the fields of research, development and technical know-how. Once again the ranking showed that a good image is important. But even more important is the ability to successfully deal with spontaneous troubles at short notice – in the field service as well as in the head office. "A fast assessment is often more appreciated than a technical 110 per cent solution," said Dr Klein. "We have to work more problem-oriented and flexible."

Amongst other things, the administrative workflows are supposed to be optimized even further. Another survey is planned for the coming year in order to check the effectiveness of the actions taken. ■ OM

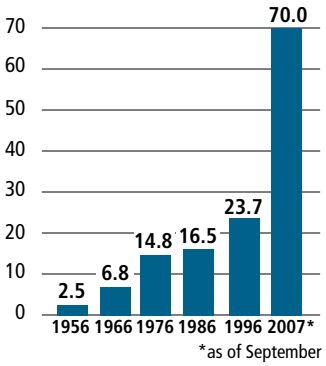


HEAD OFFICE. Hamburg-based classification society Germanischer Lloyd.

Photo: Christian Augustin

Fleet in Service

in million GT



*as of September

Shanghai Dynamic

Shipbuilders, shipowners and suppliers – the Marintec China 2007 made the global boom of the shipping industry more than palpable. GL reported numerous new contracts and co-operation agreements

The business momentum apparent at the Marintec China 2007 was impressive. Within the first two days of the biggest maritime trade fair in Asia, Germanischer Lloyd logged 36 new ship classification contracts.

This has brought GL's orderbook up to more than 1,400 newbuildings. The new contracts included eleven container ships of various sizes as well as 25 multi-purpose vessels for German and Greek owners, all of which are being built at various shipyards in China as well as one yard in Bangladesh, that of Ananda Group (see photo below on the right).

On the very first day of the event, GL Executive Board Member Dr Hermann J. Klein and Mr Zhou Jiamneng, Vice Chairman of Hudong-Zhonghua Shipbuilding, signed a contract for ten 20,000 dwt multi-purpose vessels (see photo above). During the signing ceremony, an additional classification contract for five 8,530-TEU container vessels to be built by Jiangnan Chengxing Heavy Industry was agreed upon. Hudong-Zhonghua Shipbuilding (Group) Co. Ltd. is one of five large shipbuilding enterprises under the umbrella of China State Shipbuilding Group Corporation (CSSC). Its 14,000 employees not only build trade and marine vessels but also diesel engines and large steel structures. Besides the two large shipyards, Hudong and Zhonghua, the group also owns Hudong Heavy Machinery Co. Ltd., a listed company; Dong Ding Steel Structure Co. Ltd., and around 100 other marine equipment manufacturers. The present annual newbuilding capacity of the H&Z Group is two million dwt.

AGREEMENT II. JYS Chairman Ren Yuan Lin and GL Executive Board Member Dr Hermann J. Klein signing the order.

Efficient Shipyards

In yet another series of contracts, Dr Hermann J. Klein and Chairman Ren Yuan Lin of Jiangsu Yangzijiang Shipbuilding Co. Ltd. (JYS) agreed to GL-classification of eleven newbuildings: four 4,250 TEU containerships, two 2,500 TEU containerships and five 7,600 dwt multi-purpose vessels (see photo on the left). JYS shipyards, building for a number of German and Canadian shipping companies, are in the process of designing a new midsize containership. With some 80 GL-classed vessels delivered to date, JYS is among the top clients of Germanischer Lloyd in China. In his address, JYS

AGREEMENT I. CFO Xiao Hougxing, party secretary Xu Ping of Jiangnan Chengxing Heavy Industry, Dr Hermann J. Klein, Member of GL's Executive Board, Hudong's Vice Chairman Zhou Jiamneng, Werner Enning, GL's Area Manager China (from right to left).

chairman Ren Yuan Lin emphasized the importance of operational efficiency. The new shipyard at Jianyin City in the Chinese province of Jiangsu will be able to deliver some 50 vessels annually. Extending along a 1,000-metre deep-water shoreline, it covers an area of 322,000 m².

The shipyard has more than 1,000 employees, including over 300 engineers and technicians. It has built multi-purpose cargo carriers, container vessels, oil tankers, car ferries, passenger vessels, offshore working vessels, dredges, salvage rescue boats, lifting vessels and other ships for customers all around the world.

Today the yard ranks among the top-500 enterprises of the Chinese transport and traffic equipment manufacturing industry. JYS' steel structure factory, capable of producing up to 10,000 tonnes of steel, or 150 blocs, per month, focuses mainly on manufacturing structural elements for container vessels. ■ OM

AGREEMENT III: Afruja Bari, Managing Director Ananda Group, Dr Volkmar Wasmansdorff (l.) and GL Executive Dr Hermann J. Klein.

SNIPPETS FROM THE MARINTEC CHINA 2007

EXCHANGING VIEWS. Minister Jin Zhuanglong, GL Board Member Dr Hermann J. Klein, Dr Volkmar Wasmansdorff, Werner Enning, Juzhen Hou (all from GL, right to left).

TOP-LEVEL TALKS

Political Exchange

The rapid expansion of the Chinese shipbuilding industry was the topic discussed in a meeting with Jin Zhuanglong, Chinese Vice Minister of Science & Technology of National Defence. GL Executive Board Member Dr Hermann J. Klein took the view that China will succeed more rapidly in establishing itself as the world's leading shipbuilding nation by boosting its domestic maritime supply industry. "This will generate additional growth for years to come," said Dr Klein.

Quality assurance. Mr Zhuanglong underscored the importance of classification societies for quality assurance in shipbuilding. "Quality is extremely important to us," the vice minister emphasized. Classification societies play a pivotal role in supporting China's objective of matching the standard of Korea or Japan in shipbuilding. Mr Zhuanglong thanked GL for the work the society has done so far: "Germanischer Lloyd has done a lot for the Chinese maritime world."

CO-OPERATION WITH HARBIN

Students To Be Awarded Scholarships

PARTNER. Engineering professor Liu Zhigang, President of HEU (M), Dr Hermann J. Klein, Member of the Executive Board of GL.

Germanischer Lloyd and Harbin Engineering University (HEU) announced a comprehensive co-operation programme for training future engineers in disciplines such as acoustics and fluid dynamics. "As an innovation-driven classification society, we are very honoured to support a renowned institution such as the Harbin Engineering University," said Dr Hermann J. Klein, Member of the Executive Board of Germanischer Lloyd.

Leading university. The two partners will jointly work on science and industry projects and exchange lecturers and instructors. Harbin Engineering University will be host to colloquiums, workshops and conferences with GL participation. The classification society has also donated eight scholarships for undergraduate and graduate students with excellent academic credentials in shipbuilding and maritime engineering. "Our goal is to deliver world-class research and graduate education at a university with international renown," Professor Liu Zhigang pointed out. Harbin Engineering University (HEU) is today China's leading technical university, offering programmes in engineering, science and management.

INTERNATIONAL MARITIME CONFERENCE

Tracking down Material Fatigue

At the maritime conference held during the Marintec China, Karsten Fach, Head of Competence Centre Engineering Services at GL, gave a lecture titled "State of the Art Engineering Services". He covered the topics of simulation, strength vibrations, acoustics, hydrodynamics, CFD, evacuation analysis and risk-based state calculations – all disciplines relying on modern mathematical methods to simulate on-board conditions realistically or by approximation. Of special interest were his statements on early prediction of material fatigue caused by hydrodynamic stress. In a second lecture, he discussed the "Dynamics of Single Point Mooring Configurations".

Ship Design and Architecture

Experts get updated at Germanischer Lloyd's Container Forum Shanghai

The wide range of topics met with lively interest. Nearly one hundred engineers from design offices and shipyards attended GL's 'Container Forum Shanghai' in late November. Jan-Olaf Probst, Head of Competence Centres Hull & Ship Safety, gave a lecture about current design developments for 'New Panamax' containerships. The enlargement of the locks of the Panama Canal will give rise to a new generation of Panamax vessels with a maximum load-bearing capacity of approximately 12,500 standard containers.

Welding Know-how

Holger Jefferies, Head of Department Approval Services East Asia, discussed "Design Aspects for Ice Notations", explaining design requirements relating to aspects such as hull structure, machinery and electrical systems. Other lectures addressed the "Practical Application of the IACS Unified Requirement UR A2" (mooring and towing equipment), "Additional On-site Services for Containership Operators and Designers", and a "Medium Voltage Shore Connection" intended to cut ship emissions in ports.

A report by Marcus von Busch on "Welding of Critical Details of Container Vessels" generated much interest and a lively discussion. In numerous examples von Busch showed that welding in areas subject to high stresses requires utmost care to avoid weakening the material or inducing cracks. The welding expert recommended taking extra precautions in high-stress areas and avoiding welds altogether if possible.

In addition, the material of the consumables should match the higher-strength structural steel of the hull as well as plate thickness, von Busch emphazised. Heat input should be limited to protect the mechanical integrity of the material after welding.

Ballast Water: IMO Convention Postponed

Another topic discussed during the one-day GL forum was the IMO ballast water convention. The International Maritime Organization has postponed the effective date of the new rules by up to three years for certain ships. IMO Secretary General Efthimios Mitropoulos had proposed the delay during the IMO general assembly in November to avoid implementing a regulation for ballast water management that shipowners would be unable to comply with and flag states could not enforce by the original deadline.

The delay only applies to new ships with a ballast capacity of less than 5,000 m^3 constructed after 1 January 2009. Shipowners will not be required to have systems installed on these vessels until their second annual survey or no later than 31 December 2011, whichever occurs first. ■ OM

Rickmers: Red Carpet for "Sabine" and "Erwin"

Sister Ships Commissioned: Two containerships, MV "Sabine Rickmers" and MV "Erwin Rickmers", were christened in the northern Chinese port of Dalian in late November, and delivered to the owner just a few days later. Completed by Dalian Shipbuilding Industry shipyards within less than 14 months, the two sister ships are designed to carry 4,250 TEU, or 50,700 dwt.

Photo: iStockphoto

Hong Kong Leads the Way

Ships are the most environment-friendly means of transportation. Yet global warming calls for further improvements in ship and port operations. Hong Kong has accepted the challenge

Fragrant Harbour" is the translation of the name Hong Kong. The scent of fresh blossoms, herbs and cookshops once wafted through the streets. But times have changed. Thousands of skyscrapers now tower up into the skies above the city and its seven million inhabitants. Factories, cars and ships blow pollutants into the environment. Some people wear face masks to protect themselves from noxious fumes.

Shipping, although a relatively environment-friendly mode of transportation, contributes to this situation. Roughly 300 ships call at Hong Kong harbour per day, says the city's Director of Marine, Roger Tupper. Many more tankers and container vessels are passing the Asian metropolis by day and by night. Hong Kong's ports are expanding at a breathtaking speed. Yantian Container Terminal, built just 15 years ago, increases its throughput by 20 per cent each year. "Next year we will cross the ten-million-TEU line," says managing director Keneth Ise.

It is mainly the sulphur content of ship fuels that has given rise to the air pollution problem. From 2001 to 2005, sulphur dioxide emissions rose by 16 per cent, according to government sources. Experts say the average sulphur content in typical bunker oils used in the area is about 3.8 per cent, compared to a global average of 2.58 per cent according to IMO. In Hong Long, however, fuels sometimes contain as much as 4.5 per cent of sulphur.

To cope with the problem, the Hong Kong Marine Department recently announced random sampling of bunker oils to ensure strict compliance with the sulphur limits defined by Marpol Annex VI.

"Hong Kong is a perfect example of how climate challenge can be addressed on a local basis," says Dr Volkmar Wasmansdorff, Head of Division Asia/Pacific at Germanischer Lloyd. On occasion of the Maritime Asia Awards 2007 he commended the city for what it has accomplished to date: Hong Kong has presented a timetable for reducing emissions from all water craft and port installations, he said. Shipowners and masters have been urged to approach and leave the port at drastically reduced speeds and take appropriate measures to ensure their ships will use cold ironing while at the mooring. "The shipping industry can do a lot to underscore its current and future leadership in terms of efficiency and environment-friendliness," Wasmansdorff said.

