

Germanischer Lloyd

EDITION 2 · 2005

nonstop

The magazine for customers and business partners



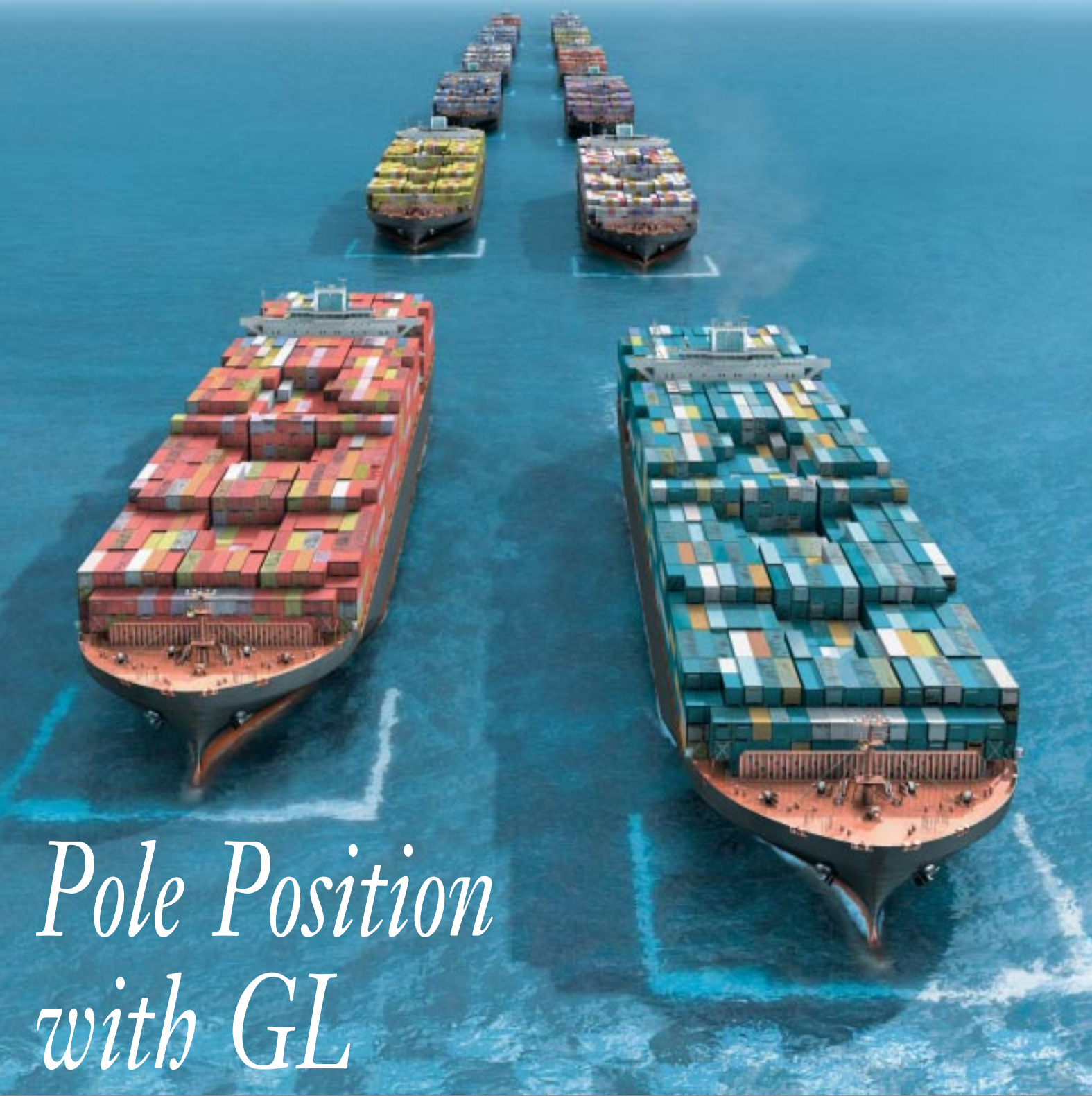
Ballast water management

Small creatures-great impact

BALTIC SEA The safe lane for tanker traffic

SAFEDOR Safety as a design objective

SEA TRIAL Passing the test of toughness



Pole Position with GL

Profitability is decisively dependent
on operational safety and reliability – 24 hours a day, 7 days a week.
In shipping as in Formula 1, it's team and technology that decide pole position.
Get there with GL!

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Germanischer Lloyd
OPERATING 24/7

PHOTO: STEPHANIE BRINKKÖETTER

Dear Readers,

FIFTY MILLION GROSS TONNAGE (GT) is the figure that will soon be reflected by the register book of Germanischer Lloyd. For us, this is a most pleasing development and once again a good opportunity to reflect on the sustainability of our corporate values. After all, they help us to meet our objectives and to convince you – our customers and business partners – of the quality of our work.

The primary purpose of classification lies in the regular surveillance and improvement of the safety and quality of each and every ship. This is because the focus of our Maritime Services is not just on the individual “gross tonnage” figure, but on the entire ship as a system. In this case, 50 million GT is equivalent to almost 5,500 ships, the technical safety of which is our prime concern. Starting with feeder ships and ranging up to mega container carriers, tankers, bulkers, multi-purpose cargo vessels, passenger ships, fast ferries, yachts and special-purpose ships – all have to be inspected and monitored regularly.

Each individual vessel must meet the relevant classificatory and statutory regulations from both the technical and the administrative standpoint. However, the size of the ship is a secondary factor here. As a rule, a small ship does not necessitate much less work than a large one. We entertain no compromises with technical safety; for us, each ship represents a major responsibility and commitment!

Our obligation to you and your ships also entails environmental protection. In this, the second edition of “nonstop”, the spotlight is on maritime environmental protection. Indeed, this keynote topic is a matter of global importance. Ballast water management, the reduction of pollutant emissions by MARPOL Annex VI, and the Environmental Passport are some of the issues in which we can support you with advice and technical expertise. New approaches to ship safety are being probed by the European research project SAFEDOR under the lead management of Germanischer Lloyd. And with our Industrial Services too, safety and environmental protection are of great bearing. Our interview with the new Managing Director of Germanischer Lloyd Oil and Gas GmbH, in which he points out the potential involved in risk mitigation, is particularly relevant. When can we help to reduce your risks in the maritime or industrial sector?

Yours sincerely,

Rainer Schöndube
Executive Board Member



Rainer Schöndube



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News from Maritime Services



Ship Christening: “Colombo Express” Takes the Top Slot as the Largest Container Ship

The period for which newbuildings can rightfully claim the title of “biggest container ship in the world” is getting shorter and shorter. At present, Hapag-Lloyd is operating the largest container ship worldwide. In the middle of April, the mega carrier was christened “Colombo Express” in Singapore. It boasts a dead-weight tonnage of 104,000 and can load up to 8,750 standard containers, is 335 m long, 42.80 m wide and has a draught of 14.60 m. The vessel was built by Hyundai Heavy Industries in Korea and is powered by a 68,640 kW main engine. It will probably have to hand over the title in July, when the first 9,200 TEU container carrier is delivered to the shipping company Claus-Peter Offen.

SHIP FINANCE

China’s Shipping Brising Along

At the “Asia Pacific Ship Finance Conference” which took place in Shanghai at the end of April, former Executive Board Member Dr Hans Georg Payer attended for Germanischer Lloyd and directed the attention of the more than eighty participants to the still growing shipbuilding capacities in his speech entitled “Shipbuilding Capabilities in Asia: Current and Future Opportunities”. The situation of shipping in Asia must be judged as being very positive for the short and medium term; China will remain the largest motor for global economic growth. Over the next two to three years, a balanced tonnage demand/supply relationship is expected in shipping. Unabated port congestion in Europe and the USA could lead to bottlenecks, despite the great volume of container newbuilding tonnage coming onto the market in the next two years.

50 MILLION HP

Germanischer Lloyd Certifies Hyundai Jubilee Engine

Hyundai Heavy Industries has reached the remarkable milestone of 50 million bhp of low-speed engines built and installed in ships worldwide. Germanischer Lloyd certified the jubilee engine intended for a GL-class ship at Hyundai Samho Heavy Industries Co., Ltd. Claiming a global market share of 35%, Hyundai’s Engine and Machinery Division is renowned as one of the world’s largest engine builders. In a ceremony with national and international guests from shipping companies, suppliers and authorities, Hyundai celebrated this anniversary at the beginning of May.

SOLAS

NATO Conference at Germanischer Lloyd

How the “Safety of Life at Sea” (SOLAS) Convention can be implemented for naval vessels was examined on 15 and 16 March by more than 20 representatives of NATO and the Naval Ship Classification Association (NSCA) at Germanischer Lloyd in Hamburg. Faced with sinking defence budgets, a lack of specialized personnel and the challenge of meeting international safety requirements, military procurement agencies, both domestic and foreign, are increasingly looking for alternatives. Here, they are orienting themselves towards the existing naval vessel standards of the classification societies. Safety regulations such as the SOLAS Convention are also to be applied to naval ships. In cooperation with the classification societies, NATO will be developing a naval interpretation of SOLAS. For further information: Lorenz Petersen, Head of Department for Naval Projects, Phone +49 40 36149-254, lorenz.petersen@gl-group.com



ATHENS

Press Call at the INTERTANKO

During the tanker event INTERTANKO from 10 to 13 April in Athens, Germanischer Lloyd presented its wide-ranging spectrum of services to tanker owners. Stephan Assheuer, Head of Flagstate Affairs at Germanischer Lloyd, explained to the plenum the background of the IMO initiative "Goal-based Standards". At a press conference, GL executives emphasized the activities for corrosion protection and the development of a new class notation for the coating of cargo oil tanks. Furthermore, the strong commitment to the ice class and the establishment of an expert team for tankers and bulk carriers was also presented in Piraeus. For further information: Lutz Wittenberg, Division Mediterranean, Phone +30 210 4290373, lutz.wittenberg@gl-group.com



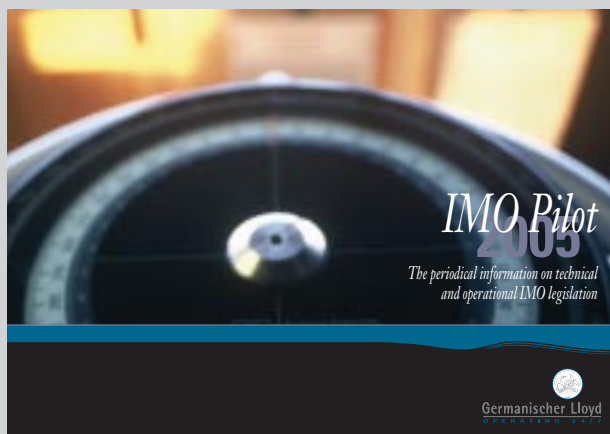
A "paradisiacal" smile (l. to r.): Nikolaus H. Schües (Laeisz), Herbert Juniel (Laeisz), Dr Hermann Klein, Jürgen Meyer (Group Leader for Maritime Industry, Shipbuilding, and Offshore Technology at the BMWA), Georg Wilhelm Adamowitsch (Maritime Coordinator of the Federal Government), Dirk Schildwächter (Gebab), Nikolaus W. Schües (Laeisz), Dr Hans-Heinrich Nöll (VDR)

CONSULTATIONS

Maritime Coordinator Adamowitsch at Germanischer Lloyd

The significance of innovations in shipbuilding for further improvement in the technical safety of ships and measures for reducing the environmental emissions caused by ship operation were discussed in March by Dr Hermann J. Klein and Rainer Schöndube, Executive Board Members of Germanischer Lloyd, with Georg Wilhelm Adamowitsch, State Secretary at the Federal Ministry of Economics and Labour and also Coordinator for the Maritime Industry. The reason for this visit by the Maritime Coordinator of the Federal Government to Hamburg was the change back to the German flag of the "Paradise N" (formerly the Peene Ore) owned by the shipping company F. Laeisz – one of the largest bulk carriers in the world and classified by Germanischer Lloyd.

IMO Pilot 2005



MARITIME BLACK BOX MANDATORY It is not necessary to reflect for very long about the usefulness of ship data recorders. The use of the "black box" in aircraft has been prescribed since the 1960s. Now shipping is following suit. From July 2006, the so-called "voyage data recorder" (VDR) will be obligatory for all cargo ships built before July 2002 with a gross tonnage of 20,000 or more, and from July 2007 for vessels of the size range 3,000 to 20,000 GT. For passenger ships and cargo vessels built since July 2002 with over 3,000 GT, the "maritime black box" is already mandatory. More information on these and other IMO regulations can be found in the new "IMO Pilot 2005". This 90-page brochure, now in its 5th edition, offers a ship type-specific overview of all the major changes in technical and operational IMO legislation (SOLAS, MARPOL, STCW, Load Line Convention, et al.) since the year 2000. All supplements and amend-

ments decided at the 79th session of the IMO Maritime Safety Committee (MSC 79) and the 52nd session of the IMO Marine Environment Protection Committee (MEPC 52) have been considered in the current edition. For further information: Kay Friese, Department for Flagstate Affairs / IACS, Phone +49 40 36149-748, kay.friese@gl-group.com

The IMO Pilot 2005 can be requested as a brochure from Germanischer Lloyd; it is also available for download on the Internet as a PDF file: www.gl-group.com > Client Support > Download Center > IMO Pilot

WORKSHOP

Innovative Network Technology

Network technology in shipbuilding is a topic of the future. 30 naval architects and yard representatives met in March for a comprehensive exchange of information. The agenda for this second conference on the use of networked systems in shipbuilding included the technical requirements for the interfaces and network technologies. Special interest is being shown in the integration of diverse systems for the passenger area on cruise liners and large yachts. Here, considerable cost reductions are possible through the consistent implementation of network technology. A shipowner workshop on the same topic is planned for summer. For further information: Jürgen Wittburg, Head of Department for Automation, Phone +49 40 36149-526, juergen.wittburg@gl-group.com



"Paradise N" – one of the largest bulkers in the world

Trade Fairs

JUNE

7–10 June 2005, Oslo, Norway

Norshipping

D03-21, Hall D

Germanischer Lloyd, Maritime Services

Internet: www.messe.no/nor-ship

21–23 June 2005,

Amsterdam, the Netherlands

Underwater Technology Europe

140, Hall 10

Germanischer Lloyd, Maritime Services

Internet: www.udt-europe.com

SEPTEMBER

6–8 September 2005, Gdansk, Poland

Baltexpo

Germanischer Lloyd, Maritime Services

Internet: www.baltexpo.com.pl

13–16 September 2005, London, UK

DSEI

817, Excel

Germanischer Lloyd, Maritime Services

Internet: www.dsei.co.uk

Bulkers: New Comprehensive Database

The first Bulker Forum on 14 April ended with a surprise. We did not want to send our participants back to their offices "only" with complete information on the changes in the regulatory situation for bulk carriers. The new database PROTOS (Provisions for Transportation of Solid Bulk Cargoes) was presented as an added extra. PROTOS compares all the statutory, structural and equipment-related requirements applying to a bulk carrier with the envisaged cargo. Shipping companies and owners of bulk carriers are assisted by PROTOS in obtaining a comprehensive overview of all cargo types for which transportation is permissible under the given circumstances. The database contains a list of over 60 solid bulk cargoes which are compared to the ship's data. Germanischer Lloyd issues a "Bulk Certificate", which is compiled on the basis of the PROTOS requirement catalogue, a ship survey and an examination of the ship's documents. The "Document of Compliance for the Carriage of Solid Bulk Cargoes" confirms that the ship meets the prerequisites for proper and safe transportation. In addition, the "Bulk Certificate" contains a list of the cargo types that may be conveyed by the ship, a list of cargo-specific annotations and a list of the equipment-related requirements. The customer-specific benefits offered by the new database are clear: the owner or shipping company is given comprehensive certification, the transparency and consistency of which offers clarity and ease of examination for the approving authorities concerned with hazardous goods. In this way, the operators of bulk carriers can avoid delays in the cargo-handling process. The certification of bulkers according to the Bulk Cargo Code of the International Maritime Organization (IMO) is not yet mandatory on an international level. However, many states are already demanding a comparable certification through their national regulations. With a "Bulk Certificate" from Germanischer Lloyd, all the requirements for statutory approval are met. For further information: Dipl.-Ing. Friedo Holtermann, Dangerous Goods, Phone +49 40 36149-677, friedo.holtermann@gl-group.com

