

Germanischer Lloyd

EDITION 3 · 2005

# nonstop

The Magazine for Customers and Business Partners



*Container Ship Development*

## *Pamela the Great*

**KOREA** World Leader in Shipbuilding

**IMO** Call for Global Standards

**TRAINING** Surveyors Don't Grow on Trees



# Smarter solutions whatever the challenge



As part of the Germanischer Lloyd Group, GL Industrial Services (GLIS) provides high-quality testing, certification and consulting services all over the world. Our focus is on the oil and gas, wind energy, construction technology and maritime engineering sectors. The solutions we offer draw on the experience and expertise of the entire GL Group and help safeguard our customers' long-term profitability. We look forward to hearing from you.

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PHOTO: STEPHANIE BRINKHOFF

## Dear Readers,

THE NEWS HAD BEEN ANTICIPATED FOR A LONG TIME. In June, the ten member societies of the International Association of Classification Societies (IACS) agreed on the introduction of the "Common Structural Rules". Now uniform construction regulations will apply for tankers as well as bulk newbuildings from April 2006. With this decision, the IACS has once again shown how the requirements of the shipping companies, yards and statutory monitoring bodies regarding greater structural safety in shipbuilding are implemented through concerted action. The new structural rules envisage partially increased scantlings for the hull, which will undeniably result in a certain added effort for ship newbuildings. On the other hand, common structural rules embodying the current state of the art will lead to cost reductions and time savings for the yards. The effort required for familiarization with the rule books of the various classification societies will become a thing of the past. In addition, new potential for more intensive cooperation will arise on the basis of uniform construction rules of the classification societies.

This represents a remarkable turning point in the self-image of the classification societies. It will have significant effects on the competitive situation, leading to greater customer focus and service orientation. Besides these clear advantages for the customers of the classification societies, the possible drawbacks of common structural rules also deserve closer examination. In particular, these include the risk that the pace of technical advancement in the construction rules will be slowed down by sluggish and lengthy coordination processes between all the participating classification societies. In the future as in the past, all the feasible innovations in shipbuilding must be incorporated into the construction rules without delay.

With very little commotion and public attention, the largest container ship in the world went taken into service in July 2005. Offering a stowage capacity of over 9,200 standard boxes, the "MSC Pamela" currently occupies pride of place amongst the mega carriers. As is the case in aviation, the trend to ever larger transportation units is continuing in ocean shipping. However, in contrast to the aircraft industry, the shipping world is developing, building and operating new vessels in quick succession. Whereas the maiden flight of the Airbus A380 was broadcast worldwide by TV stations, the technological and logistic challenges surmounted in building the seagoing behemoths are hidden from a wider audience. But, with "Pamela the Great", "nonstop" is putting things right. The challenges faced by the IMO were outlined for us by Efthimios Mitropoulos. What our surveyors need to learn before they are allowed to go on board and how Germanischer Lloyd actually trains them for their duties is of great interest to everyone, because their level of qualification and sense of responsibility are decisive factors for safety in shipping. And how our quality objective is rated may be seen in the latest annual statistics of the Paris Memorandum of Understanding.

We hope you enjoy the magazine!

Yours sincerely,

Dr Hermann J. Klein  
Member of the Executive Board



Dr Hermann J. Klein



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# News from Maritime Services

**PORT STATE CONTROL**

## *Germanischer Lloyd Tops the List Again*

“The Committee has closely monitored the performance of classification societies. [...] When comparing the performance with results published by the Paris MOU over the past years, the ranking in the list is unlikely to lead to many surprises.” This is the paragraph relating to the performance of the classification societies in the annual report of the Paris Memorandum of Understanding on Port State Control – and is thereby also the result for Germanischer Lloyd. As in previous years, Germanischer Lloyd has once again taken the lead position in the latest evaluation of the inspections of ships under its jurisdiction during the past year. From a total of 11,773 inspections of classified ships, Germanischer Lloyd picked up just 58 detentions. This is equivalent to a factor of –1.41, which is the best result of any of the 25 societies rated in the report. On the whole, the Paris MOU indicates an improvement in safety standards, as the number of detained ships in its region of authority has dropped in the past five years from 1,764 to 1,187. It is the MOU’s declared goal to reward ships with proven high safety standards, a course of action which the shipping companies have long been pushing for. Inspections would then only be carried out every two years, thus significantly reducing the inconvenience to the shipowners. At the same time, however, ships with deficits can expect to be subjected to even tighter checks. For further information: Peter Graaf, Flagstate Affairs IACS, Phone +49 40 36149-189, peter.graaf@gl-group.com. The latest annual report from the Paris Memorandum of Understanding can be found on the Internet at [www.parismou.org](http://www.parismou.org)



## *Economic Advisory Committee: Plea for Preservation of the Tonnage Tax*

The debate on the reduction of subsidies in Germany has gathered momentum. A big question mark has even been put over the future of the tonnage tax, although in the past it strengthened Germany as a shipbuilding location and secured jobs. In fact, the tonnage tax is neither a subsidy nor a tax, but merely a method of determining profits that is already being applied in many European states. The discussion at the 59th meeting of the Economic Advisory Committee of Germanischer Lloyd was prompted by the surprise elections for the German Bundestag and the resulting uncertainty about the continuing dependability of the political environment. In view of the considerable efforts made by shipowners and shipping companies in changing their ships back to the German flag, preservation of the tonnage tax is of great importance in safeguarding the competitiveness of the German shipping companies. The fact that the German maritime industry is currently doing well was highlighted by the government’s assistant secretary Jürgen Meyer, Group Leader at the Federal Ministry of Economics and Labour (BMWA), in his tour d’horizon of all the topical maritime issues. For the first time, the meeting of the Economic Advisory Committee was chaired by Dr Klaus Meves, Chairman of the Executive Board of the Hamburg Süd shipping group, who took over in this function from Nikolaus W. Schües. Member of the GL Executive Board Rainer Schöndube thanked Mr Schües for his many years of dedicated work for the Economic Advisory Committee.

**PIRAEUS**

## *Mediterranean Area Expanded*

Southern Africa has been added to the scope of activities of the Piraeus area office. Area Manager Athanasios Reisopoulos can draw on the support of a strong team of GL experts, which grew in February with the addition of four new members of staff. The changes to the geography and personnel structure of the Mediterranean area will result in greater customer proximity, speedier service and comprehensive advice on all technical issues relating to the newbuildings of tankers and bulk carriers in line with customer demands. Your contact in Piraeus is Athanasios Reisopoulos, Phone +30 210 4290373, [athanasios.reisopoulos@gl-group.com](mailto:athanasios.reisopoulos@gl-group.com)

PHOTOS: MSC (COVER), MICHAEL BOGUMIL

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# Conferences

## SEPTEMBER

08.09.2005, Hamburg

**ICST 2005 International Congress on Ship's Technology: Requirements on Operation of Modern Big Container Vessels**

The ICST is held by the VSIH (Hamburg Association of Maritime Engineers) at the Hamburg trade fair site. Dipl.-Ing. Jan-Olaf Probst and Dipl.-Ing. Hanspeter Raschle will talk about "Carriage of Reefer Containers on Board Modern Ships" (5.45–6.30 p.m.). [www.schiffingenieur.de](http://www.schiffingenieur.de)

12–13.09.2005, Rome

**Mare Forum Shipping Conference: Shipping in a Responsible Society – Quo Vadis?**

[www.mareforum.com](http://www.mareforum.com)

20–21.09.2005, Hamburg

**3rd Boxship 2005 – Safe and Efficient Design and Management of Container Ships**

Dr Hans Payer will talk about: "The Role of the Feeder Vessel" (20.09.05, 11.30 a.m.) and Ship Type Manager Jan-Olaf Probst will give a speech on "Reefer Transport on Large Vessels" (20.09.05, 4.15 p.m.).

[www.lloydslivestvents.com/boxship2005](http://www.lloydslivestvents.com/boxship2005)

## OCTOBER

04–07.10.2005, Athens

**Interferry**

[www.interferry.com](http://www.interferry.com)

19–22.10.2005, Houston

**SNAME Maritime Technology Conference & Expo**

[www.sname.org](http://www.sname.org)

## NOVEMBER

30.11–02.12.2005, Singapore

**Ship Registers Conference**

GL Area Manager East Asia, Hergen Thielemann, talks about the "The Relationship between Flag State and Class"

(01.12.05; 10.15 a.m.).

[www.lloydslivestvents.com](http://www.lloydslivestvents.com)



The Committee on Transport, Building and Housing on board the "COSCO Shenzhen" of E.R. Schiffahrt in Long Beach, California

## LOS ANGELES

### Station Manager Turns Tour Guide

The Field Service Manual describes a Station Manager's responsibilities in terms of technical, personnel and quality management. The Los Angeles station in the USA operates like many Germanischer Lloyd locations in the world: "lean and mean". Los Angeles is where the US and Asian economies meet and they do so on a grand scale! But sometimes, tour guide qualities are needed as well: recently, the German Embassy enquired as to how to present a major US port to a visiting delegation of German parliamentarians. Paul Hopson, Station Manager Los Angeles, created a three-dimensional experience to present this major maritime, rail and highway hub in the best possible way. Eric Caris and Marcel van Dijk of the Port of Los Angeles hosted the delegation aboard the port's yacht "Angelina II" for a tour of the harbour. The visitors saw the port's Alternative Marine Power project, Pier 400, currently the largest container terminal in the western hemisphere, and a presentation of advanced navigational techniques for moving container ships in and out of the back channel and under the Gerald Desmond Bridge at Jacobsen Pilot Services. With the help of a fellow German, E.R. Schiffahrt, and the coincidental arrival of the "COSCO Shenzhen" (7,500 TEU), the committee members were treated to a personal tour of the ship by its master, Capt. Manfred Boss. For further information: Paul Hopson, Phone +1 562 628-9989, [paul.hopson@gl-group.com](mailto:paul.hopson@gl-group.com), Station Manager Los Angeles and the Port of Los Angeles Alternative Marine Power project [www.portoflosangeles.org/environment\\_amp.htm](http://www.portoflosangeles.org/environment_amp.htm)



## NEW STATION

### "Espera en tránsito" – Survey en Route

Early this year, the worldwide surveying network of Germanischer Lloyd was expanded by a station in Panama City. Our man there, Alfredo Bolivar Patiño, is rarely to be found in the office, however. He is constantly en route between Cristobal and Balboa, to make good use of the 10 to 12-hour passage through the Panama Canal for periodical surveys. It is clear that these can only be partial surveys: on the busy 82 km waterway, rolling the wheel is as inadvisable as testing the standby pumps or performing a blackout check of the main engine. Germanischer Lloyd has classified 90 ships in Panama to date. For further information: Alfredo Bolivar Patiño, Managing Director, Germanischer Lloyd de Panama, S.A., Albrook, Ancon, Avenida Omar Torrijos Herrera, Edificio Pan Canal Plaza 11th Fl. # 103, Panama City, Rep. de Panama, Phone +507 315 0067, Fax +507 315 0068, [bolivar-alfredo.patino@gl-group.com](mailto:bolivar-alfredo.patino@gl-group.com)



With its common rail main engine, the "Bellavia" is both ecological and economical

## MARINE ENGINES

### "Bellavia" and "Octavia" Sailing with Common Rail Main Engines

A record for the Hermann Dauelsberg shipping company: the "Bellavia" and "Octavia" are so far the largest container ships managed in Bremen. Both vessels are equipped with the new common rail main engine of the Sulzer 8RT Flex 96C type. Developing 45,760 kW, the units allow a cruising speed of 25 kn. With common rail engines, the fuel injection is electronically controlled, doing away with the geared drive for the camshaft. The optimized combustion process improves the running characteristics and reduces particulate emissions. The electronic control also permits a very low rotation speed, which improves the manoeuvrability. For further information: Wolfgang Oeberst, Project Manager for Diesel Engines, Phone +49 40 36149-344, [wolfgang.oeberst@gl-group.com](mailto:wolfgang.oeberst@gl-group.com)

## IACS: Common Structural Rules from April 2006

Preparations in the run-up to the introduction of the "Common Structural Rules" on 1 April 2006 are well under way in the Newbuildings Department at Germanischer Lloyd. The calculation programs still need to be adjusted before the common rules for tanker and bulk carrier structures come into force. These final adaptations will take account of the progress made in the harmonization talks being boxed through by October, the aim of which is to harmonize the technical and structural specifications of both types of ships. The talks touch on topics such as wave shear force, the buckling assessment, the corrosion allowances, rounding of thickness or the ultimate hull girder strength.

The "Common Structural Rules" are a natural progression from the "Unified Requirements" of recent years, which were on the whole accepted by all IACS members and introduced into their respective rules and regulations. These initially addressed issues such as the use of uniform materials, the dimensions of superstructures, sidewalls and deckhouse, as well as rudder dimensions and design loads for the longitudinal strength of ships.

Germanischer Lloyd played an important role in drafting the rules of the "Joint Bulker Project". The prescriptive formulas for buckling assessment came from Hamburg, having proven their worth in design practice over the past twelve years. The original text of the rules has been amended by some practical notes on applying them to bulk carrier structures.

Germanischer Lloyd was also able to apply its extensive knowledge of building container ships to the topic of torsion which falls under longitudinal strength. As a result, the envelope curve for the distribution of the torsional moments over the ship length has been incorporated into the rules in addition to the envelope curves for the vertical bending moments, the horizontal bending moments and shear forces. In addition, a parameter study was carried out

in which the ratio of hatch opening width to ship width was varied to devise a simplified procedure for evaluating the stress resulting from cross-deck bending and then incorporate this into the regulations.

The IACS classification societies agreed to calculate the strength on the basis of the finite-element method and to use the net thickness approach to determine the hull scantling dimensions: the corrosion allowance is not added until the dimensions have been decided upon on the basis of loads and permissible stress. The corrosion allowances are based on the statistical evaluation of long-term studies, and primarily depend on where the component belongs in the ship and what purpose it serves. A different allowance applies to both sides of a component. If, for example, a bulkhead separates a fuel tank from a ballast tank, a larger corrosion allowance applies to the ballast side than to the fuel side. This approach of tying the corrosion allowances in with the level of corrosion has on the one hand made the system more transparent and has on the other hand made it even safer without having to apply excessive allowances too widely. Furthermore, this procedure can also be easily implemented to dimensioning software such as Germanischer Lloyd's POSEIDON-ND.

In order to establish calculated loads for the Joint Bulker Project, so-called design waves were defined which indicate significant loads on the structure of the ship type in question. In addition to the torsional load cases, this shows up four other important load cases: following seas, heading seas, and beam sea causing a large roll angle and large heave amplitudes. The ship's global reactions to the design waves are used to calculate exterior pressures, pressures from the ship's load and acceleration.

For further information: Dr.-Ing. Edzard Brünner, Head of the Strength (ESS) Department, Phone +49 40 36149-7433, [edzard.brueenner@gl-group.com](mailto:edzard.brueenner@gl-group.com)

PHOTOS: WWW.PANCANAL.COM, HERM. DAUELSBERG (BREMEN), R. DUCKSON



## CHANGE AT THE HELM

*Wolfgang Fichelmann Retires as Head of Competence Centre*

Jan-Olaf Probst, until now Head of the Department “Seagoing Ships Asia” and Ship Type Manager for Container Ships, is the new Head of the Competence Centre “Hull Structure”. He succeeds Wolfgang Fichelmann, who retired from active service in the middle of August. Since the takeover of the former GDR society DSRK (Deutsche Schiffs-Revision und Klassifikation) in 1990, Mr Fichelmann had been active at Germanischer Lloyd in a number of executive positions, inter alia as Head of the Departments “Hull Plan Approval” and “Hull Design Examination”. At the farewell reception, Member of the Executive Board Dr Hermann J. Klein paid tribute to the technical and personal commitment shown by the qualified naval architect and his constant dedication to meeting the needs of Germanischer Lloyd’s customers. The Competence Centre “Hull Structure” is subdivided into seven departments with over 100 employees.



