Germanischer Lloyd

nonstop

The Magazine for Customers and Business Partners

EDITION 3 · 2006

Shipbuilding in Germany

Yards Moving Forward

SOFTWARE "Home please, James!"

GERMANISCHER LLOYD IN THE UNITED STATES FOR 25 YEARS Licence to Class

MODERN DAMAGE ANALYSIS Got a Screw Loose?

YACHT TECHNOLOGY Will the Rig hold?

GLP kicks off in Hamburg

Safeguarding and enhancing quality standards brings decisive competitive advantages. Whether you're a supplier, manufacturer or plant operator, you know how crucial the quality of materials is for the quality of your product or the safety of your plant. We know that too – and are delighted to announce that Germanischer Lloyd Prüflabor (GLP) is now offering its comprehensive range of materials testing and failure analysis services direct from our base in Hamburg. Routine tests or damage evaluation – whatever the material or issue concerned, GLP is the partner you need.

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Germanischer Lloyd
OPERATING 24/7

Dear Readers,

Dr. Hermann J. Klein

As a worthy successor to the very successful "Posidonia" shipping exhibition, which took place in Athens in June, the leading fair "Shipbuilding, Machinery and Marine Technology" (SMM) will be held in Hamburg at the end of September. For us, the SMM offers the unique opportunity of showing our customers, both national and international, the wide spectrum of proven and new classification services which Germanischer Lloyd can offer – all on our home turf.

Our trade show "firsts" this time consist of innovative solutions for the operative challenges that shipping companies, yards and the supply industry have to face every day.

For shipping companies, we have developed a comprehensive, efficient and expandable program for ship and fleet management. The "GL ShipManager" combines tried-and-tested software programs, such as "fleet online" for the planning of classificatory and statutory survey dates, and "SAMS", which simplifies and automates all the administrative sequences of shipboard operations to a large degree. Besides its improved ease of use, the new package improves the quality standard of the shipping company, reduces the operating expenses of fleet management, creates a secure channel for data exchange, and offers comprehensive system integrity.

With "GL ShipLoad", we are presenting a new, user-friendly software tool for yards and design offices. Thanks to its far-reaching support in modelling the cargo distribution as well as its efficient and accurate calculation of the hydrodynamic loads, strength assessments of the hull structure can be accelerated greatly.

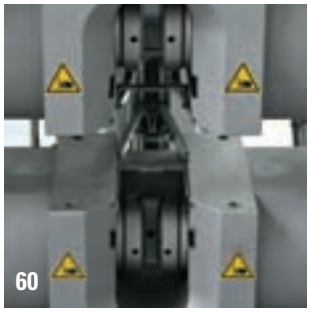
Tangible benefits in terms of time and quality are also offered by "GL Pegasus" to the contractors all over the world who measure the residual steel thickness of ships' hulls on behalf of the shipping companies. This new software has put the work of data acquisition, information exchange, and evaluation of the thickness measurements on an electronic basis for the very first time.

The examinations performed in the new testing laboratory for materials and components in Hamburg-Harburg also belong to the services offering an immediate benefit in terms of quality gained and time saved. With this "technical pathology" centre, we can speedily give you the evidence of fatigue, faulty maintenance or external force, making it possible to identify the causes of material failure without delay.

For topical reasons, this issue of nonstop is focusing on the German shipbuilding industry. The yards in Germany are profiting from the worldwide order boom and are enjoying the sight of full order books. The strategy of the yards is directed towards building technologically sophisticated ships of high quality, the progressive automation of production processes and the tailoring of special solutions to meet the customer's specific needs. But see for yourself how successfully the German shipbuilding sector and its supply industry are asserting themselves.

Yours sincerely,

Dr. Hermann J. Klein
Member of the Executive Board



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News from the Maritime Services

FLEET IN SERVICE
Constant Growth

"Cape Bon" sister ship of the "Cape Bacton"

Vessel number 6,000 in Germanischer Lloyd's fleet is a chemical tanker named "Cape Bacton". This double-hull tanker with a cargo-carrying capacity of 35,153 dwt is also the first vessel of a small fleet of 18 tankers to be surveyed by Germanischer Lloyd for Columbia Shipmanagement Ltd. (Limassol/Cyprus). In the last five years alone, the fleet of ships in operation with GL class grew by more than 1,000 vessels. Only ten years before that, in July 1991, the 4,000th ship was accepted into class. The "Cape Bacton" is owned by Cape Normandie Shipping Co. Ltd. and managed by Columbia Shipmanagement Ltd., a subsidiary of Schoeller Holdings that was established in 1978. Columbia operates a fleet of almost 300 ships: container carriers, tankers, bulk carriers and passenger vessels. With a workforce of 8,000 employees worldwide, Schoeller Holdings offers a broad spectrum of tailored maritime services, including ship management and line services. In addition, the company has interests in a number of hotels and restaurants.


Rainer Schöndube, Member of the Executive Board Germanischer Lloyd (right) with An Guan, the 3,000th employee

SHANGHAI
Expansion in China

The name of the 3,000th employee of Germanischer Lloyd is An Guan. Executive Board Member Rainer Schöndube came to Shanghai to welcome the surveyor personally and to present him with a fine bottle of champagne to mark the beginning of his career at the classification society.

An Guan studied marine engineering at the Harbin Shipbuilding Engineering Institute, gaining his initial experience at the Dalian Ship Research and Design Institute and the Dalian yard of COSCO. Owing to the strong demand for newbuilding classification in Asia and especially in China, Germanischer Lloyd is continually hiring skilled personnel and optimizing the training programme, both on site and in the Training Centre in Hamburg. Applications invited:
Area Manager Werner Enning, Room 1201, Central Plaza 381,
Huaihai m. Road, Shanghai 200020, People's Republic of China

MARINE GEARS IN DEMAND
Order Boom for Renk AG

The maritime supply industry in Germany is profiting from the strong demand for ship newbuildings. Renk AG, a high-quality producer of special gear units, vehicle transmission components and test systems, reported a successful first half-year at the end of July. At its works in Augsburg, the Renk AG manufactures special large-scale gear units for the maritime sector and for special stationary applications, with outputs reaching into the limiting range of 140 MW. Its Rheine works manufactures general industrial gears, large ship gear units, as well as couplings for a wide range of applications. The factory also builds innovative single and twin gear units, and propeller shaft clutches. As a result of the increased workload of the factories, the cooperation with Germanischer Lloyd has been intensified. The technical design and execution of the gear units is supervised by GL surveyors who perform the examination according to the construction rules developed by Germanischer Lloyd. Installation of the gear units at the newbuilding yards is also monitored by Germanischer Lloyd. In addition, each gearbox is tested thoroughly during the sea trials. This approach satisfies the common objective of achieving the very highest level of safety and the greatest customer satisfaction.

Dr. Hermann J. Klein in conversation with the Queen of Sweden

The summer sun shone brightly on the competitors in the regatta

CHILDHOOD CHARITY

A Good Deed for Children in Need

For the "Hanseatic Lloyd Dragon Grand Prix Germany" at the beginning of July in Kiel Bay, more than 60 sailing crews from many different countries battled it out for the trophy. This time, the winners of the Dragon regatta came from the Ukraine: Sergei Pichugin, Sergei Timovkhov and Dimitri Yarmolenka secured overall victory by grabbing first place in the sixth and final race. The social and media highlight of the Grand Prix was an integrated benefit gala for the World Childhood Foundation, the Charity Golf&Race. The Foundation's founder, Her Majesty Queen Silvia of Sweden, in the company of her husband, His Majesty King Carl XVI. Gustaf, were pleased at the betting fervour – no doubt heated up further by the summer temperatures – that was exhibited by the guests during the evening banquet, which followed the golf tournament and regatta. The auctioning of attractive prizes, such as a Mediterranean cruise on the MS Germany and a zippy two-seater car, generated proceeds of over 135,000 euros for Childhood Charity.

Queen Silvia personally thanked all the bidders and explained the aims and activities of her charity organization. The World Childhood Foundation is active worldwide for the rights of children and in particular strives to improve the living conditions of needy children. "Childhood" supports 75 projects in 15 countries, such as Brazil, Estonia, Latvia, Lithuania and Russia as well as Bolivia, Germany, Ecuador, Moldavia, Sweden, South Africa, Tanzania, Thailand, the Ukraine and the USA. Each project is unique and is developed to meet the specific needs of vulnerable children in very different environments. Common to all Childhood projects is the intention to reach the most vulnerable children, the ones most often ignored and forgotten, such as street children, children in institutions and children at risk from sexual abuse and exploitation. "Childhood's goal is to protect children from ongoing abuse through prevention, intervention and education. We strive to give children a safe living environment and proper care," says the Queen, adding: "We support the children as they acquire the skills, knowledge and the self-esteem necessary to offer them a chance of a happy and productive future as human beings." The dedication and personal commitment of the Queen was met with prolonged applause.

13. SEA SHIPPING DAY IN HAREN

Shortage of Captains a Big Hurdle

A key topic at this year's Sea Shipping Day in Haren was the decline in the reflagging of ships that had been sailing under foreign flags for German shipowners. In fact, from the beginning of the year until the end of July, the number of vessels operated by German shipping companies under foreign flags increased by almost twenty percent from 1751 to 2086. Over the same period, the official statistics reflected a weakening from 447 to 429 ships under the German flag. The main reason for this negative development is the "Ordinance on Safe Manning", which prescribes German or European management personnel on board. The guest speaker, Dr. Hermann J. Klein, Executive Board Member of Germanischer Lloyd, highlighted the maritime significance of Haren on the Ems river in East Frisia. Through the entire region, more than 600 ships are managed by over 60 shipping companies. In Haren alone, there are 353 sea shipping companies and 45 inland waterway firms. Technical innovations, together with the increased fostering of young engineers and a broad training programme for nautical careers are needed to cope with the expected growth.

COLUMBUS AWARD

New Perspective Acclaimed

Unusual job advertisements were awarded prizes by "VDI Nachrichten", Germany's leading journal for engineers, at the Küppersmühle Museum in Duisburg towards the end of June. The "Egg of Columbus" in silver was won by Germanischer Lloyd's image advertisement. The jury was of the opinion that the "Change of Wallpaper" theme addresses young engineers in a persuasive manner and opens up a diversity of new perspectives. But see for yourself!

For further information: Julia Rosenkranz, Director of Human Resources Management, Phone: +49 40 36149-3984, julia.rosenkranz@gl-group.com

CERTIFIED TRAINING

Modular Career Planning

The maritime industry needs qualified staff – now more than ever! In times of great demand, vocational education and advanced training are of inestimable value. Every year, the Vocational Education and Training Centre – Port of Hamburg (FZH) offers over 480 courses and seminars on vocational education and advanced training for the port, transportation and maritime industries. The comprehensive curriculum permits the flexible planning of careers in shipping, port and logistic companies. The lecturers at the FZH are all skilled experts with practical experience.
The quality management system of the FZH has been certified according to ISO 9001:2000 by Germanischer Lloyd Certification. In addition, a number of the maritime courses are approved by Germanischer Lloyd, Marine Management Systems Certification Department, as complying with international maritime standards (STCW 95). What is more, the "Modular Concept for Logistics" newly introduced by the FZH is the first holistic system of its kind to have been certified by Germanischer Lloyd . The benefit of this system lies in its great versatility. Through the diverse combination possibilities offered by the separate modules, advanced training courses in the field of port logistics can be planned and conducted in a very flexible and individually coordinated manner.

Signing the contract: Jatinderpal Singh Grewal, Station Manager Fremantle and Derek Gill, Design Manager at Austal (standing from left to right) and Georgios Spiliotis, Area Manager Australia / New Zealand, James Bennett, Marketing and Technical Manager at Austal and Dr.-Ing. Dieter Krüger, Head of Special Craft at GL

AUSTAL

New order from Turkey

Istanbul Deniz Otobusleri (IDO) has once again chosen the Australian shipyard AUSTAL to design and build two high speed vessels for their services across the Marmara sea between Yenikapi (Istanbul) and Mudanya (Bursa). IDO founded in 1987 by the Metropolitan Municipality of Istanbul is expecting the delivery of two 88 meters long high speed catamarans in 2007 to add to their fleet of some 27 vessels. Each catamaran has a capacity of 1,200 passengers and 225 cars. The main engines accelerate the catamarans to an average speed of 36 knots utilizing only 90% of its maximum power. Germanischer Lloyd will class the newbuildings as part of the cooperation agreement with the Henderson-based AUSTAL Group been extended once again. Since 1995 AUSTAL, the world leader in the design and construction of customised aluminium vessels, and Germanischer Lloyd have concluded a number of innovative high-speed passenger ships such as the Fred Olsen SA owned 127-metre trimaran "Benchijigua Express" serving the Canary Islands. The high speed craft is the world's longest diesel-powered fast ferry, combining the high comfort of a mono hull with the low resistance, excellent stability and carrying capacity of catamarans. As part of the agreement, Germanischer Lloyd provides classificatory handling, technical advisory services and accompanying analyses of strength, dynamics and hydrodynamics as well as of noise and vibration behaviour for various projects of the yard.

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

SINGAPORE

GL Surveyor Turns IACS Auditor

After almost 28 years with Germanischer Lloyd, Mr Tin Seh Low, Senior Lead Surveyor and Lead Quality Representative said "goodbye" to his customers and colleagues. Rather than retiring, Mr Low accepted an offer by the International Association of Classification Societies (IACS) to take over a vacant position as quality auditor. On the farewell dinner in Singapore Hergen Thielemann, Head of Division East Asia lauded their long, fruitful, and rewarding collaboration. He stated: "It is a high commendation for Germanischer Lloyd that IACS chose one of GL's quality representatives to fill an open position. This underlines the high qualifications, technical expertise and excellent abilities of GL's surveyors." T S Low joined Germanischer Lloyd in 1978 after a First Class Certificate of Competency for Marine Engineers at the Singapore Polytechnic and the Poplar Technical College in London and several years of work experience. Based in Singapore Mr. Low and his colleagues developed the then GL Station into a Division Office. He became ISM Auditor in 1996, was named Senior Surveyor and Quality Manager in 1999 and

Fook Seng Chan, Area Manager ASEAN/South Asia, Tin Seh Low, Senior Lead Surveyor and Hergen Thielemann, Director Division East Asia at the farewell dinner.

achieved the title Senior Lead Surveyor in 2003. In the same year Mr Low took over the newly founded GL Station in Jiangying, China and became Lead Quality Representative for the entire Division when the Division Office moved to Shanghai. Successor in the task of Lead Quality Representative for the Division East Asia will be Mr Biao Cao.

For further information: Biao Cao, Representative Division East Asia, Mobile: +86 1390 1747494, biao.cao@gl-group.com

Dr. Volkmar Wasmansdorff christened the ship according to a Hindu custom.

INDIA
Keel-Laying with a Coconut

Coconuts are extremely hard. This is something that Dr. Volkmar Wasmansdorff, Director of the East Asia Division, also had to admit at the shipyard Chowgule & Company in Goa. It was only on the third attempt that he managed to crack the fibrous fruit on the newly laid keel of the "Union Ruby", the first of four ships being built to GL class for the British company Union Transport Group PLC. According to Hindu custom, a coconut must be smashed on the keel during the keel-laying ceremony – the nutritious milk is said to bring good luck to the later ship. To be on the safe side, incense sticks are waved in a ritual to avert harm from coming to the crew and vessel. The "Union Ruby" is a multi-purpose dry cargo carrier measuring 89.94 metres from bow to stern, is 14.4 metres wide, and offers a cargo carrying capacity of 4,450 dwt. Delivery is scheduled for April 2007. Union Transport Group had placed an order with Chowgule & Company in June 2005 for the construction of four multi-purpose dry cargo ships. 14 more of this type are planned. Chowgule & Company has two yard sites in the Goa region, in Rassaim and Loutulim, where the ship types built so far include ore carriers, fishing vessels and passenger ships.

For further Information: Mario Fernandes, Country Manager India, Phone: +91 22 22826808, mario.fernandes@gl-group.com

Events at the SMM

LECTURES – ROOM KOPENHAGEN 4

ISPS Exercise
Tuesday, 26 September, 11:00-12:00
Wednesday, 27 September, 11:00-12:00

GL Pegasus
Wednesday, 27 September, 14:00-15:00
Thursday, 28 September, 14:00-15:00

GL Shipload
Thursday, 28 September, 11:00-13:00

Ship Recycling
Tuesday, 26 September, 14:00-15:00
Friday, 29 September, 11:00-12:00

PROTOS online
Wednesday, 27 September, 10:00-11:00
Friday, 29 September, 14:00-15:00

Reducing fuel costs by selecting optimal speeds for future container transport
Friday, 29 September, 10:20

LECTURE – HAMBURG FAIR

Technical Requirements for Year-Round Baltic Sea Tanker Traffic
Friday, 29 September, 14:50

LECTURE – ROOM MARSEILLE I-III

Update on Coating Certifications
Thursday, 28 September

EVENTS

Marine Coating Conference – Looking Forward to a New World of Coating Technology
27–28 September 2006, Hamburg

STG Forum at the SMM: Technological Synergies – Marine Technology and Merchant Shipbuilding
27 September 2006, Hamburg

GL FAIR BOOTH 150, HALL 12 1st FLOOR

KOREA
Change of the Watch

"Parting is such sweet sorrow" – in keeping with this saying, Heinz Wagner was bid a fond farewell with a large reception to speed him on his way to well-earned retirement. Before an audience of customers, business partners and staff members, Dr. Hermann J. Klein, Executive Board Member of Germanischer Lloyd, paid tribute to the accomplishments and dedication of Heinz Wagner over many years of duty. In the last two decades, he had made Germanischer Lloyd a classification society that was much in demand in South Korea. Before that, the graduate marine engineer had already seen service for GL in Poland, China and Emden (Germany). In 1985, he came as Principal Surveyor to South Korea, where, with a small team of three surveyors, he started to systematically build up the business activities of Germanischer Lloyd in South Korea. Today, there are more than 160 employees at 11

A glass of sparkling wine to bid him a fond farewell: Heinz Wagner and Dr. Hermann J. Klein.

locations. With the establishment of the Korean Committee in 1995, Wagner extended the close contacts to yards and shipowners. The cooperation with the Korean shipbuilding supply industry was strengthened in 2005 with the founding of the Korean Industry Committee. Since March 2006, Heinz Wagner has been a professor at the Korea Maritime University, teaching European Studies. Because of his services for German-Korean trade relations and his close bonds with Busan, Heinz Wagner was named honorary citizen of the city in June of this year.

Heinz Wagner's successor as Area Manager will be Stefan Höner. The graduate marine engineer has been with Germanischer Lloyd for ten years now. Towards the end of the nineties, he had already been able to experience just how exciting Korea is and what challenges await him there, when he worked for two years as a surveyor in Busan, later changing to the GL station in Augsburg (Germany) and assuming the position of Station Manager in 2003.

For further information: Stefan Höner, Area Manager, Phone: +82 51 4401220, stefan.hoener@gl-group.com

Launching ceremony of 2nd 1100TEU CS for Universal Marine by Qingshan Shipyard: Mr. Liu Xihan, President of CSC Group, Mr. Ren Shimao, Vice Governor of Hubei Province and Hergen Thielemann, Division Manager East Asia Germanischer Lloyd (from left to right).

CELEBRATION

Chemical Tanker is 60th GL-Vessel at Qingshan Shipyard

A 19,800 dwt stainless steel chemical tanker vessel will be the 60th ship classed by Germanischer Lloyd at the Qingshan Shipyard which is located at the Yangzi River in Wuhan. This vessel is due to be delivered in 2009 for the Norwegian owner Utkilen Shipping. Qingshan Shipyard and the classification society signed the contract during their 10-year anniversary celebrations. With a more than 50 year history of shipbuilding, Qingshan is the largest inland shipbuilding base in China. The shipyard has 3,800 employees, occupies an area of 1,000,000 m² with a 2,200 m long shoreline. It can build simultaneously several vessels with a deadweight from 5,000 to 20,000t, such as the 818 TEU, 502 TEU, 660 TEU and 1,100 TEU container vessel series, the 12,000dwt bulk cargo carrier series and the 18,500dwt chemical products tankers series. Qingshan Shipyard was the first Chinese Shipyard to build chemical products tanker with duplex stainless steel. The shipbuilder has now an order book of 32 ships which will be delivered within the next three years.

For further information: Werner Enning, Area Manager China, Tel.: +86 21 61416710, werner.enning@gl-group.com

PIRAEUS

Quintet completed!

The last of a series of five 9,500teu containerships built for Costamare Shipping was christened "COSCO Hellas" in July 2006. A truly international endeavour, the quintet was built by the largest shipyard in the world Hyundai Heavy Industries in Korea, ordered by the Greek containership operator Costamare, chartered for twelve years to COSCO Container Lines of China and classed by Germanischer Lloyd. Speakers at the naming ceremony included COSCO Captain Wei Jiafu, Costamare President Vassilis Konstantakopoulos, who received a warm send-off into retirement, as well as members of Greece's shipping community such as the President of the Union of Greek Shipowners Nikos Efthymiou As a token for long lasting prosperity and luck Dr Hermann J. Klein of Germanischer Lloyd presented the ship's captain an icon of St. Nicholas. "Germanischer Lloyd has given all its expertise to provide the utmost technical safety and state of the art technology in order to achieve a robust, safe and fit for purpose vessel. In short: long lasting. This is truly a world-class performance." Dr. Klein concluded. One of the largest container vessels in the world, the COSCO Hellas is, 350.56 metres long and 43 metres wide. Its main engine power amounts to 74,760 kW, which equates a top speed of 25.5 knots.

Costamare Group President Captain Vassilis Constantakopoulos, Athanasios Reisopoulos, Area Manager for Greece, Dr. Hermann Klein, Member of the Germanischer Lloyd Executive Board and Captain Wei Jiafu, COSCO Group President enjoyed the ceremony.

For further information: Athanasios Reisopoulos, Area Manager Mediterranean, Tel.: +30 210 4290373, athanasios.reisopoulos@gl-group.com

INLAND SHIPPING

New Construction Rules Published

New construction rules for inland waterway vessels have been developed jointly by Germanischer Lloyd and Bureau Veritas. They entered into force with effect from 1 August for all inland vessels classed with the French or German classification society and contracted for construction on or after that date. On the owner's request, these rules may become applicable to existing inland vessels if such vessels have been technically updated to comply with the new construction rules.

The new rules comprise four sections, dealing with: classification and surveys; hull design and construction; machinery, systems and electricity; and additional requirements for notations. They make provision for continuing improvements in pushing units, double hulls and dangerous goods regulations.

As far as possible, they comply with statutory regulations, such as the Ordinance on the Inspection of Rhine Vessels (RheinSchUO), and are compatible with the ADNR (Regulation for the Carriage of Dangerous Goods on the Rhine).