Green Lung

There is something in the air in Hong Kong, and shipping is just one of the causes. Rather, the problem is a combination of many factors. Especially when the wind blows from the northeast, pollutants from other regions descend upon Hong Kong. The Pearl River delta, Hong Kong's catchment area, is home to about 50 million people and one of the fastest-growing economic regions on earth. Meteorological influences aggravate the problem: the hot, humid climate is very prone to smog. Yet, Hong Kong has its green side, too: only about one-quarter of its area of 1,000 square kilometres is urbanized. Hong Kong is still one of the greenest cities on our planet. ■ DH

CEREMONY. Dr Volkmar Wasmansdorff at the Maritime Asia Awards 2007.

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140 years of Germanischer Lloyd stand for 14 decades of technical progress, innovation, safety consciousness and the highest quality objectives. In a special series, nonstop has highlighted the most important events in the history of Germanischer Lloyd. Today GL is one of the most renowned classification societies of the world. In the fourth and last part we venture a view into the future.

On to the Next 140 Years

Safety at sea, energy for the future – in its anniversary year, Germanischer Lloyd continues its strong commitment to find technology solutions for tomorrow's challenges

Expertise, quality, service – those have been the determining factors for Germanischer Lloyd's success since 1867. Today, 140 years after the classification society was first established, they are the main reason for its excellent future prospects. In the Maritime Services business unit, order books are full and will keep the GL staff busy until 2011/12. Meanwhile, GL's second major unit, Industrial Services, is steadily expanding. New alliances and acquisitions in the UK and Canada are boosting the growth of the provider of certification and inspection services in the high-demand oil, gas and renewables markets.

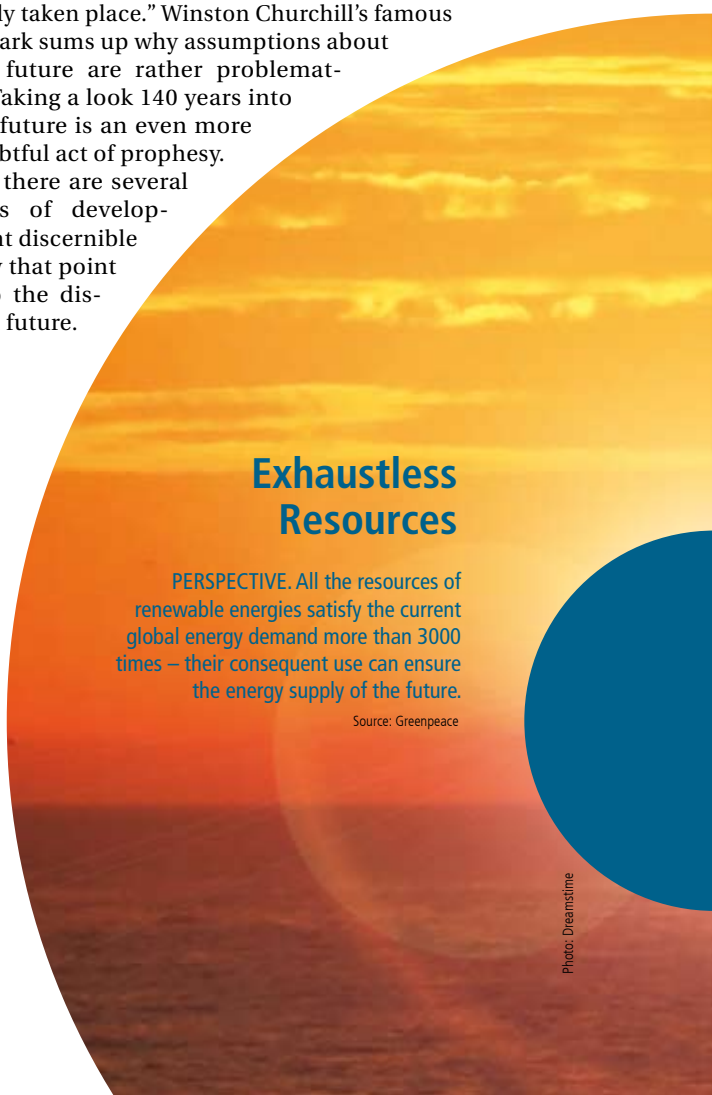
Looking ahead to a Strong Future

Mankind will be facing great challenges in the medium and long term that are discernible today. Trade will intensify, and so will energy demand. As the age of fossil fuels is declining, the quest for alternative energy sources is gaining momentum, driven in part by the realization that we must cease to pollute the atmosphere by combustion processes of all kinds. Safety, quality, efficiency and the protection of the environment will continue to be key issues on the energy agenda.

What will our industry look like 140 years from now? This question was among the main topics during the anniversary year that GL celebrated together with its customers and partners, not only in Hamburg but in 25 other cities all over the world, as well. The GL board held lively discussions with a small circle of experts about important future trends.

Among the participants were Prof. Günther Clauss, head of the Marine Technology Department and co-ordinator of the Naval and Marine Technology field at Berlin Technical University; and Prof. Thomas Straubhaar, Director of the Hamburg Institute of International Economics. The results were published in the commemorative volume "Technical Horizons and the Sea".

"I always avoid prophesying beforehand, because it is a much better policy to prophesy after the event has already taken place." Winston Churchill's famous remark sums up why assumptions about the future are rather problematic. Taking a look 140 years into the future is an even more doubtful act of prophesy. Yet, there are several lines of development discernible now that point into the distant future.



Exhaustless Resources

PERSPECTIVE. All the resources of renewable energies satisfy the current global energy demand more than 3000 times – their consequent use can ensure the energy supply of the future.

Source: Greenpeace

Photo: Dreamstime

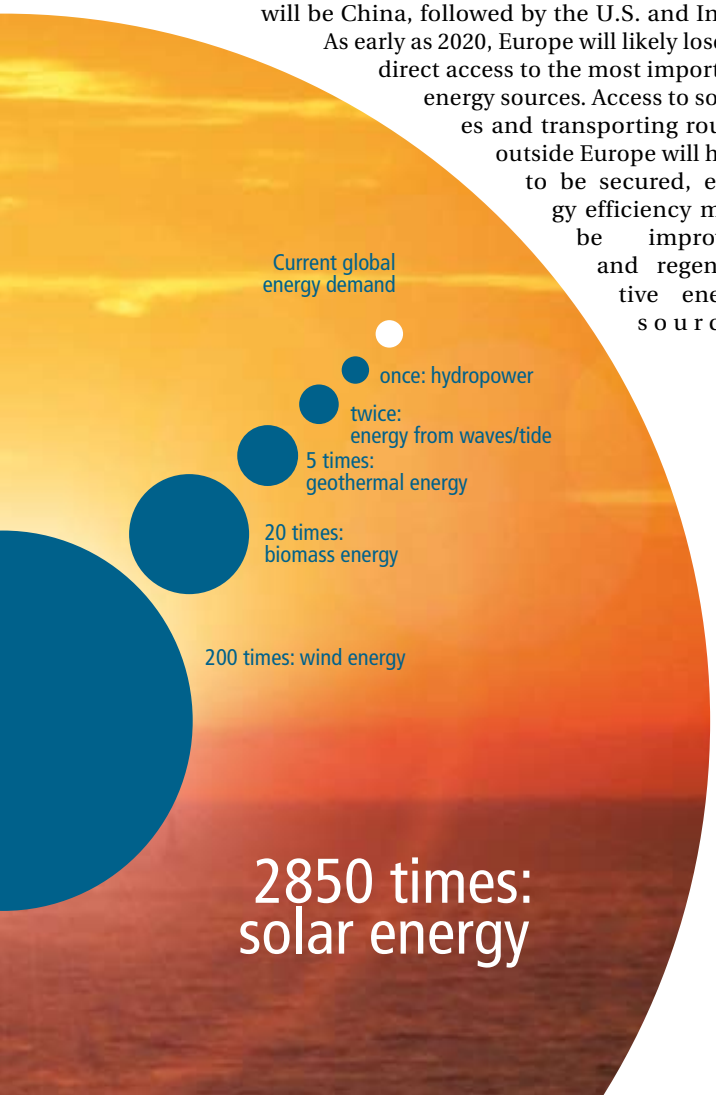
It may only be a question of time until the rapid progress of global warming has eliminated all Arctic ice. If the ice continues to melt as it has in recent years – an effect reinforced by periods of very abrupt melting due to a strong influx of warm water – the Arctic Ocean could be nearly free of ice and thus navigable during summers as early as 2040, according to new studies. In winter, however, it will always be covered by a coherent sheet of ice.

Polar melting will extend the annual Arctic navigation season along the North Sea and through the Northwest Passage by 20 to 30 days. In a more distant future, it might even be possible to sail directly across the North Pole in summer. Furthermore, the melting ice will make it easier to access many sources of raw materials in the northern regions.

While a more vigorous movement of ice and waves is making it more and more difficult to navigate or execute projects in the Arctic, rising levels of seas and rivers, coastal erosion and increasingly unstable soils on land as a result of melting permafrost could improve the relative competitiveness of shipping compared to land-based transport on roads, rails or pipelines.

The causes of global warming have not been identified with ultimate certainty. The fact that the climate is changing globally, however, is no longer questioned. But what dimensions will it assume by the next century? Will mankind succeed in better protecting the natural environment to limit the effects of global warming by managing fossil resources more responsibly?

Much will depend on the development of the global energy consumption. Forecasts predict a 50 per cent increase over the next 25 years. Oil and gas will continue to be the most important energy sources. The biggest consumer will be China, followed by the U.S. and India. As early as 2020, Europe will likely lose its direct access to the most important energy sources. Access to sources and transporting routes outside Europe will have to be secured, energy efficiency must be improved, and regenerative energy sources must be developed with determination. But it remains to be seen whether these goals can be reached.



Alternatives in Sight

Yet, there is reason for optimism. Next to solar and wind energy, ocean wave energy is at the top of the agenda of utility companies and technology providers. Ocean waves store gigantic amounts of energy – at no cost. Studies have shown that the waves pounding against steep coastal cliffs can release up to 30 kW of energy per metre. According to the World Energy Council in London, 15 per cent of the global energy need could be satisfied with energy from waves. Coastal nations such as Spain, Great Britain or Norway could draw half of their electricity from the sea. Utility and engineering companies have begun embracing this technology. Dozens of projects are being implemented around the world at this time.

Renewable energy sources are a sustainable approach to a more environment-friendly mix of energies. Existing technologies for solar, wind, wave, tidal and hydroelectric power as well as cogeneration are evolving further. As prices of fossil fuels continue to rise, alternative energies will become economically feasible in the foreseeable future. If combined intelligently, they will secure the future electricity supply. In a matter of a few years, hydrogen power may begin replacing traditional energy sources to eventually become a key factor in the energy markets of tomorrow. The chemical element is pervasive in nature, occurring in plants, natural gas and water. Hydrogen accounts for 90 per cent of the cosmic matter.

Using it as an energy source poses no technical problems. The current global production amounts to 500 billion cubic metres, used mainly by the chemical industry. Major efforts are underway to establish hydrogen as a main source of energy for power generation, heating and transportation.

Visionary Technology

For the next few decades, fossil energy carriers will continue to dominate electricity generation. While new-generation power plants are highly efficient, the cost of reducing CO_2 emissions offsets much of the gains. In the face of soaring oil and gas prices, coal mining and gasification offer a realistic alternative, not least because of the existence of major reserves in deep formations.

Nuclear power – low in CO_2 emissions and a reliable energy source – could see a revival, in spite of safety concerns. There are many promising innovative concepts for converting nuclear waste into non-radioactive chemical elements. Accelerator-Driven Systems (ADS) currently being researched in Germany, the U.S. and other countries could reduce the space required at permanent disposal sites by a factor of 10; ideally, they might even render permanent disposal unnecessary. Another vision is nuclear fusion, which endeavours to imitate the processes inside the sun. How soon new sources of energy will be able to compete with oil, or even upstage fossil fuels, will largely depend on the oil price – and the technology development.