Wolfgang Fichelmann (left) has handed over the helm of the Competence Centre to Jan-Olaf Probst

# Trade Fairs

## SEPTEMBER

06–08.09.2005, Gdańsk, Poland

## Baltexpo

Germanischer Lloyd, Maritime Services  
3.69, Hall 1, [www.baltexpo.com.pl](http://www.baltexpo.com.pl)

13–16.09.2005, London, GB

## DSEI

Germanischer Lloyd, Maritime Services  
817, Excel, [www.dsei.co.uk](http://www.dsei.co.uk)

## OCTOBER

05–08.10.2005, Busan, Korea

## Kormarine

Germanischer Lloyd, Maritime Services  
R32, Hall 2, [www.marineweek.org](http://www.marineweek.org)

## NOVEMBER

01–02.11.2005, Hamburg

## Seatrade Europe

Germanischer Lloyd, Maritime Services  
CCH, 231, [www.seatrade-europe.com](http://www.seatrade-europe.com)

01–05.11.2005, Rotterdam, the Netherlands

## Rotterdam Maritime

551, Hall 5, [www.rotterdammaritime.nl](http://www.rotterdammaritime.nl)

## DECEMBER

30.11–02.12.2005, New Orleans, USA

## The Internat. WorkBoat Show

Germanischer Lloyd, Maritime Services  
1064, [www.workboatshow.com](http://www.workboatshow.com)

06–09.12.2005, Shanghai, China

## Marintec China

Germanischer Lloyd, Maritime Services  
1B11, Hall 1, [www.marintecchina.com](http://www.marintecchina.com)

## NAVAL VESSELS

*Visitors from Australia*

The Port of Hamburg was one of the more important stops on the world tour of the Australian frigate “HMAS Anzac”. The naval vessel is linked to the Hanseatic city in two ways: the ship type was designed at Blohm + Voss and classified by Germanischer Lloyd according to the Naval Construction Rules. The “Anzac” bears the GL class character 100 N 6 FRIGATE CoC. With the identical frigates of the ANZAC family, the Australian Navy belongs to the trailblazers in the classification of “front-line warships”. For five days at the end of May, the frigate was moored at the “Überseebrücke” quay opposite the GL Head Office. The invitation by Captain Richard Menhinick to inspect the ship was gladly accepted. The “Anzac” – the name of the ship is an abbreviation of “Australian and New Zealand Army Corps” – is on a six-month trip to commemorate the participation of the Royal Australian Navy in the Gallipoli campaign (Turkey) in the year 1915 as well as the 200th anniversary of the Battle of Trafalgar. The Australian crew is bound to have fond memories of Hamburg: in glorious sunshine and summer temperatures, a repairman was at last found to fix the shipboard espresso machine, which had been out of order for months.

## JAPAN

*New Home for Yokohama Station*

The Germanischer Lloyd team in Yokohama, Japan, moved into a larger office at the start of June. Together with his two colleagues, Station Manager Nobuyuki Kanesaka deals with the fleet sailing around Tokyo and Yokohama and all the materials and components suppliers. The Yokohama branch was opened in 1986. You will now find Germanischer Lloyd at the following address: Yomiuri Yokohama Bldg. 7th Fl., R.704, 51-1 Yamashita-cho, Naka-ku, Yokohama-shi 231-0023, Japan, Phone +81 45 6503567, Fax +81 45 6503568

## MARINE

*Germanischer Lloyd Takes the Chair of the Naval Ship Classification Association*

At its annual general meeting in London, the Naval Ship Classification Association (NSCA) voted Lorenz Petersen, Head of Germanischer Lloyd’s Navy Projects, in as its new Chairman. The NSCA is the military equivalent of the International Association of Classification Societies (IACS), and exists to promote safer naval shipping and to report the classification societies’ technical findings to NATO. One of its top priorities is to organize a new SOLAS Convention for naval ships. For Lorenz Petersen, there is no question that the naval SOLAS will serve as the starting point of a completely new partnership between navies and the classification societies: “Naval SOLAS will make a major contribution to safety standards in naval shipbuilding,” said the new NSCA Chairman. The aim is to establish safety regulations which are comparable to the standards already in place for industrial and passenger shipping. A first draft is expected to be presented to NATO in spring 2006.



## NEW MISSION

*Second Career for an Old Steam Engine*

For two decades, it decorated the entrance hall at Head Office. All that is over now, because the familiar old steam engine was removed in June by a heavy-lift crane, through an opening made in the roof of the hall. On request by the non-profit association “Schleppdampfer Vampyr”, Germanischer Lloyd donated the lovingly restored exhibit for a new mission. For Gustav-Adolf Pluns, Head of the Department Customer Accounts, it was indeed a moving occasion when the colossal steam engine was hooked up: “There is a certain nostalgia about it. For so many years, this historic engine served as a prime example to show our many visitors how the mechanization of shipping has advanced over the last century.” Originally, the double-acting steam engine with the serial number 973 had driven a salvage tug registered in September 1945 as the first post-war newbuilding certified according to Germanischer Lloyd class. The manufacturer at the time was the engine building works “Christiansen & Meyer” in Hamburg-Harburg. The construction certificate specifies an output of 200 HPi, a stroke of 380 mm and a speed of 160 rpm. The unit was in service for all of forty years. Following restoration by the Norderwerft yard and the well-earned rest at its classification society, it will power the steam tug “Vampyr”, which dates back to the year 1911. When exactly the “Vampyr” will again join the fleet in service had not yet been finalized at the time of going to press.

## DELIVERIES

*“Highspeed 5” flies from Piraeus to Crete*

Her first journey was also her longest. Arriving in Piraeus from Western Australia in mid-August, “Highspeed 5” now has shorter trips within the Aegean network on her travel schedule. With a speed of 40 knots, the new fast ferry transports up to 809 passengers and 154 cars between the most picturesque Greek islands in the Aegean Sea with the Greek flag on her mast. Built by the Australian shipyard Austal, “Highspeed 5” claims the number 34 in the fleet of Greece’s largest domestic ferry operator Hellenic Seaways. In keeping with the stern-to mooring style commonly used in Greece, the vessel has been customized to provide separate passenger and vehicle loading ramps. The bi-fold ramps enable loading and unloading onto a low landing stage and the ferry is equipped with high-speed anchor winches and mooring winches to allow for efficient berthing. During the building process, Germanischer Lloyd supervised the entire construction and issued all relevant class and other statutory certificates.



Australian girl in Greece: the “Highspeed 5” in a hurry

## LONDON

*Newbuilding Boom for Bulk Carriers*

After the steep rise in freight rates for dry-bulk shipping, the shipowners are investing flat out in new tonnage. With more than 20 per cent of the existing capacity, the order book of the bulk carrier fleet has “climbed to the highest level since the beginning of the eighties,” explained John Kearsley, Chief Analyst at the shipbroker Simpson Spence & Young (SSY), at the end of June during the Market Outlook Forum organized by the specialist journal “Lloyd’s List” in London. Fired up by China’s high imports of iron ore with a simultaneous shortage of available tonnage, the freight rates repeatedly hit new record levels last year. In the first half of 2005, however, the average yields of the bulkers sagged again: in the segment of large Capesize ships from 80,000 down to 30,000 US dollars a day. With their strong investments in new ships, the shipowners are helping to take the steam out of the freight rates. “In contrast to the previous year, the freight capacity this year is increasing faster than the cargo volume,” said Kearsley. The growth in transportation demand is being dampened by, amongst other factors, the weaker steel economy worldwide. Through the production cuts announced by the European steel groups, the need for ore and coal shipments is declining. For further information: Sönke Pohl, Seagoing Ships Asia, Phone +49 40 36149-7059, [soenke.pohl@gl-group.com](mailto:soenke.pohl@gl-group.com)

# Awards

## SEPTEMBER

29.09.2005, Singapore

## 7th Lloyd’s List Maritime Asia Award

Germanischer Lloyd is again the main sponsor of this prestigious event, during which outstanding achievements in Asian shipping will be honoured. Further information: [www.maritimeasiaawards.com](http://www.maritimeasiaawards.com)

## NOVEMBER

25.11.2005, Athens

## Lloyd’s List Greek Shipping Award

Further information: [www.lloydslist.com](http://www.lloydslist.com)





Germanischer Lloyd offers a comprehensive training programme for marine superintendents, quality managers, crewing managers, maritime training facilities, seafarers and the staff from shipping administrations and yards

## SEPTEMBER

**05–06.09.2005, Hamburg**

### **Internal Auditor DIN EN ISO 9001:2000 for Industry and Service Providers**

This seminar provides knowledge and skills on the planning, conducting and evaluation of internal audits.

**12–13.09.2005, Hamburg**  
**CSO/SSO**

The seminar provides CSO and SSO with the detailed knowledge, understanding and proficiency required to undertake their duties and responsibilities as defined in the ISPS Code.

**15.09.2005, Hamburg**  
**Customer Satisfaction**

Seminar about the planning, conducting and evaluation of arrangements designed to measure customer satisfaction acc. to the requirements of the DIN EN ISO 9001:2000 standard and findings of modern market research.

**16.09.2005, Hamburg**  
**Basics about DIN EN ISO 9001:2000 for Industry and Service Providers**

Seminar on the requirements of the DIN EN ISO 9001:2000 standard and the introduction of a quality management system, regarding the commitment of the management, the requirements for the documentation as well as the required procedures.

**19–23.09.2005, Hamburg**

### **Lead Auditor DIN EN ISO 9001:2000**

Seminar on planning, conducting and evaluating internal as well as external audits. Presentation materials are supported with real-life examples and case studies.

**21.09.2005, Hamburg**  
**Quality Objectives and Continuous Improvement**

Seminar about finding adequate quality objectives and how to realize and sustain implementation and success of these objectives on the basis of the DIN EN ISO 9001:2000 standard.

**26.09.2005, Hamburg**  
**Basic Principles of Environmental Management Systems DIN EN ISO 14001:2005 for Industry and Service Providers**

Seminar on the requirements of the DIN EN ISO 14001:2005 standard and the introduction of an environmental management system. Helpful forms and checklists will be available.

**28.09.2005, Hamburg**  
**Basic Principles of Environmental Management Systems DIN EN ISO 14001:2005 for Shipping Companies**

The seminar shows how an existing safety (ISM) or quality management system (DIN EN ISO

9001:2000) can be complemented by an environmental management system. The requirements of the DIN EN ISO 14001:2005 standard will be explained and help will be given to implement them.

**29.09.2005, Hamburg**  
**Internal Auditor DIN EN ISO 14001:2005 for Shipping Companies**

This seminar provides knowledge and skills on the planning, conducting and evaluation of internal audits of environmental management systems (acc. DIN EN ISO 14001:2005) in shipping companies. The seminar is based on the ISO 19011 standard within which standards for the qualification of auditors are defined.

## OCTOBER

**13.10.2005, Hamburg**

### **Bulk Carriers – Technical and Operational Aspects**

The seminar presents current and future amendments to IMO

conventions as well as IACS requirements.

This is accompanied by the latest bulk carrier fleet developments and operational aspects.

**18–19 and 24–25.10.2005, Hamburg**  
**Shipping Basics**

The seminar is aimed at newly employed and laterally hired personnel in the shipping industry. The connection between the crew, ship, cargo and shipping company is explained and major regulations and conventions regarding ship safety and protection of the marine environment are introduced.

**20.10.2005, Hamburg**  
**Introduction to the System of Maritime Regulations**

Introduction to the international and national legal framework on ship safety and protection of the marine environment. The structure, contents and application of major conventions are dealt with in detail. An overview regarding the various types of surveys and ships' certificates is provided as well as explanations of how to deal with the implementation of amended regulations.

**21.10.2005, Hamburg**  
**Inspections, Surveys and Certificates**

This seminar introduces the legal framework for ship inspections and surveys as well as the issuance of certificates. The various survey

types, such as statutory and class surveys, flag state and port state inspections, are dealt with in detail. An overview regarding important ships' documents and the validity of certificates is provided.

**25–26.10.2005, Hamburg**  
**Internal Auditor ISM/DIN EN ISO 9001:2000 for Shipping Companies**

Qualification course for the implementation of internal audits based on the ISM Code and ISO 9001:2000. Practical case studies form an integral part of the course.

**31.10–04.11.2005, Hamburg**  
**Lead Auditor Environmental Management Systems DIN EN ISO 14001:2005**

The seminar provides knowledge and skills on the planning, conducting and evaluation of internal and external audits (acc. DIN EN ISO 14001:2005). It is based on the DIN EN ISO 19011:2002 recommendations for the qualification of auditors.

## NOVEMBER

**02.11.2005, Hamburg**

### **ISPS Basics**

Seminar dealing with the ISPS Code with emphasis on the requirements for shipping companies, shipping personnel and public authorities.

**03.11.2005, Hamburg**  
**US Coast Guard Regulations for Ship Operators**

Seminar on the main regulations applicable to foreign vessels calling at US ports to ensure compliance.

**04.11.2005, Hamburg**  
**The Change of Flag in General and Especially the Reflagging of Ships to the German Flag**

The seminar provides basic knowledge of the change-of-flag process in general with special emphasis on reflagging ships to the German flag. The legal framework, responsibilities and the various procedures such as registration, manning, surveys and issuance of certificates are explained.

**08.11.2005, Hamburg**  
**ISPS Internal Auditor for Shipping Companies**

Course about the implementation of internal audits in shipping companies and on ships, based on the International Ship and Port Facility Security (ISPS) Code.

**10.11.2005, Hamburg**  
**The New Requirements of DIN EN ISO 14001:2005**

This seminar provides information on the revised DIN EN ISO 14001:2005 standard and its require-

ments for the transformation of existing environmental management systems. Besides the interpretation of changes and the transitional conditions, first experiences with the implementation are presented.

**15–16.11.2005, Hamburg**  
**Internal Auditor DIN EN ISO 9001 for Industry and Service Providers**

This seminar provides knowledge and skills on the planning, conducting and evaluation of internal audits.

**21.11.2005, Hamburg**  
**Hull and Equipment – Damages, Repair and Maintenance**

This seminar provides an overview of significant damage to hull structures and its repair. Furthermore repair standards as well as emergency and temporary repairs from the class point of view will be dealt with.

**22.11.2005, Hamburg**  
**ISPS Exercises**

The workshop provides a methodology for the performance of exercises as required by the ISPS Code Part A/13.5 taking into account the guidance given in Part B/13.7 of this code. Based on a described shipboard emergency scenario, a table-top simulation exercise is carried out in the seminar room. The exercise incorporates the participation of shore organization and the simulated actions of relevant authorities.

**23.11.2005, Hamburg**  
**ISM Basics**

Overview of the 16 elements of the ISM Code and resulting requirements.

**24.11.2005, Hamburg**  
**ISM for Ship Management Personnel**

Seminar on the ISM Code with particular consideration of the responsibilities of the master and the ship's officers in promoting the acceptance of safety management systems by disseminating information and emphasizing the benefits of ISM.