For further information: Ronald Schröder, Business Development Manager, Phone: +49 40 36149-7907, ronald.schroeder@gl-group.com

GL Academy: Seminars in Germany

SEPTEMBER

Hamburg, 26.09.2006
Basics aout DN EN ISO 9001 for Industry and Service Providers

Hamburg, 27.-28.09.2006
Internal Auditor DIN EN ISO 9001 for Industry and Service Providers

OCTOBER

Hamburg, 05.-06.10.2006
Shipping Basics

Hamburg, 05.10.2006
Basics of Technical Risk Analysis in Ship Building and Ship Operation

Hamburg, 10.10.2006
ISM for Shipmanagement Personnel

Hamburg, 11.10.2006
Hull and Equipment – Damage, Repair and Maintenance

Hamburg, 16.-17.10.2006
Company/Ship Security Officer Training Course

Hamburg, 18.10.2006
Maritime English Basics

Hamburg, 19.10.2006
The Change of Flag in General and Especially the Re-flagging of Ships to the German Flag

Hamburg, 23.10.2006
Maritime Casualty Investigation in Shipping Companies

Hamburg, 24.10.2006
Machinery – Damage, Repair and Maintenance

Hamburg, 25.10.2006
Fuel Tank Protection

Hamburg, 26.10.2006
US Coast Guard Regulations for Ship Operators

NOVEMBER

Hamburg, 01.11.2006
Waste Management

Hamburg, 02.11.2006
ISPS Interner Auditor for Shipping Companies

Hamburg, 07.11.2006
ISPS Passenger Ships – technical and operational aspects

Hamburg, 07.-08.11. .2006
Application of Risk Assessment in TMSA

Hamburg, 09.11.2006
Introduction to the System of Maritime Regulations

Hamburg, 10.11.2006
Inspections, Surveys and Certificates

Hamburg, 14.11.2006
ISPS for Ship Yards

Hamburg, 14.11.2006
Basics obout DIN EN ISO 14001 for Shipping Companies

Hamburg, 15.-16.11.2006
Implementation and Internal Auditing of an Environmental Management System in Shipping Companies

Hamburg, 16.11.2006
High Speed Craft (HSC) – Technical and Operational Aspects

Hamburg, 21.11.2006
ISM Basics

Duisburg, 21.11.2006
Inland Water Transport – National and International Regulations

Hamburg, 21.11.2006
Quality Management Co-ordinator

Hamburg, 22.11.2006
Quality Objectives and Continious Improvement

Hamburg, 22.11.2006
ISPS Basics

Hamburg, 27.11.2006
Container Ships – technical and operational aspects

Hamburg, 28.-29.11.2006
Internatl Auditor ISM / DIN EN ISO 9001:2000 ffor Shipping Companies

DECEMBER

Hamburg, 05.12.2006
Shipping Basics for Banks

Hamburg, 05.12.2006
Port State Control Basics

Hamburg, 06.12.2006
Ballast Water Management

Hamburg, 07.12.2006
Managing Newbuildings

Hamburg, 11.12.2006
ISM Basics for Yachts

Hamburg, 12.-13.12.2006
Internatl Auditor ISM/ISPS vor Yachts

Hamburg, 14.-15.12.2006
Ship Security Officer (SSO) Training Course for Yachten

For further information: GL Academy, Phone: +49 40 36149-195, academy@gl-group.com, Internet: www.gl-group.com > Maritime Services > GL Academy

POSIDONIA CUP
Modest Support by Aeolus

Compared to the first place in Port State Control (see article next page) the Germanischer Lloyd sailing team took it sportingly at the Posidonia Cup: Our crew on board of a Beneteau F40.7 managed to finish in seventh position which is a bit better than in the previous race in 2004. At this year's Posidonia Cup, 53 international teams participated in the yacht race, which is organized by the Hellenic Offshore Racing Club and Posidonia Exhibitions. The Greek god Aeolus was not in the mood to release his wind. Racing conditions suffered a bit from low wind and high temperatures. Later on, the wind freshened up shortly to 18 knots when the regatta for demanding crews began. The next chance for ambitious crews of shipowners, shipping companies, shipping managements, banks, underwriters, broker houses, maritime newspapers and classification societies to win the Posidonia Cup will be in 2008.

Julia Rosenkranz, Director of Human Resources Management (fourth from the right) received the award on behalf of Germanischer Lloyd.

HAMBURG
Commendation for Created Jobs

Increasing the level of employment is not only rewarding in itself. As part of the "Jobs for Hamburg" competition, Hamburg's Chamber of Commerce has commended sixteen companies for their sterling efforts in reducing unemployment. The jury assessed the number of jobs created, the sustainability of the jobs, and their impact on the Hamburg labour market. Germanischer Lloyd was one of the prizewinners in the category "Large companies with more than 200 employees". At Head Office alone, as many as 142 new staff members were hired in the course of last year. Worldwide, the GL workforce grew by 241 employees.

For further information: Julia Rosenkranz, Director of Human Resources Management,Phone: +49 40 36149-3984, julia.rosenkranz@gl-group.com

Events

SEPTEMBER

28 September 2006, London
IMO: World Maritime Day

OCTOBER

02-03 October 2006, Copenhagen
Green Shipping World

13-15 October 2006, Hamburg
Anniversary of the Historical Shipbuilding Working Group

19-20 October 2006, Hongkong
Asia Pacific Ship Finance Conference 2006

NOVEMBER

08-09 November 2006, Honkong
Green Ship Technology – Including one-day Workshop: Balast Water Management

22-23 November .2006, London
Royal Institute of Naval Architects: Design & Operation of Container Ships,

PASSENGER SHIPPING
Attention, please!

A safety bulletin by the UK based Marine Accident Investigation Branch (MAIB) advises shipowners, flag states and yards to consider two new recommendations to cruise lines and operators of passenger vessels: 1) Immediate actions to counter the risk of a recurrence of an incident. 2) Actions to provide a permanent solution to prevent an incident in the future. In addition, the recommendations suggest flag states to "urgently review the fire safety integrity of external areas of passenger ships on their register, to ensure that the immediate and medium term actions taken in the light of this Safety Bulletin are effective." The immediate and medium term actions are identified in an International Council of Cruise Lines (ICCL) bulletin attached to the report. The bulletin can be obtained from the MAIB website www.maib.gov.uk.

For further information: Carsten Beese, Survey and Order Services,Head of Department, Phone: +49 40 36149-962, carsten.beese@gl-group.com

Three year detention rate per Recognised Organisation (2003-2005) Cases in which more than 60 inspections are involved

		Inspections*	detentions	Low/medium limit	Medium/high limit	excess factor	Performance level
Register of Shipping (Albania)	RS	253	26	9	1	6,38	Very Low
International Register of Shipping (USA)	IS	303	24	11	2	4,59	
International Naval Surveys Bureau (Greece)	INSB	457	20	13	3	1,96	Low
Hellenic Register of Shipping (Greece)	HRS	583	21	18	6	1,47	
Inclamar (Cyprus)	INC	101	5	5	0	1,11	
China Corporation Register of Shipping	CCRS	84	3	4	0	0,87	Medium
Indian Register of Shipping	IRS	90	3	4	0	0,72	
Shipping Register of the Ukrain	SRU	188	5	7	0	0,67	
RINAVE Portuguesa (Portugal)	RINAVE	75	2	4	0	0,60	
Bulgarski Koraben Registar	BKR	344	5	12	2	0,30	
Turkish Lloyd	TL	706	10	21	8	0,19	
Romanian Naval Register	RNR	88	0	4	0	0,17	
Polski Rejestr Statkow (Poland)	PRS	1084	16	30	14	0,15	
Russian River Register	RR	279	2	10	1	0,09	
Croatian Register of Shipping (Croatia)	CRS	287	2	10	1	0,08	
Korean Register of Shipping (South Korea)	KRS	506	4	16	4	-0,12	High
China Classification Society	CCS	485	3	15	4	-0,33	
Russian Maritime Register of Shipping	RMRS	5466	55	127	92	-0,74	
Lloyd's Register (U.K.)	LR	10710	78	239	190	-1,13	
Nippon Kaiji Kyokai (Japan)	ClassNK	5062	33	118	84	-1,14	
Bureau Veritas (France)	BV	8368	49	189	146	-1,28	
American Bureau of Shipping	ABS	4248	20	100	69	-1,36	
Det Norske Veritas (Norway)	DNV	8051	39	182	140	-1,40	
Registro Italiano Navale (Italy)	RINA	1876	5	48	27	-1,53	
Germanischer Lloyd (Germany)	GL	11882	43	263	212	-1,57	

p=0,02 q=0,01

PORT STATE CONTROL

Again, the Winner is …

This year, the European port state statistics once again awarded the top slot to Germanischer Lloyd. In the current evaluation of all statutory inspections of ships within the scope of the "Paris Memorandum of Understanding" (Paris MoU) in 2005, the vessels under attendance by Germanischer Lloyd achieved the best results. The Paris MoU determined the number of class-relevant detentions for each classification society and expressed them in relation to the total number of statutory inspections during the years 2003 to 2005. According to these figures, a total of 11,882 inspections were conducted on ships classified by Germanischer Lloyd.

In only 43 cases did class-relevant deficiencies prevent a direct onward passage of the ships. The relationship between inspections and detentions yields an excess factor of -1.57, which is also the lowest value for the 25 classification societies considered. In view of the considerable growth exhibited by the Germanischer Lloyd fleet in recent years, Executive Board Member Rainer Schöndube expressed his great satisfaction with the outcome: "We view these results as being clear confirmation of our uncompromising philosophy of safety and quality – a philosophy we have implemented in concert with our customers to the benefit of all people and the environment."

PORT STATE CONTROL AND CLASSIFICATION

The owner or operator of the ship is responsible for the safety of a ship and its crew, the protection of the marine environment and proper living and working conditions on board. There are international regulations which govern which standards have to be observed. The flag state as the certifying authority for the ship, or the recognized organization acting on its behalf (a classification society, as a rule), is responsible for ensuring compliance. As the final authority in the chain, Port State Control conducts spot checks to see whether this responsibility has indeed been fulfilled. The ships are selected according to the criteria of the Paris Memorandum of Understanding (Paris MoU) and the European PSC Directive. All ships to be examined are at least subjected to an "initial inspection" in accordance with the applicable provisions. This includes a check of all certificates and documents of the ship and its crew as well as a general examination of the vessel's condition. A "more detailed inspection" is performed if, during the initial inspection, there were clear grounds to believe that the requirements of the relevant international conventions have not been met. The required rectification of the deficiencies is specified in the inspection report and, if necessary, the ship is detained in the port until these shortcomings have been resolved.

Port State Control is based on an agreement of the maritime transport authorities of Northwestern Europe dating back to 26 January 1982. It is aimed at achieving greater effectiveness in the enforcement of the international conventions and provides for the annual inspection of at least 25 percent of all ships calling at European ports.

In 2003, the implementation regulations were tightened up. From this time on, oil tankers over 3,000 GT and older than 15 years, gas and chemical tankers older than 10 years, bulk carriers older than 12 years as well as passenger ships older than 15 years must be subjected to a "mandatory expanded inspection", insofar as the previous expanded inspection took place more than twelve months earlier.

EVERYTHING SHIPSHAPE – FEWER CHECKS NEEDED

At present, efforts are under way to achieve a further optimization of the port state controls. In future, the PSC inspectors are to look not only at the usual quantitative aspects (25 percent of the incoming vessels), but increasingly also at the condition of the ships. The objective of the new monitoring procedure is to reward shipowners who keep their vessels in good condition by extending the inspection intervals up to two years. Ships with poor maintenance, on the other hand, will be subject to increased scrutiny; they will run the risk of being inspected more critically and at shorter intervals. Moreover, work is progressing on a further harmonization between the inspection criteria of the port states according to the Paris und Tokyo MoUs, and joint inspection campaigns are planned (see also nonstop Edition 4/2005). The new arrangement was formulated by a working group with representatives of the Paris MoU and the European Commission over the past few years. As soon as the European Parliament gives the green light, it can come into force.

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Hasso Hoffmeister checking the Rigg.

AMERICA'S CUP

The Package is Trimmed

This was the moment the United Internet Team Germany had yearned for: at last, the crew of the first German campaign in the America's Cup was able to test its "Germany I" with the sail number GER 89 for the first time, off Valencia. After a planning and construction phase lasting more than seven months, the team led by skipper Jesper Bank are beginning to familiarize themselves with their boat in practical training. "I am absolutely delighted. Our boatbuilders and designers have delivered a very good package," is how Jesper Bank describes his impression. No less than 22 boatbuilders and 16 designers put all their expertise into the conceptualization and construction of the new yacht. One of them was Hasso Hoffmeister, Germanischer Lloyd's expert for the structural engineering of yachts and rigs. Over a year ago, he was called in to join the design team of the United Internet Team Germany and was tasked with planning, designing and engineering the rig for the German America's Cup entry. The challenge was clear: "With a height of 32 m and a weight of only 750 kg, the rig has to withstand wind loads which are counterbalanced underwater by the 4 m deep bulb keel bearing 20 tonnes of lead. This results in mast compressions of up to 50 tonnes," as Hoffmeister summed up the tough requirements which were posed. Initial experience with the boat was very positive.

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COPENHAGEN

Meeting of the Scandinavian Committee

Since 19 May 2006, the entire Baltic has been a so-called SOx Emission Control Area, or "SECA" for short. Because the Baltic lies directly on the front doorstep of the representatives of the Scandinavian Committee who come from the worlds of shipping, the shipbuilding industry and underwriters, it was natural to choose Annex VI of the MARPOL Convention and the limiting values it prescribes as the main topic of discussion at the 4th Meeting of the Scandinavian Committee. Convened at the beginning of June in Copenhagen, the Meeting was co-headed by Hans Langh, Committee Chairman and President of the shipping company Langh Ship, and Rainer Gutzmer, Area Manager Scandinavia at Germanischer Lloyd. Dr. Reinhard Krapp, Head of Strategic Research at GL, reported on the efforts of the IMO and the EU to introduce a "Green Passport" for ships and the associated consequences for shipowners. For instance, it would be a great challenge for authorities and the industry to draw up an inventory of the approximately 50,000 different materials and single parts comprising a ship. Naturally, the ice classes also presented a subject for discussion in Copenhagen. Navigating a ship in ice-covered waters is fraught with numerous risks, such as an increased load on the machinery, low ambient temperatures, impaired functional readiness of components, longer periods of darkness and poor weather conditions. Rainer Gutzmer, Area Manager for Scandinavia and Seppo Luikkonen, Station Manager for Helsinki, emphasized that almost half of the GL-classed ships were sailing with an ice class and informed the Committee about the new regulations of the Finnish government in this regard.

Hans Langh, President of the shipping company Langh Ship, opened the 4th Meeting of the Scandinavian Committee together with Torsten Schramm, Director of the GL Division Europe/Middle East/Africa (left) and Rainer Gutzmer, Area Manager Scandinavia (right).

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GL Academy: Seminars Worldwide

EUROPE

Piraeus, Greece, 12 October
Application of Risk Assessment in TMSA

Piraeus, Greece, 18 October
Practical Aspects of Corrosion Protection for ShippingCompanies & Shipyards

Piraeus,Greece, 25 October
Machinery: Damage, Repair & Maintenance

Piraeus Greece, 22 November
High Speed Craft - Technical & Operational Aspects

Piraeus Greece, 7 December
Inspections, Surveys and Certificates / PSC Basics

ASIA

Singapore, October/November (planned)
Introduction and latest Amendments of Maritime Regulations for Shipowners

HongKong, China, Ocktober/November (planned)
Introduction and latest Amendments of Maritime Regulations for Shipowners

Shanghai, China, October/November (planned)
Introduction and latest Amendments of Maritime Regulations for Shipyards

Guangzhou, China, October/November (planned)
Introduction and latest Amendments of Maritime Regulations for ship yards

Taipei, Taiwan, October/November (planned)
Introduction and latest Amendments of Maritime Regulations for Shipowners

Busan, Korea, October/November (planned)
Introduction and latest Amendments of Maritime Regulations for Shipyards

Busan, Korea, November (planned)
Practical Aspects of Corrosion Protection for Shipping Companies & Shipyards

Dalian, China, November (planned)
Practical Aspects of Corrosion Protection for Shipping Companies & Shipyards

Shanghai, China, November (planned)
Practical Aspects of Corrosion Protection for Shipping Companies & Shipyards

Guangzhou, China, November (planned)
Practical Aspects of Corrosion Protection for Shipping Companies & Shipyards

NEW SEMINARS

Hamburg,
Scheduled date: 15-6. November 2006
Introduction and Internal Audit of an Environmental Management System in Shipping Companies

Duisburg,
Scheduled date: 21 November 2006
Inland Water Transportation – National and International Regulations

Hamburg,
Scheduled date: 11 December 2006
Basics of ISM for Yachts

Hamburg,
Scheduled date: 12-3 December 2006
Internal Auditor ISM/ISPS for Yachts

Hamburg,
Scheduled date: 14-15 December 2006
Ship Security Officer (SSO) Training Course for Yachts

Not all the dates of the seminars taking place worldwide had been decided at the time of printing.

Registration and contact: GL Academy, Phone: +49 40 36149-195, academy@gl-group.com, Internet: www.gl-group.com/glacademy

OPTIMIZED DOUBLE HULL

Steel Innovation Prize for Lindenau Shipyard

With the winning concept for a double-hull tanker, the Lindenau yard of Kiel has been awarded the Steel Innovation Prize 2006 in the category “Steel in Research and Development”.
The improvement developed by Lindenau provides for a special arrangement of perforations in the supporting elements between the two skins. In the event of a collision, the outer shell and its structural elements can be deformed so strongly that it is separated from the inner hull. The latter then has a certain degree of freedom and is thus able to accommodate much more deformation energy. As a result, there is a reduced risk that the liquid cargo may be spilt. The type of steel used is of particular importance here; it must exhibit a favourable deformation response, such as the steel grade S 355 MC, which has a tensile strength of 430 to 440 N/mm² and a minimum breaking strain of 23 percent. This is the seventh time that the steel industry in Germany has awarded the Steel Innovation Prize. The competition takes place every three years, and was started in 1989 to create a platform for innovative applications using steel as the basic material. The contest, which in 2006 was endowed with 70,000 euros, singles out innovations in four categories: “Products of Steel”, “Components and Systems of Steel for Building”, “Steel in Research and Development” and “Steel Design”. From all over Germany, 620 projects were submitted as entries for the competition, which is organized by the Steel Information Centre (www.stahl-info.de). Germanischer Lloyd extends a hearty congratulations to its customer in Kiel!

The Managing Shareholder of Lindenau-Shipyard, Günther Steen (middle) with Wendelin Wiedeking (left), the patron of the competition and Karl-Ulrich Köhler, chairman of the Executive Board of the Steel Information Centre (right) at the award ceremony.

Special Orders are Our Strength

For the German yards, the SMM 2006 was blessed by a lucky star. The order books of many firms are full to bursting, owing to the record level of orders received in recent years. The shipbuilders intend to secure their future through niche products, superior quality and the international distribution of labour. However, there are some hurdles ahead, in the form of the general tax environment and the shortage of qualified personnel.

For a long time, it seemed as though German shipbuilding was in free fall. The headlines in the media spoke mainly of "yards dying out" and "an ailing industry". But now the world-view of the sceptics, who regarded the industry as being on its last legs, has been turned upside down. Shipbuilding is currently one of the very few success stories in an otherwise stagnant economy. The German Shipbuilding and Ocean Industries Association (VSM) can stand up in public with some pride. Since new contracts have considerably exceeded the deliveries for several years, the comfortable cushion of orders is getting ever thicker for local companies. Last year, the backlog rose from 2.78 to 3.96 million CGT (Compensated Gross Tonnage: the ship's volume adjusted by a weighting factor for the amount of work at the yard). What was even more impressive was the growth in value of the order level, with a plus of 58 percent to 11.1 billion euros in

PHOTOS: MICHAEL HOLLMANN

total, of which almost two thirds were for foreign customers and one third German. Although it is still too early for a conclusive assessment of the current business year, VSM Director Werner Lundt is optimistic: "Particularly in the past few weeks, an increased volume of orders have been noted internationally for container ships, owing to the unexpectedly high cargo volume. German yards also stand to benefit. What is more, the demand is not limited to container ships, but stretches over the entire product range of the German yards." Some companies are booked up until 2009 or, in the case of the Meyer shipyard, even into 2010. Shipowners who order in Germany can be sure of obtaining the very highest quality.

Shipowners and Brokers Rely on Quality

Short paths and easier communication, because everyone has the same language. All this speaks in favour of Germany, even if the yards cannot compete with China and Korea on price. Ship brokers, whose business involves newbuildings as well as the buying and selling of ships all over the world, find the terms of payment required by the German yards to be "more generous" than in other countries. The risk of having to enter into renegotiations on the construction price because of the rising cost of raw materials, as has been experienced by some German companies in China, may be excluded. "Because of this high quality, the servicing and maintenance costs are much lower for German-built ships," says a broker, and another adds: "The designs are generally much better thought-out. The ships are simply better." The engineers at German yards are adept in the art of optimization: for the fabrication of small and medium-sized container ships, for instance, they manage to astound the competition time and time again with carriers offering extremely low consumption and high stowage capacity. Special attention is paid to optimizing the lines of the ships and achieving a high intake of containers with an average weight of 14 tonnes in relation to the total storage space. A good example of this is the new type "Super SSW 1000" by SSW Schichau Seebeck Shipyard GmbH in Bremerhaven, for which the yard was promptly able to secure the first orders this year. The high degree of competence ascribed by the shipping companies to feeder ships made in Germany becomes evident when one looks at the full order books of yards such as J.J. Sietas, Rolandwerft and Peene Werft. More than 60 cargo ships, mainly with container capacities ranging from 800 to 1,500 TEU, are waiting for delivery there.

Bespoke Service

In the segment of small and medium-sized oil and product tankers too, "made in Germany" is a synonym for top quality. Lindenau Shipyard in Kiel has set new standards in respect of manoeuvrability, fuel savings and reduced vibration with its double-hull tankers of up to 45,000 dwt. Over and above that, Managing Director Dirk Lindenau is increasing the diversification of his shipyard into other product areas. Not for him the large series – he has his sights set on "special customer-specific solutions". Recently, his company won the order for constructing a wind turbine transporter that is powered both by a diesel-electric unit and by wind energy at the same time. "The customer defined his basic vision, and we are currently in the process of optimizing his requirements," says Lindenau. On deck, four cylinders arranged transverse to the wind direction and rotating about their own axes will support the diesel engines. When blown by the wind, these large rotors of light alloy generate a propulsive force at 90 degrees to the airstream. The fundamental idea for this innovative 130 metre carrier, which is to be completed by mid-2008, is based on the rotor ship built by the German inventor Anton Flettner in the 1920s.

PHOTO: LINDENAU

Dirk Lindenau
Businessmanager of
Kieler Lindenau-Werft

"The efficient processing of the shipbuilding orders is most impressive."

To secure their technological lead, the German yards must become "systems suppliers" that are able to put innovative ship types in all segments on the market in record time. "We must ask ourselves how we can start cooperating with the local supply industry at an even earlier stage than before. A basic prerequisite is that we must focus completely on the customers' needs and help him to win through against the competition on the strength of optimized products," explains Lindenau. In order to shorten development phases, yards and suppliers must already cooperate closely in the design and development process. To promote the necessary networking, representatives of both sides have formulated a guide for "vertical cooperation".