In the long term, mankind is facing the end of the age of fossil fuels and thereby an unusual technical challenge: the quest for alternative energy sources and energy storing methods. The associated technological issues have opened up a wide range of activity for enterprises such as GL for decades to come. Safety, quality, economic feasibility and environment protection will remain the main focal areas of Germanischer Lloyd. ■ OM

"A Good Man to Have as a Friend"

After 27 years of sterling service for Germanischer Lloyd, Rainer Schöndube has ended his successful tenure. As a long-standing Member of the Executive Board, he leaves behind a well-ordered company

An era has come to an end. With the full red-carpet treatment, Rainer Schöndube (64), long-standing Executive Board Member of the classification society Germanischer Lloyd (GL), was bid a fond farewell on 27 September in Hamburg's "Vier Jahreszeiten" Hotel. Over 200 guests from the worlds of commerce, administration and politics came to hear the various guest speakers pay tribute to his many accomplishments with noteworthy speeches.

Choosing the Right Time to Go

Hamburg's former Senator for Finance, Dr Wolfgang Peiner, started off the procession of panegyrists. As the Chairman of the GL Supervisory Board, he praised the endeavours of Rainer Schöndube, who, after all, had dedicated 27 years of his life to the tradition-steeped company. All those fortunate enough to have worked with him had been impressed by his pronounced competence as well as by his strength of character. As Wolfgang Peiner put it: "You are an engaging person, a good man to have as a friend."

His steadfast nature and firm resolve had most recently been demonstrated in the autumn of 2006, when an attempt was made at a hostile takeover of Germanischer Lloyd. That this takeover bid had failed in the end was due to the clear stance of the GL Executive Board and the "staunch commitment of a Hamburg entrepreneurial family," said Peiner in reference to the major GL shareholder, Günter Herz, who attended with his wife Uta and son Christian.

The fact that Rainer Schöndube had chosen the time of his retirement from active service after careful consid-

TALK. Chairman of the Board Dr Wolfgang Peiner with couple Schöndube.

Photo: Eckhard-Herbert Arndt

Photo: Andreas Schmidt-Wiethoff

Photo: Andreas Schmidt-Wiethoff

"Instead of a swashbuckling Captain Blackbeard, we got Count von Count!"

Dr Hermann J. Klein,
Member of the Excecutive Board,
Germanischer Lloyd

"20 per cent of the time that GL has been in existence is indelibly associated with your name."

Gunnar Uldall,
Senator for Economy of the Free and
Hanseatic City of Hamburg

eration was a sign of special wisdom. "It is always better to choose the exit point yourself. That is something I can confirm from my own experience," Wolfgang Peiner declared.

Numbers in His Genes

His fellow Member of the GL Executive Board, Dr Hermann J. Klein, gave a very personal and humorous speech. In the 27 years of his service for the company, Rainer Schöndube had played a significant role in GL's ascent to one of the world's leading classification societies. Only a few numbers, such as the tonnage classed by GL, were needed to document this rise: 16.5 million gross tonnes (GT) in 1980 have grown to some 70 million GT today. Dr Klein also touched on the "defensive battle" in autumn 2006. "Those weeks, spent fighting side by side, were very intense and not always amusing."

Turning now to Rainer Schöndube as a person, he had always had immense respect for a very special ability of his Board colleague: his talent for figures. This special competence was well known throughout the company. In his retrospective, Dr Klein described the arrival at GL of Schöndube, who had trained as a chartered accountant, with a witty reference to some TV characters: "Instead of a swashbuckling Captain Blackbeard, we got Count von Count!"

Nonetheless, his love of "getting the numbers right" had by no means made a bone-dry bean counter of him. On the contrary: it was a quote by Schöndube's Mexican wife that really described the personality of his colleague best of all: "He has the German sense of discipline and the Mexican zest for life." Just how highly regarded Schöndube is throughout the shipping world and beyond was shown by his many duties outside of the GL Group. One example must suffice: since April 1997, Rainer Schöndube has been honorary consul for the Kingdom of Belgium.

At the Service of His Wife

Hamburg's Senator for Economy, Gunnar Uldall, expressed his great appreciation for Schöndube's efforts on behalf of Hamburg as a major centre for port operations, logistics and shipping. In concert with many others, the enduring Executive Board Member had helped Hamburg win an internationally leading position in the shipping industry. As Senator Uldall said: "One can say that 20 per cent of the time that GL has been in existence is indelibly associated with your name." This was great respect indeed: Gunnar Uldall was convinced that GL was "the best classification society we have in the world," and so it was fortunate that Schöndube would remain affiliated with Germanischer Lloyd as an external adviser.

Rainer Schöndube himself had the last word: "This is the most difficult speech of my life." And yet he was glad that the new course had been set and now taken. Looking back, the defence against the hostile takeover had demanded a lot of energy. But it was already clear for him: "I will be everything but idle in my retirement." Demanding assignments already await him at his wife's company in Mexico. There Rainer Schöndube will be responsible for the area that occupied him so intensively during his entire working career: finances. ■ EHA

PROFILE: RAINER SCHÖNDUBE

Rainer Schöndube started after training in business management at accountancy firm Treuarbeit AG (today PricewaterhouseCoopers). In 1973 he graduated as a tax adviser and four years later as a certified public accountant.

In 1980 Schöndube changed to GL, first as a commercial director. Ten years later, he became Member of the Executive Board. His colleague since 2004, Dr Hermann J. Klein, Rainer Schöndube's fellow Executive Board member since 2004, will now be joined by successor Dr Joachim Segatz.

SUCCESS. Schöndube with GL's former Director Division East Asia Hergen Thielemann.

service

Dates at a Glance

JANUARY

23.01.2008 – 24.01.2008
7th Conference
Corrosion Protection in Maritime Technology (in German)
Hamburg, Germany

29.01.2008 – 01.02.2008
Pacific Sydney
Sydney, Australia
www.pacific2008.com.au

FEBRUARY

14.02.2008 – 17.02.2008
OCEANTEX
Mumbai, India
www.chemtech-online.com/oceantex

MARCH

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

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

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

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

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

APRIL

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

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

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

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

MAY

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

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

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

JUNE

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

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

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

Rules for Classification and Construction

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

I – Ship Technology

Part 1 – Seagoing Ships

Chapter 08

Fishing Vessels	2007-10-01

IV – Industrial Services

Part 4 – Condition Monitoring Systems

Chapter 1–7

Guideline for the Certification of Condition Monitoring Systems for Wind Turbines	2007

Part 6 – Offshore Technology

Chapter 5

Machinery Installations	2007-11-01

V – Analysis Techniques

Part 1 – Hull Structural Design Analyses

Chapter 1

Guidelines for Global Strength Analysis of Container Ships	2007-07-15

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All orders and surveyors from **Kure Area** have been taken over by the **Country Office Kobe**, Japan.

Foto: Dreamstime

Staff Changes

Kui Zhao has been appointed as Deputy Station Manager for the Station Nanjing, China.

Hisham El Grawany is the new Country Manager Industrial Services for the Country Egypt.

Hassan Fahim has been appointed as Country Manager Industrial Services for Kuwait.

Reginaldo Maia has been appointed as Country Manager Industrial Services for the Country Brazili and Manager Systems Certification for South America.

Peter William Empson succeeds Nobuyuki Kanesaka as Station Manager for the Station Yokohama in Japan. **Nobuyuki Kanesaka** transferred to the Station Office Kobe, Japan.

Zaw U Tun is the new Station Manager in Nanjing, China. He follows **Friedjof Westendorff** who went back to the Station in Rostock, Germany.

GL Academy

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

MARCH

03.03.2008 – 04.03.2008
Implementation and Internal Auditing of an Environmental Management System in Shipping Companies
Hamburg, Germany

10.03.2008
Damages to Machinery and Repairs
Hamburg, Germany

11.03.2008
Damages to hull and equipment
Hamburg, Germany

APRIL

01.04.2008 – 02.04.2008
Internal Auditor ISM/ISO 9001:2000 for Shipping Companies
Hamburg, Germany

23.04.2008
Managing Newbuildings
Hamburg, Germany

28.04.2008 – 29.04.2008
TMSA Workshop – Risk Assessment, Change Management, Incident Investigation
Hamburg, Germany

MAY

05.05.2008
Maritime Casualty Investigation in Shipping Companies
Hamburg, Germany

19.05.2008 – 20.05.2008
Company/Ship Security Officer (CSO/SSO) Training Course
Hamburg, Germany

25.05.2008 – 31.05.2008
Certified Coating Inspector According IMO PSPC
Hamburg, Germany

28.05.2008
ISPS Internal Auditor for Shipping Companies
Hamburg, Germany

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

IMPRINT

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news

Photo: BIOENERGÉTICA EXTREMEÑA

EXPANDING PRODUCTION. The new bio-diesel plants in Valdetorres have a production capacity of 250,000 tonnes per year.

SPAIN

Bio-Diesel in the Pipeline

Spain, already the biggest producer of bio-ethanol in Europe, is rapidly expanding its bio-diesel production. One of the country's new bio-diesel plants was constructed in a 12-hectare industrial park in Valdetorres. The design and construction of the plant are managed by CMB Iberica, an affiliated company of Christof Group, Austria.

Comprehensive test. GL has been brought into the scene to witness and verify the Provisional Acceptance Test (PAT) for the Valdetorres plant, which has a production capacity of 250,000 tonnes per year. The PAT comprises a review of the plant and equipment documentation, an on-site inspection of the plant upon mechanical completion, a check of proposed procedures as well as witnessing the performance tests.

GL Industrial Services has been active in Spain since 1994, offering its full range of certification and inspection services to the wind energy industry and certification markets. In addition, GL's Spanish branch has been actively involved in regional oil & gas activities since 2007.

For further information: José Manuel Garcia Martin, Country Manager Spain, Phone: +34 91 4170018, E-Mail: jose-manuel.garcia@gl-group.com

VATTENFALL

Pioneering Renewable Energy

In a presentation at the WindenergieZirkel Hanse conference held in Hamburg in late August, Holger Grubel of Vattenfall Europe New Energy informed about expansion plans for various wind farm projects.

The plans of the Swedish energy company comprise ambitious onshore and offshore projects intended to produce ten TWh of electricity from renewable energy sources by 2016.

Conflicting interests. Energy giant Vattenfall currently operates more than 523 wind turbines with an output of 487 megawatts. The lively discussion revealed that major technical and bureaucratic challenges must be overcome to realize offshore projects along the German North-Sea coastline.

In particular, the antagonisms between project planning timeframes, economic feasibility and ecology became more than evident.

BRAZIL

New Country Manager in Rio de Janeiro

Reginaldo Vargas Oliveira Maia is the new Country Manager for Brazil. His duties include the management systems certification for entire South America, the certification of quality systems for industrial, oil and gas installations in Brazil. In addition, he assumes responsibility for the expansion of Germanischer Lloyd Industrial Services in the region.

Experienced Engineer. Reginaldo Maia studied technical mechanical design and metallurgical engineering. In 2002 he added an MBA to his curriculum vitae. He gained professional and management experience with an international technical supervisory organization and has worked in the Sao Paulo region for ten years. Mr Maia is an experienced Lead Auditor for various industries.