**28.11.2005, Hamburg**  
**ISM Basics for Yachts**

Overview of the 16 elements of the ISM Code and resulting requirements for owners and crews of yachts.

**29–30.11.2005, Hamburg**  
**ISM Internal Auditor for Yachts**

Qualification course for the implementation of internal audits based on the ISM Code. Practical case studies form an integral part of the course.

## DECEMBER

**01-02.12.2005, Hamburg**

### **CSO/SSO Training Course for Yachts**

The seminar provides CSO/SSO with the detailed knowledge, understanding and proficiency required to undertake their duties and responsibilities as defined in the International Ship and Port Facility Security (ISPS) Code.

**01.12.2005, Hamburg**  
**ISPS for Shipyards**

The aim of this course is to familiarize personnel of ship yards and suppliers with the contents of the ISPS Code and with applicable security measures.

**07.12.2005, Hamburg**  
**Machinery – Damages, Repair and Maintenance**

This seminar provides an overview of significant machinery damage and its repair. Furthermore repair standards as well as emergency and temporary repairs from the class point of view will be dealt with.

**08.12.2005, Hamburg**  
**Emergency Preparedness and Crisis Management**

This seminar introduces methods which allow controlled decision-making under conditions of great stress. By utilizing real-life cases, the behaviour and the decisions of those responsible for managing the emergencies is discussed as well as teamwork and team communication.

**13.12.2005, Hamburg**  
**Maritime Casualty Investigation in Shipping Companies**

This seminar provides essential knowledge about maritime casualty investigation. Participants will understand what casualty investigation boards do when they carry out casualty investigations. They will therefore be able to carry out their own investigations into minor accidents in a more structured way, as required, for instance, by the ISM Code.

**15.12.2005, Hamburg**  
**Basic Maritime English for Superintendents**

The basic Maritime English (ME) seminar provides superintendents and inspectors in shipping companies and maritime authorities with basic communication skills with respect to their field of work. This seminar is particularly aimed at technical superintendents who also cover nautical superintendence in their companies.





*Container Ship Development*

# *Pamela the Great*

Another milestone in the history of container shipbuilding: with space for 18 rows of containers, this newbuilding offers a capacity of 9,200 TEU. Close cooperation between the owner, shipyard and Germanischer Lloyd meant she was built in record time.

Pamela and her sisters were never meant to be so big. When the Hamburg shipping company Claus-Peter Offen ordered nine large container ships from the Samsung shipyard in Korea, it was thinking in terms of an 8,200 TEU design. But the market was hungry for more. The container transport boom was nearing its peak, with the line shipping companies all scrambling to muster the tonnage needed to meet demand. Mediterranean Shipping Corp. (MSC), initially

intended to be the charterer but now the owner, was therefore set on increasing the ships' capacity. Around Christmas 2003, the owner consulted the shipyard and the experts from Germanischer Lloyd with the aim of finding a solution. "In three days, we managed to transform an 8,200 TEU ship into a 9,200 trailblazer," says Jan-Olaf Probst, Ship Type Manager for Container Ships at Germanischer Lloyd's Hamburg Head Office. Originally, the freighters were to



*In the computer simulation, MSC Pamela has already mastered many critical situations.*

have been 323 metres long and 42.8 metres wide. There were two ways in which to increase the capacity: the ship either had to be lengthened or widened. C.-P. Offen decided on the latter – and with good reason, in Probst's opinion.

"Wider ships are better natured," says the specialist. "Their steel structure is much more rigid." The longer the vessel, the greater the deformation in its hull. In order to attain the necessary stiffness, a slender hull has to be significantly stronger than that of a wider ship. The ships built for Offen and MSC are now 45.6 metres wide, making them the first to be able to accommodate 18 rows of containers between port and starboard, with 16 abreast in the holds. "The ratio of hold to deck containers on the redesigned ships is much better, because the moulded depth was increased too," explains Probst. The proportion of containers below deck is greater (over 50 per cent). All the containers there can take heavier loads, whilst only the bottom layer can be filled on deck – the admissible container weights decrease sharply going up the levels, otherwise the pressures on the container stack from wind and waves would be too great.

**HIGHER STACKING?** Despite these precautions, close attention must still be paid to the weight below deck. The maximum corner load of a standard container is 346 t. This can easily be exceeded if the ten containers are each loaded with the maximum of 35 t permitted for a 40-foot unit. Higher layers could be allowed if the containers were not fully loaded – which is something of a zero-sum game for the total cargo weight to be transported. Whilst the corner post loading of the "boxes" is fixed, there is still room for improvement on deck – not concerning the total weight of the stack, but rather the distribution of the permitted maximum weight across the individual containers. A solution to this problem comes in the form of elevated lashing bridges, from which the corner castings of the fourth layer can be reached. Currently, it is generally only the bottom three layers which are lashed. "Higher lashing bridges mean that the stack's centre of gravity is higher too. You are given more flexibility as regards load distribution," says Probst. Even the higher layers, which at present are only made up of empty containers because of the tipping risk, could include some loaded containers. Can loads be held in the sixth, seventh or even eighth layer on deck? How should the lashing system be constructed? What sort of force is placed on the hatch-covers? Questions like these are answered by Germanischer Lloyd using the so-called lateral acceleration test. This establishes how forces develop on board when the vessel rolls or pitches in a seaway.

**GLOBAL ANALYSIS IN RECORD TIME** Before the lateral acceleration test is carried out, the global analysis of the ship's hull has to be completed – this is the first and most important hurdle for every new ship design. The larger the freighter, the longer the testing process. In the case of "MSC Pamela", Germanischer Lloyd and the shipyard were on a tight schedule. "We had just ten months from modification of the design to the steel being cut in Korea," remembers Probst. "In order to keep to our deadlines, we really had to speed up the testing process." By working closely with Samsung, Germanischer Lloyd managed to trim the global analysis time for the 9,200 TEU vessel from five down to three and a half months. The Korean team provided the model for the strength analysis using the finite-element method. This involves the entire hull being subdivided into millions of pieces, so that tensions and deformations can be tracked right down to the last detail. "This model goes to sea virtually, using a computer simulation. It is put through many thousands of situations where different forces are at play," explains Probst. Depending on the ship's load and the direction, length and height of the waves, various scenarios can occur. The computer looks for all the possible



Jan-Olaf Probst, expert for container ships

#### "MSC PAMELA": FROM PAPER TO THE COMPLETED SHIP

**December 2003:** Design increased from 8,200 to 9,200 TEU

**January to October 2004:** Ship strength analysis, lateral acceleration testing and plan approval by Germanischer Lloyd

**October 2004:** Steel cutting at the Samsung shipyard in Geoje City

**February 2005:** Keel laying

**April 2005:** Completion

**June 2005:** Trial voyage

**July 2005:** Naming and delivery

Nowadays, jumbo container carriers are made up of sections that are either built on site or delivered just in time



## THE 9,200 SERIES

"MSC Pamela" is the first of nine large container ships with a 9,200 TEU capacity ordered by the Hamburg shipping company Claus-Peter Offen from Samsung Heavy Industries in South Korea. Four identical carriers have also been ordered independently by the line shipping company Mediterranean Shipping Corporation (MSC). All 13 vessels will be delivered by the end of 2007.

**Orderer:** Claus-Peter Offen GmbH & Co.

**Owner** MSC

**LOA:** 336.7 m

**LBP:** 321 m

**Width:** 45.6 m

**Moulded depth:** 27.2 m

**Draught:** 15 m

**Gross tonnage:** 107,849 GT

**Deadweight:** 110,592 tdw

**Container total:** 9,200 TEU

**Rows on deck:** 18

**Rows in hold:** 16

**Layers on deck:** 7

**Layers in hold:** 10

**Reefer container connections:** 700 FEU

**Engine power:** 69,000 kW

**Engine type:** MAN B&W 12K 98MC-C licence

**Speed:** 25.2 knots

**Character of classification/hull:**

100 A5 with freeboard 5.238 m, IW NAV-O RSD Star, BWM-F SOLAS-II-2, Reg. 19, Container Ship, Environmental Passport

balancing act. With "MSC Pamela", the results were, however, "very satisfactory", as Probst puts it. When it came to the global analyses, Germanischer Lloyd was able to build on the extensive experience it had gathered in the past. As early as the 1990s, the company developed a concept study together with the German shipyard HDW for a large container ship, and this topic was examined in a new light at the end of the decade. The influence of main parameters such as the width of the side structure, the depth of the transverse bulkheads and the height of the double bottom were investigated at that stage, and the dimensions were roughly the same as those of "MSC Pamela". After Samsung had incorporated the results into the design documents, the plan approval process was finally completed, which meant that the tight schedule could be met.

**CLOSE COOPERATION ON SITE** Germanischer Lloyd sent three engineers from Hamburg to Korea – a measure which has proved useful in the past – to present and clarify the results of all the calculations for the C.-P. Offen vessels on site. "This helped us to save the necessary amount of time," explains Probst. "It meant we were able to work together with the shipbuilding engineers right on the spot and discuss all the entries and alterations on site." Misunderstandings were therefore avoided from square one, and work in the building docks could be planned quickly. Prompt approval is all the more important nowadays because shipyards put the steel giants together using sections which are either built next to the dock or delivered just in time. "Even if we suggest only small alterations, it can bring all the logistics to a halt," says Probst. "So it is better for both sides to talk things over directly." The need for timely coordination is likely to increase even more in future. Plans for ever larger vessels are already under way: Germanischer Lloyd recently conducted seaway and strength analyses for the design studies of a 13,000 TEU project. ■ MPH

# Perfect Logistics

Building a 9,200 TEU ship in South Korea demands ingenious logistics. Entire sections of ships are built by different companies around the world. Experts from Germanischer Lloyd are there at all the decisive crossover points.

**SHIPBUILDING STEEL FROM JAPAN**, engines from Korea and radio equipment made in Europe: the components used to build container freighters are sourced across the globe. Even before they arrive at the building dock in Korea for assembly, their quality must be shown to conform to the requirements of the classification society. Nothing is spared from testing – from the radar and the switchboard to the boiler. Suppliers are obliged to undergo regular quality testing – with some of them, Germanischer Lloyd is permanently looking over their shoulder. "At the building dock, there are three GL inspectors working solely on the 9,200 TEU project and another two inspectors at the sub-contractors, with production facilities located up to 60 km from the shipyard," says Heinz Wagner, Area Manager of GL Korea in Busan. 15 per cent of all shipbuilding blocks which are then welded together to form a whole are made by suppliers – with a large proportion coming from a Samsung subsidiary in China. Work can be completed there at a fraction of the cost compared to South Korea. And even before the blocks are put on a pontoon to be transported to South Korea, GL experts go over them with a fine-tooth comb.

**ALWAYS LOOKING FOR NEW APPROACHES** Only two thirds of the shipbuilding steel required comes from Korea, says Wagner. The rest is sourced from China and Japan. To a certain extent, the pumps, radars and nautical and life-saving equipment are produced in Europe. "Most of the installation materials like the main and auxiliary engines, together with the electrics and electronics, now come from Korea," Wagner continues. For the 9,200 TEU vessels, Samsung used a new welding technique for panels up to 58 millimetres thick (electro-gas welding in tandem) which had to be authorized by Germanischer Lloyd before production started. All the welders performing the operation also had to pass a test. "This took our inspectors six months," says Wagner. "It was uncharted territory for the shipyard. First of all, we had to work with the materials department on site to create guidelines which would meet with approval." Under the control of Lothar Knöchelmann, C.-P. Offen's technical manager, and Ralf Stehr, Germanischer Lloyd's Station Manager, the container giant's sea trial went well apart from a few technical hitches which have since been rectified. Another project supervised by Germanischer Lloyd was a first for the shipyard: due to timepressure, the main engine of this ship (total weight 2,600 t) was installed in one piece by a floating crane.

**JUST IN TIME** Due to the global shortage of steel, shipyards have to use exact logistics. It is not profitable for them to have large stocks, and it is therefore especially important to feed the steel into production just when it is needed. "The large local shipyards here are masters of the art," emphasizes Wagner. All of the subsequent processes are based on this. As early as the manufacturing stage, volume sections are fitted with the internal components, such as pumps, coolers, pipes and cables. Installing them after completing the hull would be far too complex. The finished sections can then be put together quickly. "In the building dock of a certain yard, for instance, the blocks for a 6,000 TEU vessel were welded to a hull – with all the equipment except main and auxiliary engines – within only 14 days. Now that's what I call perfect logistics," says the GL manager, who has been working in Korea for 20 years. The crane capacities at shipyards approach 1,000 t, with floating cranes lifting nearly 3,500 t – and these figures are increasing all the time. The shipyards are learning to cope with larger and larger volume sections, and, Wagner considers, are well equipped to deal with yet larger vessels. He knows that a German shipping company is engaged in talks in Korea to develop ships with a 10,000 TEU capacity. Germanischer Lloyd is happy to tackle the challenges this entails. "There's no such thing as 'impossible'!" says Wagner.

A total of 69 vessels classed by Germanischer Lloyd will be completed in Korea this year, with the figure climbing to 82 in 2006. And Germanischer Lloyd can accommodate this increase: "When I arrived here, there were six of us," says Wagner. The organization now has nearly 160 employees in 12 offices in Korea, with two additional site offices being set up this year. ■ MPH



Heinz Wagner, Area Manager Korea

combinations which could lead to critical moments. In this way, Germanischer Lloyd can find out where the design provided by the shipyard needs to be improved in order to satisfy the strength requirements. Optimizing the interplay between container stowage capacity and ship strength is a tricky



Welding under time pressure:  
Korean yards are fully booked for years to come





The Hyundai shipyard extends over four kilometres of coastline in Mipo Bay in Ulsan and has ten dry docks

# World Leader in Shipbuilding

The Republic of Korea has developed into the world's leading shipbuilder. The ongoing shipbuilding boom is keeping Korean shipyards booked up. This comes as no surprise.

SOUTH KOREAN SHIPYARDS are the uncontested world market leaders ahead of Japan and China. This ranking is also reflected in current demand. Korea's shipbuilders won more than a third of last year's newbuilding orders, equating to a much higher increase in demand than in supply. Japanese shipbuilders won 30.3% of orders, whilst China took third place with 12.6%.

Opinions as to how this rapid advance came about differ depending on your geographical perspective. Disputes between the European Union and Korea at the World Trade Organization have since been settled. The shipbuilding industry was given strategic support from the 1970s onwards, as the Korean government considered that growth in that sector would have positive effects on others. The shipbuilding industry expanded constantly thanks to its large sites and the variety of vessels built – in 1975, it held just 1% of the

market share as compared to 33% twenty years on. At that time, Japan was in the lead with 41.4% of the market. Despite the severe financial and economic crisis of 1997–98, Korean shipbuilding reached pole position in international newbuilding in 1999.

**FULLY BOOKED FOR YEARS** Today, the market is dominated by five large shipyards: Hyundai Heavy Industries Co., Ltd. (HHI) with its subsidiaries Hyundai Mipo in Ulsan and Hyundai Samho in Mokpo, Samsung Heavy Industries Co., Ltd. (Geoje), Daewoo Shipbuilding & Marine Engineering Co., Ltd. (Geoje), Hanjin Heavy Industries & Construction Co., Ltd. (Busan) and STX Shipbuilding Co., Ltd. (Jinhae). They are booked out until 2008. The high demand – seen especially for container ships and LNG (liquefied natural gas) tankers – can be put down to ongoing growth in Asia as

well as China's high demand for natural oil, steel and other raw materials and its resulting entry into foreign trade. The Korean shipbuilding industry contributes 6% to foreign trade figures and employs over 80,000 people, of which nearly 30% work at HHI.