PHOTOS: ECKHARD-HERBERT ARNDT, GERMANISCHER LLOYD



MELBOURNE

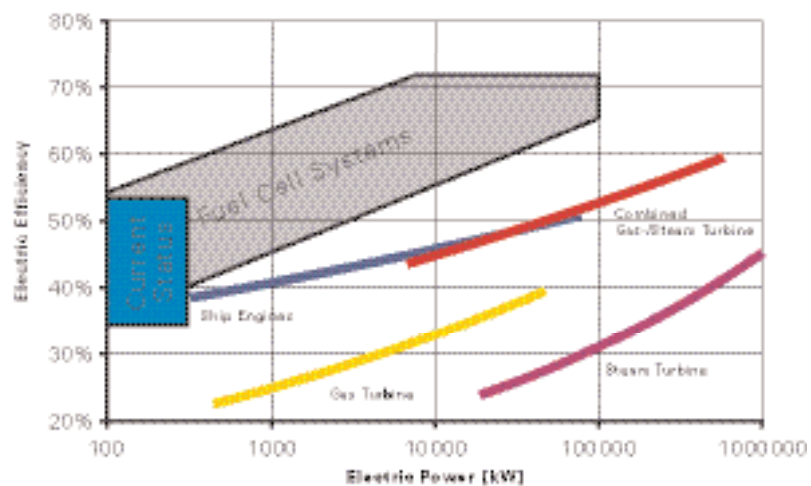
Successful Start for the Navy Committee

The establishment of a Technical Committee for Naval Ships (TCNS) at the beginning of March in the Australian port city of Melbourne met with an enthusiastic response. Thirty high-ranking representatives from the navies of Europe, Africa, South-East Asia, South America, New Zealand and the host country displayed great interest and commitment in intensively discussing the pros and cons of classifying naval ships over a period of two days. In addition to the international exchange of news and views, the participants in Williamstown were able to tour the yard of TENIX Pty. Ltd., which has been entrusted with the construction of ANZAC-class frigates according to the naval construction rules of Germanischer Lloyd. Rear Admiral d'Anglade Pérez of Spain was unanimously voted to be Chairman of the new Technical Committee for Naval Ships. For further information: Lorenz Petersen, Head of Department for Naval Projects, Phone +49 40 36149-254, lorenz.petersen@gl-group.com

LONDON

International Conference on Sub Construction

The role played by classification rules in the construction of modern submarines will be portrayed by Lorenz Petersen, Head of Department for Naval Projects, and Harald Pauli, Head of Department for Pressure Vessels and Underwater Technology, at a two-day conference on today's challenges in building submarines. As yet, Germanischer Lloyd is the only classification society to have compiled its own construction rules for both commercial submersibles and naval submarines. The current classification rules for naval submarines were published in March of this year. The specialist conference "Warship 2005 – Naval Submarines 8" will take place on 22 and 23 June in London, and is organized by the Royal Institution of Naval Architects. For further information: Lorenz Petersen, Head of Department for Naval Projects, Tel. +49 40 36149-254, lorenz.petersen@gl-group.com and Harald Pauli, Head of Department for Pressure Vessels and Underwater Technology, Phone +49 40 36149-365, harald.pauli@gl-group.com



Fuel cell systems have the potential to become the most efficient energy converters: as the diagram shows, a high level of efficiency is already obtained at low power

SEATRADE CRUISE CONVENTION

Fuel Cells on Cruise Liners?

What opportunities are there for alternative energy carriers on passenger ships? What advantages are offered by fuel cells? Can fuel cell systems be integrated into such ships? Answers to these questions were given to the participants of our press conference at the Seatrade Cruise Shipping Convention in Miami on 16 March. With up to 5,000 people on board, cruise liners have a great appetite for energy. Passenger vessels, in particular, are a major cause of greenhouse gas emissions in sensitive coastal regions. An alternative power supply is made possible by fuel cells, which do not generate environmentally harmful CO₂ exhaust gases. Once MARPOL Annex VI comes into force with its strict emission controls, this technology will gain in importance over the medium term. For further information: Dr Gerd-Michael Würsig, Expert for Fuel Cells, Phone +49 40 36149-621, gerd-michael.wuersig@gl-group.com



Island-hopping between Tenerife, Gomera and La Palma with the "Benchijigua Express"

DELIVERED

High-Speed Trimaran Sets Course for the Canaries

With the delivery of the "Benchijigua Express" to the shipping company Fred Olsen SA, a truly remarkable shipbuilding project came to a successful end on 13 April. This high-speed trimaran, 127 m long and over 30 m wide, was built by Austal Ships in Australia and is the result of intensive research and collaboration between the West Australian yard, the Spanish-Norwegian shipping company and Germanischer Lloyd. Through the close teamwork, a multi-hull ferry was born which sets completely new standards in respect of profitability, freight capacity, speed and passenger well-being. The "Benchijigua Express" offers comfortable space for up to 1,350 passengers and can take on about 350 cars. With its four diesel engines, the trimaran attains a speed of up to 40 knots. Directly after the Spanish crew took delivery, the fast ferry set sail for the Canary Islands. In future, it will enable holidaymakers and locals alike to island-hop between Tenerife, Gomera and La Palma.

NEWBUILDING SERIES

Manet Follows Mondriaan

Following in the wake of the "P&O Nedlloyd Mondriaan" (see "nonstop" 1), its sister ship the "P&O Nedlloyd Manet" was delivered on 24 March by the Japanese yard IHI Marine United Inc. (Kure). The series consists of eight container carriers and is scheduled for completion by July 2007. With a length of 335 m, a width of 42.80 m, a height of 24.40 m and a design draught of 14.50 m, these 94,724 GT vessels attain a cruising speed of 24,5 knots, thanks to the 55,701 kW provided by a common rail Wärtsilä-Sulzer engine of the type 12 RT-flex 96C. The naming ceremony is scheduled for 23 June in Hamburg.

EU DIRECTIVE

Making Waves, Not Noise

Sportboats will have to hush up after 2006. The exhaust gas and noise emissions of recreational craft have been lowered by an EU Directive. New boats made by domestic and foreign manufacturers can only be placed on the market within countries of the European Union if they are certified and bear the CE mark as per 2003/44/EC. The EU Recreational Craft Directive (94/25/EC) applies to motorized boats with a hull length of 2.5 to 24 m as well as jet skis and similar waterborne vehicles. Germanischer Lloyd is the first European classification society to have been authorized as a "notified body" by the European Union to certify boat and engine manufacturers. The performance spectrum offered by Germanischer Lloyd includes conformity assessments and certifications according to various EU Directives "all under the same roof" For further information: Dirk Brügge, EU Certification of Recreational Craft, Phone +49 40 36149-620, dirk.bruegge@gl-group.com

Letters to the Editor

MANY THANKS FOR YOUR COMMENTS AND SUGGESTIONS! A number of letters have been received by the "nonstop" editorial office. We are pleased by this interest. Readers praised us for the new concept of the customer magazine, but also pointed out two errors, which we would like to correct here and now. Joseph Conrad was not an American! The author, who was mentioned in the article about ship christenings in Japan, was a British citizen of Polish extraction. Our enthusiasm with superlatives must also be curbed: the "Benchijigua Express" is not the largest aluminium ship to date as far as deadweight tonnage is concerned. By this benchmark, the largest aluminium (car/pax) ferries in the world are still the three HSS 1,500 ferries owned by Stena, built in 1996/97 in Finland. It is only with its length overall (LOA) of 126.70 m that the Austal trimaran beats the Finnish ferries – by ten centimetres, at any rate! We look forward to receiving many more readers' letters; please send them to Germanischer Lloyd AG, "nonstop" Editorial Office, 20416 Hamburg, Germany or by e-mail to pr@gl-group.com

SOURCE OF DIAGRAM: "GREENHOUSE GAS EMISSIONS FROM SHIPS"; MEPC44; 2000-03-06; MARINTEK AND OTHERS. PHOTOS: FRED OLSEN SA, GERMANISCHER LLOYD

GIRLS' DAY
30 Girls Interested in Ship Safety

Getting a group of young girls to be enthusiastic about shipping and maritime technology was the objective of "Girls' Day" in April at the Germanischer Lloyd Head Office in Hamburg. 30 daughters, nieces and god-daughters of GL staff, and their friends, were given an insight into various technical/maritime fields of work. Two ship surveyors, an auditor for maritime safety and an engineer working in corrosion testing – all ladies – were on hand to answer questions about their careers. There was even some practical experience to be had: the "Cap San Diego" was inspected under the guidance of a surveyor and various measurement methods were presented in the Germanischer Lloyd laboratory.

Ships can be fun: the staff members of tomorrow take a close look at the "Cap San Diego"



SCANDINAVIA
The Helmsman Goes Ashore

At the end of April, Ulrich Wohlfeil placed the management of the Area Scandinavia in the able hands of his successor. Ulrich Wohlfeil, long-standing Area Manager for Scandinavia at Germanischer Lloyd, has gone into well-earned retirement. At the farewell reception on the "Mälardrottningens", a historic luxury yacht berthed in Lake Mälaren off the Old Town of Stockholm, Torsten Schramm, Division Manager for Central Europe, paid tribute to the notable achievements of Ulrich Wohlfeil in building up the surveying network in Sweden, Norway, Iceland, Finland and Denmark. Ulrich Wohlfeil was in the service of Germanischer Lloyd since 1981, following a period at sea as Chief Engineer. His career as the first Exclusive Surveyor for Germanischer Lloyd in Sweden began at the end of the eighties with the systematic establishment of Germanischer Lloyd's activities in Scandinavia. In the year 2003, he founded the Scandinavian Committee. Following in the footsteps of Ulrich Wohlfeil, who will now have more time for his hobby of restoring historic sailing boats, is Dipl.-Ing. Rainer Gutzmer. The new Area Manager previously spent ten years working for Germanischer Lloyd in Korea, Japan and China.

Right: a fond farewell on board the Mälardrottningens in Stockholm. Bottom: Ulrich Wohlfeil (r.) and his successor Rainer Gutzmer



IMO
Fuel Tanks with Double Hull

The IMO working group for the "Protection of fuel tanks" under the chairmanship of Hendrik Bruhns, Head of the Stability Department at Germanischer Lloyd, has done a very good job. Within a very short space of time, the group was able to submit practicable proposals on how the fuel tanks of seagoing ships could be better protected against ship collisions and grounding, in order to prevent oil spills. At the 48th session of the IMO Sub-Committee on "Ship Design and Equipment", all representatives of the IMO member states unanimously passed a supplement to the MARPOL Convention. The two approaches suggested by the working group, which are "prescriptive" as well as "alternative" in nature, will be finally debated at the forthcoming session of the Marine Environment Protection Committee (MEPC) in July. With the "alternative" requirements, it was possible to minimize the structural limitations for the ship design. They permit greater flexibility for the structural design of newbuildings, since no predefined distance between the tanks and the outer shell is stipulated. The double-hull standard for fuel tanks corresponds to the ruling anchored in MARPOL for the cargo tank area on tankers. With tankers, the criterion for this requirement is the freight capacity. Similarly, the regulations for fuel tanks are based on the total fuel capacity of a ship. For further information: Hendrik Bruhns, Head of the Stability Department, Phone +49 40 36149 635, hendrik.bruhns@gl-group.com



Small Competitive Edge: New Marketing Campaign for the "Pole Position"

The competition between the shipping companies operating worldwide is increasing constantly. At the same time, the market share held by shipping alliances is also growing. At present, 15 container ship companies control approx. 65% of all container ships, representing about 75% of the TEU capacity available worldwide. Nine of the fifteen shipping companies have formed alliances. The number of teams in Formula One racing is similarly low. "First gain the victory – and then make the best use of it you can." When Admiral Horatio Nelson spoke these words in the year 1798 before the Battle of the Nile, he was on the verge of one of his greatest victories over Napoleon. The French fleet was utterly vanquished and the British established their maritime supremacy in the Mediterranean. Nowadays, sea battles are no longer the decisive factor for success in the maritime industry. But even in the year 2005, Nelson's words are still valid as far as exploiting a superior position is concerned. And with the "pole position" for technically robust and reliable ships, it is possible to achieve high freight rates, optimum utilization of cargo capacity, and a greater market share in today's dynamic market. The new marketing campaign puts the spotlight on the technical and operational spectrum of services offered by Germanischer Lloyd. We are the pit team with whom our shipowner customers qualify themselves for the pole position! (See illustration on the inside cover).

STATISTICS
New Yearbook

If you need a thorough statistical overview of the international shipping situation, the percentage share of individual nations in the world merchant fleet or the number of foreign-flagged ships, it is worth looking at the current ISL Shipping Statistics Yearbook 2004. This 456-page compendium is a comprehensive reference book on today's maritime developments. Written in English, the Yearbook is divided into three sections, with chapter 1 "Shipping Market" focusing on statistical analysis. Chapter 2 is concerned with world shipbuilding, whilst chapter 3 looks at the performance capabilities of the ports. The Yearbook can be obtained from the Institute of Shipping Economics and Logistics (ISL), Bremen (www.isl.org).



Up to date: 456 pages of maritime developments

PHOTOS: STEFANIE NORMANN, ISL, GERMANISCHER LLOYD

FUEL CELL TECHNOLOGY

Energy without Emissions

Ever stricter environmental regulations and increasing requirements for fuel quality will exert a powerful influence on shipping in future. On 15 March 2005, Germanischer Lloyd, acting with

HDW Fuel Cell Systems GmbH, presented areas of application for fuel cells in maritime technology. Hydrogen is an ecological energy carrier and opens new vistas for shipping, thanks to its high efficiency. For several years now, Germanischer Lloyd has been involved in the corresponding projects and is offering safety analyses and acceptance

inspections of fuel cell systems, so that low-noise and cost-effective ships can be brought onto the market in the near future. Initial applications may be expected for research ships, official vessels, small ferries and mega yachts. For further information: Dr Gerd-Michael Würsig, Expert for Fuel Cells, Phone +49 40 36149-621, gerd-michael.wuersig@gl-group.com



Paddle-wheel steamer with GL Class

Change of Class: Former Yacht of the King of Württemberg Now with GL Class

The paddle-wheel steamer "Hohentwiel" is now sailing with the class certificate of Germanischer Lloyd. The former state yacht of the King of Württemberg embarked on this year's excursion season on Lake Constance with the GL class character [+100 A 5 I for the ship and +MC I for the engine. The ceremonial presentation of the new class certificate was held in the "border triangle" area between Germany, Austria and Switzerland. The half-saloon steamer was prefabricated in 1912 at Escher Wyss & Cie in Zurich by order of the "Königlich Württembergische Bodensee Dampfschiffahrt" company, and the official acceptance trial trip took place on 21 April 1913. After the first World War, ownership of the "Hohentwiel" was transferred to the German Reichsbahn and it then sailed as a passenger ship of the so-called "White Fleet" between Friedrichshafen, Constance, Bregenz, Romanshorn and Rorschach. In the spring of 1946, it resumed a scheduled service on Lake Constance, and in 1962 it was decommissioned after 49 years in operation. Following a sorry interlude in which it was used as a clubhouse for the Bregenz sailing club, the "International Lake Constance Shipping Museum" association was founded in 1984. Its declared aim was to save the "Hohentwiel" from the scrapyards. After a final technical inspection and approval by the Bregenz authorities, the restored paddle wheel steamer was officially inaugurated on 17 May 1990. Since then, this "technical monument" has been used for excursions and VIP trips. For further information: Stefan Höner, Station Manager Augsburg, Phone +49 821 343870, stefan.hoener@gl-group.com

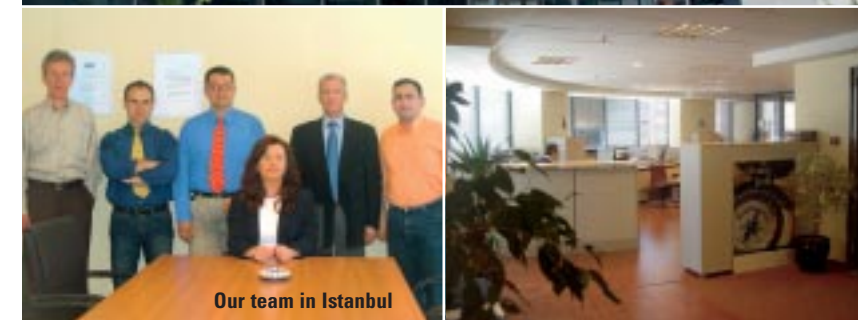


A unique ambience: the old paddle wheel steamer is used for outings and prestigious trips

TURKEY

Germanischer Lloyd Opens New Office in Istanbul

On 12 May, Germanischer Lloyd celebrated the opening of the new and larger Istanbul branch office with customers, guests of honour and journalists. The new office in the Kozyatagi district of Istanbul houses seven GL staff members, of which six are Exclusive Surveyors. Five are employed in the maritime sector, and one attends to the offshore work. Since 1990, Germanischer Lloyd has supervised the fabrication of new-buildings in a number of Turkish yards. Other activities include the inspection of materials and components as well as attendance to the fleet in service. At present, there are 65 Turkish ships under way with GL class. Contact address of Germanischer Lloyd: Germanischer Lloyd Turkey, Akif Tuna, Country Manager, Bayar Cad. Sehif Mehmet Fatih Ongul Sok, Bagdatlioglu Plaza No. 3 Kat. 1 D. 3, 34742 Kozyatagi/Istanbul, Turkey, Phone +90 216 65868 60 / 61, Fax +90 216 65868 43, e-mail: gl-istanbul@gl-group.com



GL Academy

JUNE

7-8 June 2005, Hamburg

Internal Auditor ISM/DIN EN ISO 9001:2000

This seminar provides knowledge and skills on the planning, conducting and evaluation of internal audits on the basis of the ISM Code as well as the ISO standard. Practical case studies from the shipping sector are used to illustrate the auditing process. Based on the ISO 19001 standard, in which recommendations for the qualification of auditors are defined.