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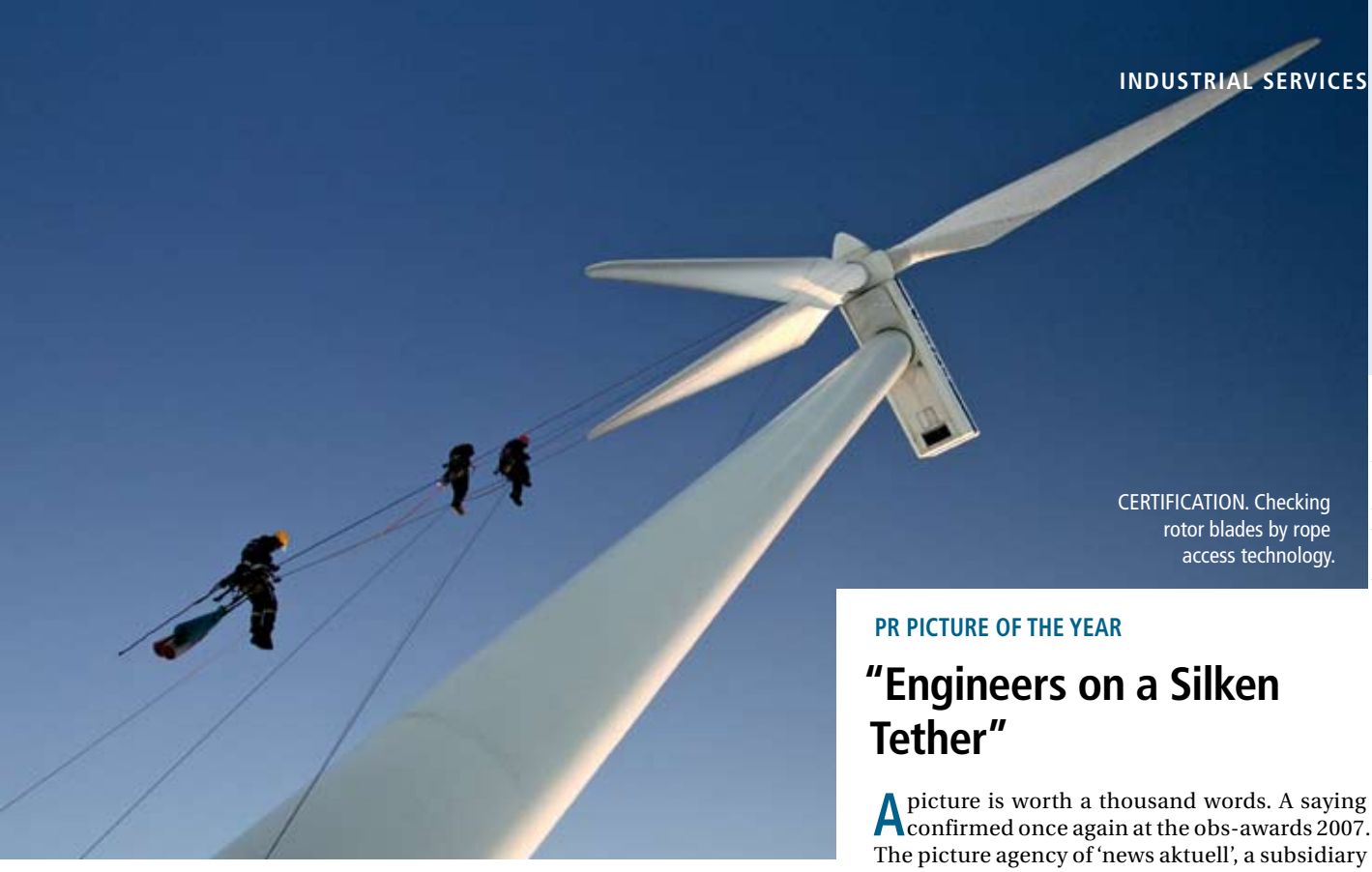
EXPERIENCE. GL Country Manager Reginaldo Vargas Oliveira Maia.



CERTIFICATION. Checking rotor blades by rope access technology.

Photo: Michael Bogumil

PR PICTURE OF THE YEAR

"Engineers on a Silken Tether"

A picture is worth a thousand words. A saying confirmed once again at the obs-awards 2007. The picture agency of 'news aktuell', a subsidiary of Deutsche Presseagentur (dpa), presented its awards for the best PR pictures of the year in Hamburg. Unusual subjects, ideas and angles: GL's photo "Engineers on a silken tether" by photographer Michael Bogumil convinced not only the audience but also the panel of expert judges, placing 2nd in the "Corporate Communications" category. The jury selected the picture "because this is the only known instance of GL in suspense". 225 photos had been submitted.

CCQI

Cool Cargo from India

SEAL OF QUALITY. Anuz Thapliyal, CSC General Manager, North East India Region, and Radharamanan Panicker, CEO & Country Manager, Cargo Service Center India (r.).

About 18,000 tonnes of perishable cargo per year at Delhi International Airport are now handled and warehoused under a seal of quality: Cargo Service Center India (CSC India) is the first company in India to receive the Cool Chain Quality Indicators (CCQI) certification for their handling of temperature sensitive goods. The CCQI are an industry standard to ensure reliability, quality and competence in the transport of temperature-critical goods including food, plants, chemicals, pharmaceuticals and human blood.

High score. In a two-day audit, Germanischer Lloyd examined the implementation and effectiveness of the CCQI management system for the Short Term Storage/Distribution Center and Apron Handling of CSC. The audit included interviews, document reviews as well as monitoring of activities and conditions.

CSC, a provider of air cargo handling, warehousing and security services, achieved a high score on the audited master tables. The company handles and stores perishable cargo shipping from Delhi International Airport under an exclusive contract. Further locations include Mumbai and Bangalore.

For further information: www.coolchain.org

LONDON ARRAY

Perfect Conditions for Largest Offshore Windpark

A new windpark comprising 341 wind turbines with a combined rated output of 1,000 MW, called the 'London Array', will be installed in a 245 km² offshore area within the next four years. Germanischer Lloyd has been commissioned to assess all relevant site conditions including bathymetry, wind, wave, ice and tidal data as well as scour and marine growth for the first 175 turbine locations. In addition, GL will evaluate the results of soil investigations.

Additional Advantages. The wind farm will be located just over 20 km off the Kent and Essex coasts in the outer Thames estuary in waters up to 23 metres deep. Shallow water, good grid connections and high wind speeds in this area offer perfect conditions for a windpark. Additional advantages are the proximity of several ports to facilitate construction, operation and maintenance, minimal interference with established shipping channels and a high power demand in South East England. The London Array offshore windpark will be the largest offshore wind farm in the UK. It is developed and built by London Array Limited, a cooperation of E.ON, Shell WindEnergy and DONG Energy.

Perfect Pipes

Advantica is now a member of the Germanischer Lloyd Group. The British company provides technical consultancy, products and services to all areas of the oil and gas industry

With energy prices exploding, revenues in the oil and gas business are soaring. However, the known reserves will be exhausted in the medium term so the industry is making every effort to explore and develop new and existing deposits. The associated technical challenges faced are becoming increasingly tough, whether exploiting Brazil's offshore deepwater gas fields or the oil sands in Canada. Without the availability of specific expertise, the task of securing sufficient energy supplies for future generations will be insurmountable. Thus, providers of technical expert services, such as Germanischer Lloyd and its new subsidiary, Advantica are taking a key role.

Germanischer Lloyd has been active in the international oil and gas business since the 1960s. Today, Germanischer Lloyd Industrial Services offer engineering for oil and gas production plants, pipelines and wind energy facilities. With the acquisition of the global technical consultancy Advantica, GL responds to the rising demand in the increasingly complex and challenging market of risk and safety analysis.

Advantica – with 660 employees worldwide – is based in Loughborough. "The acquisition of Advantica will considerably extend our portfolio as a full-line service provider throughout the lifecycle of oil and gas installations," said Lutz Wittenberg, Managing Director of Germanischer Lloyd Industrial Services. Brian Gunn, CEO of Advantica, was pleased to announce the cooperation: "The successful completion of this deal represents a truly excellent outcome for both Advantica and Germanischer Lloyd. At Advantica we are delighted with the opportunities this presents the company, its staff, clients and suppliers worldwide."

Best Solutions for Oil and Gas Business

With its focus on oil and gas installations and pipeline networks, Advantica provides expertise in risk and safety analyses, offering consulting services for installation design and the optimization of operations. Advantica operates in the fields of oil and gas production, storage, LNG terminals, pipeline engineering as well as gas, electricity and water distribution.

To date, Germanischer Lloyd's Industrial Services unit has been focused on asset and process safety, production know-how and inspections as well as evaluation of structures and safety-related components. GL's business segment Oil and Gas provides third-party certification and inspection, independent design verification, production monitoring of components and installations as well as risk-based inspections and condition surveys of production facilities both onshore and offshore. With the complementary services offered by Advantica, the GL range of services now extends across the entire asset life cycle. Advantica's specific strengths in safety and risk studies, asset performance optimization, asset integrity management, planning and design solutions and software products enable the new, expanded group to offer a one-stop solution for clients throughout the oil and gas sector.

Advantica's geographical presence in important international markets, as well as its expertise, highly qualified staff, research-based approach and market knowledge, is another key benefit of the acquisition. Advantica holds a strong position in the market, especially in Great Britain, the Middle East and the United States. Advantica supports the owners and operators of energy and utility assets in planning and managing their network assets. Nonstop introduces some of the company's strong points.

Safety Approach and Software Specialists

Advantica's expertise in safety engineering is based on twenty years of experience in hazard testing at its own testing sites. At these installations the company offers a variety of network asset evaluation and analytics services - from high pressure, full-scale propagation tests to individual component testing of natural gas appliances. For example, the Advantica Flow Centre in Durham County is one of the largest high-pressure natural gas flow facilities in the world. Here, a large variety of pipe work arrangements can be accommodated in a 90 m long test area; full-size components such as meters, regulators, valves and filters can be calibrated and tested in realistic operating conditions. The results are used to provide engineering input for decisions on safety aspects.

In the recent past, Advantica has been involved in many studies on safety-instrumented systems (SIS).

Advantica has developed and maintained a wide range of software solutions for the oil and gas industry. An example is "Forecaster", a software product that predicts future energy demand for transmission, distribution and gas-supply companies. This product supports a wide range of modelling techniques that can be configured to generate highly accurate short, medium and long-term demand forecasts. Forecaster, in conjunction with Advantica's other modelling services, can significantly reduce demand forecast errors, helping to improve decision making and business profitability. Another software package for the oil and gas industry is GasVLe. It calculates physicochemical properties of fluids, especially natural gas and natural →

HEADQUARTERS. Advantica is based in Loughborough, Great Britain.

Photo: Advantica


SERVICE. Qualified employees on duty worldwide.

COVER INSTEAD OF WELDING: The "Grouted Tee" is an example of the creativity of Advantica's engineers.

Photos: Advantica

APPLICATION. The alternative solution for the installation of welded T connections in live gas pipelines is safe and versatile.

→ gas liquids. OPTAGON is a reliability and availability simulator developed by Advantica to model technical and financial parameters at a production area and asset level.

Many major Advantica software tools have been developed by Stoner Software, a US-headquartered business acquired by Advantica in 2001. This part of Advantica specializes in developing and marketing commercial, network simulation-based solutions for the gas, electricity, petroleum and water industries. Stoner Pipeline Simulator (SPS) is the worldwide leader in the commitment to transient flow simulation of natural gas and liquid transmission systems. SPS easily handles any combination of scenarios including control system analysis, equipment performance analysis or pressure flow capacity analysis with user-defined levels of complexity.

Eagle-Eye Monitoring

Oil and gas companies with geographically widespread assets frequently use surveillance flights to monitor their condition and detect threats. Advantica developed a software tool that provides a solution for the in-flight identification of asset location and office-based data evaluation.

The RAPTOR (Remote Asset Patrols for Threat Observation and Reporting) software is easy to operate: using a laptop computer with the RAPTOR tool linked to the aircraft's GPS, the surveillance flight operator can observe the external condition of the assets and identify potential threats. A moving map shows the location of the asset which changes colour as the aircraft flies over. This allows quick identification of areas not yet patrolled. The position of the aircraft is automatically recorded every two seconds; the asset owner can thus ensure that patrols are efficient and accurate. The in-flight operator marks the location of threats on the display. Comments can be added including a description of each threat, its urgency and the category (e.g. machinery parked or flooding).

Advantica and Subsea 7 have launched a joint industry project (JIP) to develop Advantica's onshore live pipeline intervention technology, Grouted Tee™, for sub-sea application. The Grouted Tee was designed as a replacement for UK gas transmission pipeline welded tees, but can be applied to any pipeline system. Grouted Tee is safer and more cost-effective than live pipe welding.

The project's initial objective is to produce a sub-sea version of the Grouted Tee that can be installed with diver assistance. The ultimate goal is to deploy the Grouted Tee as a totally remote-operated technology with no human intervention. Advantica has completed more than 70 Grouted Tee installations worldwide, including a major project for ComGas, Brazil, for the live intervention of a medium-pressure, thin-walled pipeline. ■ CG

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TEST. Controlled gas explosion at Advantica's Spadeadam test site.

Photo: Advantica

OIL AND GAS: BOOMING MARKET

Growing demand and increasing prices of oil and gas lead to a push in the whole added value chain. Refineries, suppliers and logistics companies profit as well as technical service providers. As energy demands rise, so does the need for specialist engineering support to tackle complicated geographical and geological conditions and to enable the successful completion of projects.