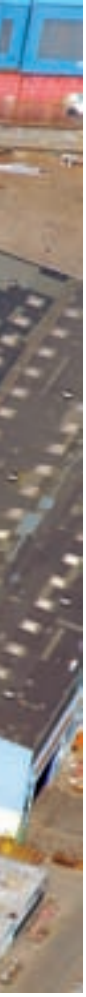
Feeder shipbuilding: Yards like J. J. Sietas have chock-full order books.

Competitive Research

The formation of networks and clusters is flanked by comprehensive research initiatives with a maritime focus on both the German and European levels. In the opinion of the VSM, there is an upward trend in the amount of money available for research and development in shipbuilding. In the ongoing 6th European Framework Programme, German companies were able to secure more than 32 million euros of the maritime assistance funds – 20 percent of the total volume – more than France (19 million euros) and Italy (15 million euros). German shipbuilding researchers are represented with more than 60 companies and institutions in 38 approved programmes. "For the first time, the return flow of funds corresponds to the economic significance of German shipbuilding and its leading position within the European maritime industry," is how the VSM judges the situation. Higher subsidies were also secured on a national level after the research programme "Maritime and marine technology for the 21st century" of the Federal Ministry of Education and Research (BMBF) was extended until 2010. Moreover, since 2005 the Federal Ministry of Economics has subsidized the order-related development of trailblazing "type ships" and investments in the process optimization through the programme "Innovative shipbuilding secures competitive jobs". The only catch: the guidelines provide for a conditional repayment of the funds, amounting to a total of some 60 million euros for the period 2006 to 2009. The leeway afforded by the EU framework conditions is therefore not used to full advantage. The ruling is "ineffective" and at the same time increases the "administrative burden in programme management," is the criticism voiced by the VSM. The tax environment would also have to be improved. The minimum taxation introduced in Germany in 2003, which is associated with a drastic limitation of the tax losses which can be carried forward, has hit local shipbuilding particularly hard.

Investment Muscle Too Weak

The yards are bemoaning the fact that they are constantly losing liquidity, because the initial losses of the multi-year projects that are typical of shipbuilding can now be offset against the later profits from the series only to a limited degree. However, it should really be the goal of politics to strengthen the investment power of the shipbuilders. "The operating results of the yards are not good enough for the industry to accumulate the necessary reserves for the years to come," is how Jürgen Kennemann, CEO for Germany of the Norwegian group Aker Yards, recently called for more government support in an interview. According to estimates, the yards in Germany only generate about one percent profit of



the turnover on average. Together with innovations and improvements in productivity, cost reductions are amongst the perennial topics. To cut costs, the companies are now making every effort to advance the international distribution of labour. The towing of ship sections or entire hull bodies from Eastern Europe by tug for final assembly in German yards has become a common sight in the North Sea and Baltic. Considerable savings are indeed possible by having the labour-intensive steelwork carried out in the low-wage countries of Eastern Europe. In addition, purchasing large components overseas also helps to secure new jobs in Germany.

Global Distribution of Labour

It was with this concept that the Lloyd Shipyard of Bremerhaven, which concentrates mainly on repairs and conversions, achieved a successful re-entry into the ship newbuilding business. The firm recently won a contract to construct two heavy-lift dock ships worth about 100 million US dollars. By having the bare hulls built in Poland, both the yard and the customer, the Bremen shipping company Harren & Partner, can be satisfied. The German Aker yards in Wismar and Warnemünde also intend to spread the work around more in future. From 2007, they plan to procure ship sections from the Ukraine (Okean Shipyard), with a view to increasing their throughput of 13 to 14 ships a year considerably. "Since the planned increase in production means we will need extra steelworking capacity in the forthcoming years, this will be the beginning of a long-term cooperation, as is already practised between other yards of the Group," explains Matthias Trott, Press Officer of Aker Yards Germany.

Naval shipbuilding in Germany has also involved cross-border cooperation for some time now. In recent times, there have been several European Community programmes, e.g. the cooperation between Germany and Italy in the construction of the submarine Class 212 or with the Netherlands for the Frigate 124 and LCF frigate. "Those were just the early beginnings. I believe that many more chapters will be written in the annals of European collaboration," says Dr. Klaus Borgschulte, Chairman of the Executive Board at ThyssenKrupp Marine Systems (TKMS). Through its merger with HDW early in 2005 and the take-over of the electronic systems supplier Atlas Elektronik this year, the Aker Group has consolidated the capacities for naval shipbuilding on a national level. And by integrating Swedish and Greek yards into the Group, "we already have a broad European line-up," Borgschulte emphasizes. In the short term, however, the yard manager regards any further concentration in Europe as being problematic, because naval shipbuilding in some important countries – like France, Spain and Italy – is either excessively state-dominated or still too fragmented. "The decisive aspect is that the national consolidation should be concluded first," says Borgschulte. An important decision for naval shipbuilding at the Emden and Hamburg locations is likely at the end of the year. It is expected that the budget committee of the German parliament (Bundestag) will pass a resolution on ordering the construction of four new Class 125 frigates from TKMS early in December.

Werner Lundt, Director of the German Shipbuilding and Ocean Industries Association (VSM)

"There will always be shipbuilding in Germany – in 2015 and also in 2025!"

FOTO: MICHAEL HOLLMANN

Too Few Engineers

A problem that is causing headaches for both naval and merchant shipbuilding is the lack of marine engineers. The demand exceeds the supply by far. Some 120 new entrants are needed every year, but the universities and the universities of applied sciences in Germany can only offer about 70 graduates in the faculties of shipbuilding and offshore technology annually. In the commercial area, the need for skilled labour fluctuates a great deal, because the order situation for the yards does not always remain constant. While one shipyard is urgently looking to hire new staff, the other does not have enough work for its existing personnel. The sad consequence is that shipbuilding specialists often change to allied branches of industry, although they may be ideally placed at another location. The know-how of these experts is then irrevocably lost to shipbuilding. For this reason, the yards have suggested that a supra-company labour pool be set up, so that they can exchange skilled personnel as needed. This will make it easier to balance out the busy and slack periods at the various sites. As is the case with many other innovations, adequate support from the government on the one hand and from the works councils and workforce on the other is paramount. "There will always be shipbuilding in Germany – in 2015 and also in 2025," VSM Director Lundt is certain. The question is just: how much will remain? If it is possible to unite the forces of industry, politics and employee representation in the shipbuilding sphere, the chances of sustained success are very good indeed. The German yards would then still be "as broadly positioned as they are today," says Lundt, and could even "win back lost market shares." ■ MPH

Almost Every Ship is Partially

"made in Germany"

Things are going better than ever before for the German maritime and offshore supply industry. Many companies have internationalized strongly but remain firmly rooted in Germany. For them, the home country is an important sales market and at the same time a field for experimenting with new technologies.

It is well known that, in striving for perfection, Germans tend to complain a lot – and German managers are no exception. The leaden inertia of the bureaucracy and the over-regulation by the state are amongst the enduringly popular topics for a good gripe. Or could these aspects represent an advantage? Peter Breidenich, for one, does not fit into the role of a moaner. The former chief engineer of a destroyer is Head of the Marine Systems Division of Saacke GmbH & Co. KG in Bremen, one of the world's leading manufacturers of burner systems. The question as to how one could improve the general business conditions in Germany initially causes him to reflect in silence. "Actually, we regard the economic environment to be quite good," he answers with some hesitation. "Germany is a very important market for us, because the technically demanding ships are still built here. As a marine supplier, we have our finger on the pulse of developments here, and we can watch new technological trends as they emerge."

Peter Breidenich, Head of Saacke Marine Systems

"Germany is a very important market for us"

The company, which generates a turnover of more than 130 million euro worldwide (of which 25 percent is in shipbuilding) with about 800 employees, has managed to grow from a subcontractor to a system supplier, thanks to a lot of ingenuity and a sure instinct. Burners and boilers are needed for just about any type of ship, be it for providing hot water, heating the accommodation spaces or warming up the fuel in the bunker und day tanks, in order to make the heavy fuel-oil liquid enough for combustion. Up until a few years ago, the distribution of labour functioned as follows: Saacke delivered the burners to the boiler manufacturers, who integrated all the components and then sold the complete installations to the yards. But when a concentration took place amongst the boiler makers towards the end of the nineties, and several of Saacke's partners were taken over or squeezed out of the market, the future of this business was suddenly very shaky indeed. The company bravely decided to take the bull by the horns: to be able to approach the European yards with their own complete systems, the medium-sized enterprise decided to acquire a burner manufacturer in Croatia. In 2003, this move was followed by the founding of their own factory in China, with a view to serving the Asian market better. Whilst the steel parts are built overseas, the burner and control technology still comes from Bremen and is combined at the yards with the matching boilers from China or Croatia. "We have made global networking work well for us," says Breidenich with some satisfaction. Thanks to their presence in all the major shipbuilding markets, Saacke Marine is benefiting in full measure from the current shipbuilding boom. This year, about 160 plants will be delivered, boosting the firm's turnover by 15 percent from its previous figure of 30 million euros. The fast movers in the delivery programme are the firing plants for LNG carriers, with which the "boil-off" part of the gas cargo that is produced by the ship's motion and solar radiation can be burnt safely. "The explosive gas is thus converted into CO_2, which is still better for the atmosphere than methane," explains Breidenich. These gas combustion units pack quite a punch: as a result of the combustion process, an output of up to 80 MW is released.

Impressions of the burner production at Saacke Marine in Bremen.

PHOTOS: MICHAEL HOLLMANN

But Saacke is just one example amongst many. In total, the German supply industry is made up of about 400 companies with some 70,000 employees and an annual turnover of over 9 billion euros. Judging by sales, the German shipbuilding suppliers are in second place behind Japan, but number one when calculated by exports. According to statistics provided by the German Engineering Federation (VDMA), more than half of all companies are expecting a continued increase in orders received for 2006, both at home and abroad. One of the leaders is the propeller manufacturer Mecklenburger Metallguss GmbH (MMG), who claims a world market share of over 25 percent. The company has initiated its ninth investment programme since German reunification and for this year announced the extension of the production hall in the town of Waren as well as the procurement of a new CNC milling machine. Relocating the factory overseas would be out of the question for these staunch "Meckenburgers". They simply do not need to. Their know-how, especially in the manufacture of large propellers weighing more than 100 tonnes, is unrivalled to such a degree that they also supply yards in Korea and China who have their own propeller production capacities.

Quite a different path has been taken by the major makers of marine engines. Companies like MAN B&W have the greater portion of their engines produced under licence in Asia. "Corporate partnerships play the biggest role for us in granting licences. This approach is tried and tested, and we will hold that course," explains Prof. Dr. Wolfram Lausch, Senior Vice President of the Marine Division at MAN B&W Diesel. He sums up the strategy of the group as follows: "Through unceasing advancements aimed at meeting the needs of the market, we intend to maintain such a technological lead that newcomers will, after careful examination, come to the conclusion that it would be better to ask for a licence than to reinvent the wheel." Current efforts are directed primarily at the development of engines with lower and lower emissions. For instance, the new L/V32/44CR for the four-stroke sector will be premiered at the forthcoming SMM exhibition. According to the company, this is the first medium-speed HFO four-stroke engine which is offered exclusively with the common rail technology – to be available from mid-2008. Electronic fuel injection makes for increased reliability, lower consumption and reduced emissions by marine diesels.

PHOTO: MAN B&W DIESEL

Prof. Dr. Wolfram Lausch, Senior Vice President of the Marine Division at MAN B&W Diesel

"The market generated by Germany is the largest for us"

Lausch regards the German market as being "extremely important, especially for our two-stroke engines". Over the past one and a half years, German yards have purchased over 1100 MW of engine output from the company, corresponding to 84 percent of the entire market volume in the country. If orders from German shipping companies for foreign shipbuilding projects are included, "then the market generated by Germany is by far the largest for our company," Lausch declares. ■ MPH

PHOTO: MICHAEL HOLLMANN

Closeness to the Yards is Important for German Owners

A Brief Interview with Dr. Hans-Heinrich Nöll, President of the German Shipowners' Association (VDR)

PHOTO: HASENPUSCH

What role does Germany, as a shipbuilding location, play for the German shipping companies?
In the past few years, the number of ships delivered by German yards to German shipping companies has increased once again. In 2005, this proportion made up more than half of all newbuilding deliveries. We expect that this trend will continue in the forthcoming years and that more than 50 percent of the ships built in Germany will still go to German shipping companies. Over and above that, Germany is of great significance as a location for the maritime supply industries. Up to 70 percent of the acquisition costs of a ship have to be ascribed to the supplied goods and services. Here Germany occupies a leading position, regardless of where the ships are actually being built. Understandably enough, the shipping companies are interested in retaining their closeness to this important sector.

Why, in your view, do domestic shipowners still order vessels in Germany at all, when the competitors in Korea and China can offer their ships at much lower prices?
It is particularly in boom times that the German yards can offer time slots for delivery that are very attractive. On the whole, however, it is a conglomeration of various arguments that decides where each individual order is placed.

Within the scope of the National Maritime Conference, German shipping companies and yards are making a case for better locational conditions. What common interests are being pursued by these two groups?
The shipping companies and yards are both interested in having the entire maritime industry pulling together for the location promotion policy. This applies regardless of the fact that the shipbuilding industry is completely subject to domestic production conditions, whilst the shipping companies acting globally can act under foreign business conditions. A healthy and flourishing domestic industry will benefit both sectors. ■ MPH

PHOTO: VDR JOHNS

Dr. Hans-Heinrich Nöll, President of the German Shipowners' Association (VDR)

"Shipping companies and yards pull together"

"Home Please, James!"

Modular fleet management makes light work of resource planning.

Just in time for the leading Hamburg fair "Shipbuilding, Machinery & Marine Technology (SMM)", Germanischer Lloyd is presenting a new and comprehensive fleet management program. "GL ShipManager," says Wolfhard Sengler, Director of Information Technology and Organization, "is a synergetic supplement to "fleet online". The intermeshing of the two systems permits an optimum planning of operative sequences with class-relevant or statutory surveys, which reduces costs and achieves greater transparency."

If you rest, you rust: SAMS grows into "GL ShipManager"

Previously known as the "Ship Administration Management System", a suite which is now being used on 250 ships worldwide to ensure plain sailing through the efficient planning and controlling of operational sequences, SAMS has now leapt into a new dimension of service, thanks to an intelligent link-up with the successful GL software tool "fleet online".

"Simplifying and, wherever possible, automating the administrative work in operating a ship was the original idea by the GL subsidiary Ms Logistik Systeme GmbH," says Managing Director Heiko Hofmann, under whose leadership the further extension of the software is now being pushed forward. The "Ship Administration Management System" (SAMS) with modules for "Crew Management", "Technical Management" and "Ship Management", augmented by open interfaces, proved compelling by virtue of its many and varied possibilities for application. These modules simplified the operative planning processes of the shipping company, automated the administrative activities needed for day-to-day ship operations and provided a secure method of data exchange. All this was done by utilizing modern communication channels: Internet, satellite or even telephone lines. The program compresses the individual data packages as efficiently as possible, so that the transmission costs are kept low.

In their new form of the "GL ShipManager", (page 26) the proven software modules are now appearing in a user-friendly office suite with web-based user interface. Now, any internet-enabled PC can be used to work on the system, without the need to install additional software, licences etc.

In addition to the improved ease of use, the new package supports the quality standard of the shipping company, cuts the running costs of fleet management, offers an economical form of data exchange between ship's officers and the shipping company's management, and reduces the workload for standardized management sequences. What is more, it also offers a system integrity that, in combination with "fleet online", provides a comprehensive picture of the operative, classificatory and statutory requirements applying during the life-cycle of a ship. Introduced in 1999, the software tool "fleet online" is now being used by over 729 shipping companies operating more than 3,000 ships, to obtain an exact overview of the classificatory und statutory requirements of their fleets. Not only does this tool signal a need for action in good time, it also supports the planning, ordering and monitoring of classificatory and statutory surveys. Survey reports on the condition of the ship are then provided, together with automatic generation of the due dates for class renewal.

Ideally, "GL ShipManager" should be implemented during the construction phase of the ship. All of the applicable components are defined in the "Planned Maintenance System" (PMS) module and permanently stored in the ship-specific database. Even for ships already under way, the necessary data for the technical documentation can be entered later, whereby the shipping company should ensure that all the relevant future actions are included, such as the ordering of lubricants or the replacement of defective machinery components.

However, before things progress this far, the master of a vessel equipped with the GL ShipManager will be pleased at the convenience offered for each port call by the new and extensive "Port Clearance Module". With just a few mouse-clicks, it supplies all the applicable port-related information, such as charts, overviews and texts on the screen – not to forget some hot tips for shore leave. ■ OM

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Alfred Hartmann, shipowner from Leer

"SAMS – the All-Inclusive Carefree Package"

The Hartmann shipping company in Leer uses the high-performance software for its entire fleet.

Hartmann is a young and innovative shipping company based in the North German town of Leer. To ensure optimized management of the rapidly growing fleet, "which above all means faster and more precise administrative operations," as Managing Director Dietrich Schulz puts it, the company has been using the SAMS (Ship Administration Management System) since 2004 – a comprehensive software suite developed by Ms Logistik Systeme in Rostock.

Look before You Leap – First a Market Survey

The decision in favour of the high-tech software coincided with the placement of a large shipbuilding order – nine container carriers – at the Aker yard in Wismar. "Naturally, we had first done some window-shopping to see what ship management software was available on the market. So we already had a good picture of the possibilities when our attention was drawn to the software developed by Ms Logistik Systeme in Rostock," reports Dietrich Schulz, Managing Director of Hartmann Schiffahrts GmbH. The next step was to contact the experts in Rostock. "We were extremely impressed by their presentation, and I can now say that we are very happy with the decision."

Lutz Baltrusch, marine superintendent at the company and, as a captain, well acquainted with the customary processes and operations on board, bases his opinion of SAMS on specific comparisons with other systems and plenty of hands-on experience: "As users, we have been given an all-inclusive carefree package!" And his colleague Eike Enzmann, also a marine superintendent, adds: "The other products always consisted of separate applications, for example for the area of "crewing" or "ship operation costs". What was missing there, however, was the internal linkage. Furthermore, there was also a lack of technical support by the supplier in the event of difficulty. And yet it is precisely on this support that we as front-line practitioners – and this affects especially the personnel at sea – need to rely on, all the more so in the critical introductory phase."

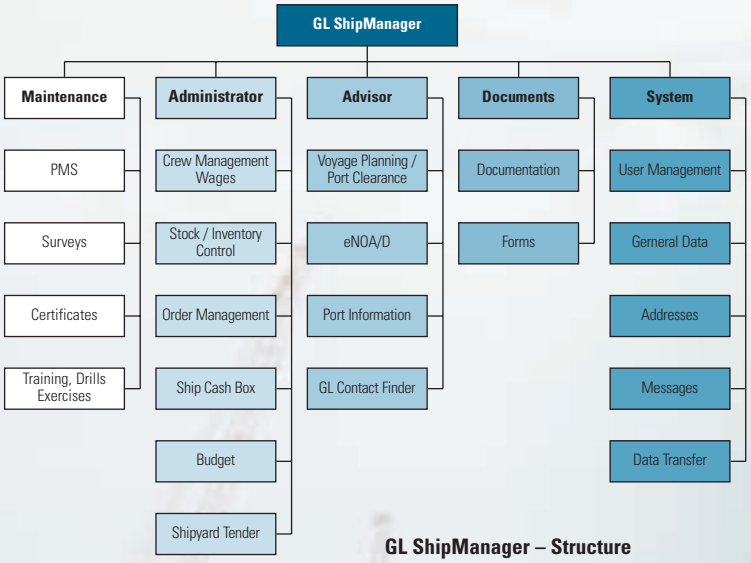
SAMS Also Earmarked for the New Fleet

Out of the entire SAMS package, Hartmann is at present using mainly two components: the "Planned Maintenance" module, which can be used to plan and administrate the servicing tasks of the ship and the "Purchasing" module. The latter covers the entire area of consumables, repairs and spare parts for ship operation, including orders for the sophisticated shipboard technology. Dietrich Schulz is pleased: "All the new ships will be equipped with SAMS from the very start." The resounding success Hartmann is having in implementing SAMS for all the ships in its fleet is ascribed by Eike Enzmann as being due to the excellent and close teamwork with the Rostock software house. "First of all, we naturally had to provide all the fundamental vessel-specific data. In Rostock, this information was then entered into the software to create the corresponding ship databases. In addition to that, our staff was trained in the use of the programs. An important aspect here is the support for the shipboard personnel, because that is where the necessary data has to be entered into SAMS on a regular basis. But whenever a question crops up, the specialists in Rostock are quick to help."

For the training of the shipboard personnel – only officers are concerned with SAMS – two days are generally reserved for a course in Rostock. There is also the possibility of having instructors from Ms Logistik sent out to the ships to provide training and familiarization on board. Follow-up support can then be given by e-mail.

Many Improvements already Implemented

An important aspect for the Hartmann shipping company in using SAMS is also that suggestions for improvements that result from the daily handling of the system are actually implemented by Ms Logistik. Says Dietrich Schulz: "Amongst a number of essential criteria, this was a very important issue for us in choosing the system. We want to use a tool that really helps us get ahead in our everyday work." In the course of the past two years, a whole series of remarkable enhancements have been put into practice by the Rostock efficiency experts. "A special strength of the company is that people with a lot of experience in shipping are working there," says Lutz Baltrusch, "So we are actually speaking the same language." And Eike Enzmann adds: "Perhaps we are unusually energetic in trying to optimize a system which is already very good. From discussions with Ms Logistik, we know that not all customers are as active in requesting adaptations."



GL ShipManager – Structure

Provisioning Made Easy

The topic of data security is very important, says Dietrich Schulz. "Early on in the decision-making phase, we spoke about this in great detail with everyone involved. Sensitive data are kept on the server in Rostock, so it is vital that we can rely on confidentiality. It's good that there is an atmosphere of mutual trust. The fact that Ms Logistik Systeme is now part of Germanischer Lloyd, with whom we have been working closely since our very first ship – in September 1981 – is naturally another guarantee that data protection, and therefore also safeguarding the customer's interests, enjoys top priority."

But what practical benefits does the system provide in operation? Captain Enzmann is quick to answer: "We now conduct all provisioning and procurement for our ship operations through SAMS. From the shore offices in Leer, we can track every day what is needed on board and what is actually being ordered. Of course, we can also check whether the requisitioning is really necessary, because the corresponding parts or materials might already be available on board. This makes it possible to achieve considerable savings. There is another benefit: through the daily updates, we are given our own market price comparison. The suppliers and their prices are available at our fingertips." Eike Enzmann explains the advantage: "I no longer have to carry out hours of laborious

price research, because I can quickly see which supplier offers what conditions for a certain valve, say." Added to this, the purchasing and vendor data are readily available to all users within the company, and are not hidden in a paper file or hoarded on lists in various offices. The "Planned Maintenance" module, with which a high level of availability can be achieved for a ship on a long-term basis, also unlocks a great deal of added value.