7, 14, 21 and 28 June 2005, Hamburg

Basics about Shipping

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

14 June 2005, Hamburg

ISM Code Basics

Seminar on the ISM Code with particular consideration of the 16 elements of the ISM code and the resulting requirements for the shipowner and the crews.

15 June 2005, Hamburg

Quality Management Coordinator

Seminar for the training of personnel to become quality management coordinators who support the quality management representative in a decentralized manner, e.g. in branch offices or departments.

20-21 June 2005, Hamburg

Company/Ship Security Officer Training Course

Seminar on the requirements of the International Ship and Port Facility Security (ISPS) Code. The aim of the seminar is to provide Company and Ship Security Officers (CSO/SSO) with the detailed knowledge, understanding and proficiency required to undertake their duties and responsibilities as defined in the ISPS Code.

29-30 June 2005, Hamburg

Risk Management, Product Liability and Prevention Strategies for Design, Process, Production and Maintenance Engineering (FMEA/RCA)

This seminar provides experienced engineers and technicians with information on liability risks relevant for development, production and maintenance. This knowledge enables the participants to act preventively and to adapt the company

organisation according to the current legal requirements and judicature. "Legal management" begins in the development department.

AUGUST

17-18 August 2005, Hamburg

Internal Auditor ISM/DIN EN ISO 9001:2000

This seminar provides knowledge and skills on the planning, conducting and evaluation of internal audits on the basis of the ISM Code as well as the ISO standard. Practical case studies from the shipping sector are used to illustrate the auditing process. Based on the ISO 19001 standard, in which recommendations for the qualification of auditors are defined.

SEPTEMBER

19-23 September 2005, Hamburg

Lead Auditor DIN EN ISO 9001:2000

This seminar provides knowledge and skills on the planning, conducting and evaluation of external and internal audits. Based on the ISO 19011 standard, in which recommendations for the qualification of auditors are defined. Practical case studies are used to illustrate the auditing process.

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Small creatures-great impact

Researchers are sounding a warning: aquatic micro-organisms which are being distributed over the entire earth through ballast water are causing millions of dollars damage. Now the IMO is taking action against shipworms, zebra mussels and friends with more stringent regulations.

NO SHIP CAN DO WITHOUT ballast water. It ensures that the empty or partially unloaded ship can be given the draught needed for safe sailing, or a more favourable trim. Over the centuries, taking on water for ballasting purposes has proven to be the most practicable – and also the cost-effective – method. And that is the way it is to remain in future. However, the world shipping body IMO in London intends to attach stringent conditions to the exchange of ballast water.

12 BILLION TONNES OF BALLAST WATER A YEAR The reason for this step: together with the ballast water, large amounts of aquatic organisms are also transported over the oceans, penetrating ecosystems in which these species are hostile invaders which, as we now know, cause appreciable damage. The problem of “unwanted passengers in the ballast water tanks” has gained significance of late, because intercontinental ship traffic has been increasing over the years. An end to this development is not to be expected, because shipping plays such a vital role in this age of globalization. One need only think of the gigantic waves of growth triggered by the boom in the Chinese economy. Some time ago, experts calculated that between 10 and 12 billion tonnes of ballast water are moved over the oceans every year worldwide. Recent studies by the Federal Environmental Agency (UBA) in Berlin show that about 2.2 million tonnes of ballast water are brought to Germany alone each year. Six million micro-organisms from extra-European regions, the agency specialists found, reach Germany's ports every day.

SHIPWORMS, ZEBRA MUSSELS AND FRIENDS The global migration of micro-organisms causes widespread damage. The Federal Maritime and Hydrographic Agency (BSH) in Hamburg, associated with the Federal Ministry of Transport in Berlin, has investigated this invasion from the ballast tank in the North and Baltic Seas. Here the BSH experts concentrated on the areas of fishery, aquaculture and coastal

facilities for shipping and tourism. The results, which were published in 2004, give cause for great concern: from 1993 until the present day, the shipworm or marine borer has caused damage amounting to 50 million euros at the coastal protection installations of the Baltic. But that is not all: according to the BSH survey, the Chinese mitten crab is responsible for about 85 million euros worth of damage – in German waters alone.

However, in other parts of the Baltic, the ballast-tank aliens have also given rise to alarm. In February of this year, the public was alarmed by media reports of a fish that is actually at home in the Caspian Sea but was caught by Finnish fishermen in the sensitive ecosystem within the chain of Finnish skerries. This is the goby, which was found in the Baltic Sea as early as 1990, namely in the Bay of Gdańsk.

ONE BILLION DOLLARS OF DAMAGE BY A LITTLE MUSSEL Disturbing reports are also coming in from overseas. The zebra mussel, which really comes from the Black Sea, hitched a ride in ballast water, not only to Western and Northern Europe but also to the East Coast of the USA. These mussels have turned out to be a veritable plague for underwater structures, which they cover with a tough coat of fouling. In many cases, water inlet pipes are blocked. The nuisance is worsened by the considerable financial losses involved. Experts have calculated that, between 1989 and 2000 alone, these creatures caused damage worth as much as one billion US dollars. These facts were probably an important motivation for the USA to decide – independently of the IMO efforts – on passing national regulations for the treatment of ballast water applying to all ships wishing to call at US ports. In the meantime, the Australians have also taken national steps to defend themselves against undesirable immigrants from the sea, and have issued the corresponding regulations. Above all, the people from “down under” fear the invasion of small animals from Asia. Besides the micro-organisms, highly dangerous germs are also

PHOTO: JALENS/JOACHIM AFFELDT

Pumping off the ballast water: practicable and cost-effective

smuggled in. For example, Brazil has suffered unpleasant consequences in this regard. In this case, the pathogens did not come from overseas, but were introduced through the seaward flow of goods within the South American continent.

IMPORTANT STEPS BY THE IMO Since the ballast water problem represents a challenge of truly global dimensions, the IMO in London commenced work on the subject several years ago. "Initially in 1997, the measures were only voluntary when the IMO published a guideline," says Christoph Peickert, who has been concerned with the ballast water problem for several years now at Germanischer Lloyd in Hamburg. In the years that followed, international experts at the IMO drew up a draft for a protection agreement with international clout. It expressly uses the term "ballast water management". With this choice of words, it already documents the intention that operations must be controlled and that structures and mechanisms which can be adequately monitored must be created. In addition, various symposia have taken place worldwide on this topic. To sum up one finding of all these events: it has long since been time to take action. "13 February 2004 marks a very important date. On this day, the 'International Convention for the Control and Management of Ships' Ballast Water and Sediments' was adopted by the IMO in London within the scope of a diplomatic conference," says Hendrik Bruhns, also a ballast water specialist at Germanischer Lloyd.

The convention, also known the Ballast Water Management Convention (IBWMC), is scheduled to come into force in 2009. Once it does, the first phase will demand ballast water exchange. After a transitional period of several years, the exchange will then be replaced and upgraded to treatment of the ballast water. Here the aim is to reduce the number of micro-organisms imported into the ecosystems through seaborne traffic. For shipowners, the date on which

their ships have to implement these measures depends on two main factors. Firstly, it depends on the size of the ship, and the ballast water capacity plays an important role here. The second question is whether the ship is new or old, i.e. whether the tonnage is already in operation.

One of the most important aspects of the convention is that the ships are to be equipped with technology, i.e. treatment plants, to make uncontrolled ballast water exchange unnecessary. Another element of the convention is that over a transitional period until the required technology is installed on the ships, the shipmaster is only to perform the ballast water exchange in certain zones on the high seas. The essential parameters to be observed here are a minimum distance from the coast of 200 nautical miles and a water depth of 200m. Wherever this is not possible, the ballast water exchange is to take place at a water depth of 200 m and a coastal range of at least 50 n.m.

30 STATES NEEDED FOR RATIFICATION In order for the convention to become mandatory, however, at least 30 states representing 35 per cent of the world merchant shipping tonnage must ratify this trailblazing document. As GL expert Christoph Peickert puts it: "So far, Brazil and Spain have already done so. Other states are getting ready to follow." Germany is also aware of the pressing need for action on ballast water exchange and is supporting the IMO with its efforts. As the control centre for this matter, the Federal Ministry of Transport is supported by a number of maritime facilities with specialized knowledge and skills. One of the recognized experts in this field is the German marine biologist Dr Stephan Gollasch from the Institute for Marine Science at Kiel University. He regards the IMO convention as a "sensible compromise, combining environmental concerns with what is technically possible." Four research projects on the overall topic are being funded by the federal government.



The common shipworm: an enemy of Germany's coasts



Damages ranging into the billions: attack by zebra mussels

"We advise our customers to comply with the technical requirements of tomorrow's IMO conventions today. Retrofitting is always the more expensive option."

GL AND SHIPOWNERS WANT A PRACTICABLE SOLUTION A down-to-earth approach to this volatile topic is desired by the Association of German Shipowners (VDR) in Hamburg, whose position is thus identical to that of Germanischer Lloyd. "We need procedures that are both affordable and practicable," says the VDR. The association welcomes the action taken by the IMO, but is very interested in ensuring that the convention is applied uniformly on an international level. Country-specific solutions as implemented by the USA for its seaborne traffic do not meet with the VDR's approval, partly because of the considerable added costs involved for the shipping companies. For instance, the USA is already demanding that the ballast water exchange must

take place 300 nautical miles off the coast. For a large bulker carrying some 30,000 t of ballast water, this signifies one to two extra days at sea to pump out and refill the corresponding ballast tanks. Something that may be easy to do in a calm sea poses great difficulties for the ship's officers in heavy waves. It would be much easier to perform such procedures in the port.

TACKLING THE SEA ALIENS But how should the ballast water be treated in future before it is discharged? According to the present state of knowledge, the undesirable passengers can generally be eliminated by four methods: by UV radiation, by heating, by changing the oxygen content of the

PHOTOS: FRANK HECKER/OKAPIA, PETER YATES/SCIENCE PHOTO LIBRARY



Detailed view of a self-cleaning automatic filter

water or, as is already being done, by adding certain chemicals. Many experts criticize the latter method, since negative side effects are possible. No one wants clean ballast water but an ill crew. Another problem is that numerous micro-organisms are deposited in the sediment of the ships' ballast tanks. Getting rid of these "embedded" aliens is quite a technical challenge. To overcome both of these obstacles, i.e. the sediments on the one hand and the organisms on the other, most manufacturers of treatment technology rely on a modular structure for their units. In a first step, the sediments are split off through a mechanical process, for example special filters or hydrocyclones (voraxial separators). In a second step, those micro-organisms that can "slip through the net" of the first two processes are eliminated. Another thing is already clear: in future, the processing operations must be documented in detail, in a similar way to the oil logbook for bilge oil, so that the measures taken for ballast water treatment can be tracked exactly, possibly within the scope of port state control.

A NEW MARKET ARISING FOR SHIPBUILDING SUPPLIERS

The industry has advanced so far that it can already offer technical solutions for ballast water treatment. While the IMO has devised a general framework, the technical details still need to be fleshed out. This does not exactly make it easy for the industry to develop units and processes that will be able to conform to the purification limits. But then again, when the convention comes into force, a huge new market will be created for the worldwide shipbuilding supply industry. When it comes to ballast water management, Germanischer Lloyd sees itself as primarily fulfilling the role of a technical adviser. As Christoph Peickert underlines: "At Germanischer Lloyd, we are not the ones making the rules within the overall process. This is solely the domain of the IMO."

The industry has not yet been forthcoming about the costs of such ballast water cleaning systems. That these are not likely to be negligible may be taken as read. For the

ballast water exchange, the piping system must be modified appropriately. Furthermore, adverse influences on the steel structure must be considered. In the course of the future ballast water treatment, expenses will be incurred for both the initial procurement of the system and for the treatment taking place on board. Here Christoph Peickert says: "At Germanischer Lloyd, we therefore advise our customers planning any newbuildings to provide the necessary technical prerequisites, so that the ships will comply with the requirements of the IMO convention regarding ballast water management. Retrofitting is always the more expensive option." And Hendrik Bruhns adds: "We always recommend that shipowners take a serious look at the ballast water problem and make the corresponding preparations. Seen with a long-term perspective, this can make the implementation of ballast water management, and also relations with the port authorities, all the easier." ■ EHA

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GL experts Hendrik Bruhns (left) and Christoph Peickert

Extra Effort for the Environment

In matters of environmental protection, an increasing number of shipowners are doing more than merely complying. And for good reason, too. Experience has shown that the extra effort made today for ecological ships secures tangible commercial benefits later.

FROM MAY 2006, THE BALTIC SEA will become an "SO_x emission control area" and the North Sea is to follow almost a year later. In these waters, ships may only use fuel with a maximum sulphur content of 1.5 per cent, or they must reduce their SO_x emissions in some other way. This development underlines once again that the international legislation for protection of the environment is constantly in flux. MARPOL, ISO 14001, port state control, regional ballast water regulations, local emission standards – the list is long. This confusing territory is not making life any easier for the shipping world. Added to this is the fact that long periods of time often elapse between ratification and the actual coming into force of new provisions. In the case of MARPOL Annex VI, effective since 19 May 2005, the delay was eight years. How can one prepare a fleet of long-lived capital goods for regulations that will (possibly) apply in several years' time, without losing sight of the economic constraints?

ECO-FRIENDLY SHIPOWNERS BENEFIT "The experience of the last few years shows that an increasing number of shipowners are willing to do more for the environment than just merely comply. This is done not only for altruistic motives but also when it becomes clear that going beyond the call of duty is good for the company," says Jürgen Butzlaff, who advises the customers of Germanischer Lloyd in these matters. Indeed, the benefits can be appreciable. It begins with the marketing of the tonnage. Organizations such as the international Clean Cargo Group, whose members include major industrial and transportation companies, are increasingly taking steps to ensure that the transportation chain is ecologically sound.