The market changes: Besides oil companies like Shell, BP and Exxon, state-owned enterprises like Saudi Aramco, PDVSA (Venezuela), Lukoil and Gazprom (Russia) have become global players. In the meantime the China's CNPC is the most valuable listed enterprise in the world.

Proven Class

Naviera Armamex celebrates its 30th anniversary. In its 30-year history, the Mexican enterprise has contributed significantly to the development of the Yucatán Peninsula

Rodolfo Mora, President of Naviera Armamex, has two reasons to celebrate. The first one is the 30th anniversary of his company this year. The second one is the incorporation of "Cerro del Bernal" to his fleet. The vessel, which provides both supply and anchor handle services is originally from Malaysia, and was flagged with the Mexican labarum on 13 June in the port of Tampico, Mexico. Her operations with the shipping company began on 3 September.

Mora founded the company in 1977 to offer maritime services on the Mexican domestic market. Intensifying ship traffic and the prospering oil and gas industry in Mexico prompted a steep increase in the demand for transport services, an industry that continues to boom today. Mora focused his operations on the Yucatán Peninsula, and from today's perspective, he is content to say: "We have been key contributors to the development of the Peninsula."

His core business consists of tanker shuttle services and services to the marine drilling industry between the port cities along Mexico's east coast. Naviera Armamex owns two tankers that distribute crude oil and derivatives from different refineries for further processing. In addition, the fleet comprises GL-classed supply vessels, tugs, and anchor handlers, among others.

MEXICAN COMMITTEE. GL Executive Rainer Schöndube (l.), Luis Ocejo (Grupo TMM), Rodolfo Mora (Naviera Armamex), Fritz Grannemann (Head of Division Americas, GL) and Pedro Velazquez (GL Country Manager Mexico).

New Business Portfolio

Mora sees further expansion potential in supply operations to offshore platforms in the Gulf of Mexico, and in increasing his crude oil hauling capacity. As a new line of business, Naviera Armamex now develops suction pumps that will support further development on the Yucatán Peninsula. "We will use these pumps in canal construction, harbour expansion and waterway deepening projects," Mora announces. Designed to improve the infrastructure, the new equipment will be certified by Germanischer Lloyd in Mexico. "We have known each other for 15 years," says Mora. "And we have been communicating regularly on innovative technology ever since." Rodolfo Mora chaired the Germanischer Lloyd' Mexican Committee since 1999. At the 9th meeting, which took place last October, he handed over the post to Luis Ocejo, Grupo TMM's Operations Director.

Photo: Armamex

SPECIAL PROVIDER. Tugs of Naviera Armamex drag an oil platform through the Gulf of Mexico.

Yucatán – A Peninsula Divided by Three

The Mexican peninsula of Yucatán, located in the eastern part of the country, separates the Gulf of Mexico from the Caribbean. Politically, its northern section belongs to Mexico, specifically the three states of Yucatán, Campeche, and Quintana Roo. The southern part of the peninsula is partly owned by Guatemala and Belize. The Mexican state of Yucatán, covering an area of 38402 km² is inhabited by approximately 1.7 million people. Its capital is Mérida.

Yucatán is home to some of the most famous Mayan ruins, such as Chichén Itzá or Uxmal. Agriculture and tourism are among the most important Mexican industries, apart from petroleum. Car manufacturing and the associated supply industries, as well as petrochemicals, chemistry and the textile industry also play a major role. Mexico is among the foremost exporting countries of Latin America. The nation joined the OECD in 1994. ■ JI

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Sauna at the South Pole

GL's Oil and Gas department offers its wide range of services all over the world. Just recently the experts also conquered the 'sixth continent': they certify the new research station "Neumayer III"

Photo: Alfred-Wegener-Institut

SUBSTRUCTION. The model shows the hydraulic posts of the garage level.

Not a single ray of sunlight penetrates the darkness of the polar winter night. The thermometer drops below 50°C as storms whip across the icy landscape. In this environment, buildings must be designed to withstand extremely hostile climate conditions. Materials must be selected carefully, and the functional fitness of elements must be tested in realistic simulations.

A house in Antarctica: In December 2006, Germanischer Lloyd received an order from the Alfred Wegener Polar and Marine Research Institute (AWI) in Bremerhaven, Germany to certify the institute's new research station "Neumayer III" in Antarctica. Even for an experienced classification society, this project is rather challenging. The station, named after the German polar explorer Georg von Neumayer (1826 to 1909), will consist of a structure supported by sixteen hydraulically operated posts. By moving up and down on these support legs, the building will adjust continuously to the changing level of the snow surface. As a consequence, the research station will not gradually disappear under masses of snow, as its predecessor did.

Submerged in Ice

After 15 years of operation, the current Neumayer station has sunk twelve metres deep into the ice and will have to be abandoned in the near future. Built in 1992, the tube-type structure was state of the art at the time. But the two steel tubes that form its outer shell have been deformed over the

Photo: Astrid Richter

OVERWINTERER. AWI-employees at the underwater acoustic measuring station PALAOA.

years by the movement of the shelf ice and the constantly increasing load of snow. Today, the once elliptical shape of the station is no longer discernible. Time and again, bolts burst with a loud bang, unable to withstand the weight of tons of snow bearing down on the station. The engineering concept of the new station consists of a building to be erected on top of a platform above the snow surface. The building will accommodate rooms for research and operations as well as living quarters.

To construct this unique facility, a pit eight metres deep will have to be excavated for the foundations of the hydraulic support pillars of the station. Later on, the pit will also be used as a parking area for tracked vehicles and snowmobiles. A workshop, the hydraulics centre, exercise rooms and food stores will be located directly below the cover of the pit. The station itself will be positioned on stilts six metres above snow level so even high winds and dense snowfall will not cause any major snowdrifts. The two-story building will be standing on a platform 68 by 24 metres large and provide space for common rooms, a kitchen, an infirmary and operating theatre, 15 bedrooms with 40 beds, as well as twelve laboratory and office rooms. Nine so-called "overwinterers" – scientists, physicians and technicians – will have nearly twice as much space for their work as in the subterranean station "Neumayer II". For leisure, there will be a lounge with a bar and a sauna. Once the basic structure has been completed, a protective shell 120 mm thick with a blue, white and red coating – the colours of the AWI – will be placed on top of it to reduce wind loading. The roof offers enough space to accommodate a chamber for helium sounding balloons, as well as antennas and other measuring equipment.

Certified Containers

The entire building itself will be assembled from containers certified by Germanischer Lloyd. GL has many years of experience in container certification. Today, the society certifies up to 360,000 containers each year. After the design review, GL subjected the thermally insulated containers to special tests to check their fitness for transport. These tests included stackability, as well as loading and unloading strength to ensure the containers can be taken safely to Antarctica aboard a Danish supply ship. Now, the GL experts' main task is to review the documentation for safety-relevant equipment for the entire station – including evacuation and survival systems, fire extinguishing and fire alarm systems, automation and alert systems. "Due to the exposed location, the system as a whole has to meet the most stringent reliability requirements," says Andreas Mäscher, project manager of GL. "In this respect we can draw on our experience in offshore installations."

The AWI order also includes tests of the energy supply systems as well as the acceptance inspection of a combustion engine-based cogeneration plant at the manufacturer site. "Supplying the station with heat and energy is a particular challenge, considering the extreme climate conditions – low temperatures, large quantities of snow, high winds," Mäscher emphasizes. Thanks to more efficient generation of heat and electricity in the cogeneration plant, the future station will need only 30 per cent more polar diesel (diesel plus kerosene) than its predecessor although it is twice as large and will be exposed to greater wind loading.

GL conducted the component acceptance tests for both, the diesel-operated generator and the hydraulically operated stilts. This year, the lifting units were tested under low-temperature conditions to ensure flawless operation in the extreme temperature environment (+4 to – 50° C) of Antarctica.

Photo: Jens Kube

TEST. Assembly of the „Neumayer III" in Bremerhaven.

Photo: Ude Cieluch

TECHNIQUE. The hydraulically-operated posts.

In November, the components were loaded onto the Danish ice-breaking supply vessel "Naja Arctica". In mid-December the ship will reach the ice edge of Atka Bay, Antarctica. From there the station will be transported by snowmobiles to its future location. The assembly process is slated to be completed by the end of the Antarctic summer. The interior works will follow next year. 45 technicians and engineers will be flown to the construction site at 70° 40.8' south and 8° 16.2' west, 6.5 km away from the old station. A GL surveyor will join them to inspect the construction of the Neumayer III station and conduct the acceptance tests.

The station will cost about 36 million euros and is expected to go into operation in early 2009. It is designed for a service life of at least 25 years. The Alfred Wegener Institute, the operator of Neumayer III, will continue its research activities in Antarctica, recording important meteorological data and taking measurements of the earth's magnetic field as well as atmospheric readings of climate-relevant gases. GL will continue to keep an eye on the station as well, says Andreas Mäscher: "There are plans for periodic inspections of the structure and its equipment." ■ MN

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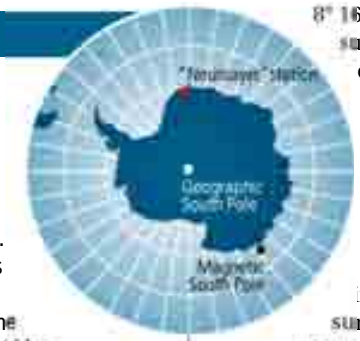
BACKGROUND: THE ANTARCTIC



The Antarctic Zone comprises the land and sea areas of the South Pole region. It covers a surface of approximately 12.5 million square kilometres. 98 per cent of this area is permanently covered by ice. The continent of Antarctica is located in the centre of the region. The Antarctic was explored by various scientists and seafarers from 1920 onwards.

The continent is characterized by an extreme climate: It is the coldest, driest and most wind-ridden part of the earth. There have been reports of temperature readings as low as – 89 °C and wind speeds exceeding 300 km/h. According to CONMAP (Council of Managers of National Antarctic Programs), there are currently more than sixty active research stations on the continent.

New Perspectives

PV Inspection is one of the world's leading third-party independent inspection service companies. They support the oil and gas industry worldwide with qualified procurement support services. Now the Canadians belong to the GL group

North America is rich in oil deposits. Canada's oil reserves, for example, are among the world's largest. More than 24,126 million tonnes of black gold slumber in Canadian soil. According to the Esso study 'Oeldorado 2007', only Saudi Arabia possesses more mineral deposits – around 35,478 million tonnes.

The German Federal Institute for Geosciences and Natural Resources (BGR) estimated the worldwide oil reserves in 2006 at 162,807 million tonnes that can be feasibly produced in both technical and economical terms. An additional 82,056 million tonnes are proven or probable reserves. Last year, the oil industry produced more than 3.9 gigatonnes of oil. Assuming a regular annual oil production of this magnitude, the existing oil reserves will last no more than 60 years, some analysts predict. But other experts warn that the era of fossil energy could come to an end even sooner. On the other hand, for each pessimistic study there is an optimistic one claiming the opposite.

Peter M. Jackson, a director with Cambridge Energy Research Associates (CERA), has come up with a highly controversial hypothesis, saying there is no evidence that worldwide production will peak before 2030. According to a CERA analysis, the global resource base is 4.82 trillion barrels, probably even more. Compared to some 1.08 trillion barrels of cumulative production to date, there are 3.74 trillion barrels remaining if CERA is right, three times more than the typical 'peakist' estimate of 1.2 trillion. Jackson argues that technological innovation will continue to unlock additional oil resources not currently identified, understood or viewed as producible. In the long run, technology will expand the concept of 'conventional oil', as it has throughout the history of the industry.

More complex, innovative technologies will inevitably continue to boost the demand for well-trained personnel and specialized services in the oil and gas industry. Today, companies like PV Inspection Services Ltd provide a wide range of services to their global customers in industries such as energy, marine, mining and transportation. Services include inspection and technical supervision of onshore and offshore plants, third-party inspections, feasibility studies, quality and project management as well as procurement support.