**CONCENTRATING ON A HIGH-VALUE SEGMENT** Apart from their size, it is the high technical standards that make Korean shipyards stand out from the crowd, and they are constantly being developed further. HHI and Daewoo were able to revolutionize methods for building ships on land, for example. New welding techniques allow, for example, even greater automatization in the manufacturing process and therefore more business at the shipyards. Increasing steel prices and growing competition from China have taken their toll on cost estimates, despite the large number of contracts. By concentrating on higher-value segments such as container ships and tankers – and LNG tankers in particular – shipyards have kept apace with these developments. The increase in crude oil prices means that gas will become an increasingly attractive option, leading the industry to expect significant demand for LNG tankers. Just like Japanese shipyards (see "nonstop" 01/05), Korean companies are transferring areas of production to China and the Philippines. Daewoo Shipbuilding is just one company to be planning its own factory in Yantai – China is without doubt Korea's most important trading partner, ahead of the USA and Japan.

The Korean shipbuilding industry has achieved a lot. It is planning to increase annual production to 16.7 million GT over the next ten years and to secure itself a market share of 40%. In the large container ship segment, Korean shipyards are even anticipating a market share of 60%, and 65% for LNG tankers, and are confident of being able to build on their position as the market superpower in the long term. ■ HCL/OM

## INDUSTRY COMMITTEE FOUNDED

Germanischer Lloyd's dealings with the Korean shipbuilding supply industry have been given a new forum. The Korean Industry Committee was founded on Jeju Island in August, encompassing 20 leading companies.

The committee will promote the exchange of information between the shipbuilding supply industry, engine manufacturers, producers of steel, cast and forged metal components, and Germanischer Lloyd. The committee will tackle issues and make proposals relating to speeding up and simplifying the testing, inspection and certification procedures of parts and components. The founding meeting of the industry committee was chaired by Dr Hermann J. Klein.

## GERMANISCHER LLOYD IN THE REPUBLIC OF KOREA

Germanischer Lloyd's first Korean base was opened in Busan in 1977. Further stations followed in Ulsan and on Geoje Island. There are also branches in Chang Won, Daegu, Mokpo and Seoul. Today, a total of 165 people are employed by Germanischer Lloyd in Korea, including 127 inspectors and nine plan approvers. The focus lies on newbuilding classification, with 70 vessels lined up to be supplied with GL class this year, of which 60 are still being built. In the past five years, an average of 40 ships per year were completed with GL class. For further information:

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PHOTO: HYUNDAI HEAVY INDUSTRIES CO., LTD.



# Breathing Deeply at Last!

Ship exhaust emissions are being reduced by MARPOL Annex VI. Bunker delivery notes, statutory fuel samples and logbook entries are just some of the measures shipowners must now observe. Engine expert Hans-Joachim Götze provides an overview.

WITH REGARD TO THE ENERGY CONSUMED, the transport of goods by ship is extremely economical in comparison to other modes of transport. And yet the designers of

marine diesels have been put under increasing pressure over the last thirty years to optimize the engines for ever better utilization of the fuel – not least because of the considerable

increases in fuel costs. For large diesels, it was possible to achieve efficiencies of about 50% in relation to the energy input and thereby reduce the emissions of the dangerous greenhouse gas CO<sub>2</sub> to a considerable degree. However, with the simultaneous use of cheaper residual fuels, this development has led to a situation where the emissions of nitrogen oxides (NO<sub>x</sub>) and sulphur oxides (SO<sub>x</sub>) from shipping have risen. At the same time, more effective exhaust gas cleaning systems have come into use for power stations and motor vehicles in response to the increasingly stricter statutory



*"Before using LSFO in diesel engines, you should ask the manufacturer about possible effects on engine operation."*

Hans-Joachim Götze, engine expert

regulations (e.g. the limits for the emission of toxic exhaust gas constituents) applying to many fields of industry on land. Although this decreased the level of shore-based emissions, the share generated by shipping rose significantly, especially in ports and coastal regions.

**DISTRIBUTION OF THE EMISSIONS CAUSED BY SHIPS** in the Port of Hamburg. Against this background, the International Maritime Organization (IMO) has recognized the necessity of compiling regulations for the prevention of air pollution from ships. As the end result, MARPOL Annex VI came into force on 19 May 2005.

The objective of this regulation is, amongst other things, to reduce the emissions of SO<sub>x</sub> and the particulate matter caused by the sulphur in the fuel. Since these emissions practically cannot be influenced at all by the engine design, sulphur limits were defined in Annex VI for any fuel oil to be used on board: from now on, only such fuels whose sulphur content does not exceed 4.5% of the fuel mass may be used on board. In addition, there is the option of proclaiming so-called "SO<sub>x</sub> Emission Control Areas" (SECAs), in which the sulphur content in the fuel may not exceed 1.5% m/m. The entire Baltic has been declared as the first SECA. Here the regulations are to apply from 19 May 2006. It is expected that the same requirements will apply from November 2007 for the North Sea and the English Channel.

The regulation prescribes that, if high-sulphur fuel oil is used, an exhaust gas cleaning system or other approved technological methods may be used as an alternative to reduce the total emissions of a ship to a maximum of 6.0 g SO<sub>x</sub>/kWh when operating in a SECA. However, such systems are subject to costly approval procedures. At present, some pilot projects are under way with such systems, but it is far from clear when and for which engine categories such systems will be ready for market. This only leaves the path of sulphur-reduced fuel for the time being. According to information from the oil industry, such fuel will be available in sufficient quantities when needed for operations in the Baltic. It remains to be seen how the situation develops when there is a much higher demand resulting from the declaration of further SECAs.

**SO WHAT MUST A SHIP OPERATOR LOOK OUT FOR?** As documentation of the fuel quality, the supplier must issue a bunker delivery note (BDN) for all fuel oil taken on board for com-

bustion, showing inter alia the sulphur content of the fuel. Furthermore, the BDN must contain a declaration by the supplier that the oil meets the corresponding regulations. The bunker delivery note must be kept on board for a period of three years.

In addition, a sample must be taken continuously during the bunkering process at the shipboard inlet bunker manifold, sealed in suitable bottles and provided with a label signed by the supplier and the responsible officer of the receiving ship. The bunker sample must be retained on board for at least a year in a suitable place. IMO Resolution MEPC 96(47) provides detailed instructions on the handling of bunker samples. If any non-conformities occur with regard to the requirements, e.g. in respect of the sampling point or possible non-availability of the prescribed fuel, it is urgently recommended that the conditions be confirmed by the competent authorities, so as to prevent any serious problems during port state control (PSC).

On ships which use various fuel grades (high-sulphur fuel oil – HSFO, low-sulphur fuel oil – LSFO), suitable measures must be taken to ensure that the fuel system is filled with LSFO upon entering a SECA and that the combustion plants are operated accordingly. The volume of fuel oil in the tanks, as well as the date, time and ship position must be recorded in writing in a suitable form (a logbook) once it is established that the changeover has been completed. The form of such a logbook should be prescribed by the flag state administrations. In addition, it is recommended that the diesel engine manufacturer be asked about the possible effects on engine operation when LSFO is used. ■ HJG

For further information: Hans-Joachim Götze, NPC – Combustion Engines, Phone +49 40 36149-314, hans-joachim.goetze@gl-group.com

## OVERVIEW OF OTHER SULPHUR REGULATIONS

In the European Union, the Directive 99/32/EC applies. This states that the sulphur content of marine gas oil (MGO) may at present not exceed 0.2% m/m (definition of MGO: all fuels according to ISO 8217 (1996) Table 1: DMX, DMA, DMB, DMC). An amendment to the EU Directive 99/32/EC that is expected to come into effect soon prescribes the following (EU Directive 2005/33/EC):

- a) Maximum sulphur content in fuel used by ships for voyages in the **Baltic Sea** from 19 May 2006: 1.5% S m/m
- b) Maximum sulphur content in fuel used by ships for voyages in the **North Sea and English Channel** from autumn 2007: 1.5% S m/m
- c) Maximum sulphur content in fuel used by **passenger vessels (ferries)** on regular services to/from any **EU ports** from 11 August 2006: 1.5% S m/m
- d) Maximum sulphur content in fuel used by **inland waterway vessels in general** and on seagoing ships **at berth in EU ports**, from 1 January 2010: 0.1% S m/m

In 2008, the EU Parliament will debate on whether and/or when a sulphur limit of 0.5% S will be introduced in a second phase for the applications under a) to c) and, if applicable, for other regions/applications.

Fresh sea air – wonderful! Lower ship emissions will ensure perfect holidays in coastal regions

PHOTO: P. MANNER/ZEFA



# “Satisfaction Is Good, Success Is Better”

Its beginnings lie almost 40 years back: in 1967, the Islamic Republic of Iran Shipping Lines (IRISL) commenced operations with two ships of 2,500 DWT each. Today, IRISL serves its worldwide clientele with over 115 vessels of its own totalling approx. 3.7 million DWT.

BESIDES THE 4,500 qualified seafarers sailing for IRISL, some 1,000 people are employed in the shore offices and diverse subsidiaries all over the globe. Group turnover reached 2.2 million US dollars in 2004. The key activities lie in container shipping (Far East, Southeast Asia, Europe), in general cargo (Persian Gulf and Africa, Far East, Australia, South America, Europe) and in bulk shipping (worldwide). The successful privatization from 1999 onwards and the ongoing internationalization course of the shipping company led to a sharp rise in transport volume to the current level of 24 million tonnes – and the trend is unbroken. Expansion efforts are concentrating especially on the container fleet, which will triple its capacity by the end of 2008. For his successful expansion strategy, IRISL Chairman and Managing Director Ali Ashraf Afkhami was recently honoured with the Seatrade Personality of the Year Award 2005. In the following interview, Mr Afkhami gave “nonstop” further details of his corporate philosophy and further plans for expansion.

**NONSTOP: Mr Afkhami, you were recently named Seatrade Personality 2005. Congratulations! What does this mean for you personally?**

ALI ASHRAF AFKHAMI: Well, I think above all it represents appreciation and recognition for the performance of our entire team.

**What is your formula for success?**

I believe in thinking positively, and I always encourage my colleagues to do the same. Such an approach generates a great amount of energy and is a major part of our philosophy. Also, quality is clearly the focus of our efforts. It is the solid foundation that makes it possible for business relations, market share and profit to develop in a sustained way. Besides this, you must have the capability for innovation and teamwork.

**Are there any role models for you who implemented this fundamentally positive attitude in a particularly successful way?**

If you look around all over the world, you see many good examples. Even within our company, there are departments and areas which have developed into a benchmark for others.

**One of the main reasons you received the Seatrade award was to honour your efforts in establishing a massive maritime training programme for young Iranians. What was your approach here?**

In every business, I think, you should focus on three major pillars of support: knowledge, skills and experience. The more knowledge the people in a company have, the fewer hurdles there are and the easier it is to follow a common vision. Every company is like a knowledge factory engaged in a continuous process of improvement. But knowledge alone is not enough. We must also improve our skills constantly. It's rather like driving a car: you only really learn by practising for a long time. And the shipping world in particular is characterized by so many technological changes and very tough competition that practical skills are essential. The third pillar is experience, and to stay with our image of driving: you can learn how to drive both theoretically and practically, but you also have to be able to drive under a wide range of conditions – in snow, in the mountains as well as in the desert. We are investing consistently in these three pillars, right throughout the company. The best guarantee for stable customer relations are reliable and qualified employees who perform their tasks responsibly “under their own steam” and do not need to be instructed again and again. In this regard, we have achieved a great deal in recent years. There is still a lot to be done, but I am very pleased with today's results.

**What do these training programmes look like?**

We are not only training our seafarers, but are also cooperating with European universities, for example on classic MBA programmes for the management level. Our staff are encouraged to make use of this scheme, which is being received very well. We provide classic lectures and also organize workshops and seminars, etc. All this takes place in our own training institute, which offers a wide range of programmes and courses.

**How many people are trained there every year?**

Every year, we accept over 100 fresh maritime students at the institute, but our existing personnel also benefit from the opportunity to increase their knowledge regularly. All our



managers take part, from the bottom to the top – and I myself am no exception.

**Over the past years, you have completely transformed the company. What obstacles did you encounter along the way?**

The path from a state-owned entity to a private company is always a difficult one. For instance, there were legal hurdles to overcome, we had to change the shareholder structure, and so on. But we had a clear strategic plan with which we were able to convince the government. This is how we initiated the transformation. Besides, even in small companies, you will meet with some resistance when you want to introduce changes. People often prefer to keep their existing duties and routines. But we were able to prevail, with the aid of many open discussions on all levels. Our staff know that, through teamwork and respectful treatment of each other, they are making an important contribution to the good of the company and also our country.

**How did you come to IRISL?**

Actually, my background lay primarily on the industrial side. When the idea of privatizing industry arose in Iran, I and many others supported this movement. In the beginning, it seemed necessary to have some positive examples to present

*“Positive thinking generates a great amount of energy and is a major part of our philosophy.”*

to the government and also the public, i.e. privatized companies that were working much more successfully than before. So I participated in some effective restructuring – in the petrochemical industry, amongst others. This success then persuaded our government that it was indeed the right



course to take. When IRISL was about to be privatized, I was asked whether I wanted to be part of it. At the time, there was no experience available in the services sector – which is what shipping really is.

**You certainly have every right to be pleased with the fruits of your labour ...**

Yes, thank you. But there is always something you feel you can do better. This is an integral part of our philosophy: continu-

*“We are not trying to create the largest fleet, but the best fleet. In the long term, quality will win.”*

ous improvement. “For a better tomorrow” – that is our basic drive, so to speak. And we are working not only to the benefit of our own country, but also other nations, because we are an international enterprise providing services all over the world.

**Is this what fascinates you in your work?**

Absolutely. With our services, we want to ensure that our customers are not only satisfied, but also see us as a success factor: satisfaction is good, success is better.

**What further aims and plans are you pursuing, especially regarding container shipping?**

We are not trying to create the largest fleet, but the best fleet. Our container activities started about five years ago, and this now represents one of the most important sectors for investment. At the moment, we are among the top 25 container lines in the world, but not with a very large capacity. So, with the steps we have taken, we are going to triple our existing capacity by the end of 2008. In the first phase of our expansion plan, we will have ten additional vessels with 5,000 and 6,500 TEU built by that time. Further expansion

steps will follow. We are continuing to work on changing our image from a local shipping company to a global enterprise. Liquid chemical tankers and LNG tankers represent a further topic for fleet growth.

**In the shipping sector, we are currently experiencing a gigantic concentration process, with huge alliances being formed. How do you view the role of IRISL?**

Well, we cannot compare ourselves to these giants – not yet anyway! But let me quote an example: thirty years ago, you had mainframe computers which dominated the whole market. Then along came those little PCs and turned the entire computing world upside down. What I am saying here is that we may not be the largest, but we want to be the best through efficiency and quality. Of course, the question of size cannot be neglected, and that is why we are investing. And in future, there will be other opportunities to grow, for example together with partners. In the long term, quality will win.

**Are similar models feasible for Iranian shipbuilding?**

Iranian shipping has its history, but Iranian shipbuilding is still in its infancy and needs more time. Here too, privatization is a very promising path to take. When the time is ripe, we will be ready to make our contribution.