Bringing together the Buyers and Bookkeepers

So what is planned for SAMS at the Hartmann shipping company? Apart from the outfitting the new ships planned to come under way by 2010, the system's own accounting component is to be given the spark of life. Says Dietrich Schulz: "In our company, daily reporting traditionally ranks quite high. The next logical step is therefore to link up the purchasing and accounting departments. At the instant in which something is ordered, an accounting transaction is initiated; the purchase order and delivery on board give rise to an invoice later on." Enzmann and Baltrusch concede that this simple-sounding idea will necessitate a lot of preparatory work. Nevertheless, in view of the positive experience with SAMS, the Hartmann team is bound to overcome this challenge too. Dietrich Schulz has already set a finishing line: "If we are able to complete the project in the course of next year, then I think we can be proud of ourselves. And I am quite confident that it will all work out well." This too is one of the overarching objectives for SAMS users: the Administration module should be activated through practical operation. The clearance documents needed for a port call are also stored in the system for speedy access. "Fully exploiting the advantages offered by SAMS will certainly take us quite a while, but we are enjoying the trip," smiles Lutz Baltrusch. His opinion is confirmed by Dietrich Schulz: "Above all, it means that we are making our services more and more efficient."

"MAKING MORE OF THE SEA – A FASCINATING PROSPECT"

This vigorous approach to business is not only practised by the Hartmann family as shipowners, but also by the 3,500 employees working for the Hartmann Group worldwide. Today, the fleet comprises 35 units, with gas tankers ranging up to 8,000 m? and container ships up to 2,700 TEU. The shipowners in Leer are firmly on course for continued expansion: by 2010, the fleet is to double in size, with the ships also growing ever bigger. The construction programme includes an 18,000 m? gas tanker, a container ship with 4,250 TEU, and several bulk carriers. All ships taken into service by the Hartmann shipping company over the past 25 years were classified by Germanischer Lloyd. The Hartmann Group's quality objective includes operating the vessels with well-trained company personnel; it comes as no surprise that the shipping company runs its own training facility on the Philippines.

For further information: www.hartmann-reederei.de

AIDAdiva Takes Skape

There is still some time to go before delivery of the AIDAdiva (see large picture), but the order for the third sister ship was already placed in June with the Meyer shipyard. Departure for the 2,050 passengers is then scheduled for 2010. "With this renewed extension of the fleet, we are responding to the strong demand for voyages on our club ships," says Michael Thamm, President of AIDA Cruises. In early 2007, the AIDAdiva will be going on its maiden voyage to the Mediterranean. This is also an important date for Germanischer Lloyd in providing technical support for the newbuildings. The "Sphinx" ships meet the very highest safety and environmental demands: they will receive the notations "RP" – Redundant Propulsion – for the dual propulsion plant and "Environmental Passport" in their character of class. ■ SN

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Drills, Drills, Drills!

As early as June, IMO Secretary-General Efthimios Mitropoulos predicted that 2006 would be a bad year for ship safety. A number of tragic accidents have undermined the vast improvements made in recent years by passenger ferry operators.

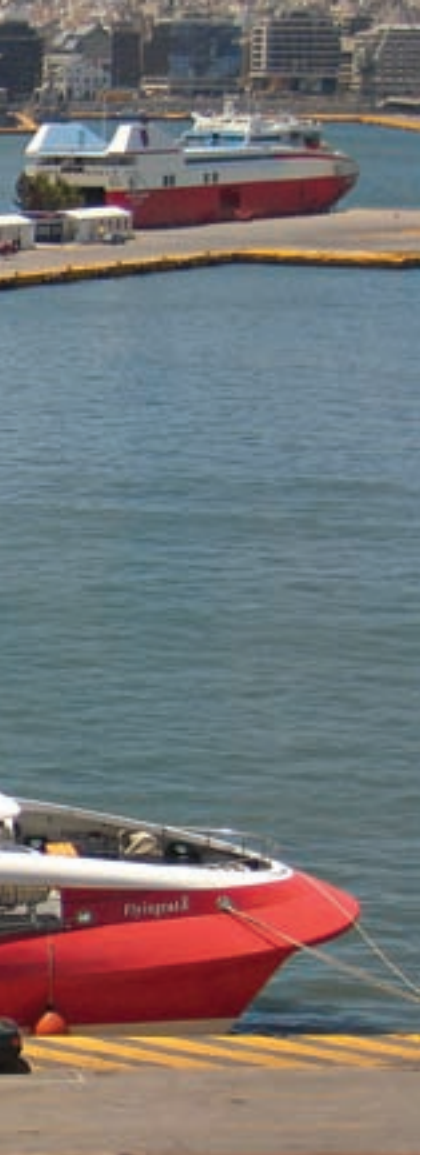
nonstop had the opportunity to talk to Gerasimos Strintzis, Managing Director of Hellenic Seaways, during the POSIDONIA, about optimizing the safety standards on passenger vessels. His recommendations are crystal clear:

"Training, training and more training is the best remedy against the consequences of fire, flooding and navigational errors." A well-trained crew can make all the difference in ensuring that the emergency is resolved and the passengers come to no harm.

"The safety standards required on passenger vessels are well regulated by the ISM Code and SOLAS. Hellenic Seaways is constantly conducting exercises. At least once a week, there is a drill on board the 31 passenger vessels in our fleet. Each drill focuses on a different emergency, because the blind repetition of a single scenario does not improve the competence of the crew; on the contrary, it prevents the detection of possible shortcomings in other areas. All drills are conducted under realistic conditions. However, the passengers on board our modern fleet are blissfully unaware of the stringent training and requirements the crews have to fulfil."

Gerasimos Strintzis, who has turned Hellenic Seaways into the leading coastal ferry operator in Greece, adds that a certificate for fire-fighting and life-saving appliances is required from each seaman. "When a crew member changes to another ship, we take great care in ensuring that his place is filled by a person with the same qualifications in maritime safety."

Part of the training concentrates on giving the crew the necessary confidence in dealing with emergencies. "A crew member who is inadequately trained in fire fighting will hardly be enthusiastic about following orders during a real fire." The drill produces the confidence that the fire fighting equipment actually works. A crew member who knows how to operate in fire



Gerasimos Strintzis, Managing Director of Hellenic Seaways

protection clothes with an auxiliary air supply is more likely to have the courage to enter a smoke-filled room than somebody who has little knowledge and no real experience. Drills are based on scenarios that allow the crew to practise with the fire fighting equipment. In addition, appropriate behaviour under emergency conditions, such as flooding or complete evacuation, is also trained.

Every crew member of Hellenic Seaways has his own job description, which even includes instructions on how to behave when others fail in their function. Given this regular training of the crews, it goes without saying that all vessels of the modernized ferry fleet with all the relevant rules and regulations.

Apart from drills on board, Hellenic Seaways has installed a crisis management team consisting of twenty managers and experts, who have to rehearse effective teamwork in a simulated emergency at least four times a year. "We have to make sure that it is announced as a drill beforehand, otherwise the Greek media and the maritime ministry will be breathing down our necks in no time!"

In order that well-targeted assistance can be given to the crews in the event of an accident, the crisis management team provides two of the company's naval architects with the drawings of each vessel. It is their job to determine what to do in order to keep the vessel afloat or pull it free. This in-house emergency response service is similar to the ERS of Germanischer Lloyd, which has primarily tankers and bulk carriers in its electronic files. "Even if some modern vessels are already equipped with a programme for calculating damage stability, the experience of Germanischer Lloyd in emergency response cases could enhance our safety concept," Strintzis points out.

"Call us old-fashioned if you will, but our crew members have to think like real sailors. It is not a question of playing the hero! The captain has to evaluate the danger for his passengers, his crew and his vessel. He bears the responsibility and, in the end, will be the last to leave the stricken vessel."

Does shipboard safety represent an important tool in marketing the services of ferry operators?

"No, safety is simply a matter of course," says Strintzis, whose company is the leader in Greece for coastal ferry operations. "We promote the luxury of our ships, the services we offer and the overall quality of our operation. We demonstrate our dedication to safety through the discipline of our crews, their appearance and their performance. Our staff know that they are doing a good job!" ■ OM

ABOUT HELLENIC SEAWAYS

Hellenic Seaways has a fleet of 31 vessels operating in the Aegean and the Adriatic Sea. Covering 1,630,000 nautical miles in 28,500 itineraries, the company carries approximately 6 million passengers, 660,000 vehicles and 105,000 lorries and trailers every year. The fleet consists of 5 "Highspeed" car/passenger fast ferries, 6 "Flyingcat" passenger fast ferries, 13 car/passenger ferries and 7 "Flying Dolphin" hydrofoils.

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Will the Rig Hold?

In cooperation with mast designers and manufacturers of PBO and carbon fibres, a new guideline on the approval of the standing rigging of fibre cables has been developed by GL. On regatta yachts like the spectacular Volvo Ocean Racers, shrouds and stays of PBO or carbon fibre have been used for several years now.

nonstop spoke to the rig expert and naval architect Hasso Hoffmeister about the current trends. “The development generally starts at the Grand Prix level, as is so often the case in sport,” Hoffmeister points out. “PBO and carbon cables are increasingly also being used for the superyachts”.

Small wonder: the use of fibre cables saves weight. Ropes of PBO or carbon fibre weigh only a fifth of what regular steel shrouds of Nitronic 50 put on the scales – and all for the same breaking load and stiffness. Weight saved in the rigging has a direct effect on the stability. Depending on the type and size of boat, a saving of 100 kg in the rig weight on a 80 ft yacht permits a reduction in the ballast of 500 kg or the corresponding decrease in draught. The cables are available in configurations that are quite usual for superyachts. Diameters ranging up to that of a coffee cup and breaking loads of up to 400 tonnes are all part of the delivery programme.

Rising Demand

What does the cryptic abbreviation PBO mean? “PBO stands for *poly (p-phenylene-2,6-benzobisoxazole)*, a flame-resistant and high-tensile material which was developed in the eighties,” explains Hasso Hoffmeister.

The properties of this material meet the stringent requirements posed by marine sports. “The sustained interest in standing rigging made of PBO and carbon fibres was the decisive factor in compiling the new guidelines for the approval of rig cables of synthetic materials,” says Hoffmeister. Published recently by Germanischer Lloyd, the “Guideline for the Type-Approval of Carbon Strand and PBO Cable Rigging for Sailing Yachts” is setting a new technical standard for shrouds and stays of artificial fibres. The new Guideline was developed in close cooperation with the customers of the classification society, including mast designers and the manufacturers of PBO and carbon fibres.

Worldwide, only a handful of companies are able to produce standing rigging from these high-tensile and ultralight fibres. However, the market is on the move. Until now, mast builders usually purchased the standing rigging from supply companies. At the same time, they are required by law to guarantee the integrity of their rigs. “As a result, there was a real need and request by the mast designers for guidelines on the approval of tear-proof synthetic cables,” the rig expert adds.

The guidelines give the manufacturers of synthetic shrouds and stays an independent verification of the suitability of their products. A prerequisite for this verification is that a number of certified loading tests must be performed on the stays or shrouds. Amongst others, these include an impact test, a chafe test and a fatigue test.

Test Triathlon Needed

For the impact test, the fibre cable must resist the damage caused by a falling blade. Since PBO strands are very sensitive to UV radiation and no light must therefore be allowed to fall on the material at all, the frictional compatibility of the plastic jacket is examined by means of the chafe test. A spinnaker sheet rubbing on the shrouds generates heat, against which the fibres have to be adequately protected. The fatigue test scrutinizes the long-term cyclic loading of the material. The cable is clamped in a test setup which is used to induce a tensile force corresponding to the maximum working load of the material. The cables must withstand up to 100,000 load cycles. At the end of the fatigue test, the maximum tensile strength is determined.

How long when have you been concerned with carbon fibre rigs? Hoffmeister: “For over ten years now, Germanischer Lloyd has been assessing the construction and design of carbon fibre masts and is therefore only classification society that has intensively supported the development and application of this technology.”

What further developmental steps are likely? For Hasso Hoffmeister, there is no doubt that standing rigging of synthetic fibres will soon come into widespread use. Once again, Germanischer Lloyd is at the forefront with the corresponding guideline. ■ OM

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PHOTO: VOLVO OCEAN RACE

Holistic Approach

European Commission presents a maritime policy draft.

"How inappropriate to call this planet Earth when it is quite clearly Ocean!" With this quote by the British science fiction author Arthur C. Clarke, the EU Commission introduced its Green Paper of May 2006, with which it wishes to spark a discussion on a European maritime policy. Here it is taking a new course: the ocean should no longer serve merely as a source of raw materials or be regarded exclusively from a sectoral policy viewpoint, but is to be treated in a holistic way.

The maritime industry, comprising the sectors of shipping, shipbuilding, ports, fisheries, offshore energy production and tourism, constitues an important economic factor in all European coastal states. With respect to marine research and maritime innovation, Europe occupies a leading position. At the same time, the economic utilization of the common maritime space throws up a number of questions which should be best solved by general agreement. These include marine and air pollution, natural catastrophes as a result of climatic change, accident risks in large-scale shipping, overfishing and the tense competitive situation of Europe's maritime industry in the age of globalization.

So far, most of these challenges have been faced by the EU with individual technical measures that address a specific sector, such sea as shipping or fisheries, without considering the ocean as a whole. To alleviate this need, the EU Commission presents a number of deliberations in the Green Paper now available for discussion.:

Through an integrated coastal zone management, the multiple uses of the coastal regions, their impacts and future development projects can be coordinated, with the possibility of combining the planning activities for the sea, the land and their interface areas.

With the establishment of a European marine observation and data network, the state of the oceans can be monitored together with the safety risks for shipping and fisheries. Moreover, the EU Commission is also considering a comprehensive mapping of the various coastal regions, a veritable "EU Atlas of the Seas".

As regards preventive coastal protection, the EU Commission believes that a concerted European approach is needed to achieve effective flood and environmental protection and to take adequate precautions against natural catastrophes.

The Commission's proposal of setting up a European coast guard – with statutory tasks – has already generated much discussion.

Another catalogue of proposals deals with the international competitiveness of the European flags, polishing the image of the shipping sector and measures aimed at improving the attractiveness of seafaring professions. The suggestions range from a course of training providing equal qualification for shipboard and shore duties, improved working and social conditions for mariners, to deliberations on an optional EU ship register.

The Green Paper, which was compiled under the leadership of the Maltese EU Commissioner Dr. Joe Borg, regards marine research as being one of the most important pillars of a future EU maritime policy. Through a marine research network and a common European internet portal, information on all the research activities within the Union may be made transparent.

The position paper also takes a stance on the "international" dimension of maritime policy: there are no less than twelve subsidiary organizations of the United Nations that concern themselves with maritime matters. From the viewpoint of the EU Commission, there are urgent problems that call for an international solution, e.g. the ecological scrapping of ships, piracy, the compliance with international obligations by flag states and accident prevention. Moreover, the EU Commission wishes to join the International Maritime Organization as a member, in order to strengthen the European influence and to increase the political clout of its member states.

With its abundance of proposals of varying significance, the Green Paper represents an ambitious project. Whether the "European vision for the oceans and seas" in its present form meets with the desired acceptance must be gauged from the statements the Commission has requested by 30 June 2007 ■ CH

PUTTING IT ALL INTO CONTEXT: GREEN AND WHITE PAPERS UNRAVELLED

The purpose of the Green Paper on a Future Maritime Policy is to examine all the activities in Europe which have an impact or are linked to the oceans and seas and the policies dealing with them. The Green Paper is accompanied by a number of background documents. They were produced by European Commission Working Groups and by the Maritime Policy Task Force made up of member states' experts in the sea-related sectoral policy areas, which oversaw the drafting of the Green Paper. The European Union involves its citizens in the legislative process by producing these green or white papers. Green papers serve the purpose of creating a public and economic discussion. Individuals or organizations are able to comment in an Internet forum on the issues addressed. Often, a white paper evolves after the completion of the discussion phase. White papers contain formal proposals for action in a particular policy area with the aim of developing this further. Every year, up to 15 green and 1 to 3 white papers are drawn up. They provide the basis for the legislative process and offer points of reference for future laws.

For further information (on participation in the EU): http://ec.europa.eu/yourvoice/index_en.htm

Improved Working Conditions

A sea voyage is not always as amusing as a popular German sailors' song might suggest.

The working conditions of seafarers vary greatly, although there are 68 maritime conventions and guidelines of the International Labour Organization (ILO) to protect them. At the beginning of the year, a new Maritime Labour Convention was adopted in a diplomatic tour de force, with a view to defining an internationally agreed minimum standard for the living and working conditions at sea. This minimum is to apply regardless of the countries of origin of the seafarers, shipping company and flag.

The Convention was formulated jointly by a three-party committee consisting of acceding states, employers' organizations and employee representatives (unions). The Maritime Labour Convention comes into effect twelve months after its ratification by at least 30 member states representing at least 33% of the world merchant tonnage. At present, Liberia (8% of the global tonnage) is the only state to have ratified the Convention. The European Union has announced that the ratification process is to be completed in all member states by 2008. Since the 25 EU member states make up 27% of the world's tonnage, the Convention could then come into force worldwide from 2009.

The Maritime Labour Convention comprises five chapters addressing the minimum standard, conditions of employment, accommodation, health protection, social security as well as compliance and enforcement. It will apply to all ships engaged in international trade, whereby warships, fishing vessels and traditional ships will be excluded.

To enforce the Convention, it is envisaged that ships with 500 GT and more be certified by means of a maritime labour certificate (MLC). The flag state will be primarily responsible for issuing the MLC. The necessary inspections on board the ships will be performed by the administration of the flag state, or can be delegated to recognized organizations, e.g. Germanischer Lloyd. The MLC will be valid for a period not exceeding five years, with an intermediate inspection after half the validity period has elapsed. With regard to the organizational requirements applying to shipping companies, Germanischer Lloyd has already conducted two information seminars. Another seminar is planned for October 2006 on Cyprus. ■ KJ

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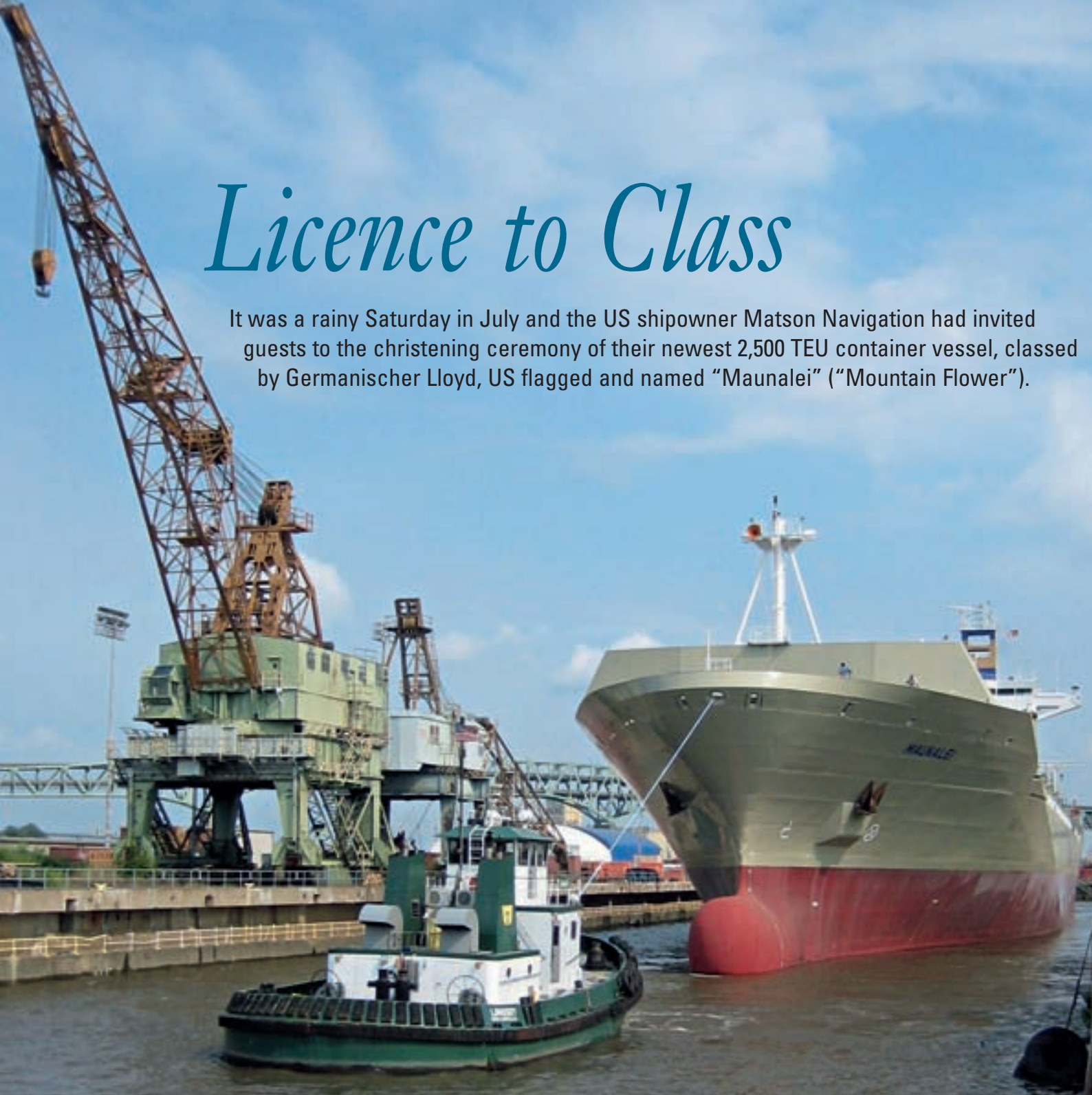
Licence to Class

It was a rainy Saturday in July and the US shipowner Matson Navigation had invited guests to the christening ceremony of their newest 2,500 TEU container vessel, classed by Germanischer Lloyd, US flagged and named "Maunalei" ("Mountain Flower").



Mary 'Mildred' Akaka, wife of Hawaii Senator Daniel Akaka, christened the ship at the Aker Philadelphia yard. And actually, the rain was a good omen: President and CEO of Matson Navigation James Andrasick explained that in the Hawaiian tradition rain is a sign of good luck and prosperity. In the meantime, the vessel has departed from Philadelphia and has successfully begun its Hawaii-Guam-China service alongside its sister vessels "Manukai", "Maunawili" and "Manulani".

Strong Demand for Container Service

Japan, China and Germany are the top three maritime trading partners of the United States. Maritime transportation accounted for more than three quarters of the 1.6 billion tons of goods traded between the United States and other countries in 2001. Americans are buying more imported merchandise than ever before, and more of the goods produced in US factories are bound for export. Los Angeles, Long Beach and Oakland: Three of the top five container ports in the United States are on the West Coast. The growth of these ports reflects the increased trade with the Pacific Rim countries.