This sales argument will gain further weight as soon as the current shipping boom weakens again. Then, more than ever, technically sophisticated ships will have the best chances of being chartered. What is more, the resale value of these ships will be higher. An important advantage in everyday operation is seen with port state control: ships with a

proven and better environmental profile stand to save time with the checks in the port. And if ship newbuildings are designed with respect to forthcoming environmental laws from the very beginning, costly retrofits can be avoided or at least better prepared, frequently with comparatively little effort. For many shipowners, providing the space for a ballast water treatment unit to be installed later could prove to be a very worthwhile investment.



"We examine the current statutory developments and make this knowledge available to our customers."

Jürgen Butzlaff, Environmental Passport expert

But how can these benefits be obtained with a justifiable effort? "We are constantly examining the statutory developments to see whether there is an international consensus, what technical repercussions there might be, and what the economic consequences are. This knowledge is then made available to our customers," says Butzlaff. Above all, the focus is on operation-related emissions by the main engine, cooling and fire-extinguishing systems, waste disposal, ballast water management, anti-fouling coatings, etc. The environmental characteristics of the ship are then visibly documented in the Environmental Passport which, in a well-organized form, groups together all voluntary and mandatory certificates as well as the compliance with additional requirements, and is always available on board. Ships classified by Germanischer Lloyd that fulfil this prerequisite can be classed as "Ship with Environmental Passport". However, the Environmental Passport from Germanischer Lloyd is also open to the ships of other classification societies. For that extra protection of the maritime environment. ■ AS

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Experts warn: with the rising density of shipping traffic in the Baltic, the danger of oil spills is growing

The Safe Lane for Tanker Traffic

The Baltic is one of the smallest and at the same time busiest sea regions worldwide. The economic area of North-Eastern Europe is booming, and so is the demand for Russian oil. But straits, a multitude of islands, ice and dense traffic make sailing a risky business – especially for the growing number of large oil tankers. Following a proposal by the Baltic states, the IMO is to establish separate routes for the tanker giants sailing in the Baltic.

MARCH 2005: Off the South coast of Norway, the empty oil tanker “Champion Fjord” catches fire and runs aground. Salvage teams are able to pull the 170-metre colossus free and extinguish the fire. The ship was on its way to Rostock via the Baltic. January 2005: In the Swedish part of the

Baltic, the ferry “Pomerania” and the tanker “Rio Grande” collide. Fortunately, both are able to continue the voyage. October 2004: In the Danish Great Belt, the tanker “Bergitta”, laden with 100,000 tonnes of oil, and the container ship “Eyra” run into each other. The two captains and the

pilot on the “Bergitta” are able to prevent a frontal collision at the last moment. Both over 200 metres long, the ships ram each other laterally, and what might have been the biggest ever oil spill in the Baltic is prevented – for the time being.

But the danger is growing steadily. One cause of this is that shipping traffic in the Baltic has increased rapidly, more than doubling since 1997. More than 2,000 ships are under way on the Baltic every day, with about 85,000 cargo vessels sailing there every year, and this trend is growing. The greatest safety hazards are the tankers. In particular, the tanker traffic to and from the Russian oil ports of Primorsk, Vysotsk and Ust-Luga near St Petersburg are giving the Baltic states good reason for concern – all the more so, now that Russia is building or planning further oil terminals. Every day, about 200 tankers are en route to one of the 20 oil ports of the Baltic. By 2010, the quantity of oil transported via the Baltic Sea is expected to almost double, from today's level of 80 million tonnes to 150 million tonnes.

In view of rising Russian oil exports and tanker traffic, an oil catastrophe is unavoidable from a statistical standpoint, EU experts warn. This opinion is shared by safety specialists, tanker shipping companies and organizations like INTER-TANKO. The ecological consequences for the Baltic would be devastating.

On an international level, the problem was recognized after the Prestige incident in 2002 off the coast of Spain, if not before, and action was taken. Shortly before the accident, the tanker had passed through the Baltic. On the initiative of all states adjoining the Baltic, with the notable exception of Russia, the International Shipping Organization

(IMO) classified the Baltic as a “Particularly Sensitive Sea Area” (PSSA) in April 2004.

CLEAR ROUTE INSTRUCTIONS PLANNED This February, the Baltic states submitted a request to the IMO, which is a UN agency, to the effect that separate routes be defined for tankers with a draught of more than 12 metres in the Gulf of Finland as well as in the southern and central Baltic Sea. These must be kept isolated from other vessel traffic, in order to reduce the risk of a collision. Regions of shallow water, such as the Hoburg Bank near Gotland and off Öland, will become off-limits for jumbo tankers. Moreover, in a traffic separation scheme being established north of the island of Rügen, the masters of all ships sailing east and west will receive specific route instructions. Here, the aim is to safely coordinate of the ship traffic in the strongly frequented Cadet Channel and in the Öresund. If the IMO accepts these suggestions at its session in June, the provisions will become internationally binding for ships of all flags.

DOUBLE-HULLED TANKERS HAVE PRIORITY Another step towards greater safety in the Baltic is the ban initiated by the IMO – and also supported by Russia – on single-hulled category I tankers, which came into force worldwide on 5 April 2005. Ships which exceed a capacity of 20,000 dwt, built before 1982, and are not fitted with protective ballast tanks must be scrapped. At the same time, the transportation of heavy fuel oil in single-hulled tankers exceeding 5,000 dwt will be prohibited. Single-hulled tankers will generally not be permitted to call at ports within the EU itself from 2010.



The new regulations have clear targets: scenes like this must be prevented in future

Environmental groups are demanding more: they want a “two-lane motorway”, rigorous traffic separation, and compulsory pilotage for straits that are hard to navigate.

The objective is to accelerate the introduction of modern double-hulled tankers, which offer a fourfold increase in collision resistance. According to the Swedish Coast Guard, 17 per cent of all tankers sailing the Baltic are single-hulled transporters. This sometimes presents a problem, especially in view of the thickness of winter ice in the Gulf of Finland. The danger zones – namely the natural across – still remain: the Gulf of Finland, the Great and Little Belts, the Fehmarn Belt, and the Öresund. Above all, the Cadet Channel between Denmark and Germany is regarded as particularly risky, owing to its shallows. Every year, some 65,000 ships wind their way through this bottleneck measuring hardly 1,000 metres wide, including 11,000 tankers – behemoths of more than 200 metres with a braking distance of over a kilometre.

Even Norway, which does not border the Baltic, is highly sensitive to the dangers of tanker traffic. The “Champion Fjord” accident was a “red alert for Norway”, says Ronnie Westerman, GL representative in Oslo. It became clear that the emergency task forces’ standby response simply had to be improved. It is with great interest that Norway is watching the high traffic density of the tanker shuttle off its own south coast heading into the Baltic. In particular, the unprotected open “Jæren” coastline between Kristiansand and Stavanger is regarded as a very dangerous area because the weather is often bad.

According to environmental bodies, the measures taken thus far are inadequate. They are calling for a “two-lane

motorway”, i.e. the continuous separation of traffic from Kattegat to the Gulf of Finland, coupled with compulsory pilotage for difficult passages. In addition, this is to be supported by the automatic monitoring system AIS and modern navigational track control. A similar arrangement is already operating in the Baltic. To increase the level of safety in the common sea region, which with the ferry traffic between Helsinki and Tallinn with 6 million passengers annually and Russian oil transports is very strongly frequented, Finland, Russia and Estonia initiated the marine surveillance system “GOFREP” on 1 July 2004. The “Gulf of Finland mandatory Ship Reporting System” registers every ship with more than 300 tonnes, and then monitors and guides it on the route through the Gulf of Finland.

SENSIBLE BALTIC SEA The possible result of a serious accident involving an oil tanker was demonstrated, like a terrible omen, in 2001 by the collision of the tanker “Baltic Carrier” with the sugar freighter “Tern”. On this occasion, “only” 2,700 tonnes of heavy fuel oil was spilt, polluting the beaches

of three Danish islands. Thousand of seabirds died, entire coastal areas had to be laboriously cleaned by hand, and in some places the top layers were removed by means of shovel excavators. Tankers carrying up to 100,000 tonnes are able to take their cargo through the Baltic; ships that are much larger do not pass through the channels, owing to their draught. In an extreme case of a collision involving such jumbos, the heavy fuel oil would completely coat the numerous Baltic islands and the coastline, which is riddled with estuaries. To make matters worse, this enclosed sea does not have much self-purifying ability, because of its low salinity. Thinning the oil would be impossible, as this would lead to carpet-like agglutination. The shallow Baltic Sea needs about 30 years to completely exchange its water with the Atlantic.

Last year’s major international oil-alert exercise was carried out by special forces of the Baltic states near the Cadet Channel off Warnemünde. The scenario: cargo ship rams a 120,000-tonne oil tanker. Several thousand tonnes of oil are spilt. Thank goodness it was just an exercise. ■ WG

Speedy Help

Damage control for accidents at sea is always a race against the clock. The Emergency Response System offered by Germanischer Lloyd could possibly provide a way of initiating assistance – including in sensitive sea areas like the Baltic – in a targeted and speedy manner.

FOLLOWING AN INCIDENT, the ship’s construction plans can be used to calculate, within the space of a few hours, the current status regarding damage stability, strength, and relative position of the casualty vessel. For example, it is possible to assess what salvage action would be most advisable or, in the case of tankers, how the oil-fighting vessels can be deployed most effectively. Via the emergency hotline of the German Maritime Rescue Service (DGzRS) in Bremen, an ERS expert team is on call at Germanischer Lloyd right around the clock, 365 days a year, and available to all shipowners – even for ships not classified by Germanischer Lloyd. Since 1993, a statutory requirement has been in force in the USA to the effect that oil tankers must utilize shore-based advice in the event of an accident. This was a legal consequence of the “Exxon Valdez” catastrophe on the coast of Alaska. The obligation to use a shore-based emergency service in the case of accidents at sea



Service right around the clock – worldwide

should also be applied to the Baltic; it could make an important contribution towards increasing the safety of tanker traffic in the region. Since January 2004, INTERTANKO has required that its member shipping companies enrol their tankers in a suitable contingency service. ■ WG

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PHOTOS: LAIF, GERMANISCHER LLOYD

In action for the first time: even the smooth operation of the anchor is tested at sea

Passing the Test of Toughness

During a sea trial, the yard, owner and classification society are able to test a new ship at sea for the first time. Germanischer Lloyd in Ulsan, Korea, followed the "E.R. Calais" newbuilding by Hyundai Heavy Industries from the start of construction to the decisive trial voyage, and was able to obtain some fascinating insights.

SPARKS FLY. On the port side, the seven-tonne anchor chain rattles down the hawse-pipe into the watery depths. Steel grinding against steel. A burning smell in the air. Suddenly, a shrill signal from the bosun's whistle and everything comes to an abrupt stop. Procedure aborted – a tough test for the winches. After several more abrupt stops, the men are satisfied with the results at last. Shortly after that, the testing team –



The men follow the test of the bow thruster with a certain tenseness

A whole series of tests can only be performed by the engineers under real-life conditions at sea.



Electronics engineer Blanchowski supervises the restart of the main engine together with his colleagues (top). Below l.: the magnetic compass has to be calibrated, no matter what the weather does. Below r.: in the engine room, the Deputy Site Office Manager Bzunek and the future Manager Jurkovic watch the course of events for the sea trial very closely



representatives of the Hyundai yard and the Hamburg shipping company E.R. Schiffahrt as well as the two GL Surveyors Grzegorz Cackowski and Heino Meyer – begin the most important part of the procedure. With a stopwatch, they check to see whether the anchor can be weighed at nine metres per minute, as stipulated in the classification rules. The winches need only two and a half minutes for a shackle. That is 27.5 metres, the standard unit for this test – the anchor test on the port side has been passed, just like the one before to starboard!

The anchor test is a central party of the sea trial, the first voyage of a newly built ship on the high seas. And so, on this chilly January evening (only 1 degree Celsius), the testing staff are willing to stand on the cold foredeck of the “E.R. Calais” right in the middle of the Korea Strait, so that they can convince themselves of the functional readiness of the winches. The vessel, 210 metres long with a stowage capacity of 2,556 TEU, is still the responsibility of the world’s biggest shipyard: Hyundai Heavy Industries in Ulsan, Korea. In only a week, the “E.R. Calais” is to be handed over to E.R. Schiffahrt, so that it can begin its charter period for the large French shipping company CMA CGM. As the “CMA CGM L’Astrolabe”, it will provide five years of scheduled service from Japan via Singapore to Brazil.

But before that happens, there is still a lot to be done. The naval architects Cackowski and Meyer were already able to check many systems at the pier. After all, the GL team has been following the fabrication of the “E.R. Calais” on behalf of the yard and the owner for one and a half years. However, a whole series of tests can only be performed under real-life conditions at sea. Tests that fill up the day and night, hour by hour.

MAIN ENGINE TEST – THE TENSION MOUNTS During the first night, the heart of the ship is examined: the seven-cylinder main engine of the type Hyundai-Wärtsilä, developing some 30,000 hp, is put through its paces in several different ways. For instance, it is necessary to see whether the engine starts reliably, whether the control system implements all commands without difficulty, and whether the safety systems function according to the applicable rules. Meyer and Cackowski take turns at being present right around the clock, to make sure they do not miss anything – Germanischer Lloyd’s obligation to keep records knows no compromises.

Often, the systems trigger an alarm which is then passed on optically and acoustically through the entire ship to the bridge. False alarm? Not at all. But still not a problem – the

alarm belongs to the test programme. And yet there are situations in which something just does not run according to plan. Then the experts from E.R. Schiffahrt and Germanischer Lloyd quicken their steps and keep a sharp eye on what their HHI colleagues are doing. Short and clear instructions are exchanged. Now and then, the discussion gets a little heated. “It is perfectly normal when some things don’t work the first time round,” says Cackowski. “Just like for us, this is the first time the yard has had the opportunity to test the ship under real conditions. Diplomacy and a sure instinct are sometimes needed when the unexpected happens. If we found no cause for complaint, it would probably mean we hadn’t done our job thoroughly enough.”

During a sea trial, countless checks are carried out: from examining the hatches for tightness, through fire protection drills and steering gear tests up to examining the bilge pumps and testing the boiler safety valves under full load. Nothing may be left out. The ship must be made as safe as possible. The international regulations, e.g. of SOLAS, the requirements of the classification society which often go beyond them, and – as if that were not enough – the performance specifications laid down in the contract between the yard and the customers are observed exactly.

One test that is less important for Germanischer Lloyd, because it does not affect safety, but all the more so for the shipping company E.R. Schiffahrt is the speed trial. Here



Staff of Germanischer Lloyd inspect the main engine

A crash stop shows whether the braking distance of the ship at full speed really corresponds to the required figure, so that a collision may be avoided in an emergency.

the “E.R. Calais” must show that it meets the requirements of the shipowner – since a little time is a lot of money in the charter business. At the beginning of the sea trial, the container ship had already taken on ballast water. Now it sails through an exactly predefined section at 50, 75 and 90 per cent output for ten minutes each. Twice in each case – there and back again. Then an average is calculated and a complicated procedure is applied to factor out the influence of wind, water temperature, drift and wave action. Here too, the result is pleasing: the required top speed of 23 knots is even exceeded slightly.

CRASH STOP – NO COMPROMISES Although sailing with 90 per cent engine output is the normal situation in everyday operation, it would be best if the crash stop scheduled for the second night never had to be repeated. Here it is checked whether the braking distance of the ship at full speed really corresponds to the required figure, so that a collision may be avoided in an emergency. For the bridge, this means switching from “full speed ahead” to “full astern” – a tough test for any engine.

A horrible sound is heard when the engine stops and the air escapes from the turbochargers, but that is normal. What is not normal, however, is that the engine refuses to start moving in reverse. The responsible specialists are stuck between the devil and the deep blue sea: on the one hand, they would prefer not to subject the engine to this absolutely

gruelling test a second time. On the other hand, IACS, the umbrella organization of the classification societies, stipulates that the crash stop must run smoothly. After intensive consultations, Park Sung-chan, Sea Trial Commander at the Hyundai yard, and Hans Huisman, Senior Director of Newbuildings at E.R. Schiffahrt and thus the highest-ranking representative of the shipping company on board, arrive at a solution: a mechanical safety element has to be replaced. During the blackout test, a simulated power failure, the engine had initially exhibited problems in starting up again.