**You are already active in the port industry ...**

That's right. The better the ports function, the more efficient the fleet. For this reason, we have set our sights on the entire value chain. In the port of Bandar Imam, for example, we have invested heavily. Regarding the port management and operation of Assaluyeh and Bandar Abbas, we are currently engaged in negotiations. What is more, we are also making efforts to develop hinterland railway connections. With a good transport infrastructure, Iran will be well positioned to act as a hub for the entire region. But our main business will always remain shipping. ■



# Propellers on the Run

With up to 140,000 revolutions a day, they are put under an incredible strain day in, day out for up to 30 years. Ship propellers are more than just the driving force on the high seas; they are product of incredible engineering and craftsmanship.

THE INVENTION OF THE SHIP PROPELLER in the 19th century is undoubtedly one of the most important technical milestones in the history of shipbuilding, which spans millennia. But there is little correlation between the first ship propellers and the technical masterpieces of today. One company that excels in the field of developing, constructing and installing ship propellers and accessories is Mecklenburger Metallguss GmbH (MMG) in Waren an der Müritz, in eastern Germany.

MMG has been in the business of manufacturing ship propellers in three massive halls for just under 60 years, and currently has around 160 employees. A new foundry hall went into operation there in July 2004 – a 100 m long “shoebox” with space for eight massive propellers and incorporating the world's biggest medium-frequency induction furnace with a smelting capacity of close to 100 t. The impressive furnace facilities also include another seven smelting plants, making it possible for MMG to produce up to 200 t of liquid metal

in time for a casting. The resultant castings are moved around with the help of a crane which is able to lift approx. 320 t. The other two halls house modern workbenches for processing the propeller blanks that weigh tonnes, including a number of CNC-aided cutting machines. The whole ensemble then goes by the fitting name of “high-tech forge for ship propellers”. The history of MMG goes all the way back to 1875, when it first went into operation as a machinery factory and iron foundry. Today, MMG belongs to Deutsche Gießerei- und Industrie-Holding AG, DIHAG for short, which is based in Essen. This encompasses a total of ten foundries located in Germany, Poland and Hungary.

**MORE THAN 100 SHIP PROPELLERS A YEAR** “Every year, we cast ship propellers that together would weigh around 8,000 t,” says Manfred Urban, the long-standing Managing Director of MMG, who runs the business with Jürgen Eberlein. Each year, they produce more than 100 ship propellers, 70 per

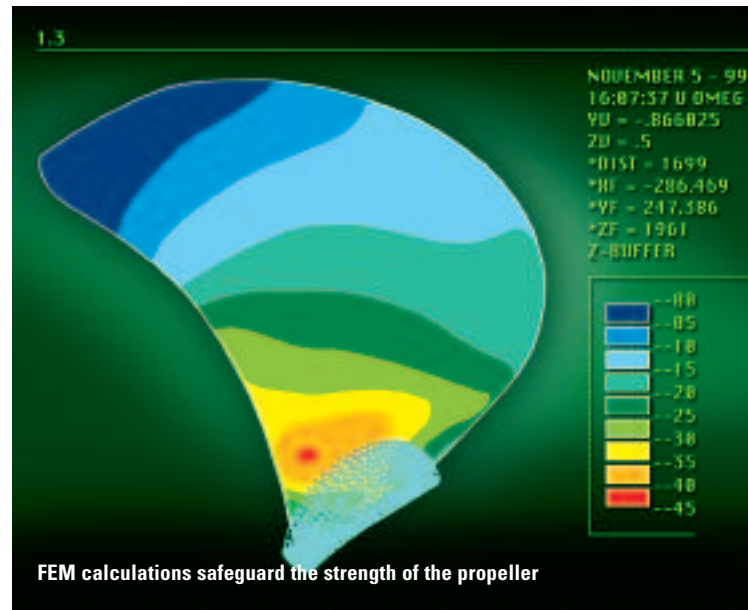


In its future investments, IRISL will be focusing on container transport

PHOTOS: MICHAEL BOGUMIL, MMG



Foundry work requires specialized know-how and a sure instinct



FEM calculations safeguard the strength of the propeller

*The pressure on shipowners to reduce fuel consumption will have considerable effects on the design of future propellers.*

cent of which are destined for export. Major deliveries go to the Far East, where post-Panamax container ships, bulkers and tankers are launched pretty much on a weekly basis. But German shipyards too favour products manufactured in Waren. MMG has a 20% share of the market in ship propellers for freighters of all types and sizes, and approximately 80% for post-Panamax container ships. This kind of ship propeller weighs over 100 tonnes and has a diameter of around ten metres.

**EXPERIENCE, EXPERTISE AND QUALITY** Producing a finished propeller is a complicated process. As Urban puts it: "These are custom-built pieces. Usually, a ship's propeller stays with the ship until it goes to the scrapyard, which can be as long as 25 to 30 years. And to a large extent, it is the propeller that determines the ship's abilities and general sea-keeping performance." In addition to the company's own engineers, the process of producing a propeller also involves specialists representing the shipping companies, the shipyards, the classification societies and the ship model basins. Throughout the process, a good deal of information and knowledge flows between these different parties. Nowadays, modern development software is an indispensable aid for the MMG experts. "But at the end of the day, it is the extensive knowledge of the constructors and the expertise throughout the company that are decisive," stresses Urban. And it is this edge in terms of knowledge, along with absolute perfection and top quality when manufacturing the highly complex parts, that keeps MMG so successful in the fiercely competi-

tive global market for ship propulsion technology. Urban adds: "There are quality control checks throughout the manufacturing process. We have our own high standards rigorously checked by independent bodies on a regular basis. Germanischer Lloyd, with whom we have been working closely on developing and constructing ship propellers for years now, has certified us according to DIN ISO 9001/2000."

**SPECIAL PROPELLERS FOR EACH TYPE OF SHIP** It would take a whole book to explain in detail how a ship propeller is developed, and it would be full of formulae, diagrams, graphs and special terminology. The requirements of a propeller come from the shipping company and the building yard. A ship propeller is a real "workhorse": when a container freighter is at sea, the propeller rotates up to 140,000 times every day in order to turn the power produced by the main engine(s) into thrust and speed. The tips of a propeller rotate at a speed of up to 45 metres a second. A ship's propeller is also a major source of oscillation – when the stern shudders, so too does the entire ship along with the crew, the passengers and any sensitive technical equipment. "A propeller designed for a passenger ship must demonstrate much better oscillation behaviour than a part which is destined for a container freighter," says Urban. Another challenge faced by anyone developing ship propellers is the so-called "cavitation behaviour of a vane in the various positions in the wake". As the propeller rotates, forces are released which can affect the propeller's surface and, in the course of time, cause damage

to its sensitive surface structure. This can not only reduce the lifespan of the drive, but can also adversely affect the ship's abilities and seakeeping performance. The effects of cavitation therefore have to be kept at an absolute minimum. The composition of the metal alloy plays an important role in this respect, as it can heavily influence the strength of the propellers.

**FROM A SCALE MODEL TO A FULL-SIZED PROPELLER** An important guideline for the dimensions of a ship's propeller is the shape of the ship's hull. This is put through rigorous testing in a ship model basin in order to optimize the design using a customized scale model (usually 1:30) of the planned propeller. The results of these tests form the basis for construction of the full-sized ship propeller. Through the years, propellers have not only become more precise, but also heavier and larger. "In order to achieve 70 to 80 megawatts (MW) of power, a propeller has to weigh around 100 t and measure just under ten metres in diameter," explains Urban. "These are dimensions that were quite simply inconceivable ten years ago."

Developing the alloy for a propeller and then casting it are where technical expertise comes into play. These days, processed alloys tend to contain copper and aluminium. Why use aluminium, which is malleable and light, and perhaps more suited to the aviation industry? Casting technician Jürgen Eberlein has the answer: "Aluminium combined with copper adds extra strength. Following all the chemical and physical processes it is subjected to, we end up with a product that is as hard as, if not stronger than, steel." Huge quantities of raw materials are needed for the casting process, and MMG buys large amounts of scrap metal such as propellers from ships that are being scrapped. Other materials that are needed are large quantities of quartz sand for the mould, new metal and other secondary materials. Once it has been cast, the "blank" undergoes extensive post-processing with special complex machines. Casting plays an incredibly important role in the whole process of manufacturing a propeller, and for Eberlein, it is "the symbiosis of smelting and design". The moulds themselves, which look like huge sandcastles at first glance, are built in the foundry hall. At MMG, there are usually up to three propellers cast every week. Eberlein says: "On the one hand, this is due to the good number of orders we have, and on the other hand we do not want to let the furnaces cool down."

The materials used in the smelting process are turned into liquid form over 48 hours. During the smelting process, one or sometimes several samples are taken and then analysed there using special equipment. Eberlein says: "In the interests of maintaining quality, we have to adhere to our targets. If necessary, certain corrections can then be made at the smelting stage." As a rule, casting is carried out by a team of up to ten experienced experts. They work under pressure, as Eberlein goes on to explain: "Depending on the size of the propeller, the casting process has to be completed within 20 minutes." It then takes a good two weeks for the molten metal to cool down and harden, after which the propeller blank is further processed in the factory. The moment of truth comes for all the MMG employees, and in particular the management and development specialists, when the ship goes on its sea trial. Urban says: "This is when it comes to



Managing directors with experience in the trade: Jürgen Eberlein (left) and Manfred Urban are the skippers at MMG

the crunch and is either make or break." But fortunately for all those working in Waren, their propellers have so far always been given the thumbs-up.

**CHALLENGES FOR THE FUTURE** What will ship propellers look like in ten years' time? MMG is already technically in a position to cast propellers weighing up to 140 t with a diameter of 11.3 m. Such propellers would be for container freighters carrying more than the magic limit of 10,000 TEU. Urban smiles: "At first glance, they won't look that much different to what we are already installing in ships. But the differences will come down to lots of details, including improved strength, and each little detail is the result of intensive development work. One issue that is likely to play an increasingly important role in the development and design of ship propellers in the future is increasing energy savings, an issue that the shipping companies are having to address primarily due to the rising costs of ship fuel." Eberlein and Urban are also quite sure that the company will still be up there with the best in the field of ship propeller manufacture in ten years' time. It is a company that has played a significant part in the development of a technical component which has literally brought shipping a long way in the past 150 years. ■ EHA

#### MMG AT A GLANCE

**Founded:** 1875 as a machinery factory and iron foundry in Waren an der Müritz

**Start of ship propeller manufacture:** 1948

**Employees:** 160

**Annual turnover:** €35 m (2004)

**Casting capacity:** 8 medium-frequency induction furnaces with a smelting capacity of approx. 200 t

#### Product portfolio:

Ship propellers with a final weight of up to 140 t and a diameter of up to 11.30 m

**Areas of application:** Container ships, VLCCs, LNGCs, bulk carriers, special propellers for marine shipbuilding, cast variable pitch propeller components



# Call for Global Standards

Since the beginning of 2004, Efthimios Mitropoulos has been Secretary-General of the International Maritime Organization (IMO). He is steering the IMO at a time when international maritime shipping, and therefore also the United Nations shipping organization, needs to get on top of some particular challenges.

FIRSTLY, GLOBALIZATION IS RESULTING in a considerable increase in maritime shipping, with more and more ships transporting bigger and bigger loads. At the same time, governments and the general public are becoming increasingly aware of the dangers that maritime traffic poses to the oceans and coastline. And last but not least, since 11 September 2001, protecting the transport chain against terrorist attacks is now a matter of the utmost urgency. The IMO can boast an impressive track record in safeguarding people's lives at sea and keeping the oceans clean. But the international regulations nevertheless need to be constantly reviewed and updated in order that they remain effective in view of developments in technology and the global economy. At the same time, the IMO is having to defend its role as the international platform for laying down safety standards. Its relationship with the EU in particular needs to be redefined. With his many years as Secretary of the IMO's Maritime Safety Division, Efthimios Mitropoulos is more than familiar with the way the IMO works and the challenges it faces. In the following interview with "nonstop", he explains how he envisages the IMO functioning in the future.

**NONSTOP:** After 18 months in office as Secretary-General, where do you see an urgent need for action by the IMO in the sense of the central theme *Safer Shipping and Cleaner Oceans*?

EFTHIMIOS MITROPOULOS: The IMO has adopted international legislation covering all essential aspects of safe shipping, security of transport and protection of the marine environment. But not all of these instruments have come into force yet. It will therefore be a priority for the IMO to press for the necessary number of ratifications.

On the environmental side, the 2000 Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances and the 2001 and 2004 conventions on anti-fouling systems and ballast water management need to be ratified and brought into force as soon as

possible. Urgent action has already been taken to address the question of maritime security, but I think more needs to be done, particularly with regard to the protection of strategically sensitive sea lanes. The Strait of Malacca is a major case in point. World trade depends on the Malacca Strait shipping lane remaining open for international navigation at all times. The IMO intends to convene a meeting in Jakarta in September on protecting the Strait against piracy and armed robbery. The IMO will also have to address safety standards aboard non-convention ships. The tragic ferry accidents in places such as Bangladesh, the Philippines and the Maldives over the past two years have highlighted how devastating these incidents can be in terms of loss of life. The IMO has already promoted safety codes for non-convention vessels in Asia and the Pacific, Africa, the Caribbean and the Mediterranean, and will continue to assist countries in avoiding these tragedies.

**Have the measures adopted in the wake of the major maritime accidents of recent years really resulted in an increase in ship safety?**

The numbers of ships lost, the proportion of the world's fleet lost, lives lost at sea, oil spill incidents and bulk carrier accidents are on the decrease. There are many factors playing a part: improvements in technology, better seafarer training, more robust inspection regimes, closer cooperation and

*"I consider the preservation of unity among the IMO members as my paramount duty."*

information sharing among port states, greater awareness of the importance and vulnerability of the marine environment – they all make a significant contribution. But it is my belief that the measures adopted by the IMO and applied throughout the world's fleet provide the framework for these improvements.



**Is the IMO monitoring the proper implementation of the international regulations on ship safety and environmental protection by the individual member states?**

IMO conventions require member states to furnish the IMO with information and this can shed some light on how comprehensively they are fulfilling their obligations. In the interests of transparency, we are in the process of putting a great deal of this information into the IMO's Global Integrated

Information System (GISIS). Even more important will be the voluntary audit scheme for member states. This scheme will monitor the implementation of international regulations. It will enable the IMO to target its assistance within the countries that undertake an audit towards those areas where such assistance is most needed and will have the best effect. The United Nations General Assembly and a great number of IMO member states have repeatedly welcomed the IMO's initiative to develop this scheme.

**Is the IMO – with its more than 160 member states and the correspondingly lengthy ratification processes – equipped to react in an appropriate and timely manner to the turbulent changes in ship technology, ship sizes and cargo volumes?**

There are a few things that need to be borne in mind here. Firstly, it could be argued that a greater number of member states actually brings about a greater likelihood of speedy ratification. The entry-into-force criteria of most IMO tech-

nical measures have two components – the number of states that ratify them and the proportion of the world's fleet that those states represent: the more states become members, the sooner the criteria are likely to be achieved. Turning to the real question, which is: how well equipped is the IMO to react in a timely fashion to changing events? To my mind, timeliness, in this respect, means the proper balance between reacting quickly on the one hand and, on the other, ensuring that whatever issues may be raised receive thorough and comprehensive consideration and, once new standards are adopted, that they stand a good chance of wide and effective implementation. A knee-jerk reaction can be as undesirable as dragging your feet. I think the IMO achieves this balance very well. The organization's response to certain incidents, such as certain high-profile vessel casualties and, of course, the 2001 terrorist atrocities in the United States, was rapid indeed. Other issues have necessitated and received a more measured approach and this is how it should be.