New Horizons

PV Inspection, headquartered in Dartmouth, Nova Scotia, Canada, was founded in 1988. Today the company has offices in St. John's, Newfoundland, as well as Calgary, Alberta. Its U.S. affiliate, PV Inspection Services Inc. operates

Photo: iStockphoto

OIL: CANADA'S UNWIELDY WEALTH

Canada's rich oil deposits are among the driving forces of the country's economy. Conservative estimates speak of accessible reserves of 179 billion barrels. This puts Canada second to Saudi Arabia in oil reserves. But there is a problem: 174 billion barrels are trapped in oil sand deposits, having to be extracted in a complex process.

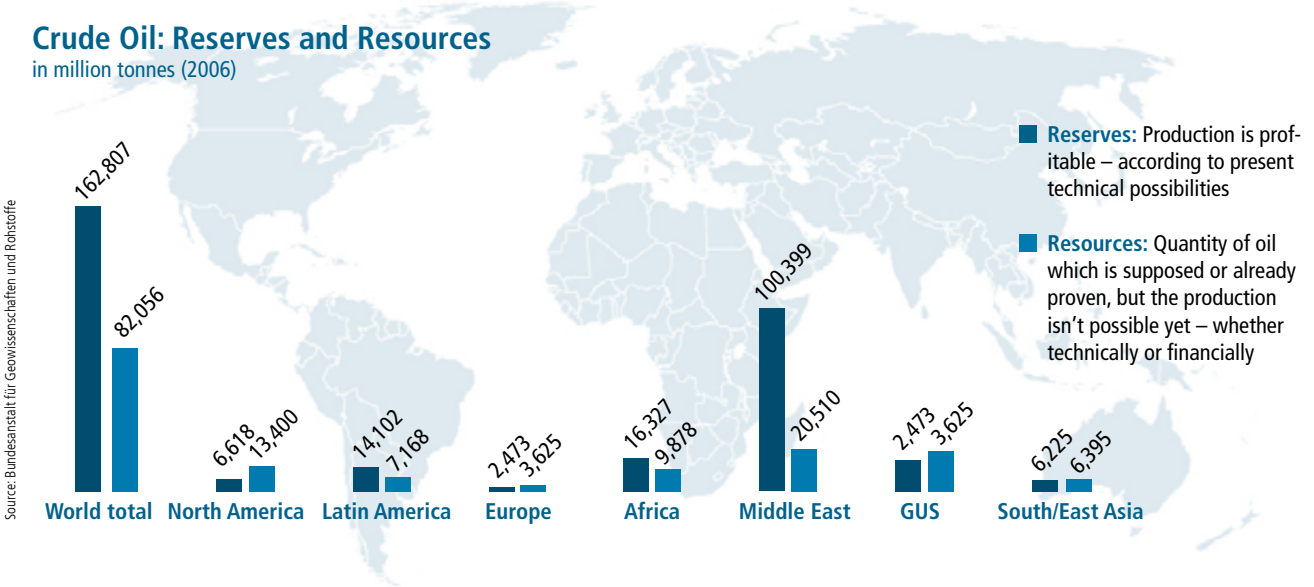
The heavy, black oil sand is either quarried in open pits, or the oil is liquefied using hot steam and pumped from the ground directly. Both methods require additional chemical treatment to make the product marketable as synthetic oil. Rising crude prices have made this process feasible.

Photo: PV Inspection

TRANSPORT. Tugs towing a floating production, storage and offloading vessel (FPSO).

Crude Oil: Reserves and Resources

in million tonnes (2006)



Source: Bundesanstalt für Geowissenschaften und Rohstoffe

out of Houston, Texas (USA). With a combined staff of 44, the two companies oversee projects in 62 countries around the world, assisted by an extensive network of more than 3,500 freelance technical experts.

In November 2007, PV Inspection Services Ltd. and PV Inspection Services Inc. (USA) joined Germanischer Lloyd Group. "The inspection, engineering and consulting services of PV Inspection complement the portfolio of GL, particularly on the North American energy market, offering new perspectives to all of our customers," says Lutz Wittenberg, Managing Director - Germanischer Lloyd Industrial Services.

Wide Range of Services

PV Inspection experts manage projects for oil companies, refineries and petrochemical plants, natural gas producers and distributors as well as power plant operators and developers, including alternative energy projects such as hydroelectric, solar and wind.

As one of the world's leading inspection companies, PV Inspection has been offering a broad range of services for the last 20 years, including inspection, management, expediting and procurement support for power plants, drill ships, oil platforms, FPSO vessels and pressure vessels. Through a number of alliances and partnerships, PV Inspection has access to local customers as well as experts familiar with regional markets and operating environments. As sources of personnel, equipment and technical expertise in many parts of the world, these alliances enable cost-effective, value-added solutions in many different markets, including the oil and gas industries of Africa and Asia.

Over the years, PV Inspection has been involved in numerous floating production storage and offloading (FPSO) projects worldwide, providing third-party inspection, expediting and site supervision services. Among these projects is the Agbami FPSO, one of the largest FPSO vessels in the world. It is located in the Agbami field, Nigeria's largest deepwater discovery to date with expected oil reserves of 0.8 – 1.2 billion barrels. Daewoo Shipbuilding and Marine Engineering (DSME) contracted PV Inspection for inspection and QA/QC-related services during the procurement, construction and commissioning of 31,000 tonnes of topside processing equipment. Oil production is scheduled to begin in early 2008. ■ SG

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Thai – Extra Hot

Thailand's oil and gas industry is prospering. With a new local office, Germanischer Lloyd strengthens its presence

NEW OFFICE. Lutz Wittenberg, Managing Director of GL's Industrial Services (left), congratulates Country Manager Somthai S. Tavechoke.

Thailand stays on top" read a title in "upstream" recently. Indeed, the South East Asian country has long forgotten its financial crisis of the late 1990s. Today, Thailand ranks among the richest nations in the region in terms of per capita wealth, after Singapore, Brunei and Malaysia. The economy of the newly industrialized country (NIC) heavily depends on exports such as rice and textiles. But in recent years, another industry has been moving into the centre of attention: Thailand's oil and gas sector.

Upstream activities have been increasing steadily. In 2006, Thailand's domestic output reached 600,000 BOE/D (barrels of oil equivalent per day). The country's major exploration areas are located in the Gulf of Thailand and the Central and North onshore regions, as well as in the Joint Development Area (JDA) between Thailand and Malaysia. Bruno Solinas, GL Regional Manager Asia, is convinced of the country's enormous potential: "Thailand is a gas producing country with large-scale offshore development activities. It also has a very dynamic refining and petrochemical industry."

Impressive Output

The country's oil output from inland fields is impressive, as well. It is expected to reach nearly 30,000 barrels a day within the next two years. The country currently has ten oil fields and two gas fields on shore. With Thailand's 20th petroleum concession round in progress, investors are showing a healthy appetite for the 56 onshore blocks and nine offshore blocks in the Gulf of Thailand spanning 235,606 square kilometres. Bidding will end in May 2008.

In response to the rising demand from the Thai oil and gas sector, Germanischer Lloyd has established a new subsidiary: Germanischer Lloyd Industrial Services Thailand Ltd. will be serving the country's upstream, midstream (LNG and gasification), transmission, distribution and utilization market segments. The services portfolio includes design certification of technical plants, third party inspections (TPI), risk-based inspections (RBI), asset integrity management (AIM), risk studies and certification of management systems.

The newly established GL office will be headed by Somthai S. Tavechoke. The electrical engineer who, among other academic credentials, holds an MBA from the University of the Thai Chamber of Commerce, joins Germanischer Lloyd after having worked for Technip Engineering Thailand Ltd. for nine years. S. Tavechoke has considerable experience in the design, cost estimation, procurement, construction and project management of industrial, oil, gas and petrochemical plants.

Germanischer Lloyd has been active in Thailand since the late 1990s, rendering services such as design reviews and TPI for the Malaysia-Thailand Joint Authority (MTJA) in the Joint Development Area. In the Carigali-Triton Operating project (CTOC) in the Cakerawala Gas Field, Germanischer Lloyd handled third-party verification. More recently, GL provided design verification and marine warranty services for Carigali Hess Operating Company (CHOC) as well as QA/QC services and source inspection for Carigali-Pttepi Operating Company (CPOC). Furthermore, GL certified the designs for three wellhead platforms in the Arthit field for PTTEP. ■ AM

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MEGACITY. Bangkok, a place between traditon and modernity. Photo: iStockphoto

Thai Growth Hits Bottom

With a population of 66 million Thailand is one of the most important nations in East Asia. The Thai economy is export-dependent, with exports of goods and services accounting for 68.6 per cent of GDP in 2006. The World Bank predicted Thailand's gross domestic product (GDP) would be driven in 2007 by a 14.5-per cent increase in exports and would expand by 4.6 per cent next year – a good figure, but the lowest among the emerging East Asian countries.

TRANSPORT.
Quickly and reliably
to the customer.

Photo: Dreamstime

Supply Chain Security

International certification programmes help companies to identify and assess risks. A new quality seal ensures that transport companies can securely deliver their goods to their destinations

Advanced logistics concepts can make a big difference in managing complex supply chains by improving efficiency and transparency. There are various ways of organizing material flows: for just-in-time (JIT) delivery, a company relies on timed deliveries in synchrony with production. As a result, warehouse stocks can be eliminated almost entirely. In the case of outsourcing, on the other hand, companies hive off entire business units, transforming them into entities of their own. The dependency on suppliers increases accordingly.

As a result, companies are often unable to respond flexibly to delivery failures. To keep production going, risks need to be controlled. Back-up warehouse stock, parallel processes and guaranteed-supply contracts are strategies to maintain flexibility and prevent loss of production.

Local sourcing, an intelligent logistics concept capable of mitigating risk, attempts to avoid geographic areas, product parts or organizations known to be particularly hazardous. Refusing to cooperate with organizations afflicted by a certain risk potential is an important step for manufacturers striving to comply with the numerous standards designed to improve supply chain security. Several new logistics standards developed in recent years have been welcomed by a business world confronted with the constant threat of terrorism.

Individual Requirements

Apart from established certification standards such as ISO 9001 and ISO 14001, TAPA (Transported Asset Protection Association) rules have gained general acceptance, providing guidance for supplier selection and assessment. ISO 28000, a newly-developed standard on the market, offers a quality seal to certify the fulfilment of certain minimum security requirements to be identified internally by the respective company.

The catalogue of requirements is developed in a risk assessment process. To be certified, a “reliable company” must define and implement appropriate measures to mitigate its risk based on the outcome of the risk assessment and compliance with legal and other requirements. This may involve a variety of steps, such as installing systems that prevent unauthorized parties from entering company property.

International Supply Chains

One control system for companies involved in international supply chains in order to implement ISO 28000 is ISO 28001. It stipulates the implementation of minimum requirements for protective measures to minimize the security risk associated with international supply chains. To receive this certification, the applicant must specify the portion of the supply chain the security concept is intended for.

In doing so, potential weak links in the supply chain must be identified, and a catalogue of corrective measures must be developed. Every conceivable scenario must be examined and assessed, determining the probability of each potential supply chain failure and identifying possible consequences.

The resulting catalogue of measures recommends specific courses of action, ranging from organizational or physical measures designed to mitigate or avoid risks to the abandonment of certain risky activities. Furthermore, companies should also incorporate into their assessments security declarations from their supply chain partners and verify that processes, hardware and locations are indeed consistent with these declarations.

To ensure the long-term effectiveness of the security measures, the security system must provide for regular internal audits. ISO 28000 and ISO 28001 is expected to play an important role on the international logistics market. European customs organizations will recognize existing certifications such as ISO 28001 when considering applications for „Authorized Economic Operator“. ■ BS

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A Fresh Sea Breeze

The wind energy market is growing stormily. In line with the trend: offshore wind energy plants. But the power production on the high sea presents engineers with enormous challenges

The pressure is increasing: Global warming and dwindling fossil fuel reserves have brought renewable energy sources into focus. In the last two decades the wind energy sector has grown dramatically. Denmark and Germany marked the beginnings with small, 20–50 kW turbines. Today, machines rated up to 6 MW are manufactured in series. As more and more countries install wind turbines, the installed capacity grows exponentially.

The total European installed power is expected to grow from 48,000 MW in late 2006 to 88,000 MW in 2010, equivalent to 20 large nuclear power plants. Wind power has become an important sector of the energy industry, with Germany as a world market leader in exports and installed capacity.