The frequent visits of large container vessels are mirrored in the ship inspections Germanischer Lloyd provides in the United States. "Every third container ship in service worldwide is classed with Germanischer Lloyd and every other container ship newbuilding is constructed to our rules," Stephen Gumpel, Germanischer Lloyd's Area Manager North America, sums up the demand. Class surveys are especially requested on the West Coast, but Germanischer Lloyd surveyors are

stationed at eight locations throughout the US and Canada. Hapag-Lloyd, Hamburg Süd with its US subsidiary Columbus Line, NSB, Pacific-Gulf Marine and Matson Navigation are only some of the container lines that are regular customers in this part of the world.

"But container ships are not the only business of Germanischer Lloyd!" Gumpel is quick to explain. The classification of two high speed ferries at Austal shipyard in Alabama is currently under way. They will be the largest aluminium ferries ever built in the US. The certification of materials and components, namely engines, for the international shipbuilding industry is part of the services offered. A full range of engines built by Caterpillar for worldwide export has been certified according to MARPOL Annex VI by Germanischer Lloyd, by the way, the first classification society chosen to do so.

Flag Relations

123 flag states have authorized Germanischer Lloyd to act on their behalf. Some of them are special to Stephen Gumpel: Panama, Liberia, Marshall Islands and Vanuatu have their registration offices in New York. Close to Germanischer Lloyd's area office, there is almost daily interaction and a personal relationship in communicating between head office in Hamburg and flag state offices in New York.

The US Coast Guard, of course, is of particular significance. Under the Jones Act, vessels delivering cargo or persons from one US port to another need to fulfil special requirements: A US-flagged vessel must be built in the United States, owned by US citizens, and registered under the laws of the United States. To offer full service to its US clients it is a prerequisite for Germanischer Lloyd to be authorized for the US flag. Recently, this authorization was again expanded – something that came in handy for the Jones Act newbuilding "Maunalei".

Tonnage admeasurement for US national requirements is a service Germanischer Lloyd has provided since 2003 from its New York office. This new business line acknowledges the unique calculation requirements that are necessary for vessels in US flag service, such as yachts, small passenger vessels, fishing fleets and barges. Germanischer Lloyd is authorized to issue the tonnage certificate on behalf of the US Coast Guard. "Technical expertise and a personal service," is how Gumpel characterizes GL USA's relationship with its customers – shipowners, yards, supply industry and flag states.

Shipbuilding: Room with a View

As elsewhere in the world, commercial shipbuilding in the United States is a fiercely competitive industry. Stringent quality and safety standards go hand-in-hand with narrow profit margins. Many vessels built in the US are for military service and governed by state standards. The delivery of the Manukai in 2003 by Aker Philadelphia was the first new commercial container ship built in an American shipyard since 1992. Considering view of the average age of the US-flagged fleet in service, the industry will see the newbuilding of more and more container ships, coastal tankers and barges. Aker Philadelphia is in the midst of a project to build, own, and lease product tankers for the US Jones Act market. Austal (USA) in Alabama and NASSCO in California also belong to the range of important shipyards in the US reaching into this market.

Stephen Gumpel, GL Area Manager North America

"We are providing technical expertise"

At the reception later on that rainy day in July, Stephen Gumpel was honoured to see the Jones Act newbuilding "Maunalei" successfully completed to GL Rules. As he presented a Germanischer Lloyd plaque to Matson's Capt. Jack Sullivan, he noted "Where you have entrepreneurial spirit and the desire and need to move cargo in the Pacific, you have Matson Navigation; where you have industry with the energy and the drive to build US flag ships, you have Aker Philadelphia; where you have the need for engineering expertise and 24/7 service to keep ships moving, you have Germanischer Lloyd," underlining the GL North American service approach. ■ SN

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GERMANISCHER LLOYD IN NORTH AMERICA

In 1981, Germanischer Lloyd in the United States started with three stations New York, Miami and Houston and a few hundred ship visits per year. Approaching the 25th anniversary this year, Germanischer Lloyd's US fleet customers are serviced by an international staff at six stations throughout the US: Miami, New Orleans, New York, Los Angeles, Jacksonville and Houston. In Canada, Germanischer Lloyd is operating from Vancouver and Montreal. A station in Halifax is to be opened in 2006. The certification of materials and components for international shipbuilding, tonnage admeasurement for US national regulations as well as classification of newbuildings are part of the service portfolio.

Protecting America's Maritime Interests

Since 2004, 16,000 vessels have been caught violating the law, 144 vessels have not been allowed to enter US waters.

On August 4, 1790, the US Congress authorized the construction of a fleet of "revenge Marine" cutters to enforce the nation's tariff and trade laws. he military history of the Coast Guard is impressive: The cutter "Harriet Lane" fired the first shots of the American Civil War at sea, Coast Guard cutters participated in rescue operations during the Second World War, and a number of Coast Guardsmen died in combat during the Vietnam War. Today, the Coast Guard has primarily civilian duties; it operates under the jurisdiction of the Department of Homeland Security; however in wartime it operates as part of the U.S. Navy.

According to the US Code of Federal Regulations, vessels entering American waters must provide a "Notice of Arrival" form to the Coast Guard. The form includes data about the ship's cargo, the names and passport numbers of each crew member, details about ownership and agents, and a list of recent port calls. 96 hours prior to a vessel's arrival in the United States, the Coast Guard screens the vessel's cargo, people and data on the operating companies. A risk profile is established – risks associated with the safety and security of the ship, or any environmental threats the ship might bring. On that basis it determines whether the ship will be boarded in open sea or be allowed to anchor near shore or proceed to a pier. If a vessel is found to be non-compliant with US and international law, the Coast Guard can direct the vessel to correct its condition at the dock, offshore, or not allow the vessel in.

Offenders have to expect high fines for committing and concealing water pollution offences. The Coast Guard wants to crack down on deliberate marine pollution incidents. "We see no reason to protect people who deliberately break the law; but we are not interested in criminalizing seafarers," said Rear Admiral Thomas Gilmour. Most pollution incidents could be avoided. Of 27 criminal cases involving

THE US COAST GUARD – FACTS AND FIGURES

Staff: The organization consists of 36,000 active-duty men and women, 8,000 reservists and 6,300 civilian employees.

Mission: It enforces federal laws on the high seas and waters within US territorial jurisdiction; it monitors marine safety, directs vessel traffic management, protects the environment, develops and operates aids to navigation, maintains a network of lifeboat and search-and-rescue stations, prevents terrorist attacks, and it protects US economic and security interests in any maritime region.

Fleet: The Coast Guard employs 1,400 boats – including cutters, motor life boats, seagoing tenders, and coastal patrol boats. And it operates 210 aircraft.

PHOTO: By courtesy of the US Coast Guard

marine environmental crimes in the US between 1989 and 2004, only one could be called a marine accident. "These cases are about people intentionally dumping oil," Gilmour complained. A list of people who served in the Coast Guard may soften the uncompromising image of this sea-going service: Who would believe that author Alex Haley once belonged to the Coast Guard? Or the conductor Arthur Fiedler, TV personality Walter Cronkite and golfer Arnold Palmer?

Around the clock and around the globe, the Coast Guard will enforce 100 security zones, board four high interest vessels, board 200 vessels of law enforcement interest, board 120 large vessels for port safety/ security checks, and respond to oil, chemical, or hazardous material environmental pollution incidents.

It also successfully intercepts illegal drug shipments and makes concentrated efforts to block all possible sea and air routes to drug traffickers. About 55 percent of all US government seizures of cocaine and marijuana annually are executed by the Coast Guard. Furthermore, as part of the Department of Homeland Security, the Coast Guard helps to prevent terrorist attacks on the United States. It also plays a role in combatting illegal immigration.

The organization was pleased that foreign-flag vessel compliance with new international security requirements was better than expected. According to a new analysis, just 2.5 percent of vessels arriving at US ports in the first month after implementation of the International Ship and Port Facility Security Code (ISPS) were non-compliant. "The vast majority of maritime stakeholders exceeded all expectations," said Rear Admiral Gilmour. There were 176 safety-related detentions at US ports from 7,241 vessel arrivals, resulting in a detention ratio of 2.4 percent. Commander Clayton Diamond has called for an international effort to improve compliance with the ISPS code. "The US wants to achieve its maritime security goals by working with the international community," Diamond confirmed. "After all, this community is composed of our trading partners." ■ FM

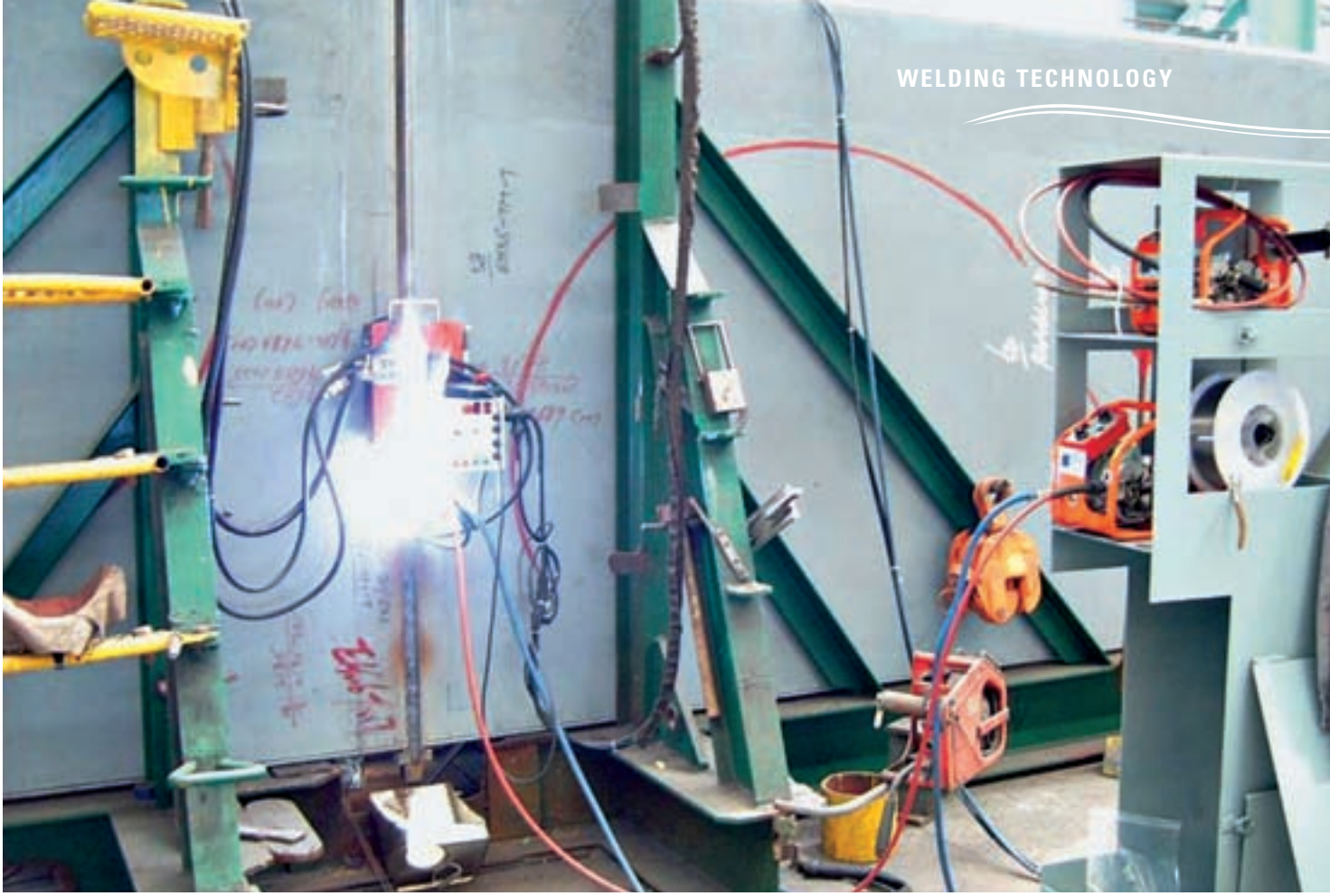
OUTLOOK: A report on the future of the US Coast Guard in the 21st century concludes that threats from the sea will worsen – hence the need for a modernized Coast Guard. "Rapid growth in maritime traffic has put a premium on the Coast Guard's inspection, oversight and safety programs," the report summarizes: "The US will continue to need a flexible, adaptable, multi-mission military Coast Guard to meet national maritime interests well into the 21st century."

Save Money, Reduce Speed

Once again Antonis Maniadakis, CEO of Minoan Lines, played host to the Hellas Committee on board of the luxury "Festos Palace". The high speed ferry was an ideal place to discuss maritime issues

Current trends in shipbuilding, the latest results of the port state statistics, new software tools to optimize ship management, and the urgent search for cost-optimal transport solutions were on the agenda of this year's Hellas Committee Meeting. Dr Hermann J. Klein, member of the executive board of Germanischer Lloyd, pointed out that the continuous increase in energy costs and stricter emission regulations have already had a major impact on the balance sheet of all container shipping lines. Since 2004 bunker fuel costs have rocketed. According to the shipping magazine "Containerisation International" the average price of ship's fuel is now over 100% higher than in the second quarter of 2004. Given the discussion about the overall energy supply, Dr Klein assumed that the long-term trend in the price for ship fuel would continue upwards and suggested reducing speed. "Only a small drop in speed produces a substantial saving in fuel costs," he said.

A reduction from 26 to 22 knots would cut an 8.000 TEU vessel's daily fuel bill by more than 40 percent in reasonable weather conditions. Germanischer Lloyd has conducted a major study based on model calculations to offer the cost optimum for a fleet of container vessels. Main parameters are fuel costs, cargo value and the financial effects of later cargo arrival. Dr Kokarakis, Head of the Tanker/Bulker Expert Team in Piraeus gave a lively update of the on-going implementation of the common structural rules for tankers and bulk carriers, the reaction of the market to this safety initiative by IACS, and the state of harmonization of both sets of rules. Furthermore, he highlighted the new performance standard for coating and the IACS requirements for coatings of ballast tanks for ships contracted for construction after January 1st 2007. In the concluding discussion, committee members expressed their concern about the effects of the common structural rules on the steel weight of newbuildings. Dr Kokarakis analysed the impact of using higher tensile strength steel as a countermeasure for, yielding, and ultimate strength. Torsten Schramm, Vice President and Head of Division Europe/Middle East/Africa, explained the latest research-activities of Germanischer Lloyd within the European research project SAFEDOR. Athanasios Reisopoulos, Area Manager Mediterranean informed about the forthcoming opening of two exclusive stations in Haifa/Israel and in Mombasa/Kenya. ■ OM



What a Wonderful Weld

For a new ship, many kilometres of steel plate have to be welded together. As in other sectors of industry, the processes and manufacturing procedures are subject to constant change

South Korea is the world leader in the construction of container ships. As a result of the record level of orders placed over the past few years, the yards throughout the country are bursting at the seams. Since new dock capacities cannot be conjured up overnight, the companies are making renewed efforts to speed up the shipbuilding process itself. The current focus is on reducing the assembly times in the docks, i.e. by reducing the time required for joining the individual sections. A key factor in achieving this goal is the welding procedures. “Shorter welding times mean reduced dock periods and lower costs overall,” explained Ludger Hachmöller from the Materials / Welding Department at GL at a conference which took place early in May in Hamburg. To be able to “sew” together the individual sections, with plate thicknesses sometimes exceeding 70 mm, at an even faster pace, the yards are intensively pushing forward the electro-gas welding process – a high-performance method for vertical application. Here an electrode guide tube moves up the groove between the parts to be welded. This “snout” feeds out the filler wire to be melted under the inert shielding gas in an electric arc, which also melts the edges of the sections. The molten weld pool is kept in the groove by ceramic backings and sliding copper shoes, ensuring that the parts are properly joined after cooling. Previously, a large number of welding passes were needed to join the thick outer plates of the cargo ships. Moreover, the conventional procedure was slow and labour-intensive. “Now, only one man is needed to operate the welding machine,” says Hachmöller. The welder controls the apparatus from a lift cage. The tractor of the welding machine is guided along the hull by a rail, enabling it to move at a speed of up to 2.5 metres an hour. The method is used not only for making the butt joints between sections but also for fabricating the blocks during preassembly. Before this method can be applied, however, detailed procedure tests, as is the case with other welding processes, are necessary in order to examine the influence of the high level of heat input during electro-gas welding on the mechanical and technological properties, e.g. tenacity and strength. The corresponding care must be taken in selecting the materials and designing the seam geometry. Since the method is relatively new for greater plate thicknesses, the yards, steel producers and classification societies such as GL are working on individual solutions. “We are making every effort to involve the steelmakers more closely, so that the required steel grades can be available ‘off the shelf’ in future,” says Hachmöller. ■ MPH

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New Chances for Recovery

Ultramodern Hyperbaric Chamber Inaugurated in Stockholm. The clinical pictures are diverse: wounds that will not heal, carbon monoxide poisoning, caisson disease ("the bends"), bacterial infections etc. Oxygen therapy promises relief and recovery. But where? In the world's most modern hyperbaric treatment chamber! The "New Intensive Care Hyperbaric Chamber System" of the Karolinska University Hospital in Stockholm was recently certified by Germanischer Lloyd

"Hyperbaric oxygenation" (HBO) is the technical term for the special therapy with which patients have been treated since April 2006 in the new pressure chamber facility of Karolinska Hospital. Here they breathe in oxygen under an increased ambient pressure, which exerts a positive effect on the healing process. The pressure difference in the chamber enables the body to absorb much more oxygen than under normal atmospheric pressure.

The "New Intensive Care Hyperbaric Chamber System" in the Stockholm University Hospital consists of four pressurized chambers with a total volume of more than 120 m². Each pair can be used independently of the other, which means that several intensive-care patients can be accommodated at the same time. With an internal width of 3.5 m and a length of about 15 m, the chamber offers a maximum pressure of 3 bar. Owing to its size and its weight of 105 tonnes, it was only possible to install the hyperbaric chamber in a new building of the hospital. Modern technology makes it possible for the breathing system to be used under atmospheric pressure as well.

Elaborate Certification

Karsten Hagenah at Germanischer Lloyd examined the design drawings, supervised construction on site with support from Eberhard Währer and Markus Bianchi from the GL subsidiary MEDCERT and also subjected the medical installation to numerous functional tests. The hyperbaric chamber facility, built by Haux-Life-Support in Germany, was tested for compliance with the specifications of Karolinska University Hospital and with respect to the European standard EN 14931 "Safety Requirements and Testing Methods for Hyperbaric Chambers" as well as the Guidelines for Diving Systems and Diving Simulators of Germanischer Lloyd. During the practical acceptance test of the pressure chamber, all safety-related aspects were inspected for their functionality and operational reliability. In particular, the specially designed fire-extinguishing system and the medical equipment installed in the pressurized treatment room were examined with regard to their safety properties under a wide range of pressures.

Aesthetics Helps to Heal

Not only does the Stockholm chamber facility offer diverse possibilities for treatment, it could also win a design prize. Unlike "normal" hyperbaric chambers, the shape of the new unit is not composed only of circles – nor does it look like a typical pressure vessel. Once inside, the patients feel as if they were in a normal hospital room. Thanks to the large windows,

CERTIFICATION IN THE MEDICAL ENGINEERING INDUSTRY AND IN HEALTH CARE

MEDCERT offers the testing and certification of quality management systems and medical products as per DIN EN ISO 13485, as well as the European directives on medical devices and active implants. The company's range of services also includes the examination of electrical safety in its own laboratory. Medical products that pass a conformity assessment procedure by MEDCERT may be recognized by the MEDCERT identification number "0482" after the CE mark. Established in 1993, the firm today has a clientele which chiefly includes manufacturers and distributors of medical devices, and also medical technology practitioners, e.g. dental laboratories, orthopaedic workshops, opticians and audiologists as well as dialysis centres and service providers in clinics. A staff of 15 is employed at the company's Hamburg office. Germanischer Lloyd Certification holds a 50% interest in MEDCERT.

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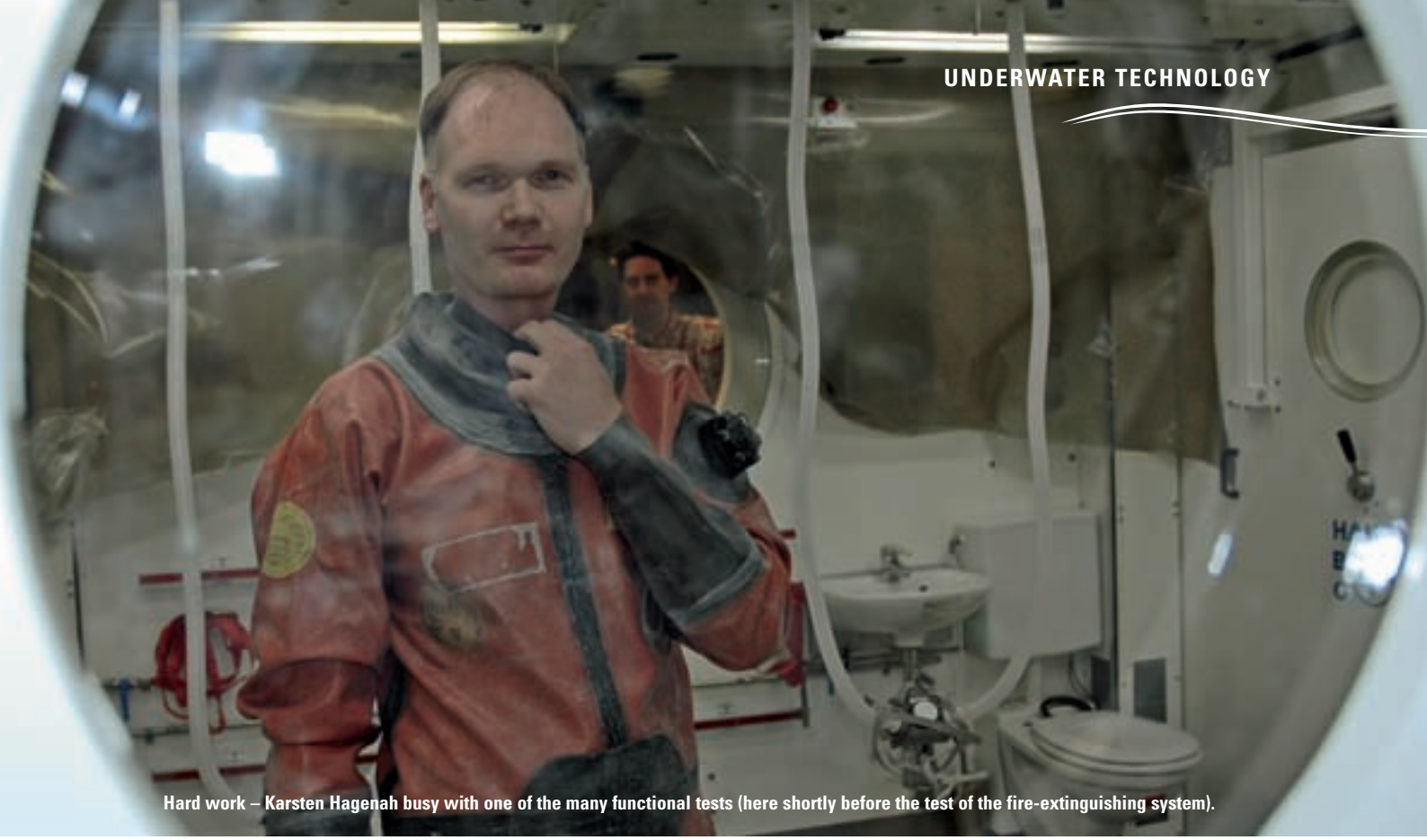
Installing the pressure chamber in its own specially designed building



Hard work – Karsten Hagenah busy with one of the many functional tests (here shortly before the test of the fire-extinguishing system).

which let in lots of light, and a normal door instead of a round access hatch, the anxieties of claustrophobic patients do not manifest themselves in the first place. This enhances the success rate of the treatment. As an added extra, the built-in multimedia suite ensures a pleasant stay.