“This means we lose five hours, because a boat has to bring the spare part from the yard, but we cannot entertain any compromises where the safety of the ship is concerned,” says Huisman. “Well, that took some doing,” comments Heino Meyer, who spent the whole night conferring in the engine room with the engineers from Hyundai and E.R. Schiffahrt. “But it was certainly a good decision.” Indeed: after installation of the spare part, the engine completes the crash stop without the slightest difficulty.

SEA TRIAL – A HEAP OF STEEL BECOMES A SHIP A sea trial is certainly no joyride. But the meals on board are generally ample and tasty. And because the trial voyage is such a tiring experience for everyone involved, the cook makes a special effort – a point of honour. Seafarers know that good food keeps body and soul together. The mealtimes have to be held in shifts, because the messroom, designed for the 25-man crew, is rapidly filled to bursting during the sea trial. The luxury of a single cabin must be renounced for these days. Even the fitness and recreation rooms of the officers and crew are decked out with mattresses and converted into makeshift bedrooms. These are temporary measures which the men of the testing team endure with equanimity: “It’s best not to hope for sleep during the sea trial anyway,” Hans Huisman comments laconically. This applies especially for the experts from the shipping company. Tirelessly, they work through the lists in the engine control room and check the work of their yard colleagues right down to the last technical detail. Whilst the GL engineers also sometimes need to put in night shifts, this is only required for the official test.

After 51 gruelling hours at sea, the “E.R. Calais” ties up at the pier in Ulsan. The sea trial is over, the ship has passed the test. “The list of defects is within the usual bounds, and all problems can be rectified in the coming week,” says Heino Meyer with satisfaction. And Hans Huisman from E.R. Schiffahrt sums up: “The sea trial has served its purpose: we left the yard with a heap of steel and came back with a ship!” ■ LK



Repair on the high seas: in order for the crash test to be concluded successfully, colleagues quickly deliver an important spare part (top)
Below: tailor-made precision – during the entire sea trial, the main engine is controlled and monitored from the bridge with great attention to detail



PHOTOS: NORD CAPITAL



Test passed: the “CMA CGM L'Astrolabe” is back in the harbour

A Living Piece of History

With some 4.5 million inhabitants, Norway is a relatively small country, but its shipping has been world-class for over 150 years: about 5.1 per cent of today's world merchant fleet is controlled by Norwegian owners. One of these internationally successful companies is the stock exchange-listed group I.M. Skaugen ASA of Oslo.

VERSATILITY AND SPECIALIZATION are characteristic of the Norwegian merchant fleet. A typical example is the transportation of gas, for which the Norwegian shipping companies currently hold about a fourth of the world market share. And, in this field, the I.M. Skaugen Group is a major player. Besides the transportation of petrochemical gases and liquefied petroleum gas (LPG), ship-to-ship transfers of crude oil form another key aspect of the firm's business. Its client base, which includes big names in the international oil and petrochemical industry, is served from the locations Dubai (United Arab Emirates), Freeport and Houston (USA), Nanjing, Shanghai and Wuhan (China), Oslo (Norway) and Singapore. Asia, and above all the Chinese market, is of growing significance. In 2004, total turnover attained almost 150 million US dollars.

The current fleet of the I.M. Skaugen Group comprises 42 units, including gas tankers, Aframax tankers, lightering support vessels, LPG carriers and gas barges. Over the last few years, the company commissioned the construction and taken delivery of several new vessels, among them six new LPG/E carriers. Currently, the Norgas fleet consists of 18 LPG/E carriers, of which 11 comply with the GL class.

THE PERSONNEL: AN INTERNATIONAL TEAM Skaugen gives its staff members a special place in the corporate philosophy. The underlying principle: "In global competition, the companies that will win are those that can build up a team of people with the best know-how and the greatest enthusiasm – wherever in the world they find them." At present, the Group employs some 720 people hailing from 25 nations. Owing to the high requirements that apply to its own junior personnel, the company carries out demanding instruction programmes in its training centres in Wuhan (China) and St Petersburg (Russia). Just how seriously cooperation and teamwork are taken at Skaugen is indicated by the favourite

motto of the company's "pilot" of many years, Morits Skaugen senior, who passed away recently: "It's nice to be important – but it's more important to be nice." Since the mid-1980s, the enterprise has been led by his son, Morits Skaugen junior, as Chief Executive Officer (CEO) in what is now the third generation of the family.

THE COMPANY ANNALS: A LIVING PIECE OF SHIPPING HISTORY

The roots of the I.M. Skaugen Group reach back to 1916, when the Norwegian master mariner Isak Martinius Skaugen realized that the future of shipping belonged to steam propulsion. He sold his four-masted barque "Alcides" and bought a steamship. Since he had obtained the money for his new project from investors at the Danish stock exchange of Christiania, he named both the ship and the company "Eikland" in honour of the first investor. In the late twenties and early thirties of the past century, D/S-A/S Eikland – the full name of the company – began its activities in the oil transportation business. The first diesel-driven tankers were purchased to replace the steam vessels.

After the entire Skaugen fleet, except for two ships, was lost in the Second World War, a fresh start had to be made. Together with Sven Salen, the biggest Swedish shipowner of the day, the Salen-Skaugen Line was established to offer regular services between the US West Coast and ports in the Far East, combining general cargo and passengers. However, after Mao Zedong led the Communists to power in China in 1949, the ports so essential for the success of this venture were closed; Skaugen withdrew and turned to opportunities elsewhere.

In the following decade, I.M. Skaugen, as the company was now called, became active in a new sector: after the Second World War, the International Refugee Organization (IRO) needed suitable ships for the relocation of huge numbers of refugees from Europe to the USA, Canada and



With its brands Norgas Carriers and Skaugen PetroTrans, I.M. Skaugen specializes in transporting petrochemical gases (LPG/E) and in the ship-to-ship transfer (lightering) of crude oil



Above: the Norgas Napa on its way to the open sea



Australia. A vessel called the "Skaugum", which had already been acquired in 1947 in Kiel, seemed well suited for the job, and so it conveyed – later supported by its sister ship "Skaubryn" – about 170,000 refugees to Australia over about five years. Both ships were subsequently used for the transportation of troops to Korea and Vietnam, ending their careers as a vessel carrying pilgrims to Mecca (Skaugum) and as a luxury passenger ship on the Australian route (Skaubryn).

DIVERSIFICATION AND INNOVATION The experience and expertise gained in the previous enterprises resulted in increased activities in the passenger shipping and cruise sector. Together with two other Norwegian owners, Gotaas-Larsen and Anders Wilhelmsen, the Royal Caribbean Cruise Line was founded in 1968. Later, in the 1980s, Pearl Cruises was formed in cooperation with J. Lauritzen of Denmark to meet the growing demand for more adventurous cruising to the newly reopened China.

Following the death of the founder, Isak Martinius Skaugen, in the early sixties, the focus of I.M. Skaugen again moved back more strongly to cargo transportation. The first freight contracts led to the commissioning of a fleet of four new bulk carriers to serve shallow-water ports in Argentina. Consequently, ship-to-ship transfer was required and Skaugen made its first foray into large-scale transfers at sea. At about the same time, Skaugen also pioneered the bulk shipment of cement, developing the self-unloading equipment that was required. This period also saw the establishment of the Norwegian Bulk Carrier pool (NBC), of which Skaugen was one of the founders, a move which was accompanied by an enormous expansion of the fleet.

With the increase of offshore oil and gas business in the years that followed, Skaugen reacted by founding Skaugen Offshore and Skaugen Drilling; more ships were ordered

and primarily employed for voyages to the Canadian and Soviet oilfields. Thanks to a contract with the American automobile manufacturer Ford, the company, which had in the meantime grown considerably in size, also entered the car transportation business. Viking Car Carriers was formed in collaboration with another Norwegian owner, C.T. Gogstad, and the Dominion Steamship Company of New York, operating successfully well into the next decade. The emergence of the new ro-ro ships resulted in new vessels for the fleet: together with the Seaboard Company of Canada, Skaugen commissioned the largest ro-ro transporters for car and packaged lumber that were ever built.

REFOCUSING FOR FUTURE GROWTH 1982 witnessed increased specialization in gas transportation: five companies founded the cooperative pool Norwegian Gas Carriers (now Norgas), with Skaugen rapidly becoming the largest shareholder. However, car transportation and other cargo activities remained within the scope of interest for the Group.

The nineties began with a drastic change: through the merger of Labremus, Kosmos Shipping and I.M. Skaugen, a new enterprise was born, but the name "I.M. Skaugen" was retained. In the subsequent years, the focus shifted to becoming a true marine service transportation company, with Skaugen PetroTrans for the ship-to-ship transfer of oil cargoes and Norgas for the gas transportation as its core activities.

The President of Norgas, Terje Ørehagen: "One of the goals in Norgas is to be cost and service leader in our market niche. We regard Germanischer Lloyd as a cost-effective and service-minded classification that complies very well with our needs worldwide. In addition to Class and statutory services for our existing pool of vessels, we are also actively using Germanischer Lloyd for our Condition Assessment Programme and as our ISM and ISO 9001 auditor." ■ AS

PHOTOS: I.M. SKAUGEN

Clean Air on the World's Oceans

Since 19 May, Annex VI of the MARPOL Convention has been in force. The latest annex to this body of internationally binding regulations generates numerous changes for shipping companies, engine builders and yards. Here, we present an overview of the most important aspects.

IN THE SHAPE OF MARPOL 73/78 ANNEX VI In September 1997, the International Maritime Organization (IMO) issued the first internationally binding regulatory framework for limiting the gaseous pollutant emissions of marine diesel engines. In advance of these directives, all manufacturers of marine diesels aimed for a consumption-neutral pollutant optimization of their engines with specific manufacturing costs that were as low as possible. For years now, industry and research have been developing a number of technical processes to meet the limits.

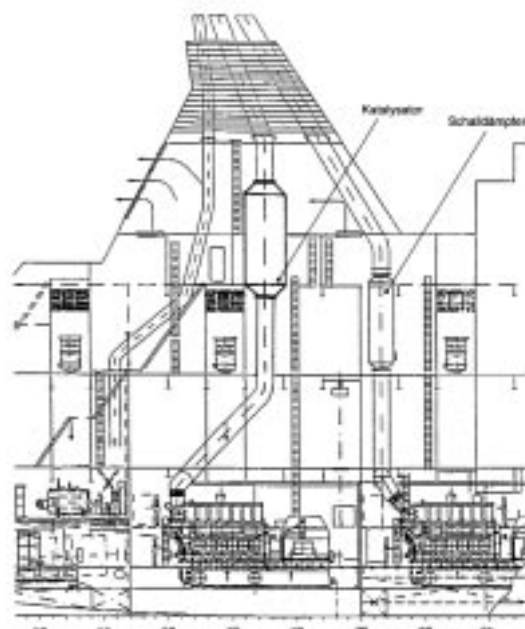
Most merchant vessels have diesel engines which are highly efficient in full and partial-load operation, have a compact design, and offer great operational reliability. Exhaust gases in ship operation are predominantly caused by the main and auxiliary engines. The quantity and composition of the exhaust gases and the exhaust gas behaviour depend on the following parameters, amongst others:

- the type of engine (two-stroke or four-stroke),
- the output installed and actually used,
- the engine speed,
- the condition of the machinery, and
- the fuel used.

HEAVY FUEL OIL AS A SOURCE OF ENERGY The fuel quality has a direct influence on the exhaust gas values of the engines. The fuel used for the diesel engines widespread today is heavy fuel oil. Heavy fuel oil is actually a residue from the refining process of the petroleum industry and is

cheaper than distillate. The noxious emissions in the exhaust gas of marine diesels contain, amongst others, nitrogen oxides (NO_x), sulphur oxides (SO_x), CO₂, hydrocarbons (HC) and particulate matter. Depending on the origin of the fuel, varying amounts of – for example – vanadium, cadmium, lead and other heavy-metal compounds can be present in the fuel. The qualities of standard heavy fuel oil not only pollute the atmosphere but also contain undesirable constituents which can cause diverse problems in the fuel supply system. By means of separators and filters, they are removed from the heavy fuel oil and form an oil sludge, which must be disposed of in a special manner (see MARPOL Annex I).

The most effective and simplest way of reducing sulphur oxide (SO_x) emissions is the use of fuels with a low sulphur content. MARPOL Annex VI generally stipulates a maximum value of 4.5 per cent by weight. The average sulphur content of the fuels used worldwide currently lies at 2.7 per cent by weight (unit mass). In so-called "SO_x Emission Control Areas" – including the entire Baltic from 19 May 2006 and the North Sea probably from mid-2007 – a maximum sulphur content of 1.5% m/m will apply for all fuels burned on board. It may be expected that the need for low-sulphur fuels can be covered by the petroleum industry; the demand has remained within bounds due to the higher prices in relation to heavy fuel oil, as explained at the second "Green Ship Conference" in Amsterdam in the middle of April.



Catalytic converter in the exhaust duct of a marine diesel engine



PHOTO: GETTY IMAGES



On the way to the EIAPP certificate

With the IAPP certificate, operators can now show that the mandatory requirements of Annex VI have been observed for an entire ship.

Annex VI restricts the exhaust gases of the main and auxiliary engines by applying two different approaches, with the focus lying on the reduction of nitrogen oxide emissions (NO_x). The composition of exhaust gases not only varies according to the particular engine but also fluctuates with the load or rotational speed. The generation of nitrogen oxides (NO_x), carbon monoxide (CO) and hydrocarbons HC depends on the speed. Slow-running diesel engines cause higher specific NO_x emissions than fast-running ones. For this reason, NO_x emission values are prescribed as a function of the rated engine speed.

The production of sulphur oxides (SO_x) depends mainly on the sulphur content of the fuel. To reduce the sulphur oxide emissions, the permissible sulphur content in the fuel is limited as the influencing parameter (regulation 14). Carbon dioxide emissions (CO₂) and the emissions of other greenhouse gases are not (yet) limited by MARPOL.

MANY ROADS LEAD TO ROME Emissions can be reduced in a number of ways, bearing in mind the difference between emission reduction measures within the engine, e.g. combustion optimization, and measures outside the engine, e.g. emissions treatment units.

The choice of the most suitable measures for the ship propulsion system depends not only on the potential for emission reduction but also on the operational factors, such as reliability, space requirements, investment and operating costs. The regulations described in MARPOL Annex VI for reducing air pollution are not restricted to the diesel exhaust gases arising from ship engines. In addition, regulation 12 considers ozone depleting substances (such as extinguishing agents and halogenated fluorocarbons from refrigerating plants), regulation 15 governs volatile organic compounds (VOC, applying only to tankers), and regulation 16 governs emissions from (waste) incineration plants (regulation 16).

CERTIFICATE PROVIDES THE NECESSARY EVIDENCE Compliance with the new limits falls within the responsibility of the shipowner. In the case of engines built after 1 January 2000 with an output exceeding 130 kW, an “Engine International Air Pollution Prevention” (EIAPP) certificate by the engine manufacturer must show that all installed main and auxiliary diesel engines subject to the regulation comply with the currently valid emission provisions. The EIAPP certificate for the engine is also one of the prerequisites for issuance of the IAPP (International Air Pollution Prevention) for the entire ship.

With the EIAPP certificate, the engine manufacturer can verify the fundamental compliance with the limits prescribed by MARPOL Annex VI by that particular engine or engine family. The IAPP certificate serves as proof for the ship operator that the requirements of Annex VI have been observed. The certificates are mandatory for all ships of more than 400 GT in international shipping, now that MARPOL Annex VI – Regulations for the Prevention of Air Pollution from Ships – has come into force. Furthermore, they can be examined within the scope of port state controls.

Before the introduction of Annex VI, Germanischer Lloyd had already published detailed information on the expected requirements for the MARPOL Convention in 1997. From then on, numerous presentations, information events and publications have reported on MARPOL Annex VI, initial experience from practical application of the regulations, and the effects on the participants (engine

industry, shipping companies, yards).