Early designs were afflicted with numerous technical problems. Yet, failure produced valuable experience, inspiring a young industry to embark on a technological journey that eventually led to today's large, 5 to 6 MW turbines. Germanischer Lloyd accompanied this evolutionary process, successfully positioning itself as an international certification agency for wind power plants.

The European Market

In 2006 the European wind power market set a new capacity record. According to the European Wind Energy Association (EWEA), 7,588 MW of wind power capacity, worth some 9 billion euros, were installed across the European Union, 23% more than in 2005. The cumulative EU wind power capacity increased by 19% to over 48,000 MW. In an average wind year this translates into 100 TWh of electricity, or 3.3% of the total electricity consumption in the EU.

While Germany and Spain still attract most of the investment capital, other European areas are catching up. EWEA statistics reveal the effects of the EU Renewable Electricity Directive passed in 2001. "The figures… confirm that sector-specific legislation is the most efficient way to boost renewable electricity production," says Christian Kjaer, Chief Executive, EWEA.

In Germany, a limited number of profitable onshore wind park locations, as well as growing reservations among the population about the aesthetics of wind turbines are shifting the focus towards offshore wind energy, in spite of its technical and economic risks. With its Renewable Energy Act, the German government has encouraged private-sector enterprises to develop offshore wind energy, which offers significant advantages, such as high wind yield and a more straight-forward design due to low turbulence.

Substantial Research in Demand

Due to the general lack of experience in the construction and operation of offshore wind farms, existing calculations (GL Offshore Wind Guidelines) are largely based on expe-

SEA VIEW. Offshore wind energy plants near the coast.

riences of offshore oil and gas installations. Foundations in particular are a cause for concern, apart from high costs. Aspects such as the dynamic load bearing capacity of the sea floor, the effects of marine growth and other factors on dynamically-loaded underwater structures, or environmental feasibility still need substantial research.

To boost such efforts, the German Environment Ministry built a research platform called FINO 1 in the North Sea near a German offshore wind test field which will eventually consist of twelve 5 MW wind turbines. Germanischer Lloyd coordinated the construction, installation and commissioning of FINO 1 and is now overseeing the operation of the research platform and conducting the measurements. FINO 1 field data are being used in many other projects.

Photo: Bigstockphoto, Vestas

SOPHISTICATED. Installation of a rotor blade at the Scroby Sands wind farm located in the North Sea, 2.5 km off the coast of eastern England.

The Way Offshore

European offshore wind energy is booming. Elsam erected the world's largest wind farm at Horns Rev in the North Sea with 80 Vestas V80-2 MW wind turbines on monopiles. This year, REpower tried a new approach, fully assembling two 5 MW turbines onshore before moving them to their destinations off the coast of Scotland and placing them upon pre-installed jacket foundations using a floating crane. This project will serve as a model for a very large wind farm.

Multibrid likewise introduced a new concept, installing a 5 MW turbine on an innovative tripod structure onshore before taking it to its offshore destination. Enercon is upgrading its current E-112 onshore turbine for offshore installation, boosting its output power from 4.5 to 6 MW. Nordex installed a 2.5 MW N90 turbine in shallow waters in the Baltic Sea on a 1,000- tonne, reinforced-concrete gravity foundation in 2 m of water. The German government is building two additional research platforms, FINO 2 near the Kriegers Flak wind park in the Baltic, and FINO 3 in the North Sea. Established in 2005, the German offshore test field foundation, "Offshore-Stiftung", is getting ready to install 12 multi-megawatt offshore turbines 45 km north of Borkum for testing under rough North Sea conditions. The test results will benefit the industry while strengthening the position of Germany as a global leader in wind energy technology.

Solutions of the Future

Most European offshore wind farms are located close to the shore in waters less than 20 m deep and have simple concrete gravity foundations or steel monopile substructures. Current projects focus on deeper waters outside environmentally sensitive areas and require innovative foundation designs. Unlike offshore oil and gas platforms, wind turbines are subject to complex dynamic loads. For countries like Norway, Korea or Japan, floating bases for deep-water sites may be the solution of the future. The European Wind Energy Association (EWEA) predicts an installed offshore wind energy capacity of 150,000 MW by 2030, equivalent to nearly 25% of the European electricity consumption. ■ TF

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A Show of Technical Maturity

A new thrust for offshore technology, technical innovations in the components and maintenance sector, and even stronger globalization are the current hallmarks of the wind energy industry. Highlights from the leading trade fair in the international wind energy sector – HUSUMwind

Offshore is awaking like "Sleeping Beauty" from a long slumber. Thanks to the Infrastructure Planning Acceleration Act and the proposed increase in the remuneration rates, the development of German offshore farms is being given fresh impetus. This was amply demonstrated by the fact that the energy utilities E.ON and Vattenfall with the corresponding subsidiaries were also represented at the HUSUMwind – a premiere. With an eye on effective publicity, E.ON made good use of the exhibition to award the largest single contract ever placed for power transmission in Germany – to the technology group ABB. High-voltage DC equipment is to convey power harvested from a wind farm 100 kilometres off the coast via Norderney island to as far as the inland town of Papenburg. To this end, ABB will be using the "HVDC Light" system, an oil-free and lightweight cable of compact design.

After successful long-term tests of the prototypes, series manufacture of the matching 5 MW turbines is now commencing. This summer, REpower was able to complete its second installation in deep North Sea water – i.e. past the 40 metre "limit" – off Scotland. At present, the company is busy assembling five nacelles of the 5M class in a mobile production hall. In future, the firm plans to produce the 5M series in Bremerhaven – with an annual capacity of 100 units – and also near Rendsburg. Moreover, an own rotor blade production facility is being built in Bremerhaven as part of a joint venture with A&R Rotec.

Its competitor Multibrid – in which the French nuclear group Areva has taken a majority interest – reported the signing of supply contracts for the "alpha ventus" test farm northwest of Borkum. The installation of six M5000 units with a rated power of five megawatts each is to begin next year. In their developmental work, the engineers are now focusing mainly on the tough environmental conditions prevailing on the high seas. In Husum, Multibrid showcased a technical innovation for optimizing corrosion protection. For this novel arrangement, the developers moved the sensitive power electronics, which had previously been located in two containers outside the tower, to the lowest tower segment. The electronics are now completely integrated into the air treatment system of the M5000, where they are totally protected against the aggressive salt-laden sea air.

Gearbox: Long Delivery Period – or None at All

For a long time, the wind energy sector was characterized by short innovation cycles. Every year, the industry took a

IMPRESSIONS. An HVDC transformer station from the inside (l.), exhibition hall in Husum (r.).

Photo: ABB, Mario De Mattia/HUSUMwind

big step forward with yet another new model of turbine in the top performance class. Since the first prototypes of the 5 MW class, this trend has come to a halt for now. Thorough trials of the machines, the training of the production and service personnel and at the component manufacturers, as well as the use of new maintenance units and techniques are now in the spotlight of attention. However, the fact that they are not reckoning with a further "rated-power race" in the coming years was made clear by the decision of the gearbox manufacturer Winergy in favour of a 14 MW test bench. Amongst other products, the company supplies the gearbox for the 5 MW jumbos of REpower and Bard Engineering, and tests prototypes at 200 per cent of their rated output; with this long-term investment, it is therefore planning for wind turbines with a maximum rated output of 7 MW.

At present, the trade is much more interested in its own ability to deliver. Even price hikes of up to 20 per cent have not reduced the surplus demand. The core components, such as the gearbox and large bearings, remain the delivery bottlenecks. According to the leading gear makers, it will be possible to fulfil only the existing orders until at least 2009, with new orders only feasible after then. For this reason, →

HUSUMWIND ON THE ASCENT

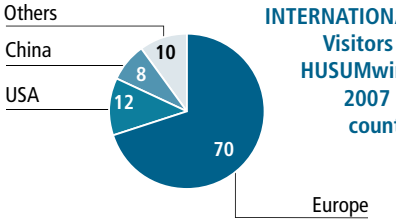
Husum is winning as a trade fair location – new name from 2008

"Husum has achieved cult status." This praise from Schleswig-Holstein's Minister of the Economy, was directed at the HUSUMWind, the world's largest trade fair for wind energy. The significance of this leading show stands in stark contrast to the exhibition grounds: "actually" – as you can hear repeatedly – the Husum exhibition grounds are much too small and "really" much too far off the beaten track of international traffic routes. But, surprisingly enough, both exhibitors and visitors are happy to come – and in steadily increasing numbers. The HUSUMwind was able to register 20 per cent more exhibitors and 30 per cent more visitors this year. Husum has become a cult. To ensure that the positive trend continues, a number of important decisions were made this year. Hamburg Messe, which tried in vain to establish its own wind fair under the name "WindEnergy", is now joining ranks with Husum. "Hamburg has the international marketing and outstanding PR capabilities, while we have the tradition and the easygoing flair," is how Hanno Fecke, Managing Director of Messe Husum, described the future teamwork. Hamburg's "WindEnergy" fair will fall away in future. From 2008, there will be the new "HUSUM WindEnergy", alternating every year with a wind focal point at the Hanover Fair. To get everyone into the swing of the new exhibition schedule, Husum and Hamburg have agreed on a kind of leap year: the first HUSUM WindEnergy will already take place on 9–13 September 2008 – and then every two years after that.

The decluttering of the trade fair landscape was welcomed by the wind energy sector. "This step is absolutely in line with the industry's interests," was the response from the German Engineering Federation (VDMA). "In this way, Germany will remain the trade-fair host country for the global wind sector."

HUSUMwind in Numbers

- 640 exhibitors from 30 countries
- 19,000 visitors from some 40 countries
- 14,000 square metres of exhibition space
- Next date: 9–13 September 2008



INTERNATIONAL. Visitors of HUSUMwind 2007 by country.

→ three major gearbox manufacturers – Moventas, Eickhoff and Winergy – are expanding their production considerably, in some cases doubling the capacity.

Of course, the suppliers of turbines with direct drives are not having any problems with gearbox availability – although their business has not become any easier in recent years, because the copper they use in great quantity has risen in price by 100 per cent over a period of only two years. Next to the market leader Enercon, there is still a lot of room left over in the club of gearless wind turbine makers; until now, the companies dispensing with the conventional planetary helical gearbox have usually been on the small side.

In the opinion of many visitors, one of the most interesting exhibitors was the company Vensys Energy AG. The 1.2 and 1.5 MW units offered thus far have no bearing block, main shaft, gearbox, intermediate shaft or couplings, and also do without the excitation coils. In the Vensys generator, the excitation field is produced by high-quality permanent magnets (NdFeB). This obviates the need for slip rings, which are subject to wear and hence high on maintenance. The advantage of this design is that the excitation power does not have to be provided and so the machine's efficiency is higher – especially when under partial load. One handicap of permanent excitation is, however, the high cost of the magnets and that the erection work is more time-consuming than the gearbox versions. Despite these drawbacks, the demand is so high that Vensys announced the prospect of manufacturing a 2.5 MW variant from mid-2008.

GL with New CMS Guideline and Maintenance Software

As before, the suppliers of condition monitoring systems (CMSs) are still having to cultivate their customers intensively. Although more and more plants are being fitted with online CMSs, experts estimate that the proportion of wind turbines equipped with remote electronic monitoring has not even reached ten per cent – making up less than 2000 installations in Germany. In view of the severe economic damage caused by the total failure of any core component in the wind turbine drive train, this restraint is difficult to understand. On the other hand, Edwin Becker, head of the Diagnosis Centre at Prüftechnik Condition Monitoring GmbH, is seeing a clear upward trend: "Amongst the more than 20,000 installations in Germany, many are older and smaller units for which an online CMS would not be applicable in any case. With the others, it is only a matter of time. In the medium term, every second plant will run with an online CMS." For offshore turbines, Becker simply cannot imagine operations without a CMS.

Photo: Iken

POLITICAL TALK. Chester Culver (left), Governor of the US state of Iowa, puts on a modest air at the press conference with Federal Environment Minister Sigmar Gabriel: "I'm here to learn."