With the handing-over of the hyperbaric chamber to the hospital, Karsten Hagenah's job is far from finished. From now on, his agenda will include annual excursions to Stockholm, since the manufacturer of the hyperbaric chamber prescribes regular safety checks. In addition, the University Hospital requires a comprehensive warranty inspection after three years of operation. Whilst the annual tests cover the entire functionality, system control and technical safety, the warranty inspection also examines in detail whether the specified performance characteristics and the system properties are still ensured. ■ SN

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The hyperbaric chamber looks nothing like a typical pressure vessel

TEST PASSED, 700 TIMES

Over 700 manned pressure chamber systems have been tested by Germanischer Lloyd in the past ten years alone. But not all pressure chambers are the same. The GL experts have examined the safety of hyperbaric chambers for intensive care in the medical sector, and also diver's pressure chambers, construction locks and altitude simulation units (hypobaric chambers). Particular attention is paid not only to the actual manufacture of the pressure vessel but also to the functional safety of the entire plant, including its supply systems.

WHICH REGULATION?

Germanischer Lloyd tests and examines pressure chambers according to the following guidelines and regulations:

- Germanischer Lloyd, Rules and Guidelines, I Offshore Technology, 5 Underwater Technology, 1 Diving Systems and Diving Simulators
- EN 14931 Pressure vessels for human occupancy (PVHO) – Multi-place pressure chamber systems for hyperbaric therapy – Performance, safety requirements and testing
- DIN 13256-3 Pressure vessels for human occupancy – Part 3: Fire extinguishing systems in pressure vessels; Safety requirements and testing
- Medical Device Directive 93/42/EEC
- Pressure Equipment Directive 97/23/EC
- Compressed Air Ordinance
- ASME PVHO-1 Safety Standard for Pressure Vessels for Human Occupancy
- National Fire Protection Association NFPA 99

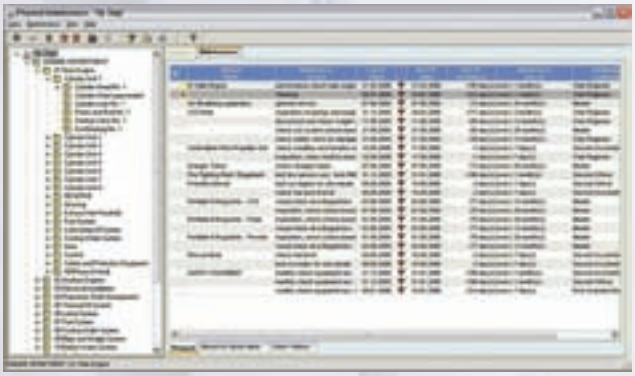
EN 14931 describes the minimum technical requirements for multi-person pressure chambers and is the first European standard on pressure chambers for medical therapy. It was published in August 2005. As Chairman of the standardization committee, Harald Pauli, Head of the Pressure Vessels / Underwater Technology Department at Germanischer Lloyd, played a major role in the development of the standard.

Systematic Maintenance Pays Off

With a certified Planned Maintenance System, shipping companies can reduce the surveying effort for their ships to a minimum.

Port State Control, class surveys, inspections by underwriters and charterers – small wonder that ship managers often get the feeling that life consists mainly of checks and controls. For the class surveys at least, there has for several years now been the possibility of limiting the number of physical surveys to a minimum. The key to this is ensuring the systematic planning and monitoring of the maintenance jobs in accordance with the requirements of the manufacturers and classification society. With a certified "Planned Maintenance System" (PMS), the servicing tasks carried out by the ship's own staff on machinery and electrical installations are recognized as being equivalent to the periodical surveys of Germanischer Lloyd. The result: the routine surveys for retention of class can be shortened considerably, leading to a reduction in lay times and hence also to a lower loss of earnings over the entire lifetime of a vessel. "Damage and defects that may cause an impairment of the class, as well as equipment under pressure, gearbox, steering gear, propeller and shaft must still be examined by a surveyor of the classification society," explains Dr. Ralf-Udo Gressmann, the responsible PMS expert at Germanischer Lloyd. Through a rationalization of the maintenance and surveys, the required effort in terms of time can be reduced by up to 20 percent. Within the scope of a conventional survey arrangement, numerous checks are needed for the class renewal; with the PMS procedure, these are distributed over the entire period of class and can be performed by the crew on board to a large extent, i.e. in the absence of a surveyor. As a result, the tests and inspections can be carried out after the running hours recommended by the corresponding manufacturer have elapsed, and no longer at fixed intervals. The benefits will be noticed by the shipping companies in hard cash, since the surveys with PMS are cost-neutral in comparison with the periodical surveys. According to Gressmann, shipping companies should allow a period of one to one-and-half years for the development, introduction and certification of the system. "After that, you will have an optimized, user-friendly system," the expert says.

For the planning and documentation of the maintenance, there are a number of software solutions in common use. Within the scope of its information system "fleet online", Germanischer Lloyd offers the GL ShipManager, a module that can be used not only for the maintenance planning but also for the entire information processing on board. It is straightforward and easy to use: by mouse-click, the user can navigate through diverse component folders to access all the details, just like with the file management system of a PC. Thanks to an effective transfer module, all servicing activities can be tracked continuously in the office ashore.



For various reasons, the demand for PMS certifications has increased appreciably of late. "In the first half of this year, we have already certified as many shipping companies as in the whole of last year. The number of ships with a recognized PMS is now 250 for Germanischer Lloyd," says Ralf-Udo Gressmann. Firstly, many companies have already developed their maintenance programmes to such an extent since introduction of the ISM Code that the change-over to PMS involves no extra effort at all for some of these firms. Secondly, the technical installations on board the ships have become so complex that a rational, computer-supported procedure has become practically indispensable for maintenance planning, as Gressmann points out. ■ MPH

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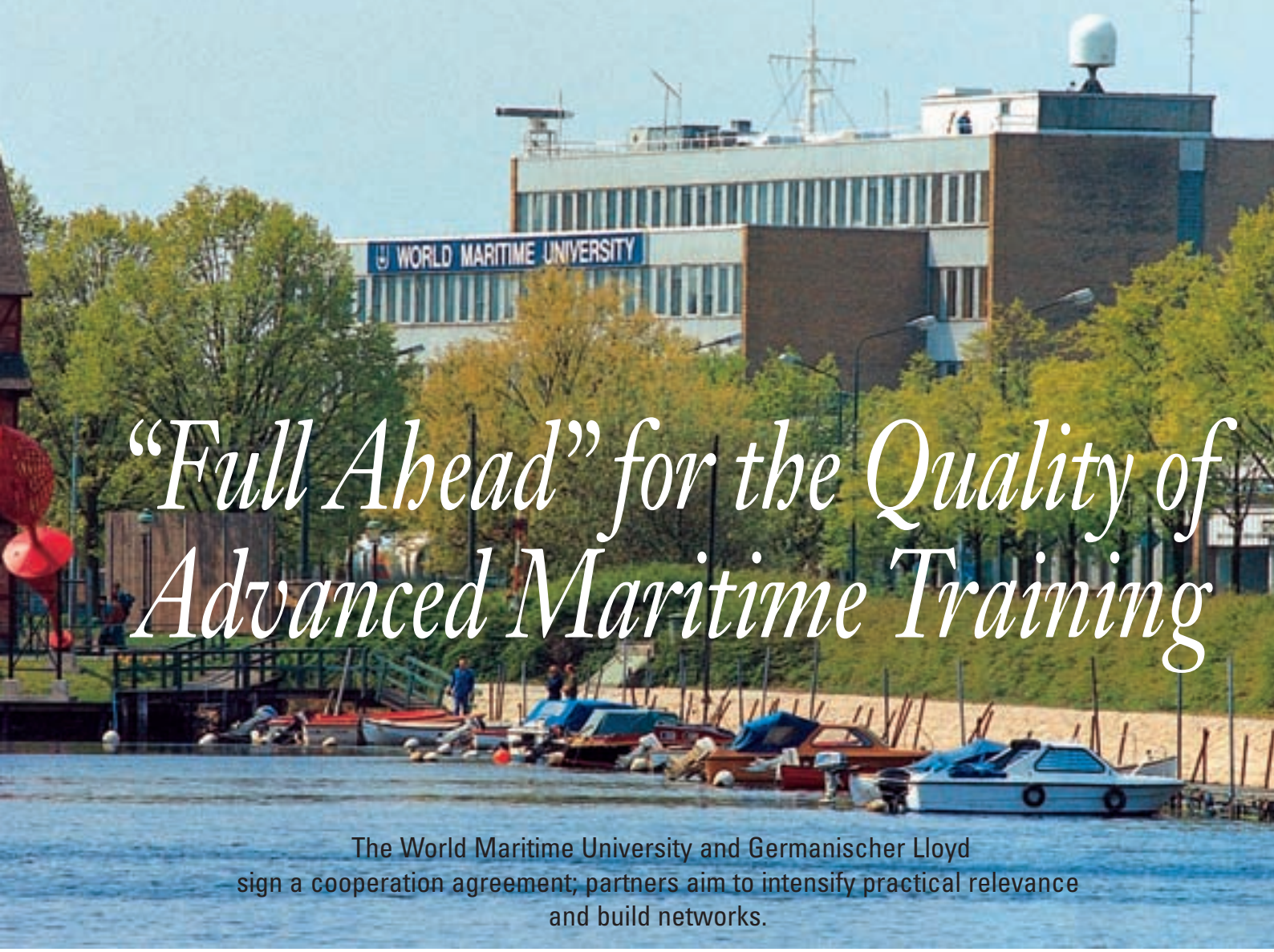
THREE EASY STEPS TO PMS

The certification of a Planned Maintenance System (PMS) can be obtained in three phases. First of all, the shipowner submits the following documents to Germanischer Lloyd: a list of all the components of the machinery installation; time intervals for the individual maintenance tasks; instructions for using the machinery components; organizational instructions for the PMS (e.g. duration of document storage, data backup intervals etc.).

The approval of the PMS then progresses through two subsequent steps: After successful examination of the documentation, a PMS certificate is issued to the owner or operator. In addition, after the PMS has been operating for at least six months, Germanischer Lloyd conducts an implementation survey on board the ship. To verify the maintenance status, a renewal survey of the PMS must be carried out once a year. "However, this is combined and coordinated with the periodical survey of the class, so that the effort required on the part of the shipping company is not increased," explains Dr. Ralf-Udo Gressmann, the specialist for PMS at Germanischer Lloyd.



"Full Ahead" for the Quality of Advanced Maritime Training

The World Maritime University and Germanischer Lloyd sign a cooperation agreement; partners aim to intensify practical relevance and build networks.

World Maritime University – this educational institution with headquarters in the Swedish city of Malmö enjoys an excellent reputation amongst experts in the trade. There is a simple reason for this – the WMU works to a high scientific standard, without losing its practical relevance. And this is also one of the strengths displayed by Germanischer Lloyd Academy (GLA), the further education institute of Germanischer Lloyd. Both university and company have now concluded a cooperation agreement for advanced maritime training. The aim is to dovetail theory and practice even more closely and thus elevate the quality of training to new heights.

"The WMU is simply the ultimate in further maritime education," says Susanne Schreeck. Although this comes from GLA's coordinator for the cooperation, it does not sound effusive. In a matter-of-fact way, the 37-year-old graduate engineer lists the reasons why she regards the partnership with the WMU in particular as being so valuable – it is only possible to study there if you have already completed vocational training. The lecturers have an outstanding reputation. And the university collaborates with three universities in Asia, an important market for Germanischer Lloyd.

For this reason, Schreeck explains, GL decided to give the loose teamwork that has already been in place for some years a firmer foundation. "The cooperation agreement has been given an initial timeframe of three years. This gives us a sound basis for developing the training in the maritime sector in concert with the WMU."

The programme is supervised on the WMU side by Professor Dr. Jens-Uwe Schröder. The fact that he had been with Germanischer Lloyd before starting work in Malmö is surely no drawback. "I know the company and value the colleagues there highly. With this cooperation, we will be able to convey our respective know-how more intensively to the benefit of all our students."

The cooperation partners were quick to agree about their joint objectives. The training must remain close to practice, and the fast-paced changes in the maritime industry and the flag states must be detected and implemented in appropriate training concepts at an early stage. "For this, we certainly need a steadfast and well-established partner from the industry," says Schröder. A company with its finger on the pulse of business is able to identify much more rapidly where things are moving and for what new trends the employees in the maritime sector need to prepare. "After all, we don't want to sit here isolated in a kind of ivory tower. We need the direct exchange of experience with experts from the world of everyday work," Schröder declares.

One of the tasks lined up for the GL experts will be to help develop suitable topics for dissertations and theses. "Of particular interest here are the subjects to do with flag state regulations, but economic aspects will also be examined," says Schröder. The tutoring of degree students and interns will form part of the cooperation activities.

In previous years, Germanischer Lloyd had already invited a group of students to Hamburg once a year, to show them

PHOTOS: WMU

ABOUT THE STUDENTS

At present, more than 300 students are registered at the WMU, 200 of whom are on the campus in Malmö, with the remaining 100 in Dalian and Shanghai. In addition, there is also the possibility of studying at the WMU by correspondence course or by attending individual seminars. The average age is still 32, but is falling. All students are post graduates, i.e. they have already completed basic academic training (Bachelor for the MSc programme and MSc for the PhD studies). The students hail from more than 100 countries, with an appreciable number coming from developing states.

what a classification society actually does. Such contacts will be intensified in future. In addition, GL staff will be invited to give lectures at the WMU. To some extent, this had already occurred in the past; it will now become firmly anchored as a result of the new agreement.

The specific measures within the scope of the cooperation agreement will be defined by the WMU and GL for a year in advance, and then put into practice. "After the twelve months have passed, we will get together and assess what has gone well and which projects we wish to tackle in addition," says Schreeck.

Besides the support in terms of expert advice, financial assistance is also envisaged. In the past, Germanischer Lloyd had already granted scholarships to WMU students – in the years 2001/2002 to a student from Ethiopia and, in the academic year after that, to a female student from the Philippines. Both are full-cost bursaries, meaning that board and lodging, pocket money as well as the cost of excursions are financed. At present, GL is supporting a student from Bangladesh jointly with the Federal Ministry of Transport, Building and Urban Affairs (BMVBS). "For people from developing countries, such a scholarship is a fundamental prerequisite for being able to study here in the first place," Schröder points out.

When the students of the WMU have completed the period of study and obtained their "Master", they return to their home countries. There they generally take up positions in the administrations for shipping affairs, work at governmental authorities and agencies of the flag states, or join the universities and colleges to teach young people "For our company, it is naturally of great interest to initiate these contacts early on during their study phase," says Susanne Schreeck. Building a network – even in the booming shipping sector, this is the best foundation for good business relations over the long term. ■ BS

ABOUT THE WMU

The WMU is the only university worldwide to have been founded by the International Maritime Organization. The duration of study in Malmö is 17 months, ending with the degree of Master of Science in Maritime Affairs. Moreover, there is the possibility of obtaining a doctorate at the WMU. The institute has to be self-financing; a considerable proportion of its funding is received from the Swedish government, with additional assistance from other nations as well as companies. In collaboration with Dalian Maritime University, the WMU offers a masters course in "Maritime Safety and Environmental Management". Similarly, the post-graduate programme "International Transport and Logistics" is offered in cooperation with Shanghai Maritime University. www.wmu.se

News from the Industrial Services

NEW STANDARD DEVELOPED

First Customer: AIDA Cruises

Bernhard Ständer, Managing Director GLC; Denver Ehrlich, Operating Line Compliance AIDA Cruises; Dr. Hermann J. Klein, Executive Board Member GL; Michael Thamm, President AIDA Cruises; Michael Ungerer, Senior Vice President Operations (from left to right)

The new industry standard "GLC Maritime Social Responsibility" has confirmed that the AIDA shipping company meets the highest international standards with regard to quality, safety, environmental protection and social responsibility. Dr. Hermann J. Klein, Executive Board Member of Germanischer Lloyd, presented the certificates to Michael Thamm, President of AIDA Cruises. "With the certification of our corporate standards, we are setting a clear example for our staff, business partners and the German cruising market. At the same time, we are creating the best conditions for the sustained development of AIDA Cruises – a development which is definitely oriented towards growth," Michael Thamm emphasized at the presentation ceremony. Besides the implementation of three ISO standards, AIDA Cruises had commissioned Germanischer Lloyd to develop a new standard for social security. This led to "GLC Maritime Social Responsibility", with which Germanischer Lloyd Certification (GLC) examines how the organizational structure of a company considers the protection needs of its personnel with regard to health, salaries, working hours and the right to establish labour bodies, for example. During a one-week audit, compliance with the requirements of the new standard was scrutinized at the head office in Rostock and on the ships of the AIDA fleet.

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EXTENDING THE NETWORK

Need for Political Rulings

The Hamburg Übersee-Club was well attended: 35 representatives of banks, insurance companies, project developers, manufacturers, energy utilities, universities and engineering consultancies met at the end of August to discuss the paper by Dr. Urban Keussen on the topic: "In What Direction is the Wind Blowing?". In his eloquent speech, Dr. Keussen (Managing Director Technology at E.ON Netz GmbH, Bayreuth), spotlighted the national and European aspects of wind energy integration. "The wind sector is booming, especially in Northern Germany. Schleswig-Holstein has become a veritable wind energy export region, and this evokes supranational rulings for electricity transit." In connection with the provisions of the Electricity Feed Law and the related remunerations, a number of technical challenges have arisen for grid operators: "The increasing feed-in of wind energy is no longer an exclusively national topic," Keussen explained. "Complaints from neighbouring states about current flows in their grids from wind energy sources and constraints on the interconnection transport capacities at the German borders make this abundantly clear."

Just what this pan-European solution must look like was the subject of lively discussion in the WindEnergieZirkel Hanse. "For this reason, the European transmission system operators have initiated a study to investigate these national aspects," said Keussen. There was agreement amongst the participants about the necessity for expanding the electricity grid in Germany. But whether this should be done with overhead lines or cabling can in the end only be determined by the political decision-makers.

WindEnergieZirkel Hanse (WEZ Hanse) views itself as a mouthpiece for the wind power industry in the greater Hamburg area. Since its establishment last year, a number of interesting speeches have been given. For example, Jörg Kuhbier, Senator (ret.), spoke on the development and erection of an offshore test field in the exclusive economic zone (EEZ); Udo Paschedag, Head of Department at the Federal Ministry for the Environment (BMU), examined the technological and innovative aspects of the wind industry; and the proprietor of the consultancy Garrad Hassan spoke on insurance and commercial aspects in the operation of wind turbines at home and abroad.

GITTERMASTEN
Big, Bigger, Biggest

Whoever thought that lattice towers could only reach a height of 100 metres was taught otherwise recently. With a hub height of 160 metres, a prototype in the Lusatia region of Germany is raising the bar. The 2.5 MW wind turbine was erected in the summer of 2006 in Laasow, Brandenburg. The assessment of the tower and machinery as well as the type approval were carried out by Germanischer Lloyd Windenergie. The progress of construction for Germany's loftiest wind turbine can be followed through the documentation provided online (www.seeba-online.de), also in English.

For further information: Andreas Manjock, Load Assumptions, Phone: +49 40 36149-188, andreas.manjock@gl-group.com

SAKHALIN
Platform LUN-A Installed

Four concrete columns with a diameter of 16 to 22 metres, anchored in a concrete base measuring 100 x 100 x 13 metres and weighing a total of 130,000 tonnes – two of these enormous structures form the gravity base substructure for the topsides of the two oil and gas production platforms being installed off Sakhalin Island. Recently, the first topside, platform LUN-A, was successfully floated out and installed offshore ("NON STOP" reported on the fabrication phase in Edition 2-2006) – the PA-B topside is to follow in the summer of 2007. The class certificate for LUN-A und PA-B will be issued by Germanischer Lloyd in each case after successful commissioning of the platforms.

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SPAIN
New Management

The Sales Manager of Germanischer Lloyd Certification Services, S.L., José Manuel García Martín, has been appointed Country Manager for Spain of the Industrial Services. José Manuel García Martín has a doctorate in chemistry; his mission will be push forward the marketing of the technical services. In the time that he has been working for GLC – since 2003 – he has acquired many Spanish companies as new customers for GLC. His professional career includes positions as auditor for quality and environmental management systems, management consultant and project manager for leading Spanish and international corporations.

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NORTH EUROPE
Act in Concert

"This is a great opportunity for us." Lutz Wittenberg, Director of Industrial Services of Germanischer Lloyd is pleased about the cooperation between Germanischer Lloyd and Bureau Veritas. The classification societies will offer their expertise for the North European Gas Pipeline (NEGP) to the construction consortium. With a length of 1,200 km, a diameter of 1,219 mm (48"), a 210 atm working pressure and a rated annual capacity of 55 bcm the NEGP shall provide Western Europe by 2010 additionally with gas. The pipeline will consist of two parallel gas pipelines running through the Baltic Sea from Vyborg to Greifswald. After 15 years of experience in the design review, certification, plant or site inspections of more than 200 onshore and offshore oil and gas pipeline projects worldwide, Germanischer Lloyd and Bureau Veritas have recently entered into a cooperation. The classification societies offer independent analysis in the design phase, a close monitoring of the material manufacturing and the supervision of the installation up to the commissioning of the pipeline.

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IMPORTANT DATE:
Germanischer Lloyd Oil & Gas will be represented at the Sakhalin Oil & Gas 2006 Exhibition from 27 to 28 September, as part of the participation by the Russian German Consortium Sakhalin (RGS).

PERSONNEL NEWS
New Helmswoman

The new Country Manager for Poland, Dagmara Zygowska, commenced duties on 1st September. Her brief will include the continued expansion of the business activities of GLC, the marketing of certification services, and the execution of quality audits. Having studied precision engineering with a post-graduate qualification in psychology, she has considerable experience in the area of systems and services certification, obtained in recent years through her work at SGS Polska Sp. z.o.o.

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The Head of the University's Centre for Cardiology, Dr. Katrin Overlack, is presented with the certificate by the Managing Director of GL Industrial Services, Dr. Hans Berg.