MOBILE MEASUREMENTS PROVIDE ESSENTIAL DATA As an organization recognized by flagstates all over the world, Germanischer Lloyd examines the documentation of the engines and, in addition, carries out initial and periodical surveys on behalf of most flagstate administrations. The pollutants emitted by engines can be measured by Germanischer Lloyd’s mobile test equipment and evaluated in its own laboratory. In recent years, many engine manufacturers have commissioned the certification of their engines on a voluntary basis. Germanischer Lloyd has thoroughly tested the engines types of almost all major engine manufacturers and has already certified several thousand engines. In carrying out the measures needed for certification, the engineers at Germanischer Lloyd will continue to actively promote the practicability of the monitoring methods in the IACS working group and in concert with the engine manufacturers of CIMAC (International Council on Combustion Engines) as well as act in an advisory capacity at the IMO. ■ OM

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MARPOL – AN OVERVIEW OF THE ANNEXES

MARPOL (the International Convention for the Prevention of Pollution from Ships) is an international agreement protecting the marine environment against pollution by ships. It consists of the article section, which contains general provisions and definitions of terms, and six annexes, which regulate certain areas of the contamination of the marine environment by ships. The Convention and Annex I became effective in 1983, with the other annexes coming into effect at later points in time. Annex VI has been valid since 19 May of this year.

ANNEX I: Prevention of pollution by oil

ANNEX II: Control of pollution by noxious liquid substances, such as chemicals transported in bulk

ANNEX III: Prevention of pollution by harmful substances in packaged form (e.g. hazardous cargo in containers)

ANNEX IV: Prevention of pollution by sewage from ships

ANNEX V: Prevention of pollution by waste from ships

ANNEX VI: Regulations for the prevention of air pollution from ships

- Amongst other things, **Annexes I, II, IV and V** govern whether and under what circumstances oil residues, chemicals, ship sewage and waste can be discharged into the sea.
- According to **Annex I**, an oil record book is required to monitor the movement of oil residues from the engine room or cargo tank of the ship, according to **Annex II**, a cargo record book for the movement of chemical cargoes, and according to **Annex V**, a waste record book on the disposal and incineration of the ship’s waste.

- **MARPOL Annex I**, which concerns the prevention of oil pollution, has the greatest significance. The discharging of the oil sludge produced in the engine room through the consumption of heavy fuel oil is prohibited. Bilge water and cargo residues from oil tankers that contain oil may only be disposed of at sea under very stringent conditions and in very small quantities, or in strongly diluted form. As a rule, oily residues must be transferred to reception facilities in the ports. A similar ruling applies to the cargo residues of chemical tankers. Insofar as substances need not be transferred to port reception facilities, discharge is – depending on the danger posed by that particular chemical for the marine environment – also possible, but only under very stringent conditions and in very small quantities. In “special areas” – such as the North and Baltic Seas – it is not permissible to discharge ship’s waste at all, except for foodstuffs.
- **Annex VI** regulates the emissions of air pollutants from seagoing ships, which includes not only the NO_x emissions from diesel engines but also the emissions from other ship systems.

PHOTO: KIM JANGWOK/E.R. SCHIFFFAHRT



On Course!

The fleet in service with Germanischer Lloyd class grew to 5,401 ships in 2004. This was associated with a rise in turnover to 268 million euros. The principal investments are being made in human resources and training as well as research and development.

THE BELUGA ETERNITY, a multi-purpose ship owned by the company Beluga Shipping, was the 5,401st vessel with GL class and completed the GL register for the year 2004. The fleet managed by Germanischer Lloyd grew by more than 8 per cent to 47.8 million GT. As another all-time high, 844 ships with 18.3 million GT were listed in the order books of Germanischer Lloyd at the beginning of the year 2005.

"Naturally, we are profiting from the booming shipping markets worldwide," is how Dr Hermann J. Klein, Member of the Executive Board, explains this outstanding growth. "At the same time, the topics of safety and environmental protection are right at the top of the agenda for shipping companies worldwide."

The good order situation and the large number of ships on the company's books have resulted in an international

recruitment campaign. 80 surveyors were prepared in the Hamburg Training Centre in 3-month courses for their work at all over the globe. At the end of 2004, Germanischer Lloyd employed a total of 2,546 people at its Head Office in Hamburg and 163 other locations in 77 countries.

DRAWING THE BALANCE Newbuilding activities and the growth of the fleet are also reflected in the balance sheet: in the year 2004, the sales revenues increased by €49.7 million



"Safety and environmental protection are right at the top of the agenda for shipping companies."

Dr Hermann J. Klein, Executive Board Member

euro to €268.5 million euros. In 2004, Germanischer Lloyd again invested in research and development; the recent start of the research project "SAFEDOR" already having had an effect. Research activities in the area of fuel cell technology were expanded, and a development programme on the collision resistance of the composite material Sandwich Plate System (SPS) was started.

QUALITY IN DEMAND All who are able to maintain with the uncompromising quality standard set by Germanischer Lloyd stand to benefit greatly, and many shipowners are getting ahead of the competition in this way. But there is another side to the coin: 440 ships with a total of 1.7 million GT were taken off the register, because the safety or repair obligations set by Germanischer Lloyd were not complied with. The vessels affected were mainly general cargo ships (including container ships) as well as ro-ro ships, bulkers and other tonnage.

The "Beluga Eternity" was the last ship of the year 2004 – which ship will reach the 50 million GT mark? ■ SN

Maritime Greetings from Brussels

Not only do that the 25 member states of the European Union control a third of the global fleet. The sensitive coasts of the Continent are also bordered by busy traffic lanes. Reason enough for the EU to concern itself more frequently with matters of safety in shipping.

A COMPREHENSIVE REGULATORY FRAMEWORK that does not skirt around the interests of third-party states is being created. The action packages "Erika I" and "Erika II" – triggered by serious accidents at sea – have necessitated a high degree of coordination at the International Maritime Organization (IMO) in London. Shipping circles worldwide are insisting on a regulatory framework that is globally harmonized without special regional dispensations.

PLENTY OF TASKS LYING AHEAD Against this background, a hand-over of power within the Commission in Brussels always meets with special interest. In the new Commission under President José Manuel Barroso, which commenced duties on 1 November 2004, Jacques Barrot (67) of France took over the position of Transport Commissioner. He follows in the footsteps of Loyola de Palacio of Spain, who generated considerable attention through her vigorous, but not always uncontroversial, course in shipping matters. Barrot, on the other hand, is regarded as the proverbial consensus politician. Evidence of his ability to strike a balance, and proof of his negotiating skills, may be seen in his political career, which has taken him from the position of Member of Parliament for the French Haute-Loire region via various ministerial posts in Paris to Brussels, initially as Commissioner for Regional Policy, and now as Transport Commissioner. In his inaugural speech before the European Parliament in February 2005, Barrot also presented the safety of shipping as being one of the key points on his agenda. With the European Maritime Safety Agency (EMSA) established in May 2003, he has now been given a suitable instrument for this purpose. Under its Executive Director Willem de Ruyter (NL) and with an initial staff of 50 – the personnel level is to increase to about 100 this year – EMSA will work towards ensuring an effective and uniform application of EU regulations. However, it will not confine itself to surveillance visits to member states and training programmes for port and flag state inspectors, but intends to participate directly in combatting

marine pollution and protecting port facilities. A central shipping authority for Europe is emerging!

Liaisons with the member states are to be handled by an administrative board in which the member states, the Commission and the most strongly affected sectors of industry will be represented. Above all, the administrative board will define EMSA's agenda and budget. Currently at home in Brussels, EMSA will have its ultimate domicile in a location with a great historical connection to shipping: Lisbon, in a building at the foot of the old town on the River Tagus. In the meantime, the law-making mills in Brussels have not been standing still. In summer 2005, the Commission will present another package of measures for ship safety. Owing to the controversy surrounding which met the preceding packages, this one will not be called "Erika III". But it will address the same issues: port state controls are to be evaluated in more detail, oil pollution in coastal waters made punishable, the obligations of flagstates defined within the European context, the statutory duties of the classification societies demarcated, and the investigation of accidents harmonized within the EU. Even the establishment of a European coastguard with its own vessels is not a taboo topic.

ONE VOICE FOR ALL OF EUROPE The most heated discussions are likely to centre around the wishes of the Commission to have the EU speak with only one voice in international organizations – such as the IMO – in future. This would result in the EU becoming a member of the IMO and ratifying its most important conventions. This proposal is brewing up a storm: can it be implemented and enforced internationally at all? What will become of the traditional participation and voting rights of the member states in the IMO? Lively discussion is guaranteed. It is to be hoped that the maritime industry's important contribution to the Lisbon strategy, which is intended to make Europe the most competitive economic area by 2015, is not lost from the radar screen because of over-regulation. ■ CH



Cubic Metres Instead of TEU

The liquefied gas tankers Polar Viking and Pacific Viking are not only the youngest vessels in this ship segment, but also the largest of their kind in the register book of Germanischer Lloyd. And that is saying something. Because Germanischer Lloyd has concerned itself intensively with the design and construction of gas tankers for 30 years now, attending to an average of three newbuilding projects per year.

THE SHIPS ARE OWNED BY a 50/50 joint venture comprising the shipowner Reederei F. Laeisz of Hamburg and the fertilizer company Yara International. Laeisz is responsible for the technical management of the vessels, which have been chartered by Yara for 10 years for the car-

riage of ammonia. Yara was recently demerged from Norsk Hydro, following the latter company's strategic decision to focus on energy and aluminium.

Yara is the global leader in ammonia trading and shipping, and large gas carriers (LGCs) of 52,000–60,000 m³ are the

biggest vessels normally used for the carriage of ammonia. Polar Viking and Pacific Viking are both fitted with four free-standing, saddle-supported prismatic cargo tanks. The tanks are insulated with 120 mm thick rigid polyurethane foam clad



"Only tankers with high environmental standards are awarded our 'Green Ship' mark."

G.-A. Martin, GL Ship Type Manager for Tankers

with 0.5 mm aluzinc steel sheeting. Both gas tankers are able to carry two grades of cargo simultaneously in a fully segregated manner.

Another recent gas carrier newbuilding classed with GL is the LPG/ethylene carrier GasChem Baltic with a capacity of 8,495 m³. The ship was built at Severnav in Romania for GasChem Services GmbH & Co. KG of Hamburg and sails as part of the GasChem-Gasmare Pool of 28 sophisticated gas carriers.

The ships in this pool, which fall within the 4,000–9,000 m³ size range, carry LPG, ethylene and other chemical gases on coastal and deep-sea routes under contracts of affreightment (COAs) with major chemical and oil companies and trading

companies. Although the gas carriers are predominantly engaged in COA work, the GasChem-Gasmare Pool also serves the international spot and time charter gas markets.

"GasChem Baltic represents the latest in a long line of gas ships classed with GL and built for GasChem Services and its principal shareholders, Hartmann of Leer, Tankreederei Ahrenkiel of Hamburg and GEBAB of Meerbusch," states Georg-Alexander Martin, GL Ship Type Manager for Tankers. "This particular ship is built to a high standard and its environmental protection features have resulted in the award of a 'Green Ship' notation. GasChem Baltic is also equipped with a cargo-handling plant offering great versatility in terms of cargo cooling and grade changing capabilities."

Two further gas carriers to the GL class are under construction at the Severnav yard in Drobeta-Turnu Severin, a Romanian inland port situated well up the River Danube near the Iron Gate gorge. Each of the pair has a cargo capacity of 8,500 m³. Germanischer Lloyd's involvement with gas carriers has been continuous and steady over the past 30 years. To cover the demand for liquefied natural gas tankers, Germanischer Lloyd is currently working on the development of innovative concept studies. ■ MC

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The gas tanker "GasChem Baltic" is intended for both coastal and high-sea routes and has a cargo capacity of some 8,500 m³



Cold Enough?

Ice, low temperatures and navigational difficulties make sailing in ice-covered waters a special challenge for the hull, engine, steering gear and crew. But first-class fabrication quality and experience help to overcome all the difficulties safely.

NAVIGATING IN ICE ENTAILS A NUMBER of unique risks. The most obvious risks when sailing in ice-covered waters come from the increased loads through ice contact with the hull, the propulsion system and appendages such as the rudder. Of course, associated with the ice are low ambient temperatures. These low temperatures not only reduce the ductility of ship construction materials, but together with the ice they reduce the effectiveness of many components critical to ship operations ranging from deck machinery to sea water intakes below the waterline. Navigation in higher latitudes brings increasing difficulties with respect to extended hours of darkness, poor weather conditions, and a relative lack of good charts, communication systems and other navigational aids. Combined with the fact that the remoteness of the polar and sub-polar regions makes rescue or clean-up operations difficult and costly, navigating the ice-covered waters of the world poses many challenges.

WHY NAVIGATE IN ICE-COVERED WATERS? Despite the problems associated with navigating ice-covered waters, there are many reasons why these challenges need to be met. One important reason is that the world's ice-covered seas

and oceans hold valuable resources. The most obvious present-day examples of this are the increased activities in the Russian waters of the River Pechora and the Kara and Okhotsk Seas, where valuable oil and gas reserves are being tapped at unprecedented levels. The world's ice-covered waters also act as lifelines for many communities and major transit routes for some countries. More than 80 per cent of Finland's foreign trade, for instance, involves shipping – rail and road are not sufficiently well developed or are simply too expensive. Although many of the cargo vessels operating in the region are ice-strengthened, a fleet of ice-breakers is required to keep twenty-three of its approximately sixty Baltic ports open all year round.

Furthermore, polar waters are increasingly viewed as potential transit routes. Although not yet utilised to a significant degree by non-Russian vessels, the Northern Sea Route through the Russian Arctic reduces the transit distance from Western Europe to Japan by approximately 40% compared to the traditional route through the Suez Canal. In addition to increasing tourism demands in the Arctic and Antarctic, invaluable research opportunities (such as those pertaining to climate change), round off the many reasons why the obstacles to navigating the world's ice-covered waters need to be overcome.

SPECIAL CONSTRUCTION AND EQUIPMENT PROVISIONS When it comes to strengthening ships for navigation in ice-covered waters, the hull structure must be designed to resist the global and local ice loads characteristic of its ice class. The extent and magnitude of local ice loads for the different hull areas and appendages depend on the various ice interaction scenarios upon which the design of the ship is based. The uncertainty associated with ice loads is relatively high compared to sea loads and so the design of the ship structure has to incorporate some strength reserve to limit damages from accidental overloads. Higher material grades suitable for low temperatures have to be used and special abrasion and corrosion-resistant coatings are required.

Main machinery systems also need to be designed for operation in ice, with particular emphasis placed on the ice loads on propellers and the entire propulsion line. Not only do engine output requirements need to be established for independent or escorted operations, but deck and auxiliary machinery systems also have to be designed taking snow, ice and the expected low temperatures into account. Deck machinery and steering gears, for instance, have to operate in low ambient temperatures, ballast tanks above the waterline need to be heated, vent pipes, sea chests, intake and discharge pipes and associated systems have to be designed such that blockage or damage due to freezing or ice and snow accumulation is avoided.

Even electrical installations and safety systems require special attention. Loss of essential services or control systems – for example due to vibrations, dampness or low humidity – has to be avoided, emergency batteries have to be protected from low temperatures and the danger of explosion when gas ventilation is restricted by the accumulation of ice or snow.

Indeed, the basic arrangement of an ice class ship has to take into account special subdivision and stability requirements due to icing, damage and/or ramming of ice features, as well as accommodation and escape measures, and anchoring and towing arrangements.

More than 2,600 ships have already been awarded one of the widely recognised GL class certificates, classifying them for voyages in different icy conditions.



Extreme conditions are also encountered on transit routes

DON'T GO INTO THE COLD WITHOUT US Overwhelmed? Don't be. For more than 135 years, Germanischer Lloyd has been providing quality services to the shipping industry and setting standards throughout a wide spectrum of services. From traditional maritime requirements pertaining to seagoing ships, to offshore and onshore installations, to our facility services, we always aim to lead rather than follow. Accordingly, Germanischer Lloyd is also at the forefront in the classification of ice strengthened ships. In fact, did you know that about half of all ships classified by Germanischer Lloyd have some level of ice-strengthening? From ships strengthened for drift ice in the mouths of rivers and coastal regions to those strengthened for navigation in the Arctic and Antarctic waters, over 2,600 vessels currently have one of our widely recognised levels of classification which certify their compliance with Germanischer Lloyd as well as international rules pertaining to strengthening for navigation in ice.