**Do you see any danger of over-regulation in sea shipping through the immediate measures taken after serious accidents?**

Over-regulation is always potentially a problem, but it is something of which the IMO is aware and, as a result, the organization is now putting more emphasis on the implementation of existing legislation than on the development of new measures.

**Can the concept of goal-based standards in conjunction with the construction rules of the classification societies facilitate the process of setting technical standards?**

The concept of goal-based standards – as opposed to the prescriptive methods that have served us well thus far but which, nevertheless, have inherent limitations – has the potential to

change the maritime safety paradigm permanently and for the better. I think it is probably fair to say that, without the constructive manner in which classification societies have embraced the concept through the IACS, it might so easily have foundered. Concerning the rules of classification societies, I have, of course, been following closely the recent development of common rules within the IACS and was very pleased to hear about the successful outcome of the recent meeting in Paris. I very much welcome the news that the IACS, which is the IMO's principal technical advisory organization in consultative status, will continue to serve the causes of safety and environmental protection in a united manner – and I look forward to the IACS's objectives for the common rules in the drafting stage being achieved.

**Do you see the central role of the IMO as a legislator for international sea shipping endangered by individual states' measures or independent regional initiatives – e.g. through the USA or the EU?** I have always contended that the main argument against unilateral or

regional legislation for international shipping is that it simply makes no sense. The very structure of shipping, in which the prime assets physically move between countries, between different regions of the world and, therefore, between different legislatures, makes internationally agreed and universally applied standards an absolute prerequisite. There is simply no room for unilateralism or even regionalism in the regulation of shipping – unless the need for regional standards has been recognized and sanctioned by the IMO, such as in the case of the Stockholm Agreement on ro-ro passenger ship damage stability standards or the MARPOL Special Areas and Particularly Sensitive Sea Areas (PSSAs), and so on. The IMO was founded to provide a global forum for governments to meet, discuss, exchange views and conclude the adoption of international technical standards, which, once ratified through national legislation, these same governments must respect and implement throughout. Through the IMO, countries with maritime interests consent to be bound by international conventions on maritime safety and protection of the marine environment which they themselves develop and adopt (at the international [IMO] level) and ratify (at the national level). So, returning to your question, if the IMO's central role were to be threatened, the consequences could be very serious. Indeed, on my appointment as Secretary-General, I stated that I considered the preservation of unity among the IMO members as my paramount duty, adding that I would, within the powers of my office, do whatever might be deemed necessary to achieve this.

**Could the cooperation between the IMO and the EU be improved by regular consultation before decisions are taken?**

The European Commission already enjoys consultative status at the IMO and, as such, is able to participate in debates and discussions within our committees, subcommittees, working groups and so on. And, of course, all the 25 member states of the European Union are also members of the IMO and many of them are extremely active participants.

**What is your standpoint regarding the declared intention of the EU to become a member of the IMO and a signatory to its most important conventions and to speak with one voice in London on behalf of its 25 member states? In your opinion, could the inclusion of the EU into the IMO structures counteract the tendency towards regional solutions?**

The input of the EU countries to the IMO debate has, since the organization's inception, been of paramount importance as a considerable number of the technical and legal proposals to upgrade the IMO's regulatory regime have originated from European member countries. They have, therefore, been instrumental in the decision-making process and in the development of the IMO's final stance on all items on its agenda. This process is not just about presenting positions agreed beforehand; it is about negotiation and compromise undertaken in a transparent way and very often within a tight timetable. My concern is that, should there be a change to the present regime, the technical debate at the IMO, which is of such benefit to the final outcome, will henceforth take place outside of the organization. In such a case, the IMO will be deprived of the technical arguments that individual EU countries might otherwise air at the organization, thus assisting the whole of the IMO membership to reach conclusions on the basis of a range of sound and valid arguments. For decades, the experience and the enormous depth and breadth of technical competence in shipbuilding, finan-



*“The concept of goal-based standards has the potential to change the maritime safety paradigm permanently and for the better.”*

cing, insurance, ship management and ship operation of a wide variety of European national administrations operating in very differing trading circumstances some in the short-sea sector, others in cross-trading, many with fragile environmental considerations have enriched the quality of the debate at the IMO and helped produce sound, well-founded legislation. To make balanced decisions, we need as many views as possible and any change to a system that has served us well may diminish the effectiveness and timeliness of the IMO decision-making process, with possible negative repercussions for the eventual outcomes adopted and their implementation.

**Would the IMO statutes permit membership of the EU from the legal viewpoint, and would such an application be capable of attracting a majority? How would it be possible to secure the voting rights and the continued cooperation of the EU member states within the IMO?**

The IMO Convention states that membership of the organization shall be open to all states. Intergovernmental organizations may enter into cooperation agreements with the IMO but they are not eligible for membership. So far, 39 intergovernmental organizations, including the EU, have concluded such agreements. For an intergovernmental organization to become a member of the IMO, the convention would need to be amended and the procedure for this is quite clear. Article 66 of the IMO Convention states that texts of any proposed amendments shall be communicated by the Secretary-General to members at least six months in advance of their consideration by the assembly. Amendments need to be adopted by a two-thirds majority vote of the assembly and would enter into force twelve months after being accepted by two-thirds of the members of the organization, excluding associate members. ■



IMO headquarters, located directly on the Thames in London

PHOTOS: INTERNATIONAL MARITIME ORGANIZATION



# Surveyors Don't Grow on Trees

The shipping sector is booming and Germanischer Lloyd needs more and more surveyors. Right away, if possible. But that is just not feasible. New staff members have to be trained – and good training takes time.

FIRE, CO<sub>2</sub> ALARM, LOW OIL in the diesel engine, failure of the steering gear. But that's no reason to panic. Tobias Neumann-Overholthaus is only simulating an emergency. As calm as can be, he is standing in the engine room of the feeder vessel and examining the equipment. Is the alarm triggered properly, can the rudder be operated manually, does the diesel generator switch off automatically? What he is doing is the day-to-day job of a surveyor. But he is not a surveyor – not yet, anyway. Neumann-Overholthaus is a trainee at Germanischer Lloyd and is currently passing through the internal course of schooling to become a fully fledged surveyor.

He is one of 160 trainees undergoing instruction at Germanischer Lloyd this year. Last year there were 82, and in the year before 48. This exceptional growth is a result of the unabated boom in the shipping sector. At present, some 660 surveyors are working for Germanischer Lloyd worldwide. In the East Asian newbuilding yards especially, an increasing number of hands are needed. Additional advanced training for this area has closed the initial gaps there, but this will not be enough. The yards are putting newbuildings onto the oceans with the blistering pace of an assembly line. And this growing fleet must also receive regular attendance. Every year, the ships must be surveyed and the certificates updated. No document may be permitted to lapse. Only with the valid certificates of a classification society may a ship sail on international waters, and enter or leave a port.

**BIG PROBLEM: THE PREREQUISITES** In the past, surveyors were usually former seafarers. For many years, they had plied the seven seas, hearing every wrong rattle and clatter of their engine, even while in a deep sleep. And so, when they got older and decided to work ashore, many signed on at a classification society. But all that is history now. There are hardly men of this calibre to be found nowadays. And little wonder too, since nobody goes to sea for half their lives any more.

Today, applicants for the job are much younger. They come from the yards, from design offices, or straight from university. All are highly qualified engineers, but the number of those who have ever sailed on a modern ocean leviathan is decreasing. This is a factor which Germanischer Lloyd – like other classification societies – must take into account.

For this reason, the Hamburg classification society puts particular emphasis on rigorous instruction. The training programme is arranged to be flexible, depending on the experience of the new hand. "We send some people to sea for two months in long-distance trade," says Jens Berner, surveyor at the Hamburg Station and one of the instructors. "Tobias Neumann-Overholthaus, on the other hand, could already survey the ships by himself," Berner is convinced. This is because Tobias Neumann-Overholthaus was at sea for almost three years during his training as a ship's mechanic, holds



*"The trainees must internalize the philosophy of the Society, and understand the system and its structure."*

Brigitte Kuhn, Head of the GL Training Centre

the technical licence, and also has a master in offshore technology. If that were not enough, he also gained experience at shipyards during his period of study.

And yet he still has to go through the entire course of preparation. For the first three months, he passed through various selected stations, like all new staff. There he received the first insight into the diverse tasks of a classification society. Although previously he had been well able to imagine how the work was done in general, he only really saw how the "class" operated in detail when actually on the job.

This initial internship was followed by two months of theory and currently another five months of practical work, during which he is taking his first independent steps under the supervision of experienced surveyors. This total of ten months represents the minimum for the younger "apprentices". But Germanischer Lloyd does not want to throw even old hands into the deep end, and for them this means about six months of training. Nobody wishes to jeopardize the high quality standard of the Society. In addition, the IACS (International Association of Classification Societies) and the EMSA (European Maritime Safety Agency) – amongst others – have committed all classification societies to undertake proper training, and this is also monitored closely.



Above: Within the scope of their tasks, surveyors must supervise the testing of the lifeboats as well as the explanation on how to use the life-rafts. Below: As a trained ship's mechanic, Tobias Neumann-Overholthaus is well acquainted with switchboards, such as this one for monitoring the bilge and bunkering system



PHOTOS: SIMONE HEDENREICH/GERMANISCHER LLOYD (3), MICHAEL BOGUMIL



**BATTLING WITH THEORY** The practical training takes place at the various international stations of Germanischer Lloyd. It is only for the theoretical training that all new colleagues come together in Hamburg. For two months, they study in the Training Centre in the “Elbhof”, an art nouveau house on the River Elbe, less than 300 metres from the GL Head Office. “The trainees must internalize the philosophy of the society, and understand the system and its structure. And they must also familiarize themselves with all the resources and working tools provided here in Hamburg,” says Brigitte Kuhn, Head of the Training Centre. The Internet, internal databases and reference works are available to them. Every year, new guidelines for classification and the international codes and regulations – SOLAS, MARPOL, Load Line, STCW 95, ISPS Code or ISM – are added. Because it is easy to lose track of the big picture, it is all the more important to know exactly where to find what information. And that is not all. The coaches, almost all of whom are experts at Germanischer Lloyd, prepare the trainees for everyday life. How do I write a report? How do I conduct myself when dealing with shipowners, masters and naval architects? What are my responsibilities? Brigitte Kuhn knows that the syllabus is enormous and a lot is demanded of the trainees. Nonetheless, they regard the time spent in the Hanseatic City as indispensable: “The time here gives them an uninterrupted period in which they can get used to the work. Later they will always be under pressure and will not have so much time available.” However, the Training Centre is not just a “swot shop”. “It is above all a platform too,” says Kuhn. The new staff should get to know the Head Office and their

colleagues as well as possible. Despite the thorough training, the field service staff will remain generalists in several fields. They will not be specialists for all the details – and in fact need not become specialized, because the experts are available in Hamburg. A primary target is therefore to interlink the personnel in Hamburg and those at the stations, both within Germany and abroad, in the best possible way. The future field staff need to know who in Hamburg is the expert for a certain topic. “And so it’s all the better if they have met each other personally beforehand,” Brigitte Kuhn points out.

**PRACTICAL TUTORED TRAINING** Some time in late summer of this year, Tobias Neumann-Overholthaus will be formally named Surveyor. At that time, he will have been at Germanischer Lloyd for almost a year. But he will still not be allowed to survey a ship or sign a certificate on his own. The last leg of his apprenticeship, the “practical tutored training”, will then begin. For each and every survey type – for ship newbuildings and the fleet in service and then for all the various ship types – he must still be duly authorized. Oil tanker, passenger ship, gas tanker, welding inspection, materials testing, ISPS Code – the list constitutes a booklet in itself. Step by step, he will receive the various authorizations – and only then will he be entitled to accept independent responsibility for these areas. When exactly he will become a “man for all jobs”, nobody can say for sure. If he stays in Hamburg, he is likely to become an authorized surveyor for container ships very quickly, because vessels of this type tie up daily in the port. In contrast, his authorization for gas tankers may take years in this harbour. ■ NL

Surveyors observing how the lifeboat is launched



PHOTOS: HDW, SIMONE HEIDENREICH/GERMANISCHER LLOYD, MICHAEL BOGUMIL



The new submarines of the German Navy have already been equipped with fuel cells by HDW

# Full Steam Ahead for Fuel Cells

Sleek yachts, comfortable passenger ferries and modern naval vessels – all stand to benefit from the future use of ecological fuel cells. Up-to-date insights into the state of research are being offered by the H2Expo, a specialist conference and trade fair for hydrogen and fuel cell technologies at the end of August in Hamburg.

HYDROGEN IS THE ENERGY CARRIER of the future. With its high efficiency and low ecological burden, it offers an economical alternative to conventional fuels. Small wonder that the shipbuilding industry is also in the process of rethinking, by promoting research into maritime fuel cell technology against a backdrop of increasing energy costs and ever stricter environmental regulations. Germanischer Lloyd too has been active in this field of research and development for several years now. As a founding member of the Initiative for Fuel Cells and Hydrogen Technology run by the State of Hamburg, Germanischer Lloyd is also participating in the H2Expo. Dr.-Ing. Gerd-Michael Würsig, Head of the Section for Fuel Cell and Process Technology within the Advanced Engineering and Strategic Research Division of Germanischer Lloyd, is chairing a workshop on the topic “Maritime Application of Fuel Cells”. “We are already expecting the first shipboard applications of fuel cells within the next ten years,” is the forecast by Dr. Würsig. Power ratings of several hundred kW can be achieved today, with future output levels reaching into the MW zone. Owing to reduced CO<sub>2</sub> emissions, this energy converter is

of particular interest for ships sailing in coastal waters. Yachts, sportboats and small ferries stand to profit in the short term. However, fuel cell technology has more advantages to offer: “The low levels of noise and vibration are decisive plus points for naval ships as well as passenger, research and official vessels in ecologically sensitive waters,” says Dr.-Ing. Würsig.

**PRACTICAL RESEARCH** To plumb the potential for ship technology in a practical way and to gain operational experience at sea, Germanischer Lloyd has teamed up with the HDW subsidiary HDW Fuel Cell Systems (HFCS) to develop a demonstrator. An FC system with an output of 160 kilowatts has been integrated into a 20-foot container. The plant can easily be integrated into the shipboard technology of a wide range of ships. After initial tests onshore, pilot projects will be undertaken on ships in the course of 2005.