Edwin Becker's view is supported by Germanischer Lloyd, which prescribes the installation of a certified CMS for the certification of offshore farms. At the HUSUMwind, GL presented its new "Guideline for the Certification of Condition Monitoring Systems for Wind Turbines" – a revised edition of the 2003 Guideline. The CMS Guideline 2007 reflects the present state of the art. First orders for certifications according to the new Guideline were received at the GL exhibition stand. It permits the certification of CM systems with extended monitoring – including the condition monitoring of the rotor blades and evaluation of the oil quality. With the integration of metal particle counters, it is, for example, possible to increase the diagnosis reliability at problematic points, such as the planetary gear. Here malfunctions are difficult to detect, owing to the revolving planet pinions.

GL's new CMS Guideline considers not only the CM hardware and software, but also the human factor. "This is most welcome," says Edwin Becker. The outcome of the condition monitoring stands and falls with the commissio-

SHOW NOTES: TECHNICAL HIGHLIGHTS

Every year, a quantum leap into a new performance class – that is how it used to be. But now the pace of innovation in the wind energy sector has slowed down considerably. While HUSUMwind 2007 offered no sensations, there were plenty of minor innovations:

- The **"SmartPump"** of the South German manufacturer Hytorc is a mobile and "intelligent" drive unit for hydraulic torque wrenches. It does not need any external reaction arms or backup wrenches – a major simplification at lofty heights. The unit and its software also permit torque-, angle- and/or yield-controlled tightening – and thus a maintenance-free threaded connection. **www.hytorc.de**
- The **"PITCHmaster II"** of the company LTi REEnergy GmbH is a servo controller for rotor blade pitching. The unit is designed for a temperature range from –30 to +70 degrees Celsius; thanks to special electronic components, the air-conditioning normally required may be omitted. It is targeted at developing and newly industrializing countries outside the temperate zones. **www.lt-i.com**
- **"Concrete care"** is a process for detecting cracks in the concrete foundations of wind turbine installations. The in-depth analysis is entirely non-destructive and finds even deep and concealed cracks in the foundation. The device works on the basis of ultrasound. **www.concretecare.de**
- **BLADEcontrol**, the well-known condition monitoring system for rotor blades made by IGUS Innovative Technische Systeme GmbH, has been extended by a new module: now, dynamic loads in the flapwise, lead-lag and torsional directions can be measured in realtime. This makes it possible to influence the pitch control whenever limits are exceeded. Also new: a truly lightning-fast system for detecting lightning damage at the blade tip. **www.igus-its.de**

Photo: ABB

Photo: ABB

CABLE. With a length of some 200 km – 125 km under water – connecting up the "Borkum 2" wind farm area is a formidable technical challenge.

ning of the system, the systematic analysis of the data and the rapid and expert reaction to changes in state that are reported – and here people are included "in the loop". For this reason, Prüftechnik Condition Monitoring GmbH and other service providers have had their entire monitoring centres certified by GL. An investment that evidently pays off: Prüftechnik received the order from Nordex in Norderstedt to monitor the company's CMS-equipped turbines – the service is to be phased in, with 25 plants being added per week.

Great interest was also shown at GL's Husum stand in an "Evaluation Statement" handed over to the Dutch research institute ECN. This statement certifies the effectiveness of the "Operation and Maintenance Model" software, which uses an assessment of the location, the maintenance concept, the access system and other parameters to estimate the technical availability of a wind turbine. "This tool, which will also be used by GL in future, is a good aid when advising investors or underwriters," explains Peter Dalhoff, Head of Department for Project Certification at GL Wind. "It permits an initial appraisal of the O&M costs."

Shifting Markets

In contrast to previous years, the wind energy market in Europe is no longer standing on two strong pillars, but on six: Germany (2,233 MW added in 2006) and Spain (1,587 MW) are still the undisputed leaders amongst Europe's wind energy countries – but appreciable markets have arisen over the past two years in France (810 MW), Portugal (629 MW), Great Britain (631 MW) and Italy (417 MW).

The European wind market could even reach 13,000 MW in the year 2010. In relation to the world market, however, it is losing in significance. The European share of all newly erected turbines plummeted to 51 per cent last year – in 2004, it was still at 72 per cent.

Worldwide sales have also expanded enormously in the last three years. The main ray of hope is China. The installation figures rose by an amazing 1,300 per cent from 2003 to 2006. Owing to political and economic unknowns, a reliable long-term forecast for the future of the Chinese wind market is hardly possible, says the German Wind Energy Association (BWE).

Another hotspot is currently developing in North America. Last year, the USA grabbed the title of "new capacity world champion" with a market volume of 2,454 MW. For 2007, industry experts are expecting a market volume of 3,000 MW and, in the long run, a potential of several 100,000 MW. With new installations totalling 776 MW last year, Canada overtook the European fledgling markets of Portugal, Great Britain and Italy. According to tender documents and the declared goals of the provinces, Canada plans to install a total wind power capacity of 10,000 MW by 2015.

In view of these numbers, it is no wonder that the US wind market dominated the conference programme of the HUSUMwind. Governor Chester Culver came to the trade fair from the flat and windy Midwest state of Iowa. Thinly populated with only three million people, Iowa occupies third place in the American ranking, with almost 1,000 MW installed, after Texas and California. Another 370 MW are planned.

German manufacturers are also active in the USA. In June 2007, the first Nordex N 90/2500 HS came online in Minnesota, and 21 units are to follow. Nordex's Hamburg competitor REpower has already been represented on the US market since 2006 with 56 plants of the type MM92. In April 2007, another 75 units of this type were added. ■ JI

Experts for Extremes

Canadian consulting firm Hélimax Energy Inc. specializes in supporting wind power projects, from helping to find suitable sites to monitoring wind turbine operation. A new strategic partnership with GL will allow Hélimax to further expand their range of services

In the north, winters are long and the climate is merciless. About 50 per cent of Canada's land mass, or 417 million hectares, is covered by forests. The geography of the second largest country of the world is a highly challenging environment for wind power installations. Icing conditions, cold climates and topographic complexities, for example, are important factors in determining the meteorological conditions at a given site and calculating the expected energy yield.

This is where Hélimax Energy comes in. As Canada's leading provider of engineering and consulting services for the wind energy industry, Hélimax has developed specific yield calculation models for the forested areas in the northern region of the continent.

PARTNERSHIP.
Rainer Schöndube, Member of GL's Executive Board (l.) and Hélimax President Richard Legault.

These calculations take the climate factor into account, as well. Wind turbines can generally operate at temperatures as low as minus ten degrees Celsius. But in some regions of Canada temperatures as low as 30 degrees below zero are not uncommon. Cold temperatures and long winters cause ice build-up on rotor blades, changing their aerodynamic behaviour.

Last October, Hélimax and Germanischer Lloyd agreed to form a strategic partnership that also involves equity participation by Germanischer Lloyd Industrial Services. "The technical know-how and the capabilities of Germanischer Lloyd will reinforce and support the efforts of Hélimax to offer a wide range of complementary services from a single source," says Hélimax President Richard Legault.

It all began in 1998 when Hélimax was established as a consulting firm for the renewable energy sector. Encouraged by strong demand, the Montreal consultant quickly focused their efforts on the wind energy market. This exclusive focus paid off, and Hélimax now offers exactly what the market demands. Today, the expertise of the consultants ranges from identifying suitable locations for wind turbines to monitoring the commissioning process and routine operation of the unit.

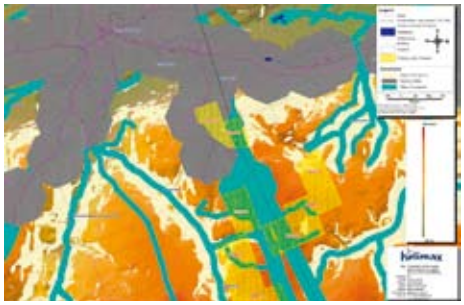
Impressive List of References

The company's core team consists of more than fifty meteorologists, geographic information system specialists, project managers, engineers and environmental experts. Hélimax's know-how is in high demand, and the company's list of references is impressive, with 130 customers in over 20 different countries. The volume of detailed meteorological studies completed to date amounts to more than 5,000 MW, and the total rated power of all wind power projects exceeds the 20,000 MW mark. Over the years, the company has overseen the installation of over 400 meteorological measuring towers in Canada alone.

An area where Hélimax expertise is especially sought-after is the hard-to-access regions of Ontario. A project the consulting company has been supporting since 2005 is the construction of a 101 MW wind farm for Kruger Energy Inc. in Port Alma.

For Peawanuck Renewable Energy Corporation, Hélimax is currently developing terrain near Hudson Bay. Peawanuck, a remote community of 400 souls located on the southern shore of the bay, has been depending on diesel generators for electricity so far. Due to storage capacity limitations, the fuel has to be delivered in relatively small quantities at a time at regular intervals; in winter, deliveries

WINTER WONDERLAND.
Wind energy plant in front of the Rocky Mountains in Alberta, Canada.



Photos: Hélimax

STUDIES. For wind energy plants in Springhill (left) Hélimax analysed, among others, meteorological data, noise propagation and shadow flicker. For a site on the Hudson Bay in Ontario the company managed the identification of potential sites for project development.

usually arrive by plane. Wind energy would thus be an environment-friendly, cost-effective alternative. This doesn't apply to Ontario's remote areas. Indeed the liberalized energy market of this economically dynamic region, where generation, transfer and control of energy are in different hands, is badly in need of new capacity.

The Canadian Federal Government under Prime Minister Stephan Harper therefore passed an ecoENERGY programme in early 2007 to support renewable energy sources. Provinces that have put climate protection high on their agenda – such as Québec, Ontario und British Columbia – are especially active in wind power.

Great Lakes, Great Potential

One of the main factors that encouraged this development was a study titled "Analysis of Wind Power Potential in Ontario" that was published by Hélimax in November 2005. The study had been commissioned by the Ontario Power Authority (OPA), an independent company contracted by the Ontario ministry of energy to report on energy matters and prepare proposals. What made the study especially noteworthy was the discovery of substantial wind power potential in the Great Lakes area. Assuming a power output of five megawatts (MW) per square kilometre of suitable territory and an average wind speed of roughly 6.5 metres per second, Lake Superior would offer a generation potential of 2,736 MW, Lake Erie 21,054 MW, the Lake Huron Shore more than 20,439 MW and the northern part of Lake Ontario over 2,599 MW.

All in all, the strong and constant winds blowing across the Great Lakes could generate as much as 47,000 MW in the Province of Ontario alone. The study was based on a method for determining wind power potential that had likewise been developed by Hélimax. It combines mesoscale models used to capture wind and weather changes for areas of between two and 2,000 square kilometres with data on area usage as well as a topographical analysis.

In the given case, a comprehensive mesoscale map with a resolution of one square kilometre was available for the Province of Ontario. This enabled the experts to calculate an average annual energy production forecast based on wind potential data obtained through many years of wind measurements. ■ CG

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Photo: Dreamstime

Royal Visit

Queen Margrethe II of Denmark recently visited the shipbuilding nation of Korea. A native Dane working for GL had his lucky day: he was allowed to greet his queen in person

It was a great day for the world's largest shipyard, Hyundai Heavy Industries (HHI) in Busan, and a truly special treat for Klaus Duch-Jörgensen, Deputy Station Manager of GL Ulsan. He and his Danish compatriots working for HHI were greeted personally at the shipyard by Queen Margrethe II of Denmark. The Hamburg based classification society Germanischer Lloyd has been maintaining an office in Ulsan since 1994.

Business diplomacy. On her flying visit to the HHI shipyard, Queen Margrethe II was accompanied by her husband, Prince Consort Henrik, and a delegation of 33 Danish business executives. This was the first visit of a Danish sovereign to South Korea since both countries established bilateral relations in 1959, and it pursued solid business interests. Korea is Denmark's third largest export market in Asia, and both countries are leading shipbuilding nations. And it was a shipyard in Odense, Denmark, that built the biggest container vessel to date.

Representatives of both the host country, South Korea, and Denmark, its business partner, took advantage of the opportunity offered by the royal visit to explore further potential areas of cooperation. In various meetings they discussed topics such as design, shipbuilding, agriculture and energy. ■ SN

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Photo: YONHAPNEWS AGENCY

HANDSHAKE. GL employee Klaus Duch-Jörgensen welcoming his queen, Margrethe II of Denmark.

GL Rules Pilot 2007

Foto: iStockphoto.com

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