OIL AND GAS
2007: Economy Boosts Demand for Oil

The global economy is booming, and now the International Energy Agency (IEA) has predicted a rise in the demand for oil in the year 2007 from 1.57 million to 86.4 million barrels a day. According to a report published in July, the Paris-based institute expects a demand of 84.8 million barrels a day for 2006. One barrel corresponds to 159 litres.
On the whole, however, the IEA sees improvements in the balance between the supply and demand for crude oil in the year to come. This, says Lawrence Eagles, head of the Oil Industry and Markets Division at the IEA, is chiefly due to the supply of oil by producers who are not members of the Organization of Petroleum Exporting Countries (OPEC). Their contribution could increase in the course of next year by 1.7 million barrels a day and thus exceed the current year's level by far (0.6 million). According to estimates, the OPEC states produced almost 30 million barrels a day in June 2006.

DIN EN ISO 9001
Cardiac Centre Certified in Hamburg-Eppendorf

It took all of one and a half years. This was the time that had to pass before the Centre for Cardiology (UHZ) at the University Medical Centre in Hamburg-Eppendorf (UKE) was finally able to receive the certificate according to the DIN EN ISO 9001 standard from Germanischer Lloyd Certification (GLC), in a ceremony taking place on 4 September 2006.
During this period, the staff developed an ISO-conformant quality management (QM) system, for which all processes and operational steps were analysed and optimized in interdisciplinary workgroups. The results showed how patient care and safety could be improved through new treatment paths and checklists. Thanks to a newly introduced QM Manual in digital form, the task of compiling the QM documentation was made much easier.
The UHZ also includes the Clinic for Cardiac and Cardiovascular Surgery, which was the local leader with 618 of the 1889 operations of this kind performed in Hamburg in the first half of 2006. According to the medical director of the UHZ, Prof. Dr. Hermann Reichenspurner, the certification now ensures a maximum level of transparency for all stakeholders. Results can be verified and information exchanged more rapidly between all participants.
Quality management at the University Medical Centre forms a process of continuous advancement and optimization, and is being improved continuously through the consulting services provided by Germanischer Lloyd. Next year, the processes and operations will be reviewed by GLC within the scope of a surveillance audit.

Trade Fairs

NOVEMBER / DECEMBER

06. - 08.11.2006, New Delhi
5th World Wind Energy Conference & Exibition WWEC 2006, www.wwec2006.com

22. - 23.11.2006, Bremen
8th German Wind Energy Conference DEWEK 2006
www.dewek.de

04. - 07.12.2006, Abu Dhabi, U.A.E.
Gastech
www.gastech.co.uk

PERSONNEL NEWS
New Regional Manager in East Asia

The new Regional Manager for GL Industrial Services in East Asia is Bruno Solinas, who takes up his duties in Kuala Lumpur on 18.09.2006. His primary mission will be to foster the sustained expansion of the technical services. A native of France, Bruno Solinas completed his degree in engineering at the Technical University of Bretigny sur Orge, specializing in steel structures. He has many years of experience as an engineer and manager in the sectors of offshore structures, industrial oil and gas installations, petrochemicals and pharmaceuticals. In his previous position, Solinas was General Manager of Technip Engineering in Thailand.

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The construction of the monopiles is subject to stringent requirements with regard to strength, loads and reliability.

APPROVAL

Monopiles for Offshore Wind Farm Q7

The first support structures of the planned offshore wind farm Q7 off the North Sea coast of the Netherlands have been approved within the scope of project certification by GL Wind. The construction of the monopiles is subject to stringent requirements with regard to strength, loads and reliability. For the dimensioning of this type of foundation, the combined loads of the wind, waves and water currents play a dominant role. Furthermore, the ground/monopile interaction exerts a decisive influence on the design of the entire structure. At the beginning of next year, the monopiles will be driven into the sea floor at water depths ranging from 19 to 24 m. The wind farm, comprising 60 wind turbines and a total output of 120 megawatts, will extend over an area of 14 km². Each tower structure will be 59 m high, with a rotor diameter of 80 m. Project certification by GL Wind is performed according to the rules and principles set out in the "Guideline for the Certification of Offshore Wind Turbines". The independent fabrication supervision includes detailed examination of not only the manufacturing procedures but also the transportation of the components, the installation of the plant, and the commissioning. The order was placed by Windpark Q7 Holding BV, which is jointly owned by the utility ENECO, the developer Econcern and the financing company Energy Investments Holding BV, all from the Netherlands.

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OIL AND GAS

Putting on the Pressure!

STATOIL

By just how much can the operating pressure in the pipelines of offshore installations be increased to achieve the maximum possible transport capacity? And how can the technical safety and availability of the plants both be maintained on a high level? These are the questions currently being investigated by six experts from the Oil & Gas (GLO) business unit of Germanischer Lloyd at South Pars, the largest natural gas field in the world. Situated in the Persian Gulf, this field stretches over an area of 500 square miles and lies 3,000 metres under the seabed, at an average water depth of 65 metres. About 15.8 percent of the world's gas reserves may be found within the territory of Iran; of these, between 8 and 10 percent lie in the South Pars area, which is to be developed in 30 phases over a period of 25 years. From 2001 to 2004, GLO had already been entrusted with the certification of the platforms and pipelines of phases 4 and 5. Now the experts of Germanischer Lloyd are examining – on behalf of the lead investor for phases 6 to 8, Statoil

– the technical measures with which the capacities of three production platforms and three gas transport lines are to be increased. Here the spotlight will be on ensuring compliance with international regulations and codes.
Experts estimate that the approx. 3.9 billion cubic feet of gas will be yielded by development phases 6, 7 and 8. At present, each phase of the South Pars field can produce 1 billion cubic feet of gas and 40,000 barrels of condensate per day

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Welding Techniques on the Testbench

In the offshore installations of the oil and gas industry, new types of steel are coming into use. To ensure the required durability of the installations, the existing welding techniques have to be adapted.

The demands are becoming tougher and tougher. Oil and gas companies are drilling for the black gold in increasingly deep waters nowadays, because, in view of high prices on the world market, production may still be profitable under the most adverse of conditions. At depths of more than 500 metres, the engineers of the offshore installations encounter conditions which call for a change in the material selection. The risk of damage and repairs must be reduced drastically, because it would be much too expensive to tear the pipelines and pumps out of the seabed for an overhaul ashore. Up until now, the oil and gas companies have used "C steels" (carbon steels) wherever possible. However, in strong concentrations of CO_2, chlorides and acid gas as well as at high pressures and temperatures ranging up to 200 °C – an operating environment which occurs frequently in deep water – this material is too susceptible to corrosion. For this reason, duplex steels must increasingly be used in future for production and downhole equipment, pipelines and pressure vessels, as they guarantee high strength and corrosion resistance at the same time. Furthermore, these steels must exhibit balanced grain structure: comprising both austenite, the main constituent of many stainless steels, and the higher-tensile ferrite. Today, the proportion of duplex steels in use is only about two percent, but "with a strong upwards trend", according to Johann Taferner. As a specialized welding engineer and former design manager for piping and tank construction, he is now responsible at Germanischer Lloyd Oil and Gas for the area of materials, welding and corrosion. In his opinion, the oil companies, plant construction firms and welding workshops are inadequately prepared for the application of duplex steels. "Very often, austenitic-ferritic duplex steels and austenitic steels are just lumped together and the literature references are simply transferred from one material to the other – with catastrophic results," says Taferner. The weak points of the duplex pipelines are generally the welding seams, "where many errors are possible in the production process," the expert points out. In order that the mechanical properties and the corrosion resistance of weld material, heat-affected zone and base material can agree, the welding consumables must be specially dosed and a watchful eye must be kept on the temperature control. Here it is sometimes wrongly assumed that the duplex steels should be treated like austenitic steels as regards the welding technology. At high cooling rates, as is desired for austenites, a grain structure with a high ferrite component may be produced, leading to insufficient corrosion resistance and tenacity. On the other hand, if cooling rates are too low, then low strength values and poor resistance to stress corrosion cracking must be expected. To attain the desired material properties, a ferrite/austenite ratio of 50/50 is needed. In the root layer and final pass, a ferrite content of between 30 and 70 percent is still acceptable, in Taferner's view.

In addition, the tarnishes are of particular importance in respect of corrosion. During welding, the passive layer of chrome oxide covering the duplex material around the weld is destroyed and replaced by other layers rich in iron oxide. These layers, which are also referred to as heat tinting, impair the corrosion resistance of the steels. Through appropriate use of inert gases, these discolourations can be suppressed to a large degree. It is not possible to inhibit the tarnish completely, however. For certain applications, only weak yellow colours, which arise at temperatures up to about 400 degrees, may be tolerated. "All other tarnishes which occur at higher temperatures must be removed," Taferner advises. ■ MPH

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Better Training for Greater

What significance does the certification of suppliers have in the aerospace industry? To what extent and how thoroughly are the production processes and operations in the companies examined to safeguard the required technical safety of the products? These questions and more were answered by Jens Rogge, Lead Auditor at GLC, within the scope of a press conference with more than a dozen Hamburg journalists

In September 2005, Germanischer Lloyd Certification (GLC) was accredited by the German Association for Accreditation (TGA) for the certification of aerospace supply companies according to the EN 9100 standard. Since then, GLC has been offering its services for examining of the quality standard as per EN 9100 to all national and international suppliers of the European, American and Asian aerospace industries. This standard calls for the effective monitoring of the functional and physical product characteristics over the entire life-cycle, amongst other things with a configuration management system, and ensures the continuous traceability of raw materials, processes, tools and personnel qualifications. ISO 9100 provides proof of competence of all suppliers, traders or service providers who are already delivering to the aviation industry or wish to do so in future. Besides the documentation of production, the communication with customers or authorities and the risk analyses for the introduction of new technologies are also reviewed. With certification to EN 9100, contractors qualify themselves for inclusion in the international OASIS database (Online Aerospace Supplier Information System), which is maintained by the International Aerospace Quality Group (IAQG).

This database is used by manufacturers in the aerospace industry to select their suppliers, vendors and service providers. Compliance with the very stringent safety and quality requirements imposed on the aircraft manufacturers is monitored by the national aviation authorities as well as the International Civil Aviation Organization (ICAO), a specialized agency of the UNO, according to criteria and regulations that have been harmonized worldwide. The manufacturers bear full responsibility for the quality of the aviation equipment; this obligation also covers the quality of products in their entire supply chain.

After this organizational overview had been presented, an important question was posed: Who monitors the auditors? This was answered by Jens Rogge by referring to the International Aerospace Quality Group. The IAQG was founded in December 1998 and its members consist of 58 of the world's largest OEMs (original equipment manufacturers). Third-party certification was established as an essential element in the qualification of suppliers. The IAQG formulates the standards according to which the companies in the aerospace industry are audited and certified; it also defines the procedures for the worldwide accreditation of certification organizations, for the auditing and certification of companies, and for the training, qualification and authentication of auditors. With the aid of its regional sub-organizations, namely AAQG (Americas Aerospace Quality Group – for the American continent), EAQG (European Aerospace Quality Group – for Europe) and APAQG (Asia Pacific Aerospace Quality Group – for Asia and the Pacific regions), the IAQG monitors the accreditation and certification processes all over the globe.

"In aviation, absolutely nothing may be left to chance."

In Europe, the CBMCs (Certification Body Management Committees) are responsible for implementation of the IAQG requirements on the national level. The CBMCs are located within the national industrial federations of the aerospace industry; in Germany, this is the German Aerospace Industries Association (BDLI). The certificates and auditor approvals (authentication) that are accepted by the CBMCs are recognized in the worldwide IAQG network. Within the scope of the global certification activities in the aerospace industry, suppliers and their customers are therevor given worldwide certainty regarding their planning and actions.

At GLC, several staff members are specialized in aerospace factories and companies. This new area of activities is headed by Jens Rogge. As a mechanical engineering graduate

Safety

and former aircraft builder at Airbus, he joins his colleagues in checking to see whether everything at the companies is running in accordance with the regulations, whether the workforce receives regular training, and whether the internal communication channels are documented properly. "And because safety is so important in aviation and spaceflight, the auditors working in this sector must be even better trained than in other industries," says Rogge to conclude his presentation.

The results of the certification are entered into the international OASIS database, which is operated in the USA. Authorized persons, such as the staff at the Federal Office of Civil Aviation (LBA), can – during the reconstruction of a flying accident, for example – access the data to find out who carried out what certification. The companies certified so far include ASKON Beratungs GmbH and Rheinmetall Defence Electronics GmbH. ASKON is one of the 15 "strategic suppliers" of the Airbus Group, and is specialized in innovation consultancy for and execution of technology projects. Rheinmetall Defence Electronics is a "main supplier" to Airbus Industries and offers both individual products and system solutions ■ OM

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PHOTO: RÖMMELER

Golden Cage for Valuable Goods

In any supply chain, there is always a certain amount of shrinkage. But enough is enough. Today, the TAPA FSR standard for protecting high-tech products en route is proving to be successful worldwide.

A loss of 60 billion euros in merchandise per year. This was the sorry balance reported by the producers of high-tech goods in the nineties. These valuable products, such as PCs, printers, mobile phones and laptops, were either lost while in storage or disappeared during the transportation process. Only ten years later, this picture has changed radically. The losses for high-tech goods have been reduced by up to 30 percent, thanks to the Technology Asset Protection Association, also known as TAPA.

The founding members of this initiative were the global players of the industry. Starting in the USA, the leading representatives of Compaq, Intel and Sun got together with their logistics partners and formulated their objectives: develop a set of instruments for limiting the effects of criminal acts such as theft, vandalism and terrorism on the goods in transit.

To this end, the initiators of TAPA developed specific measures for the storage and transport of their goods and stipulated these procedures as a minimum standard. This culminated in the so-called Freight Security Requirements (FSR). From this time on, the logistics partners of the high-tech producers have been under an obligation to comply with these TAPA FSR standards.

For the logistics providers, this first of all means increased costs. For instance, TAPA FSR standard involves the regular and continuous surveillance of the storerooms. Trained personnel are needed and the warehouses must be protected by fences and monitored by video cameras right around the clock. Particularly sensitive areas in which valuable goods are kept in intermediate storage must be declared as restricted zones. In this way, the TAPA founders considered, unauthorized persons would be denied entry and any illegal access

would at least be made more difficult. This "golden cage" for the safe storage of high-tech products has now become standard practice.

Greater Effort

It cannot be denied that this approach results in greater effort and hence a higher workload. But the drawbacks are evened out by a decisive advantage: the increased competitiveness of the compliant logistics providers. Transportation companies meeting this security standard can expect to receive preferential treatment when orders are placed. Another positive effect of the TAPA standards: as soon as fewer consignments are lost, the logistics company needs to put in fewer insurance claims. The premiums can then be reduced.

Test Passed!

Owing to the success of TAPA, the initiative also gained ground in Europe two years after its establishment, and this was followed by its introduction in Asia in the year 2000. In the meantime, the standard has also proven its worth in other sectors. Besides the protection against theft and robbery, TAPA FSR standard is also being applied in the worldwide battle against terrorism. "Efficient procedures for the joint combatting of robbery, theft and burglary can also help in fighting terrorism," explains Alexander Klotz from the European Board of TAPA. With a view to more stringent safety requirements prevailing in air cargo, the association has called for a closing of ranks between shippers and airfreight service providers. Here the aim is to harvest synergies from the efforts of the diverse working groups and initiatives focused on safeguarding against acts of terrorism.

This is also done at the regular quarterly conference held by the TAPA members. "At these conferences, we review the effectiveness of the existing measures and discuss whether and in what areas changes may be necessary," explains Stefanie de Buhr from Germanischer Lloyd Certification (GLC). When representing Germanischer Lloyd Certification at these conferences, she is impressed by the tightly organized work of the members.

Even before the TAPA FSR standard ame into force, Germanischer Lloyd had participated in the development of the international ISO 28000 standard – a process which was observed with great interest by the TAPA initiators. Their intention was to utilize the competence of the internationally experienced classification society and certification body during the implementation of their own standard. For 2006/2007, TAPA has therefore appointed Germanischer Lloyd Certification to be one of the three audit bodies worldwide entrusted with the certification of TAPA FSR. ■ BS

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PHOTOS: HASENPUSCH

How to predict the lifetime risks

Advanced analysis techniques are being utilized to evaluate the full range of risks encountered in oil and gas pipeline operations and to target the inspection of pipeline systems in the most cost-effective way possible.

Oil and gas pipelines are the world's major energy arteries. Pipelines not only transport the majority of oil and gas traded internationally, they also perform a key role in gathering supplies from the wellhead and in distributing the product through local grids to the final customer.

As is the case with the tankers engaged in the carriage of oil and gas, the design, construction and operation of pipeline systems are governed by their own regime of safety and environmental protection regulations. Effective rulemakings, in turn, are dependent on a full understanding of the risks involved.

As has already happened in a number of other industries, pipeline operators are becoming aware of the advantages of risk-based assessment methods over traditional deterministic approaches for investigating the probability and consequences of failure and implementing remedial measures in the most cost-effective way possible. This is particularly important for ageing pipelines due to the risk of corrosion and fatigue failure as a result of cyclic loads encountered over a long service life. Pipeline failures can have dire consequences in terms of environmental damage and through fires and explosions involving escaped product.

Recent Incidents

In addition, from a commercial point of view, oil and gas pipelines represent a capital-intensive means of transporting energy and their closure can have a far-reaching impact on the market. With supply and demand in the global energy market now so finely balanced, a single incident can severely disrupt product flows and prices, as evidenced by the August 2006 decision to shut down part of the BP-operated Alaskan North Slope (ANS) crude oil pipeline system to enable repairs to a number of corroded gathering lines.

The ANS incident has effectively cut the 400,000 barrel per day (bpd) flow from the Prudhoe Bay oil fields in northern Alaska by one-half and repairs will take several months to complete. The decision to curtail operations followed the discovery of internal corrosion in a pipeline from an oil processing plant in the eastern part of the field.

In March 2006 a spill, which was caused by corrosion in an oil transit pipeline, in the western part of the Prudhoe Bay gathering system disrupted operations. The ANS pipeline system is now 29 years old. A further notable pipeline was closed in August 2006 due to a corrosion incident. The 42 year-old Druzhba 1 line, which carries approximately 250,000 barrels per day of Russian crude oil to Lithuania's Mazeikiu refinery and Butinge export terminal, was shut down after Transneft, the Russian pipeline operator, discovered a leak in the line. There are doubts as to whether Druzhba 1 will be reopened.

Holistic Approach to Risk

As part of the effort to utilize advanced analysis techniques in enhancing pipeline safety, Germanischer Lloyd (GL) has developed a risk-based assessment methodology for pipelines to provide pipeline operators with an overview of the integrity and safety performance of their existing networks and to help them optimize their inspection efforts. The new methodology has equal applicability to both onshore and offshore pipelines.GL has extensive experience with the development and use of risk assessment methodologies in the marine and other industrial sectors. In addition, Germanischer Lloyd Oil & Gas (GLO) provides certification services for the pipeline industry and the company's reference list includes onshore projects in the North Africa, Mexico and Germany and offshore pipeline systems in North Sea, the Mediterranean, North Africa, West Africa, the Middle East Gulf, South East Asia and Germany. The society's work on the development of a risk-based evaluation and inspection (RBI) program for offshore and onshore pipeline systems began back in 2001 and has encompassed several projects. In spring 2004 GLO's Kuala Lumpur office initiated an RBI-database system with a user-friendly interface called GALIOM, which was previously intended for process units and gas plants. Following establishment of the database, a methodology specific to pipelines was developed including a specification for the programming.

Semi-quantitative Evaluation

The risk associated with a system or a process is generally defined as the product of the likelihood of an event happening and the consequences of failure. In establishing its holistic approach to assessing pipeline risks, GL was aware that the methodology would have to adequately evaluate the probability and consequences of failure and make an accurate assessment of the risk level in order to ensure that the recommended remedial actions represent the most appropriate response. A semi-quantitative method was chosen as the most appropriate for assessing the risks associated with existing pipeline networks. Quantitative analysis requires more effort than qualitative approaches, but provides more accurate results. By taking into account the cost-benefit implications of the risk assessment effort, the quantitative risk analysis can be targeted at the most important subsystems

# of pipelines?

in order to identify those parameters critical to the risk of the whole system. Semi-quantitative methods have been found to be adequate for such an analysis, enabling the most cost-effective remedial measures to be taken for any identified risks. Using a stepwise, semi-quantitative method, the risk-driving parameters and the quantification of the risk for a pipeline network can be calculated.

GL Methodology

The GL methodology splits the pipeline system to be assessed into different sections, called TAGs. Each TAG is deemed to have a relatively constant risk associated with it because the physical characteristics of the section and its environment remain unchanged. However, each change in the pipe's wall thickness, or a known damage, for example, or a change in water depth for an offshore pipeline, would require a split into different TAGs. Consequence-specific factors will also impact how a pipeline system is split up into TAGs. Such factors include pipeline location, volumes transported and the product being transported. For land pipeline the location factor would take into account aspects such as population density, road crossings and the proximity of buildings for a given area along the route. In addition, the risk assessment must accommodate any readjustments, such as the construction of new installations in the vicinity of the pipeline, that may take place over time.

The GL methodology also utilizes an index-based approach to risk evaluation. Risk is presented by using a risk matrix to provide a clear overview of the relative contribution of the probability of failure (PoF) and consequence of failure (CoF) factors. Considerable effort is required to estimate the PoF factor and criteria such as design, operation, third party impact and corrosion are weighed up in the analysis. Consequences considered in the determination of the CoF factor include human safety, environmental impact, economic repercussions and reputational/political fallout.´The PoF and CoF factors are incorporated in the GL Index which is used to indicate the relative severity of the risk. The highest risk is when both the PoF and CoF are serious. Risk acceptance criteria are the limits above which the operator will not tolerate risk to the installation.

Optimising Pipeline Inspections

Risk acceptance criteria are also used to help determine the most appropriate type of inspection and the optimum timing for inspections of relevant parts of the pipeline system. Obviously, it is important that an inspection is carried out prior to the acceptance limit being breached. This could be likened to preventative maintenance. Timely inspections will enable not only a reassessment of the risk level based upon the gathering of firsthand information onsite but also the detailed evaluation of any damage. Such an evaluation could necessitate the timely repair or replacement of the degraded component, i.e. corrective maintenance. The main reason for implementing a risk-based approach to inspection planning is to focus inspection efforts on items where the safety, economic, environmental or reputational risks are identified as being high. At the same time, inspections of those parts of the pipeline network identified as low-risk systems can be scaled down in an appropriate manner.

Software Package

Germanischer Lloyd has incorporated its newly developed procedure into an RBI software package called GALIOM for Pipelines. The software not only enables application of the GL methodology to all types of onshore and offshore pipeline systems but also facilitates the time-consuming iterative processes for determining the probability and consequences of failure for each TAG section in a system. This risk-based evaluation and inspection methodology provides a powerful tool for improving pipeline inspection strategies. To determine the risk it is important to consider the time-dependent and time-independent factors, as both are required for a sufficiently accurate risk assessment.