*“We are already expecting the first shipboard applications of fuel cells within the next ten years.”*

Dr.-Ing. Gerd-Michael Würsig, fuel cell expert

The certification of the plant will take place according to the Guidelines for Fuel Cell Systems published by Germanischer Lloyd. HDW is already successful worldwide with the commercial application of fuel cells in submarines. For instance, the four new submarines of the German Navy (type U-212) were equipped with FC systems. Fuel cells have long since become part of everyday work in certification. ■ LL

For further information: Dr.-Ing. Gerd-Michael Würsig, Expert for Fuel Cells, Phone +49 40 36149-621, gerd-michael.wuersig@gl-group.com



# News from Industrial Services

## Seminar

### OCTOBER

18–19.10.2005, Hamburg

#### 2nd Seminar on the Project Certification of Wind Turbines

In view of the favourable future perspectives for wind energy, there is an increased need for information on the profitability of wind farms. To a decisive degree, the profitability depends on the wind volume at the chosen site and the plant dimensions, which together must ensure a maximum level of operating economy, safety and availability. For operators of wind turbines, project developers, financiers, engineering offices and turbine manufacturers, the second seminar on the project certification of offshore and onshore plants offers in-depth information on the three key topics of site analysis, design assessment and risk minimization. The seminar will examine the following questions, amongst others: With which international standards must the plants comply? How can accurate yield forecasts be made? Under what conditions is the wind volume measured? For further information and registration: Jutta Wacker, Phone: +49 40 31106-1144, jutta.wacker@gl-group.com



Test installations will provide an insight into the potential risks for offshore wind turbines

### WIND ENERGY

#### First Offshore Wind Farm in Germany Planned

From 2007, twelve prototype turbines generating 5 MW each are to be put up around the FINO 1 research platform in the North Sea. The test farm for wind turbines will be run by the German industry foundation for the use of and research into wind energy at sea, and the testing and research programme is backed by the German Federal Ministry for the Environment. The 20 foundation members include Repower, Enercon, Prokon Nord, and the states of Lower Saxony, Schleswig-Holstein and Mecklenburg-West Pomerania, along with RWE, E.ON, Vattenfall, various construction companies, VDMA (German Engineering Federation) and Germanischer Lloyd WindEnergie GmbH (GL Wind). The results of the research project will allow manufacturers, operators, banks and insurers to assess possible risks with greater accuracy. GL Wind will be offering its scientific expertise in an advisory capacity and developing current offshore wind guidelines further by means of practical testing. Once the test phase is over, the turbines are to be put into regular operation as part of the first offshore wind farm in the German North and Baltic Seas.

### BALTIC SEA PORTS

#### ISO Certification in Demand

After Lübeck, Sassnitz, Wismar and Stralsund, Rostock is the latest Baltic Sea port to have been inspected by Germanischer Lloyd Certification GmbH according to ISO regulations. The certification shows that the port authority satisfies the stringent criteria of DIN EN ISO 9001:2000. These apply to the operation and expansion of the port infrastructure, the rental and leasing of property, the development of the port and its services, and port marketing.

### EXHIBITION

#### Risk as Opportunity

## CHANCE : RISIKO

With the exhibition "Chance: Risiko", the Munich Re insurance group is making an impassioned plea for a risk-taking culture. This unusual exhibition marks the 125th anniversary of the company, which takes over the risks covered by primary underwriters, e.g. for oil platforms, satellites and natural disasters. With the motto "No opportunity without risk", the visitor is presented with typical milestones along his personal risk history. Perhaps it is too risky to get married, because in Germany every third marriage ends up on the rocks? Maybe we should rather not drive cars, because accidents will happen? People yearn for safety and they are constantly striving to create a safe environment for themselves. Insurers and expert bodies, such as Germanischer Lloyd, which provided support for the exhibition with informative material, have set risk minimization as one of their chief goals. With a low residual risk of 0.01%, shipping is one of the safest transport systems: today, seaborne commodities have a 99.99 per cent certainty of reaching their ports of destination. Classification societies form an integral link in the chain of responsibility for maritime safety. With insurance premiums totalling 700 million euros in the transport business, Munich Re is the world's largest reinsurer in this sector. The exhibition can be seen free of charge at the "Haus der Kunst" in Munich, and will be open until 1 November. Further information is available on the Internet at [www.chancerisiko.de](http://www.chancerisiko.de)

### ISO 9001

#### Naval Arsenal Awarded Quality Certificate

The German naval arsenal in Wilhelmshaven has been certified according to DIN EN ISO 9001:2000. Christian Brix, Managing Director of the civilian agency of the Federal Office of Defense Technology and Procurement (BWB), is happy with the results of the GLC certification: "This serves as proof that we work to the same exacting quality standards as our industry partners," said a delighted Brix. The naval arsenal ensures the readiness of some 250 naval ships and 110 land bases. On top of the headquarters, there are also two arsenals, in Wilhelmshaven and in Kiel, as well as branches in Olpenitz and Warnemünde.

### WINDTEST

#### Expanding the Wind Energy Competence

The cooperation between Germanischer Lloyd WindEnergie GmbH and WINDTEST Kaiser-Wilhelm-Koog GmbH (WTK) in the northern German state of Schleswig-Holstein is growing closer and closer. GL Wind has taken over the shares owned by the State of Schleswig-Holstein, the District of Dithmarschen and Investitionsbank Schleswig-Holstein, and now holds a 70% interest in the joint venture. The remaining stock belongs to the energy utility E.ON Hanse (25%) and the municipality of Kaiser-Wilhelm-Koog (5%). With the acquisition of these shares, the GL Wind Group is intensifying its involvement in prototype tests, periodic monitoring, project certification, research and the comprehensive assessment of potential sites. The over 50 employees at WTK and the joint subsidiary WINDTEST Ibérica S.L. (WTI) are engaged in the measurement of loads, power curves, noise emissions and immissions, electrical properties and wind potentials, and also produce expert appraisals on wind conditions, energy yields, noise propagation and shadow impact. Measurements and examinations are carried out worldwide.

### PERSONNEL NEWS



#### New Managing Director for Germanischer Lloyd Industrial Services Holding GmbH

Acting jointly with Dr.-Ing. Hans Berg, **Lutz Wittenberg** will be continuing the expansion of business activities in the fields of oil and gas, wind energy, civil works, system certification, and materials and failure analysis. Until now, Lutz Wittenberg had been Director of the Division Mediterranean, Middle East, Black Sea and Africa. He succeeds Dr.-Ing. Bernhard Richter, who will be entering into retirement at his own request after more than 28 years of service for Germanischer Lloyd.

#### Management of GL Wind Extended

With effect from September, Dipl.-Ing. **Bodo Helm** has been appointed as a member of management. Together with Christian Nath, he will continue the worldwide expansion of GL Wind. As a mechanical engineer, Bodo Helm has been familiar with his new employer since his time as a student: his diploma thesis involved the development of computational software for the laying of offshore pipelines. During his time as project manager in the design and development department of a foundry, Bodo Helm also had dealings with Germanischer Lloyd. He compiled the test documents and the associated calculations for the type testing of a rotor hub.





## Trade Fairs

### SEPTEMBER

20–23.09.2005, Poznań, Poland

#### Polagra Food

Germanischer Lloyd Certification GmbH  
www.polagra-food.pl

20–24.09.2005, Husum, Germany

#### HUSUMwind

C14, Hall 1  
Germanischer Lloyd WindEnergie GmbH  
www.husum-wind.de

### OCTOBER

26–28.10.2005 Copenhagen, Denmark

#### Copenhagen Offshore Wind Conference & Exhibition

021A, Hall A  
Germanischer Lloyd WindEnergie GmbH  
http://offshore.windpower.org

### NOVEMBER

23–25.11.2005, Mérida, Mexico

#### EXPRODUCTOS

Germanischer Lloyd Oil and Gas GmbH  
www.exproductos.com



Always spectacular: touchdown on FINO 1

### FINO 1

#### Press Conferences in the North Sea

FINO 1 has been the focus of media attention twice this summer: at the end of May, Germanischer Lloyd's Press and Information department organized a trip for journalists to the research platform, which is located in the North Sea around 45 km north of Borkum. At the beginning of July, Germany's largest union of scientific journalists, Wissenschafts-Pressekonferenz e.V., also held its event, "Offshore Farms: Wind Power versus Nature?", at this unusual location. TV, print and radio reporters were informed about the results of the research conducted on FINO 1 by Christian Nath, Managing Director of GL Wind, and experts from WINDTEST Kaiser-Wilhelm-Koog, the German Federal Maritime and Hydrographic Agency in Hamburg, the German Wind Energy Institute in Wilhelmshaven, the Alfred Wegner Institute for Polar and Marine Research in Bremerhaven, and the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. The meteorological, hydrographic and biological data provide information about average wind speeds throughout the year, maximum wave height, currents and the development of underwater life forms. There is substantial interest in the data generated by GL Wind's research platform – it will serve as a basis for assessing and granting approval for planned offshore wind farms. For further information: Gundula Fischer, Project Certification, Phone +49 40 31106-1145, gundula.fischer@gl-group.com and Detlef Kindler, WINDTEST Kaiser-Wilhelm-Koog GmbH, Phone +49 4856 901-13, kd@windtest.de or online at www.fino-offshore.de



Glimpse of a "Royal" passing by: the Queen Mary 2 seen from the research platform

## News

**NEWS FROM THE WIND ENERGY SECTOR** Keep up to date with wind energy research, studies and guidelines with "beaufort 6", the new publication from Germanischer Lloyd WindEnergie GmbH. The newsletter is published four times a year. Please contact [pr@gl-group.com](mailto:pr@gl-group.com) for your personal copy or download it online at [www.gl-group.com](http://www.gl-group.com) > Client Support > Download Center.



PHOTOS: GERALD CUBITT/OKAPIA, GERMANISCHER LLOYD

# Caution, Iceberg in Tow!

Offshore rigs in ice-infested waters have to withstand fluctuating ice loads, extreme temperatures and unusual forces of nature. New guidelines from Germanischer Lloyd Oil and Gas GmbH have been published regarding the construction and protection of such rigs.

THE ARCTIC OCEAN, the Caspian Sea and parts of the Baltic are not only areas where ice drift occurs; they are also areas where an increasing number of offshore rigs are being planned, constructed and put into operation. Experts at Germanischer Lloyd Oil and Gas GmbH (GLO) took a closer look at how these rigs are constructed and safeguarded. The new guidelines are based on a research project on ice barriers to protect offshore structures, which was jointly carried out by the engineer's office Impac, the Kiel shipyard Lindenau and GLO. Some of the results of the project were then put together with their joint expertise and existing standards from other institutions to create the "Guidelines for the Construction of Fixed Offshore Installations in Ice-Infested Waters". The guidelines consist of seven chapters and are designed to give constructors and operators of offshore installations a comprehensive overview of the most important factors that need to be taken into consideration when building and protecting oil and gas rigs (see summary of contents below).

**DEMAND FOR ICE ALERT PLAN** On top of general rules relating to analysing ice structures, the guidelines provide information on calculating the forces that ice places on different surfaces. Chapter three in particular focuses on ice loads.

How can they be reduced by means of passive measures such as erecting barriers, and alternatively through active ice management, e.g. ice-breakers, in order to reduce the pressure from the ice or to change the direction of drift of icebergs? Other sections of the rules address the issue of the materials used for offshore construction projects and how they are processed, as well as the construction of barriers and the rigs themselves. In this respect, it is important that all the installations, including equipment on deck, are able to withstand the extreme external temperatures. The guidelines conclude with comprehensive advice on safety on board. The most important course of action is constantly updating an ice alert plan in order to safeguard everyone on the rig. Last but not least, the rules make recommendations regarding rig evacuation. ■ IT

For further information: Ulrich Hachmann, Head of Structures and Offshore Installations, Phone +49 40 36149-267, [ulrich.hachmann@gl-group.com](mailto:ulrich.hachmann@gl-group.com). We would be happy to send you a copy of the guidelines. Order forms can be found on the Internet: [www.gl-group.com](http://www.gl-group.com) > Client Support > Rules & Guidelines

### GUIDELINES AT A GLANCE:

**The contents of the Guidelines for the Construction of Fixed Offshore Installations in Ice-Infested Waters at a glance:**

1. Introduction
2. Calculation methods
3. Ice load reduction measures
4. Materials and processing
5. Rigs (construction)
6. Ice barriers
7. Safety, life-saving and evacuation





# Playing It Cool

Whether you're talking about crisp vegetables, fish fresh off the boat, or juicy steaks from Argentina, the demand from consumers for a wide range of fresh, high-quality perishable goods is still growing. And so today's products have to travel much farther than ever before. So where's the problem? The unbroken chain of refrigeration is only as good as its weakest link.

IN THE WORLDWIDE EXPORT BUSINESS, over 116 million tonnes of temperature-sensitive and easily spoiled goods – so-called “perishables” – are transported every year. These include fish, meat, dairy products, fruit and vegetables as well as medicines, plants, chemicals and even sensitive industrial goods (e.g. electronic parts). The smallest interruption of the cool chain can lead to a substantial deterioration in quality or even to the complete spoilage of the product. Although logistic service providers are well aware of this problem, insufficient cooling remains the chief reason for complaints and damage claims regarding the transportation of perishable commodities. Financial losses and the corresponding loss of image are then the painful consequences for carriers and cargo handlers. For all partici-

pants in the supply chain process, absolute precision in the transport and storage procedures is simply indispensable. These companies are now able to make use of the “Cool Chain Quality Indicators” (CCQI) offered by Germanischer Lloyd in cooperation with the Cool Chain Association. As an industry standard for cool chain logistics, they evaluate the reliability, quality and qualifications of companies engaged in the transportation, handling and storage of perishables and temperature-sensitive products. As a world first, the CCQIs permit the quantitative and qualitative assessment of technical installations, processes and staff qualifications.

**CLEAR-CUT CRITERIA** The CCQI standard is made up of two main elements. Firstly, a “Cool Chain Quality Conformance

*Insufficient cooling remains the chief reason for complaints and damage claims regarding the transportation of perishable commodities.*

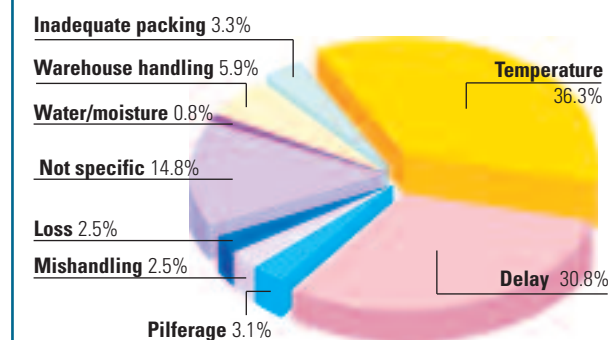
(CCQC) Check” probes for the minimum requirements that a company must meet. For example, here the spotlight is on whether special personnel are responsible for the transport and storage of the refrigerated (“reefer”) cargo, where and how often the temperature is checked, and how accurately and how frequently subcontractors are monitored and appraised. Further building blocks comprise the actual Cool Chain Quality Indicators (CCQI), which permit benchmarking, i.e. the peer group comparison of the certified companies. This benchmarking is based on a system of points that are awarded for meeting certain quality criteria. The total number of points achieved must exceed a certain figure to qualify the company for a CCQI certificate, and is an expression of its proficiency. The maximum possible number of points is 100.

In order to assess a transport service, the cool chain is subdivided into twelve individual sequences (“operations”), permitting a comparison of the various companies. The standard covers the classic logistic links of all carriers. Here the areas of truck and trailer transport, aircraft transport, apron handling at airports, long-term storage, short-term storage and distribution, as well as further operations in ocean transport by reefer ship and container and in seaport and terminal handling, are given a thorough examination (see graphic). Application of the cool chain indicators to the individual sections accounts for diverse aspects, such as the training of the staff, the refrigerating equipment, the handling and the maintenance of the transportation units.

**BENEFITS FOR ALL** Since the CCQIs not only register the quality of the cool chain and make it transparent, but also assess it in relation to that of other firms, they are a valuable aid for both retailers and logistic service providers. Potential clients can obtain a picture of the quality offered by the service providers before actually placing an order. At the same time, transportation and warehousing companies are given key figures with which they can effectively monitor and continuously improve their performance capabilities and competitiveness. From the training of staff, through the necessary hardware, and up to the individual handling phases, many different possibilities for improvement are identified. The CCQIs are of interest to all firms active in the organization of cool chains: carriers, shippers, airports, ports, warehousing and cold-store companies.