Our experience and long history of leading research directed towards the classification of ice class ships ensure that we are able to provide our customers with state-of-the-art advice. Of course, it's not only our customers who benefit from our leadership in the classification of ice-strengthened ships. On behalf of the German Ministry of Transport, Germanischer Lloyd contributed to the development of HELCOM recommendations for the safety of winter navigation in the Baltic Sea area and also chaired the IMO drafting group which finalized the "Guidelines for Ships Operating in Arctic Ice-Covered Waters". We also headed the IACS working group which developed the "Unified Requirements for Polar Class Ships" – the technical accompaniment to the IMO Guidelines. In addition to our long-standing cooperation with Baltic administrations in the ongoing development of the Finnish-Swedish ice class rules, including research regarding new guidelines for longitudinally framed hull structures, Germanischer Lloyd is the only classification society participating in the European Union research project SAFEICE, aimed at decreasing the risks involved in navigating ice-covered waters by developing improved design codes and regulations.

So what do you think now? Is it any wonder that our experience and leadership allow our ice class customers to stop worrying and love the cold? ■ RH

For further information: Richard Hayward, Ice Class Sec., Phone +49 40 36149-115, richard.hayward@gl-group.com



Traditional lashing: method of the future?

Safety as a Design Objective

SAFEDOR is the name of a four-year research project coordinated by Germanischer Lloyd in which 53 companies are developing a novel approach to ship design. What makes it so special is the fact that the approach is based on risk assessment and also considers the human factor.

SHIP DESIGN HAS COME A LONG WAY since the late 16th century when shipwrights abandoned the age-old practice of building ships "by sight" and began to construct hulls according to plans laid down on paper by the shipping industry's original naval architects.

Today, ship design is a sophisticated discipline which makes use of an extensive rule book of empirical formulae derived from the vast, accumulated experience of ships built to date and countless model test results. Designers are also now able

to make use of high-powered computers to study the performance of hull structures in a seaway under various load conditions using dynamic analysis techniques and finite element methods.

However, despite the great progress that has been made and the good maritime safety record that has been achieved, the traditional approach to ship design is unable to cope adequately with the new challenges facing the industry. There are weaknesses in extrapolating conventional methodologies

for the wide array of new and increasingly complex ship designs and technologies being introduced. Also, the current system does not take adequate account of the impact of the human element in ship operations; nor is it capable of meeting the general public's much higher expectations when it comes to safety and environmental performance.

SAFEDOR KICK-OFF Against this background, the European maritime industry has agreed to launch the SAFEDOR project to investigate the merits of a risk-based approach to ship design. SAFEDOR, which is short for Design, Operation and Regulation for Safety, is being funded with EUR 12 million euros (\$15.5 m) from the European Commission, while industry itself is contributing 8 million euros (\$10.3 m). SAFEDOR is the single largest project on maritime safety ever to be funded.

The SAFEDOR kick-off meeting was held at the Hamburg head office of Germanischer Lloyd on 15-16 February 2005. The event provided an opportunity for representatives of the 53 companies participating in the four-year project to meet, reaffirm their objectives and press on with the project's substantial agenda.

The aim of SAFEDOR is to develop and enhance tools for predicting vessel safety performance; to develop concepts for innovative and safety-critical technologies; to establish a risk-based regulatory framework to facilitate the systematic use of first principles; and to develop prototype designs for a number of safety-critical vessel types to validate the pro-

posed methodology and demonstrate its practicability. The SAFEDOR participants include representatives from across the industry spectrum – from shipowners, shipyards, equipment manufacturers and classification societies to research institutes, software developers, academia and a flag-state.

GERMANISCHER LLOYD INVOLVEMENT A range of key tasks have been set, the outcome of which will help to realise the project's goals. Germanischer Lloyd is coordinating the overall effort. The society's Dr Pierre Sames is the SAFEDOR Project Chairman while Dr Andreas Baumgart is the Project Manager.

SAFEDOR's ongoing agenda is managed by the project's various bodies. Leading the project is the Steering Committee, supported by an Advisory Committee. The Project Management Committee will coordinate the efforts of SAFEDOR's seven Work Packages. Dr Andreas Baumgart is assisted by the SAFEDOR Secretariat and will act as a link between the European Commission and the Steering and Project Management Committees.

SAFEDOR falls within the 6th Framework Programme (FP6) of the European Commission and recognises the key role played by European companies in the design, construction and operation of modern seagoing vessels. European expertise and involvement are particularly strong for those sophisticated ship types where safety is afforded the highest priority, e.g. cruise vessels, ro-ro passenger ships, gas tankers and container ships.

At the kick-off meeting this past February, Peter Crawley, the Project Officer responsible for SAFEDOR at the European Commission, was on hand to outline the results that Brussels expects to see from the project's participants. "We concur with the basic principles behind SAFEDOR," he said. "We believe that the project holds the potential to not only enhance global maritime safety through innovation but also to strengthen the competitiveness of the European maritime industry in the process."

SAFETY AS A DESIGN OBJECTIVE SAFEDOR advocates an alternative, risk-based approach to maritime safety in which safety is seen as a design objective rather than a constraint. In contrast to the conventional ship design methods and prescriptive rules currently in use, risk-based ship design is recognised as providing scope for novel and inventive design solutions.

"SAFEDOR will utilise progress that has already been made by industry in the area of risk assessment, including several advances in the maritime sector, to offer a holistic approach to ship design and operations," explained Dr Pierre Sames at the kick-off meeting. "By advancing the practical use of risk-based methods in a range of applications, SAFEDOR will then be able to propose a new, risk-based regulatory framework."

PROGRESS ON RISK ASSESSMENT The maritime industry has started to develop risk assessment methodologies in

recent years but a number of challenges lie ahead. The International Maritime Organization (IMO) first began considering formal safety assessments (FSAs) in 1995 and a certain amount of progress has been made, notably the new SOLAS requirements governing fire protection which adopt a standard risk-based approach.

"However, the risk assessment concept now needs to be taken a stage further and SAFEDOR provides an ideal vehicle for us to adopt a truly holistic approach to ship design," points out Dr Andreas Baumgart. "We need to involve all the stakeholders and we need to take into account all the accidents that could happen, including those due to human error. We also need to review our work as we establish these new methodologies and not accept the results of FSAs without question."

SAFEDOR will help to develop a risk-based ship design regime which offers flexibility, yet at the same time is specific enough not to be open to too many interpretations. "It aims to provide a better system for creative, safety-conscious designers and a system that penalises mediocrity and sub-standard practices," concludes Dr Andreas Baumgart.

Shipbuilding has come a long way since the first logboat canoe. SAFEDOR is taking seafaring to a new level.

For further information about SAFEDOR: Dr Andreas Baumgart, Strategic Research, Phone +49 40 36149 668, andreas.baumgart@gl-group.com. More details on the progress of the project can be found at www.safedor.org



Enrique Fabre Arques, Izar

Tom Strang, Carnival plc

Prof Dracos Vassalos, University of Strathclyde, Glasgow

Hans Christensen, Danish Maritime Authority



Antonio Perez de Lucas, Izar

Dr Pierre Sames, Projektleiter, Germanischer Lloyd

Dr Rolf Skjong, Norwegische Klassifikationsgesellschaft

Prof Dr.-Ing. Wilfried Hensel, SAM Electronics

News from Industrial Services

Conferences

JUNE

14–15 June 2005, Hamburg

Symposium on Offshore Wind Energy

For the first time ever, the 4th Offshore Wind Energy Conference will take place concurrently with the 3rd www.Windmesse.de Symposium in Hamburg, making this the biggest and only offshore wind congress in Germany. The expert conference on the utilization of wind energy offers operators of wind farms, plant manufacturers, investors and representatives of insurance companies alike a valuable discussion platform on matters of topical interest in the trade. On the first day of the event, the programme will focus on design fundamentals for offshore wind turbines, with special consideration of the load assumptions and dimensioning methods. The topics of the second day will include access techniques, grid connection and experience in the operation of such installations. An examination of the pros and cons for various types of multi-megawatt plants will be given special emphasis. The 4th Offshore Wind Energy Conference is being convened jointly by Germanischer Lloyd WindEnergie GmbH and www.windmesse.de in the "Hafen Hamburg" Hotel. For further information and registration, please contact Mirja Rathlev at Germanischer Lloyd WindEnergie GmbH, Tel. +49 40 36149-7016, mirja.rathlev@gl-group.com, or visit the following websites: <http://www.gl-group.com/glwind> and www.windmesse.de/symposium



Seminars

SEPTEMBER

19 September 2005, Hamburg

2nd Seminar on the Project Certification of Wind Turbines

For registration and further information on the seminar: Germanischer Lloyd WindEnergie GmbH, Jutta Wacker, Steinhöft 9, 20459 Hamburg, Phone +49 40 31106-1144, Fax +49 40 31106-1720, jutta.wacker@gl-group.com, www.gl-group.com/glwind

QUALITY ASSURANCE

Opening of Hamburg Airport Terminal

At the end of May, the new Terminal 1 was inaugurated at Hamburg Airport. An impressive steel structure bears the roof of the new departure hall, which was designed by Meinhard von Gerkan, the Hamburg star architect. Construction of the main supporting structure of the terminal – a tube framework with cast-iron nodes – was tested and supervised by GL Bautechnik with regard to the welding technology and corrosion protection. GL Bautechnik has wide-ranging experience with quality assurance in construction work: the GL specialists had previously been involved in the identical Terminal 4 of the airport. Last year, their expertise was called for to appraise the new Olympic stadium in Athens. For further information: Joachim Klindt, Managing Director of GL Bautechnik, Phone +49 40 36149-358, joachim.klindt@gl-group.com

EXHIBITION RETROSPECTIVE

Gastech 2005

Exhibitions and trade fairs are pure communication: exhibitors present their latest products or services. Visitors examine what is on offer and use the opportunity for direct comparisons with the competitors. For Germanischer Lloyd Oil and Gas GmbH (GLO), Gastech 2005 from 14 to 17 March was a discussion marathon. GLO took part in this event for the first time. This, the 21st international conference and exhibition, was held in Bilbao with almost 4,000 high-level gas industry professionals attending. Amongst the many current gas projects in which the company is involved, GLO presented diverse activities from the area of risk mitigation:

- (a) quality assurance certification for equipment, material and construction supervision for the \$3.5 billion Dolphin gas pipeline project in Qatar and the United Arab Emirates, which is on schedule for completion at the end of 2006;
 - (b) independent verification services for the new Costa Azul liquefied natural gas (LNG) receiving terminal being built in Baja California on Mexico's North-Western coast; and
 - (c) quality assurance certification for equipment, material and construction supervision for the Oryx gas-to-liquids (GTL) plant under construction in Qatar.
- The discussions with customers are highly productive, and therefore GLO's participation in Gastech 2006 will be considered.

NORTH SEA

FINO 1 Research Platform Delivered to the Federal Government

On 13 April, the research platform FINO 1 in the North Sea was handed over on schedule by Germanischer Lloyd WindEnergie GmbH (GL Wind) to the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). GL Wind will continue to provide technical support for the research platform. The data harvested from the meteorological, hydrological and biological measurements will be used by standardization bodies, research institutes and certification organizations to secure the technical requirements for offshore technology. The North Sea research platform is situated about 45 kilometres north of Borkum in water approx. 30 metres deep (Borkum Riff, coordinates N 54° 0.86' E 6° 35.26') in the direct vicinity of a potential location for an offshore wind farm. In the year 2001, GL Wind was entrusted with coordination of the construction, erection and commissioning as well as the operation of the platform. For further information: Gundula Fischer, Project Certification, Phone +49 40 311061-145, gundula.fischer@gl-group.com or on the Internet at www.fino-offshore.de



FINO 1 research project

A Date to Note: 2nd Seminar on the Project Certification of Wind Turbines – 19 September 2005 in Hamburg

In view of the favourable prospects of wind energy at home and abroad, the need for well-founded information on the profitability of wind farms is growing. To a decisive degree, the profitability depends on the wind volume at the chosen site, the plant dimensions, the technology used and the duration of approval procedures. For operators of wind turbines, project developers and financiers, the second seminar on the project certification of offshore and onshore plants offers in-depth information on the three topics of risk assessment, investment security and technology. Building on the success of the first seminar on the project certification of wind turbines, which took place in mid-February in Hamburg and attracted participants from Japan, India, Great Britain, Spain, Italy, Denmark, Germany and the Netherlands, this follow-up seminar will also consider national and international approval procedures. Here, questions affecting nature conservation and environmental protection play an important role, as do the safety of shipping, naval exercise zones, tourism, fisheries, and oil and gas production. For further information and registration: Peter Dalhoff, Head of Department for Project Certification Off- and Onshore, Phone +49 40 36149-117, peter.dalhoff@gl-group.com

Cool Chain Quality: First Airport with CCQI Mark of Quality

Denmark's Billund Airport is the first airport to be certified to handle perishables and temperature-sensitive products with the quality label "Cool Chain Quality Indicators (CCQI)". At the Berlin trade fair "Fruit Logistica" in February, the airport was presented with the certificate by Germanischer Lloyd Certification GmbH (GLC). Billund Airport is Denmark's second-largest airport and a major distribution centre for perishable goods. The Cool Chain Quality Indicators (CCQIs) verify the reliability, quality and qualifications of companies engaged in the transportation, handling and storage of

perishables and temperature-sensitive products (PTSPs). This is the world's first standard that permits the quantitative assessment of technical installations, processes and staff qualifications in this field. It is aimed at achieving a general and sustained improvement in perishable cargo supply chains. For further information: Bernhard Ständer, Management Systems Certification, Phone +49 40 36149-124, bernhard.staender@gl-group.com



Bernhard Ständer, Managing Director of Germanischer Lloyd Certification, and Jan Ditlevsen, Cargo Manager of Billund Airport, during the certificate presentation at Fruit Logistica in Berlin on 10 February 2005

EGV SECRETARIAT

GL Wind Recognized in Denmark

Germanischer Lloyd WindEnergie GmbH (GL Wind) has once again been recognized in Denmark for the type testing and project certification of wind turbines. This approval in Denmark – one of the leading countries in the wind energy sector – confirms the position of GL Wind as one of the internationally leading

certification companies in all areas of wind energy. The Danish "Energy Authority's Secretariat for the Danish Wind Turbine Certification Scheme" (EGV Secretariat) extended the recognition of GL Wind after a successful audit by DAP, the responsible accreditation body. GL Wind was examined in accordance with the Danish ministerial decree dated 10 December 2004 on the technical certification for design, production and erection of wind turbines. This decree covers the applicable provisions for the approval of wind turbines in Denmark.

Trade Fairs

JUNE

13–16 June 2005,

Kuala Lumpur, Malaysia

Oil & Gas Asia

PS027, Hall 1/2

Germanischer Lloyd Oil and Gas

Internet: www.oilandgas-asia.com

SEPTEMBER

20–23 September 2005

Poznań, Poland

Polagra Food

Germanischer Lloyd, Maritime Services

Internet: www.polagra-food.pl

Position confirmed: GL Wind remains a leading international certification company in all the fields of wind energy



High-Tech and Flying Sparks

Can welding be regarded as finally having been mastered as a technological process? More than 115 experts examined this question at the 6th Special Seminar on "Welding in Shipbuilding and Civil Engineering" in April in Hamburg, and also made good use of the opportunity for an exchange of experience and know-how.

THE AUTOMOBILE INDUSTRY, aircraft construction and railway engineering are hardly areas which one immediately associates with Germanischer Lloyd. But welding technology has the same significance here as in our "normal" specialties of steel construction, civil engineering and shipbuilding. Over 200 different welding procedures have been developed in the past. For each manufacturing task, be it a bridge or a ship, the aim is to select the optimum welding procedure to suit the technical and economic conditions. Not only the weldability of the materials, but also the workmanship exhibited by the welder as well as preparation and post-treatment are essential factors here. Topics such as product liability, finding the causes of flaws and damage, research into defect rectification, and the influences on the lifetime of weld seams become interdisciplinary questions. Two examples:

WELDING REDUCES THE FATIGUE STRENGTH – WHAT TO DO?