Germanischer Lloyd believes that simple qualitative methods should be replaced with more accurate semi-quantitative risk evaluation whenever possible. Nevertheless, the qualitative approach is still required for many technical aspects because it provides an efficient process for determining the major contributors to risk. Based on semi-quantitative methods, the GALIOM for Pipelines risk evaluation and inspection program enables an accurate assessment of the probability of failure due to factors such as design, loads, fatigue and corrosion as well as the consequences. The project has confirmed that for most pipeline systems corrosion represents a significant contribution to the overall risk. The GL methodology enables an estimation of the probability of corrosion, the size of flaws and their annual growth rate, taking into account different boundary conditions as well as inspection data, if available. The probability index is calculated using a limit state function for corrosion flaws to provide a relatively fine graduation of the probability of failure. ■ MC

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Absolutely irresistible: within seconds, the tensile tester rips apart rods of solid steel to measure the breaking force

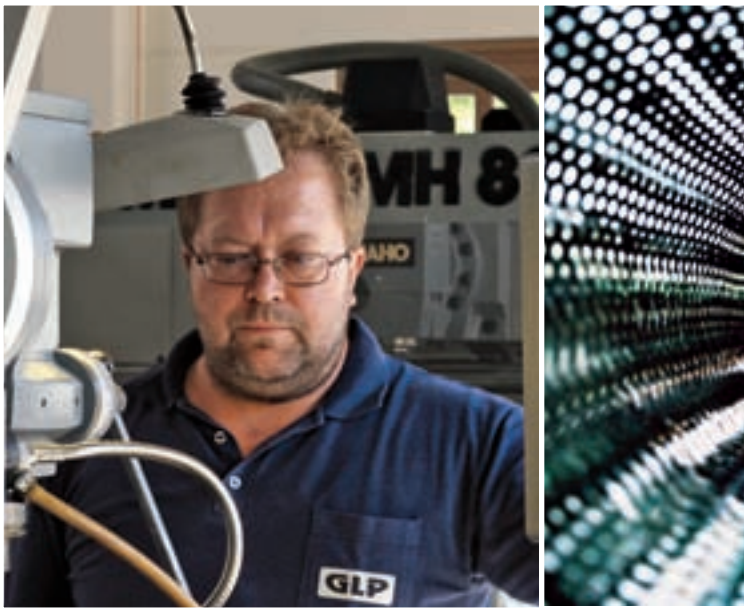
Got a Screw Loose?

GL recently opened a new testing laboratory in Hamburg – already its fourth in Germany. Advanced equipment, qualified personnel and a holistic approach all add up to form a unique service

It looks like the scene from a typical detective series: something terrible has happened. Witnesses and detectives are at a loss for an explanation. And then the men and women in white lab-coats arrive – the forensic department. Each and every detail, no matter how small, may prove to be vital. Now is the time for intense analysis, searching and often discovery, namely the little detail that ultimately leads to a closed case.

One should perhaps not over-dramatize the work of the GL testing laboratories (GLP, standing for "GL-Prüflabor"), but a good deal of detective flair is to be heard when Manfred Feyer, Managing Director of the entire laboratory group, talks about his work. "We are something like technical pathologists," is how this doctor in engineering describes his colleagues. However, neither Feyer nor his staff wear white lab-coats, nor are they concerned with unravelling a crime, rather with solving insurance cases or preventing technical damage.

GLP is an outstandingly well-equipped laboratory for the testing of metallic materials. Frequently, it is necessary in the course of failure analysis, component optimization or the routine examination of both parts and plants to start at the very beginning – with the basic material itself. "For the product quality and safety, material quality is a decisive parame-



Highly qualified machining technicians prepare the samples for the tensile and bending tests

Dr. Manfred Feyer is in charge of the new testing laboratory in Hamburg-Harburg

"We are something like technical pathologists"

ter," says Manfred Feyer. What it always boils down to is assisting the customer from a financial point of view, because the services provided by GLP help to prevent damage, clarify responsibilities, and optimize designs as well as production processes. To put it in a nutshell: cutting costs is the name of the game.

Calling in the Specialists

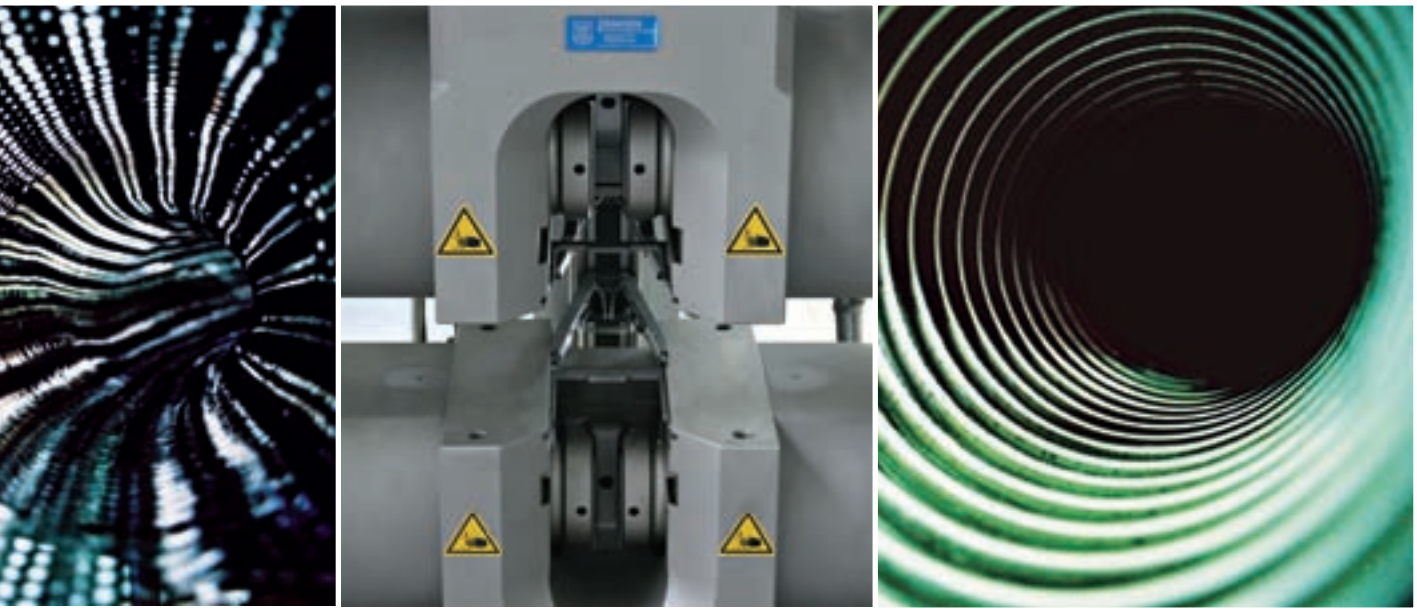
Feyer has a good example from his own professional experience: a cylinder-head bolt from the 1500 kW main engine of a container ship. Made of tempered chrome-molybdenum steel and with a length of 550 mm, this high-performance component had fractured at the first turn of the thread, as was shown by an inspection during operation. This circumstance led to considerable time spent in the yard, and hence enormous expense. The aim of the testing order issued to GLP was to identify the reasons and responsibility for the damage.

Such an investigation does not necessarily start with sophisticated techniques. Before a case of damage is given "intensive care" in the laboratory, Manfred Feyer first collects as much information as possible on the general conditions under which the damage arose. "How old is the engine? Were there any irregularities in shipboard operation? Has this sort of damage ever been encountered previously? These facts could give us valuable pointers to a systematic error," says Feyer. In this initial phase, GLP cooperates closely with "Damage & Repair", the central GL department for damage and repair management, which is based at Head Office of GL in Hamburg and boasts one of the largest damage databases in the world. "These colleagues are the specialists with operational know-how, which we at GLP as experts for laboratory-based failure analysis simply cannot have. When handling cases of damage from the world of ship operation technology, we work hand in glove," says Feyer.

No Isolated Event

Back to our cylinder-head bolt: here a check of the operational conditions turned up no abnormalities. But now the formidable analysis tools of GLP were brought to bear on the problem. The macroscopic study of the break yielded the first important finding: this was a fatigue fracture, starting from a crack in the root of the first thread turn. In contrast to a forced rupture, a fatigue fracture is not an isolated event that makes the part fail suddenly. On the contrary, a fatigue fracture develops through crack propagation over a lengthy period of time. Eventually, there is of course a final forced rupture and the total failure of the component. "In most cases, a fatigue fracture can be seen with the naked eye or by means of a magnifying glass," Feyer explains. "The ruptured surface exhibits the lines of rest, or clamshell marks, which are typical of fatigue fractures." The lines of rest of a fatigue fracture surface provide information about the growth of the crack. Or, to be more precise: the "times of rest" in which the crack only grows slowly or not at all – for example, because of machine downtime or a change in operating conditions.

The first diagnosis was therefore fatigue fracture. However, such damage can normally be excluded if the specified material is used, if the installation and operation was as required, and if the necessary maintenance was carried out properly. So what had happened?



Make it to break it: the stress at which the samples rupture provides clues about the material used

To Be or not to Be

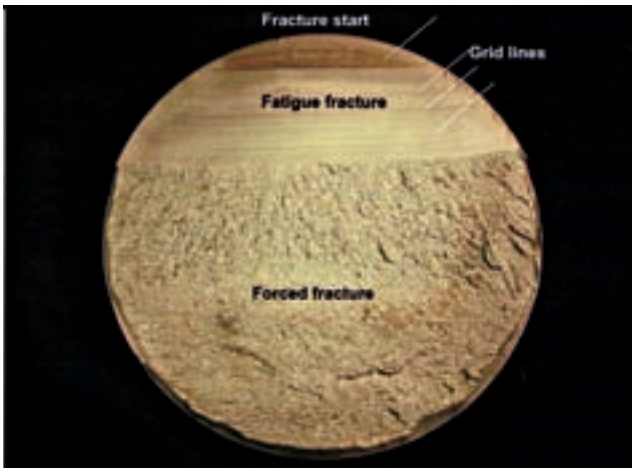
"In cases like these, we always begin by checking the material properties," is how Manfred Feyer describes the usual procedure. "After all, a mistake in material selection or application cannot be ruled out until the opposite has been proven. First of all, we have to answer what is perhaps the most trivial question of all: is the material in question really what it claims to be, i.e. according to specifications?"

To determine this, the component fragment must be subjected to a certain amount of violence. It is pulled, bent and etched literally beyond the limits of endurance. The first ordeal is called the test of tensile strength. Here the laboratory technicians extract a tensile sample from the shaft of the bolt and apply a precisely defined tensile test to ascertain the strength of the material. This value is then compared with the requirements set by the corresponding standard of the supposed material. Then the so-called "notched bar impact test", which measures the tenacity of the material, is performed. For this, a specimen is notched on one side and attacked with a pendulum hammer. Depending on how much energy the sample absorbs – how tough it is – the pendulum hammer swings back up to a varying degree. However, the tenacity is not only a function of the material, but also depends on the environmental conditions, particularly the temperature. The environmental parameters must therefore be monitored closely to obtain reliable data.

If the values determined in the tests correspond to the standard values for the material, then it is most probable that the correct material has indeed been used. Final certainty is offered by the chemical analysis. With the aid of a spectrometer, the technicians draw an electric arc – like that used in welding – from the material sample. The spectrometer analyses the spectrum of the electric arc, which is characteristic for a certain material composition. This method, which can be used for all metallic materials, e.g. those with an iron, nickel, aluminium and copper basis, now provided an exact analysis of the alloying constituents used in our mystery material.

High-resolution Analysis

In the case of the cylinder-head bolt, the conclusion was crystal-clear: it had indeed been made of the specified chrome-molybdenum steel – there had been no error in the choice of material. The actual reasons for failure were still unknown, but Feyer was now able to rule out a number of likely causes. The breakthrough then came with the microscopic examination. In addition to the light-microscopy with a magnification of some 1000 times, the test technicians at GLP also use the 20,000-fold magnification of a scanning electron microscope. The sharp vision of this high-resolution analysis device proved to be irresistible: In the thread root – the starting point for crack formation – minute traces of corrosion could be seen. "The question as to why the crack had started in the first place could therefore be answered conclusively," Feyer was pleased to report. The corrosion disturbed the overall balance of admissible stresses in the bolt, resulting in a micro-crack, which then grew to a size that compromised the integrity of the component. The rest of the investigation was routine: "In the servicing instructions for the engine, we found a clear description of how the cylinder-head bolts had to be mounted," explained Feyer, "namely with the use of a sealant to keep moisture out of the thread. This had evidently been neglected during the last maintenance." The servicing error was thus proven beyond doubt. A silver lining in the cloud for the shipowner, but bad luck for the servicing company which had been entrusted with the maintenance. "Once this test report was received, they had to call up their insurance company right away."



Ruptured surface with the lines of rest that are typical of fatigue fractures

Look before You Leap

The financial benefit which the customer can obtain from the advanced apparatus and high-level expertise of GLP is not always as clearly visible and rapidly applied as in this example. In particular, failure prevention calls for a long-term perspective. "The significance of consultative material examination – another source of business for us – is increasing steadily," Feyer explains. The realization is growing that not all structural design features can be optimized by computer – residual uncertainties will always remain. Sometimes, it is merely that the operating data with which a process or component could be optimized is missing. Take spot-welding in the processing of sheet metal, for instance: to be able to meet the quality objectives it has set itself, a certain company is having the preproduction series of a safety-relevant tank examined by GLP. With success, as Manfred Feyer emphasizes: "We were able to give specific advice on optimizing the methods being applied."

A valuable contribution towards preventing damage is undoubtedly the close cooperation of GLP with the central damage management of GL. The constant feedback of information helps to detect and avert unfavourable developments at an early stage. In this regard, the broad line-up of the GL Group is proving its worth, as it not only certifies but also tests and monitors the application of technology. "Whenever we identify a pattern in cases of damage, this is incorporated into our rules and guidelines," Feyer notes.

Not all of the assignments that land on Feyer's desk, or on those of his colleagues in Mülheim, Herne and Stuttgart, demand such a "good nose", as in the case of the corroded cylinder-head bolt. There are also the many everyday jobs – routine examinations that are performed within the scope of material certifications, product modifications, or changes of vendor or materials. But they too can save the customer a lot of money – when a company switches its supplier of cast parts, for example. The dimensional accuracy of the components can be checked by any suitably equipped incoming inspection department, but the material properties are a matter for a full-blown laboratory. Manfred Feyer is convinced: "Calling in GLP could help prevent quite a few product recalls!" ■ JI

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Wind – a Whim of the Gods

When Sir Francis Beaufort developed his wind scale, it was the culmination of contemporary knowledge on this force of nature

PHOTO: NATIONAL PORTRAIT GALLERY

The most influential thinkers in Greek philosophy had attempted to unravel the secret of the winds. Aristotle (384-322) thought that the wind was a kind of vapour. The sun made the earth breathe, so that a moist breath caused the rain, whilst a dry exhalation gave rise to the wind. Finally, the Greeks decided that the winds were heavenly manifestations and created a pantheon of wind gods. The belief that winds and storms – or a lack thereof – were whims of the gods lasted for a long time. This only changed with the advent of the scientific revolution in the 17th century.

The first systematic attempt to understand the wind was made by the British astronomer Edmond Halley (1656-1742), a good friend of Isaac Newton (1643-1727). In 1676, Halley journeyed to the South Atlantic, with a view to conducting astronomical and meteorological observations on the island of St. Helena over a period of two years. Halley was fascinated by the phenomenon that the winds, which seemed to blow completely chaotically, were really subject to an overarching natural law after all. The Arabs and Romans had already noticed that the wind generally blows from Africa to India for six months and then reverses direction for the next halfyear. These seasonal winds were called monsoons, a word derived from the Arabian "mausim" for season. Another type that was

ABOUT THE AUTHOR: (1774 - 1857)
Besides his biography of Francis Beaufort, Scott Huler has also written about the Cleveland Browns football team and the NASCAR automobile race. He lives with his family North Carolina, and his work may be heard regularly on NPR (National Public Radio).

The extended Beaufort scale accurately portrays the significance of the various wind speeds for wind turbines.

observed was the trade winds, which blew moderately but very persistently north of the equator in a southwesterly direction and south of the equator in a northwesterly direction. And as Christopher Columbus sailed over the Atlantic in 1492, he noticed how his ship was constantly driven by a wind blowing from the east. Halley's article, entitled "An Historical Account of the Trade Winds, and Monsoons, Observable in the Seas between and Near the Tropicks, with an Attempt to Assign the Phisical Cause of the Said Winds" (1686) collected together all these observations; moreover, he also drew the first map of the world showing the most important winds.

Wind-strength in Bft	Wind-strength designation	Sea condition designation (wind sea)	Description		Speed		Wind speed at hub height*
			Sea conditions	Land conditions	m/s	km/h	
0	Calm	Totally calm, smooth sea	Mirror-like sea surface	No air motion; smoke rises vertically	0 - 0.2	Under 1	
1	Light air	Calm, rippled sea	Slight rippling wavelets	Barely sensible; smoke is carried slightly away; wind fans and vanes still	0.3 - 1.5	1 - 5	
2	Light breeze	Very slightly moving sea	Small, short waves; glassy surface	Leaves rustle; wind sensible on face	1.6 - 3.3	6 - 11	
3	Gentle breeze		Start of foam formation	Leaves and smaller twigs in motion; penants stretch out	3.4 - 5.4	12 - 19	Typical range of the cut-in wind speed
4	Moderate breeze	Slightly moving sea	Small, lenthening waves; foamy white caps everywhere	Small branches move; loose paper is raised from the ground	5.5 - 7.9	20 - 28	
5	Fresh breeze	Moderately moving sea	Clearly audible wind; moderate, longer waves; foamy white caps everywhere	Larger branches and treees move	8 - 10.7	29 - 38	Range of partial load
6	Strong breeze	Rough sea	Large waves with breaking crests; white foamy spray everywhere	Heavy branches move; audible whistling along overhead wires	10.8 - 13.8	39 - 49	The rated output is achieved
7	Near gale	Very rough sea	White foam from the breaking crests forms foam streaks in the wind direction	Trees in sway; effort needed to walk against the wind	13.9 - 17.1	50 - 61	Range of output control
8	Gale	Heavy sea	Moderately high waves with breaking crests forming spindrift; streaks of foam everywhere	Large trees are moved; twigs break from trees; considerable difficulty walking	17.2 - 20.7	62 - 74	
9	Strong gale		High waves with dense spray; breakers start to form	Branches break; tiles are lifted from roofs	20.8 - 24.4	75 - 88	Cut-out wind speed
10	Storm	Very heavy sea	Very high waves; white seas; ong breaking crests; heavy breakers	trees uprooted; houses damaged; rarely inlnad	24.5 - 28.4	89 - 102	
11	Violent storm	Extraordinarily heavy sea	Violent seas; water is swept along horizontally; visibility very greatly reduced	Strong gusts; heavy storm damage; very rare in inland areas	28.5 - 32.6	103 - 117	
12	Hurricane		Sea completly white; air filled with foam and spray; zero visibility	Heavy storm damage and destruction; very rare in inland areas	33.7 - 36.9	118 - 133	
13	Tropical cyclone	Only on at sea and along coastlines: Devastating destruction			37 - 41	134 - 147	
14					41.1 - 46	148 - 165	
15					46.1 - 50.9	166 - 183	
16					51 - 56	184 - 202	
17					über 56	über 202	* extended by GL Wind

For 200 years, the classic Beaufort scale has been used for the exact description of wind force. In the course of the decades, its text has been changed several times, and in 1949 the original 12-stage Beaufort scale was augmented by five additional conditions. Now the engineers at GL Wind have extended the scale further, to account for the significance of the wind force for wind turbines.

Halley also noticed that the winds somehow had to be connected with rising air after it had been warmed by the sun. The air heated in the tropics expands, becomes lighter and rises, whilst at the same time cooler air from the north or south enters in exchange. This cooler air, Halley reasoned, was the cause of the trade winds. The stronger the wind blows, the greater the pressure difference between the various air masses must be.

However, there was a physical conundrum which Halley could not crack: according to his hypothesis, the trade wind to the north of the equator should have blown straight from the north and the trade wind south of the equator directly from the south. In actual fact, the trade wind north of the equator blew from the northeast, and the south trade wind from the southeast.

It was the British physicist George Hadley (1685-1768), who clarified the matter in 1735. The cool air from the north moves more slowly than the air at the equator. When the cool air moves south, it loses speed in relation to the faster rotation of the earth from west to east. For this reason, the trade wind blows from the northeast. The same principle applies south of the equator, so that the wind there blows from the southeast. Conversely, air masses that are displaced from the equator northwards move comparatively faster than the earth surface lying below them, which leads to the typical west winds.

All these observations and meteorological models were already expressed in mathematical terms in Beaufort's lifetime. In 1835, the French physicist Gaspard- Gustave de Coriolis (1792-1843) calculated how strongly the circulatory pattern of air currents between the equator and the poles was influenced by the earth's rotation. The fact that each air current, or even water current, on the northern hemisphere is deflected to the right and those on the southern hemisphere to the left is now known as the Coriolis effect. This force may lead to varying circular vortices, thus creating storms or hurricanes. In Beaufort's time, the Coriolis force had to be taken into account for the ballistic calculation of artillery fire, and today it is, for example, considered when launching satellites. And even in the load calculations for the growing wind turbines, the deflecting force of the earth's rotation must be included in the calculation: thanks to the Coriolis force, it is quite possible that, for turbines with a hub height of over 80 metres, a different wind direction will dominate at the lower blade tip than at the uppermost blade tip. ■ CG

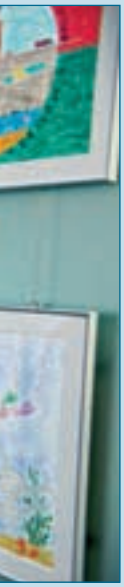
Through the Eyes of Children

"Hallo, little bit of litter – I'm coming to get you with my bucket!" What may sound almost like an invitation was actually one of the mottos under which 3,529 Greek children, aged six to thirteen, expressed their concern for the marine environment with a good deal of creativity and colour. A selection of these little masterpieces was on show from July to August in the foyer at Germanischer Lloyd Head Office.

Young surfers towing a net full of refuse, dustbins hunting for rubbish by themselves, a garbage swarm swimming towards a school of fish – the themes were both varied and imaginative. The national scholars' drawing competition had been organized by HELMEPA Junior, the youth arm of the Hellenic Marine Environment Protection Association (see also nonstop 2/2006). The best pictures were awarded prizes and were shown at the Posidonia shipping fair in Athens. A catalogue with 56 of the best motifs was published for the exhibition in Hamburg. ■ JK

Further information: www.helmepajunior.gr, www.helmepa.gr

The Director General of HELMEPA, Dimitris Mitsastos (left), and Dr Hermann J. Klein, me Germanischer Lloyd Executive Board, at the exhibition in Hamburg



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Rules for Classification and Construction

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