Whilst an increasing number of companies are interested in the CCQIs, the first certifications have already been completed. At the beginning of the year, Billund Airport (Denmark) underwent assessment and is now the first airport to be handling perishables and temperature-sensitive products with the CCQI mark of quality. One of the leading European providers of integrated logistic services, the forwarder

## NEED FOR ACTION BY CARRIERS



Breakdown of the reasons for damage claims submitted to airlines in the transportation of perishable goods (in per cent)

## BRIEF PROFILE

### About Germanischer Lloyd Certification GmbH (GLC)

Germanischer Lloyd Certification GmbH offers audits of management systems in the fields of quality, the environment, safety and benchmarking. With its network of experienced specialists and auditors in 78 countries, GLC is able to ensure comprehensive on-the-spot service worldwide. GLC is the sole certifying body for the CCQIs.

[www.gl-group.com/industrial/glc/3781.htm](http://www.gl-group.com/industrial/glc/3781.htm)

### Cool Chain Association (CCA)

The Cool Chain Association (CCA) was established in March 2003 with the aim of drawing up an industry standard and developing important performance indicators for refrigeration supply chains. This non-profit organization is a federation of companies engaged in the transport and storage of perishables and temperature-sensitive products. [www.coolchain.org](http://www.coolchain.org)



Jan de Rijk Logistics of the Netherlands, has also been issued the CCQI certificate in recognition of its fulfilment of the standard. Recently, Continental Airlines in America announced that it would also be introducing the standard. ■ IT

For further information: Claus Peter Meenke, Germanischer Lloyd Certification GmbH, Phone +49 40 36149-4836, [claus-peter.meenke@gl-group.com](mailto:claus-peter.meenke@gl-group.com)



# Uplifting Fascination

These uplifting constructions are quite rare and each is practically unique. No wonder ship lifts radiate a special kind of fascination. One of the most significant hydraulic structures in Europe is the installation at Niederfinow in the State of Brandenburg. After 70 years of trouble-free operation, it was time for a fundamental overhaul of the drive systems.

Above: View of the elevated trough. Below: Owing to the weight of the parts, many activities could only be performed with the aid of lifting appliances

MOVING AN EXTREMELY LARGE MASS vertically is the enormous technical challenge that is answered by a ship lift. With an elevating height of 36 m and a lifting capacity of 8,500 t, the ship lift at Niederfinow is a monument to German hydraulic engineering. Prior to its commissioning in March 1934, construction work went on for six years after a planning phase lasting almost two decades. The ship lift lies on the major shipping route between Berlin and Szczecin, and up to the present day still forms an important part of the waterway between the Havel and Oder rivers.

Long planning periods are typical for ship lifts, each of which must be assessed within its special environment. Feasibility studies for the colossal Three Gorges Dam project in China, for example – scheduled for completion in 2009 – began back in 1958. In the planning and implementation of this gigantic ship lift, boasting an elevating height of 113 m and 16,000 t of mass moved, Germanischer Lloyd Bautechnik GmbH (GL Bautechnik) is as much involved as in the construction of a completely new and also larger installation at Niederfinow, decided in 1997. For this new ship lift, GL Bautechnik was entrusted with the examination of the draft design and the detailed engineering documents. Although it has reached the limits of its capacity since its trough length restricts the ships' length to 84 m, the old Niederfinow lift will have to continue operations for several years. And so it was refurbished for this extended service.

The structure is moved by four electrical drives of 55 kW, each of which is synchronized by a mechanical shaft and acts on four pinions moving the trough up and down on four racks. The trough weight of 4,290 t is balanced by 128 rope sheaves and 256 suspension cables with 192 counterweights, so that only the inertial and frictional forces have to be overcome during operation. A ship chamber safety system – consisting of an inside-thread column mounted on a steel frame, a rotating lock bar synchronized with regard to the lifting or

lowering speed and a helical spring – makes sure that the trough comes to a rapid halt and does not fall in the event of an emergency.

In October 2003, the company KRANSERVICE RHEINBERG (KSR) serviced the four trough drives; this also involved exchanging the pinions and overhauling the central lubrication plant. Two drives were renewed during each of the winter breaks in 2004 and 2005. In November 2003, GL Bautechnik was asked to supervise this work on the basis of an engineering services contract. It became necessary to exchange the pinions because the mechanical wear and tear over a period of 70 years had caused the operational performance of the lifting mechanism to deteriorate markedly.

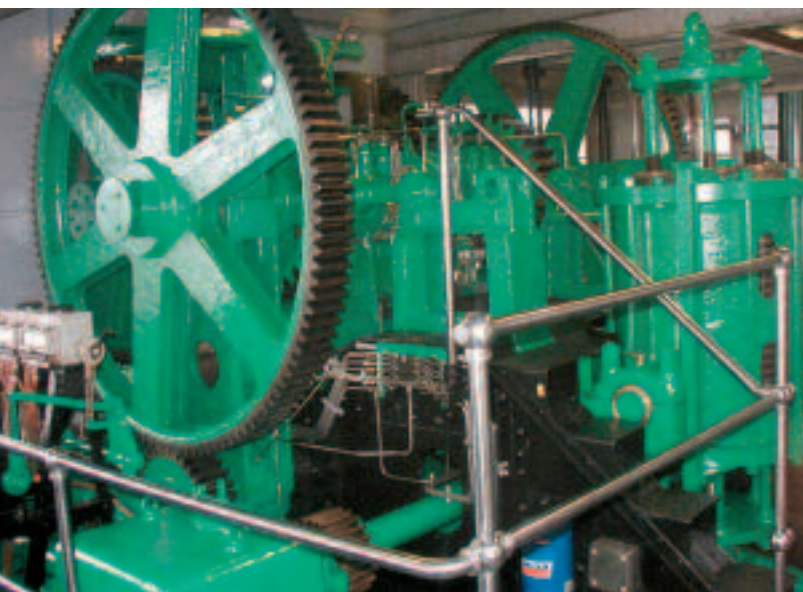
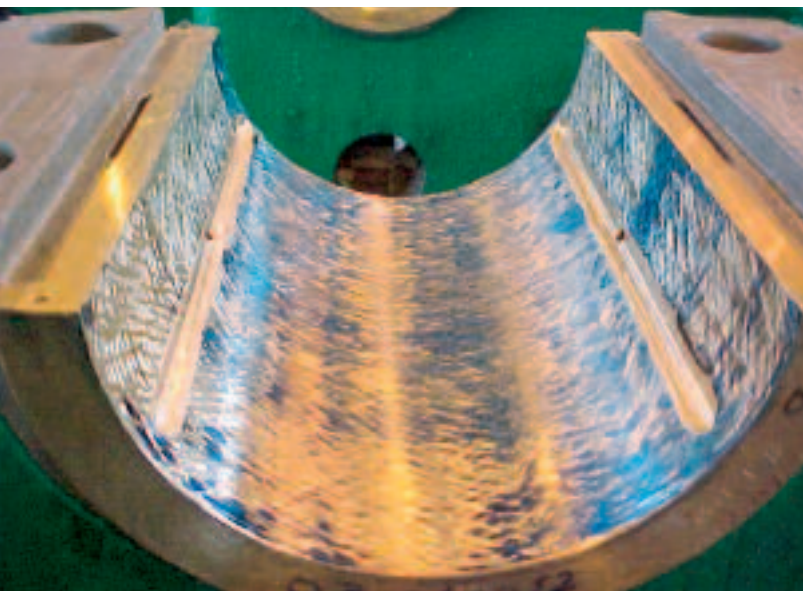


For the rehabilitation of the 592 pins of the 4 racks, these special tongs were developed in cooperation with Germanischer Lloyd and built by KSR

PHOTOS: KSR



*Since inauguration of the Niederfinow lift, the total distance of its elevating movements came to over 22,000 km.*



Picture above: The bedding-in of the bearing shells was performed  
Below: Eight weeks after the start of dismantling, it was possible to perform the first trial runs

Since inauguration of the structure, the total distance of the elevating movements came to over 22,000 km. To achieve a long-term improvement in the action of the ship lift, rehabilitation measures had already been taken in 2003 for the

pins of the four racks. Tongs especially developed for this purpose with participation by GL Bautechnik were used here.

For the rehabilitation, a technique was developed for lowering and securing the trough in the trough basin. Moreover, the materials had to be chosen for the slide bearings that had to be produced anew, since some of the old materials are no longer available nowadays. In addition, the old fit systems dating back to the 1930s were converted to the current ISO classification of fits. All new manufacturing of parts was supervised by GL Bautechnik, beginning with materials testing and ranging through the manufacturing surveillance up to acceptance of the new components. The quality standard demanded by the Waterways and Shipping Office (WSA) at Eberswalde was achieved for all individual elements of the rehabilitation project, and then duly inspected and confirmed by GL Bautechnik. On the basis of the specially developed disassembly and reassembly technique, the various assemblies were marked and dismantled with utmost care. This was followed by the examination of the old bearing parts (shafts and axles), their partial reworking by turning and grinding, the definition of new fit dimensions for the bearing shells and bushes as well as their machining to the finished size, with subsequent inspection.

**"FIT" FOR FURTHER DECADES** Eight weeks after the start of dismantling, it was possible to perform the first trial runs. After removal of the securing elements of the trough, followed by surveying and alignment, the ship lift was then put into service on schedule. "Thanks to these rehabilitation measures, the availability and operational reliability of the Niederfinow ship lift have been improved for many years to come," emphasizes Dipl.-Ing. Volker Wegner, Project Manager at WSA Eberswalde.

It was remarkable that, despite the long operating period of the lift, the wear – both in the bearings and the machinery components – had been very moderate on the whole. The robust design of the installation combined with regular maintenance, care and preventive maintenance of the plant during its operating period, in conjunction with the rehabilitation measures, justify the expectation that the installation will provide many more decades of reliable service. For both the experts and the general public, this important link of the Oder, Havel and Elbe waterways will not lose any of its fascination. ■ FH/SD

Source: "SCHIFFAHRT HAFEN BAHN UND TECHNIK", Magazine for Intermodal Transport and Logistics, No. 2/2005

PHOTOS: KSR (2), GERMANISCHER LLOYD (2)



Regular checks help to protect offshore plants against serious damage

## 400 Pages of Concentrated Know-How

"Profitability, availability, technology" was the focus of the programme for the 4th Offshore Wind Energy Conference, which took place on 14 and 15 June in Hamburg. For the first time ever, GL Wind joined forces with [www.windmesse.de](http://www.windmesse.de) as a co-organizer.

"PROFITABILITY, AVAILABILITY, TECHNOLOGY" was the focus of the programme for the 4th Offshore Wind Energy Conference, which took place this year on 14 and 15 June in Hamburg. For the first time, GL Wind joined forces with [www.windmesse.de](http://www.windmesse.de) as a co-organizer. CULINARY HIGHLIGHTS were enjoyed at the evening get-together on the "Rickmer Rickmers" windjammer. Lobster and rack of lamb were served with a fine Schloss Rheinhartshausen 2003, which prompted Christian Nath, Managing Director of Germanischer Lloyd WindEnergie GmbH, to declare: "I am a Riesling fan!" Even at the buffet, the experts kept on talking about wind energy, its potential and the new, completely revised offshore wind guideline drawn up by GL Wind. Hot off the press, this comprehensive code book is unique worldwide for the certification of offshore wind turbines and was publicly presented for the first time to the over 170 conference participants. On more than 400 pages, the

Guideline for the Certification of Offshore Wind Turbines integrates all the findings gathered through years spent in the certification of offshore installations, international standardization and diverse research projects.

Corrosion damage at the live ring and drive pinion, blade tips split open by lightning, damage to the tower caused by faulty coatings, transformer stations filled up with water – all cases of damage that are possible but can be prevented through timely checks and independent inspections by GL experts. "If all elements of this new guideline are observed and implemented, the risks can be minimized completely," was how Nath summed up the discussions of the first day. Above all, the experts from operating companies, engineering offices, insurers, universities and research facilities examined the general aspects of risk assessment as well as detailed technical questions. They agreed unanimously that the fire protection of wind turbines deserved further analysis.

Practical topics were in the spotlight for the second day of the conference: leading manufacturers presented the advantages of their various multi-megawatt plant concepts, the measure-



*"If all elements of this new guideline are observed and implemented, the risks can be minimized completely."*

Christian Nath, Managing Director of GL Wind

ment results from the research platform FINO 1 were analysed, and the consequences of the dena grid study were considered. There was general consensus that the outlook for wind energy is most promising, and that the cooperation with [www.windmesse.de](http://www.windmesse.de) should be intensified; ideas for next year's conference are already being collected. ■ CG

The Guideline for the Certification of Offshore Wind Turbines is available from Peter Dalhoff, Project Certification Off- and Onshore, Phone +49 40 36149-117, [peter.dalhoff@gl-group.com](mailto:peter.dalhoff@gl-group.com)



# The Spirits of Harriersand

Many years ago, figureheads dropped out of fashion throughout the seafaring world. Only now and then will you see a wooden "patron saint" still adorning a large sailing yacht. But their number is now increasing again. "nonstop" visited the world's only figurehead carver, who is based on the Harriersand island in the River Weser, to find out why.

SITTING ON THE BEACH, Claus Hartmann considers a huge tree trunk with deep fissures. "A man with driftwood" is what the casual observer may think – and that is fine by Claus Hartmann: "I don't want to become just another tourist attraction." And that is a very real danger, because Hartmann (48)

and his wife Birgit (32) are at present the only figurehead makers working in the grand old tradition of ship sculpture.

Even those who knock on the Hartmanns' door do not want any publicity, the latest example being the Kelly Family. For the 44-metre three-masted topsail schooner "Santa Barbara Anna" belonging to Joey Kelly, a massive figurehead of solid oak is currently in the making – an Irish beauty with a steel-stringed harp that is sounded by the wind. It all started in 1994: with his medical studies in the doldrums, Claus Hartmann fulfilled his childhood dream and produced his first work of art, a figurehead for the sailing ship "Lili Marleen". Over the years, more than 60 sculptures have come to life in this way – including the bow decoration for the large sailing vessel "Sea Cloud II", classified by Germanischer Lloyd, and a large ship's goblin for the bar aboard the "MS Germany". "The craftsmanship of ship sculpture has always fascinated me. Legend has it that the figurehead gives the ship's spirit a face", is how Hartmann explains his driving force. And he counts himself very lucky to be able to work together with his wife Birgit: "She

produces incredibly creative and flawless designs."

Like all good things, sculpting a figurehead takes time – after agreement has been reached with the client, first a 1:10 scale model is made. Then Hartmann uses a chainsaw to cut the general proportions out of the wood. "If you hold the saw wrong, the whole trunk is ruined." After that, Birgit applies the whole gamut of carving tools to conjure up the finest contours and details from the wood. Even the wealthy and publicity-shy owners of luxury yachts have developed a liking for these traditional seafaring symbols. But details of the orders are top secret. It is almost revealing too much when Claus Hartmann mumbles something about "a huge yacht" which is to bear a figurehead of stainless steel. The Hartmanns are also fascinated by new materials: they have pioneered the forming of ship-building steel in ship sculpture using explosives, a process in which steel plates are pressed into negative forms by the blast wave. ■ TO

Source: Süddeutsche Zeitung, 23 July 2005  
For further information: [www.hartmann-designs.de](http://www.hartmann-designs.de)

PHOTO: STEFFEN GERDES

# New Classification and Construction Rules

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