A project to investigate the fatigue loading of higher-tensile steels in steel construction led to development of the ultrasonic impact treatment method. Here, the aim was to influence the lifetime of seams via an appropriate post-treatment method. The processes already used, such as grinding, hammering or superficial fusing of the weld toes, only improve the fatigue strength to a certain degree. But by impacting the weld toe with the very high frequency of 27 kHz, ultrasonic impact technology (UIT) treatment achieves a plastic deformation of the surface and a change in the stress profile. Thanks to the increased surface hardness, the fatigue strength and the corrosion resistance are both improved. The effectiveness of UIT treatment has been confirmed by various research programmes. It has now been patented worldwide.

COMPONENTS NEED A FACELIFT TOO Welding is not only used for construction purposes: components can be regenerated using the welding technology of laser coating. Two applications from marine engineering show clearly how functional surfaces that have been worn down can be built up again. Thanks to a coating applied to the surface, the operating period of the components can be prolonged considerably. A laser beam is used to create a melt pool on the component. The coating material is added in powder form, melts when the laser beam passes, and then solidifies to become a coating bead. One advantage in relation to conventional build-up welding is the low level of heat generated in the components. This reduces the residual stresses and thus the deformation for the same component geometry.

INNOVATION IS ALWAYS IN DEMAND The special aspects involved with the handling of submarine steels and thick sheets for wind turbines as well as welded structures in container shipbuilding were amongst the other topics. Findings from these processes can also be transferred to other branches of industry. Welding can indeed be viewed as a process that has been mastered, but the pressure of global competition calls for unceasing innovation, rationalization and quality enhancements in this field too. ■ SN

The conference proceedings (€40) are available from Ms. Bettina Alewell, Germanischer Lloyd Industrial Services GmbH, Phone +49 40 36149-3709, Fax +49 40 36149-1781, bettina.alewell@gl-group.com

More details can be found at [Home > GL Group > Events > Congresses > Welding in Shipbuilding & Civil Engineering](#)

Right Assessment of Risk

The operators of offshore and onshore installations bear a great responsibility as regards safety. Each phase of a project has its special risks. GLO Managing Director Hartwig Schönbach presents the arguments in favour of an integrated risk mitigation approach and explains how safety efforts, production optimization and costs can be kept in balance.

NONSTOP: Safety is a word that is widely discussed at present. What does it mean for you personally?

SCHÖNBACH: Safety, as I understand the term, is an indispensable building block for the economic success of a company. It is very important to define the expression properly, because it is used in so many different ways. Moreover, you should also define what you actually want to protect. Here, the focus is on people's health, environmental protection, public welfare, and safeguarding investments.

Germanischer Lloyd Oil and Gas GmbH (GLO) is concerned with all questions and aspects – technical as well as organizational – of how to design, test and certify operational sequences for safety. How does GLO define safety?

The best way is to define the idea of safety is through accident research. This says that a company is safe when



"We look for measures that minimize the probability of an error occurring and limit its effects."

Hartwig Schönbach, GLO Managing Director

there are no unscheduled interruptions to its operation. Of course, this can only be an ideal or a corporate vision, since accident scenarios always arise from time to time as a result of human error. We therefore concern ourselves with matters of technical safety, also known as "asset integrity", as well as with questions addressing the risk of human error. Here, an important aspect is analysing the possibilities for error and examining its effects, with a view to establishing suitable measures that will both minimize the probability of that error occurring and also limit its effects.

GLO's philosophy is based on an integrated approach to risk mitigation. What exactly does that mean?

We apply the notion of "front-end engineering", in that a certain number of risk analyses are carried out for every phase of a project. Here, the objective is to detect and demarcate inherent risks, so that the most effective minimization measures can be identified in good time.

In the course of the project, the possibilities for achieving suitable risk mitigation change considerably. For this reason, it is only sensible to think in terms of project phases in which the relevant risks are treated. In the project planning phase, it is of great safety-related and economic significance for the oil and gas industry to select a suitable site and optimum process engineering. These two parameters govern profitability and operational risk over the entire lifetime of up to 40 years.

And what safety aspects are in the foreground during the project planning phase?

We place great emphasis on technical feasibility studies, such as those examining the route for offshore and onshore pipelines and their influence on the environment. With regard to the economic risk, the most important issues, are the site's suitability for the logistics, the possible influence on the general public, and for the connection of the so-called "upside potential" of oil and gas reserves, for example.

This also applies to the process technology, beginning with the well head and ranging up to the final processing of the hydrocarbons. During the project planning, the so-called "major hazards" are examined. These are the dangers that can have catastrophic consequences in an scenario, e.g. explosions or major ecological damage, caused by inappropriate chemicals that can lead to serious damage on their own or in conjunction with fire-extinguishing agents. In



Safety in plant construction has many facets, above all protecting people's health, the environment and public well fare

“All too often, an inappropriate view of the consequences of accidents leads to a watering down of the risk assessment and therefore to classic errors in management.” **Hartwig Schönbach, GLO Managing Director**

addition to these scenarios, we also check whether these substances are optimized with regard to handling and later disposal.

So risk mitigation means carrying out analyses down to the most minute details?

Yes, the detail engineering phase involves examining of the design and the safety facilities envisaged by the designer for the intended operational purpose. The hazard analyses traditionally performed here are, in our view, not sufficient. The so-called HAZOP studies only consider errors of the first order, and then look at their consequences. However, the consequence is subjective at this point, so here GLO conducts a risk analysis which also investigates the escalation potential with its occurrence probabilities. Using this approach, it is possible to ascertain whether a design meets the requirement “as low as reasonably practicable” (ALARP), i.e. whether further measures are unjustifiable in relation to the incremental reduction in the residual risk.

To what do you pay particular attention during the construction phase of the plant?

In the subsequent project phases of material procurement

and construction, the focus is on ensuring that the design is actually complied with and properly implemented on site. For this, we offer comprehensive quality assurance measures all over the globe; these range up to supervision of the plant performance tests and monitoring and acceptance testing during the start-up. An important milestone during the start-up is checking that all the improvement proposals that were approved during the prior risk analyses have indeed been applied.

The decisive moment is then the commissioning of the plant?

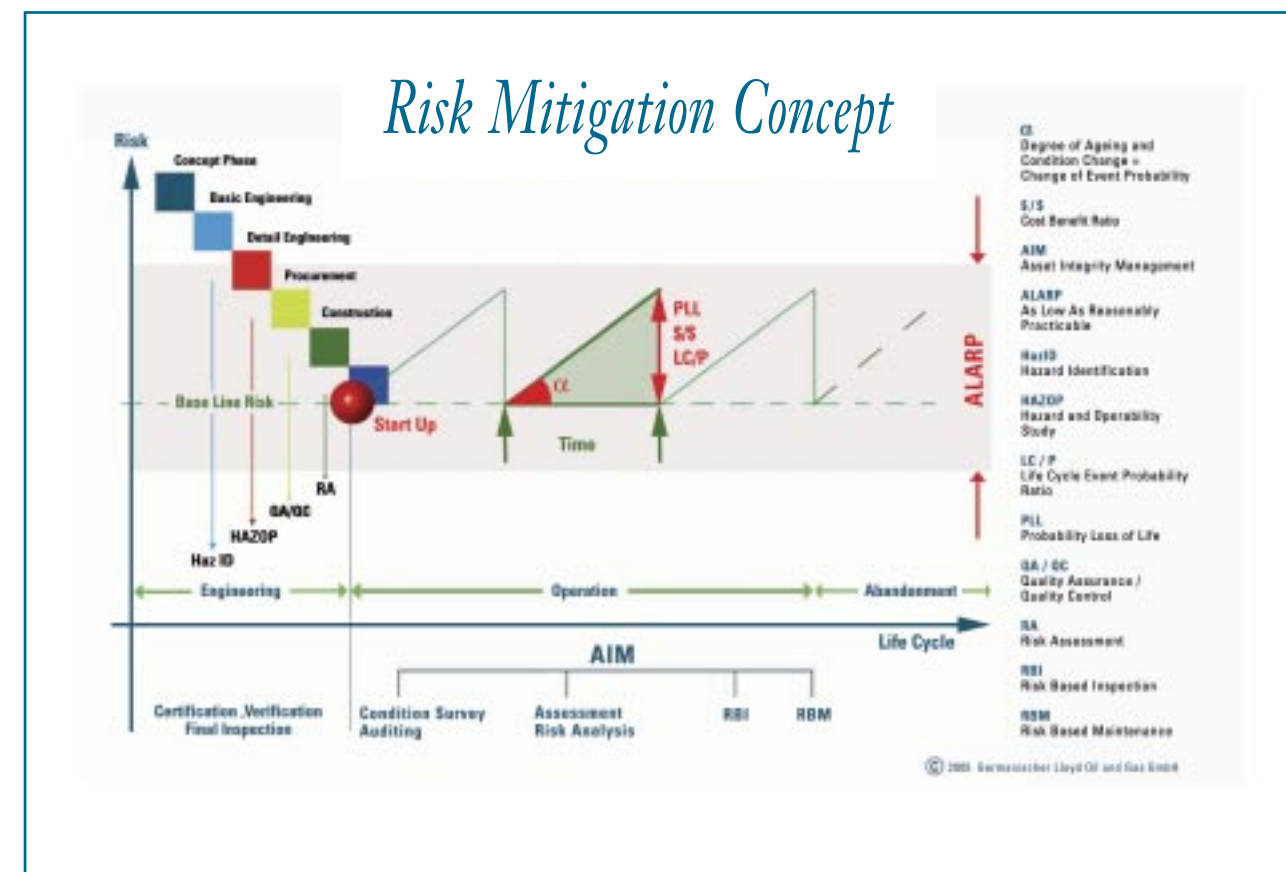
That’s right, the most important phase is of course the actual operation of the plants. Even with optimum design and implementation, the residual risk increases because of the ageing of the installations. Here, it is essential to know the change in residual risk at every point in time, so that an acceptable level of residual risk is not exceeded, thanks to inspections and repairs that are timely but not necessarily ahead of time. For existing plants where the technical state is not yet clear, a condition assessment by GLO can be analysed and evaluated with regard to the residual risk. For the time after this, GLO offers a computer-supported “risk-based inspection program”. Here, the chemical and physical operating parameters, together with data from the inspection program, are used to simulate the ageing of the plant. In this way, the optimum cycle for inspections and repairs can be developed without having to exceed the acceptable level of residual risk derived from the ALARP method.

Risk mitigation can also become a high cost factor for a company. What economic benefits does risk management offer to the operators of offshore and onshore installations?

Let me make a number of preliminary remarks to this question. First of all: although prevention has – quite rightly – been placed in the foreground since the beginning of industrialization and also for the estimation of risk in private life, which means that reduction of the probability of occurrence is the ultimate objective, public acceptance is oriented towards the seriousness of the consequences.

Secondly: public opinion and the resulting possibility of losing one’s good reputation through the consequences of serious accidents leads to a watering-down of the risk assessment and therefore to classic errors in management, i.e. the risk itself is overestimated when the possible consequences of a scenario are disastrous or underestimated when the consequences of a scenario are classified as low.

In either case, this error of judgement inevitably leads to



The graphic shows the risk mitigation process during the individual project phases, especially the recurrent processing in the production phase. Effective reduction of the residual risk is achieved by concentrating on the project phases. On the one hand, the complexity becomes manageable, whilst on the other hand the relevant risks are structured and logically processed with regard to their dimensions and sequence for the possibility of mitigation. The aim is to achieve a residual risk that is “as low as reasonably practicable” by the start-up time. Owing to wear and tear and the ageing of the installations during the operational phase, the residual risk increases and must be reduced again to an acceptable level using suitable measures

economic losses. In the first instance, too much is invested unnecessarily, since the effort expended for minimizing the risk is excessive, whilst in the second case accident prevention is inadequate, leading to malfunctions in operation and added expenditure for damage control.

How can a sensible balance be obtained in risk mitigation management?

GLO applies the basic principle of achieving a prudent mixture between the factors of safety measures, production optimization and cost reduction. The benefit consists of lower unscheduled interruptions to operation and the prevention of serious accidents, with reasonable costs for risk mitigation. To this end, ALARP criteria were developed to give the plant management a set of useful decision-making aids when evaluating possible measures. Insofar as a scenario has to include the loss of human life as a consequence, the factor “probability of loss of life” is applied and must not exceed a defined level. Another factor is the relationship between remaining service life and the probability of that event occurring, for which GLO recommends a limit. Furthermore, the model is rounded off by a cost/benefit analysis in which the present

value – based on the theoretical, weighted annual loss – is expressed in relation to the effort needed for risk mitigation.

For further information on the topic of offshore and onshore plants: Hartwig Schönbach, Oil and Gas, Phone +49 40 36149-515, hartwig.schoenbach@glo-group.com

BRIEF PROFILE

Hartwig Schönbach, GLO Managing Director

- 1981–2000 Management functions at Mobil Oil in Germany and Canada
- 2000–2003 Planning Adviser and Risk Management Adviser, ExxonMobil International, London
- 2003–2004 Adviser and Trainer for the Safety Management System OIMS, ExxonMobil Production Germany, Hanover
- Managing Director Germanischer Lloyd Oil and Gas GmbH (GLO), Hamburg

The reward for successful tests and inspections: the GL seal

Too Beautiful to Switch Off...

The lighthouse "Hohe Weg": alone in the open expanses of the mudflats, this lighthouse was built in 1856 as an orientation light for the Weser estuary

Do you like lighthouses? Are you intrigued by their varied history and fascinated by their diversity and stark beauty? Then here is a book you really must take a look at.

THE FUTURE OF LIGHTHOUSES is uncertain; in the northernmost federal state of Germany, moves are afoot to switch them all off. The Roter Sand lighthouse in the German Bight, for instance. This massive tower with red and white bands, located at 53 degrees, 51 minutes north and 8 degrees 5 minutes east, 28 metres high, with a light elevation of 24 metres, was the symbol of the North Sea for a whole century. Today, nobody needs it any more. GPS has simply rendered this lighthouse and the others on the German North Sea and Baltic coasts obsolete. With the automation of the maritime radio beacons, the fog signal, the tide level and weather data transmission, the lighthouse keepers lost their jobs. And yet, lighthouses belong to the coastal landscape as much as oceans and clouds do. They are the oldest traffic signals; many are already protected as national monuments. A richly illustrated book by the photographer Bernt Hoffmann and the journalist Nikolaus Schmidt presents the most interesting of the German lighthouses situated along the North Sea and Baltic coast. The book contains mainly large-format photographs and detailed explanations of the history of the structure, and each lighthouse has a map section showing its exact location.

PHOTO: HEEL VERLAG

Most of the lighthouses on the North Sea coast are located on land, but Mellumplate, Tegeler Plate, Hohe Weg, Dwarsgat, Robbenplate, Alte Weser, Roter Sand and Grosser Vogelsand are far offshore in the shallows of the North Sea. One of these might very well have witnessed something similar to the following episode, as recounted by a Canadian lighthouse keeper:

US ship: *Please divert your course 0.5 degrees to the south to avoid a collision.*

Canadian authority reply: *Recommend you divert your course 15 degrees to the south to avoid a collision.*

US ship: *This is the Captain of a US Navy Ship. I say again, divert your course.*

Canadian authority reply: *No. I say again, you divert YOUR course!*

US ship: *THIS IS THE AIRCRAFT CARRIER USS CORAL SEA, WE ARE A LARGE WARSHIP OF THE US NAVY. DIVERT YOUR COURSE NOW!!*

Canadian authority reply: *This is a lighthouse. Your call. ■ OM*

BOOK TIP

"Die schönsten Leuchttürme Deutschlands" (Germany's Finest Lighthouses), 192 pages, 165 colour photos and over 50 maps in colour, ISBN 3-89330-221-3, published by HEEL Verlag and available in bookshops.

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