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Lloyd's Register

Horizons

News and information for the marine industry

A Lloyd's Register magazine

Birth of the world's largest-ever ship

Lloyd's Register classes the *Pieter Schelte*

Stena pioneers first methanol-powered ferry

V.Ships celebrates its new brand

Horizons is the journal for Lloyd's Register Marine clients and employees, delivering news and analysis on our global activities.

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Cover shows a computer-generated image of Allseas' *Pieter Schelte* in transit with a topside structure fore and a jacket structure aft. The giant vessel will always remain at sea and will never have to go into port.

Lloyd's Register

LOW EMISSIONS ALERT:

The deadline for the introduction of 0.1 sulphur emissions in SECA areas was 1 January 2015. Read how LR projects such as *Stena Germanica* (see pages 18-19) are helping owners and operators lower their carbon footprint

Members of Lloyd's Register's UK Marine team admire the original design features of their new home, the Southampton Global Technology Centre (GTC) on the University of Southampton's Boldrewood campus. **Photo credit: Paul Carrett**

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On the cover

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How LR can help companies adopt novel technology in 2015

This issue of Horizons will be available as new sulphur emission control areas (SECAs) enter into force on 1 January. Different ship types and trades are being affected in a variety of ways. We have already seen European ferry route closures citing increased costs related to compliance as the reason.

The impact on deep-sea ships, that spend little time in SECAs, will be marginal – for now – while bunker prices remain lower than recent levels.

But 1 January is one vital step in moving the industry towards a lower emissions future. Bigger questions lie around the global cap, the pace of technology change and the long-term future for the marine fuel market. While there are uncertainties about enforcement, LR has been focused on helping owners comply and support innovative solutions: trying to ensure that all emerging and established technology options are well understood and that our stakeholders are going to be able to make the best commercial decisions based on the best available technical insight.

We're ready to support the designers, builders and owners in coming up with new approaches – using existing technology in novel ways or helping support the adoption of new technologies.

Our Gas Fuelled Readiness notations system is an industry first (see facing page). These innovative notations were released at SMM last year anticipating demand for clarity over the levels of readiness available and, crucially, how to describe those levels in a manner that could be agreed in contractual terms between owners and yards. LR's notations ensure that owners and yards will be able to define exactly what is required, agree what can be done, and enable any yard to put a price on levels of readiness as well as building readiness flexibility, or options, into contracts.

The expansion of LNG as a marine fuel is playing out as we anticipated – a focus on niche trades in specific geographies with expansion into larger international, but mainly regional, trading operations. LR is the chosen class for many of these projects. Our gas carrier leadership stands us in good stead in this respect. Having classed the biggest LNG as fuel project, *Viking Grace*, two years ago, we are now working on exciting newbuild projects for owners in Norway, Sweden, Finland, the Netherlands and Canada, as well as on joint development projects with Greek owners for a 14,000teu LNG-fuelled design with DSME (announced in June 2014) – and with Japanese, Hong Kong and Danish owners on gas-fuelled designs.

And then there are other fuels and propulsion technologies such as methanol (LR is working with Stena on the conversion of the *Stena Germanica* – see pages 18-19), hybrid and windpower. There is no single clean technology winner at present as each trade, vessel type and charterer requirement needs to be considered.

Our goal is to continue to take the lead in understanding all the technology options that might be available to support a sustainable shipping industry.

Nick Brown

Lloyd's Register's Marine COO

"Our goal is to continue to take the lead in understanding all the technology options... and to support a sustainable shipping industry"

Are you ready to use gas?

In response to considerable industry demand, Lloyd's Register has established clear standards that describe different levels of readiness for shipowners and operators to use gas as a fuel.

(Left to right), Luis Benito, LR's Global Marine Strategic Marketing Manager and Leonidas Karistios, LR's Global Gas Technology Marketing Manager

While LNG as a fuel has already been adopted in projects that already make commercial sense such as north European ferry routes, most deep-sea players interested in the potential of gas-fuelled operations are not yet ready to commit to the full LNG fuel package but want to have the option to adopt gas fuelled readiness built into newbuild contracts.

Known as the Gas-Fuelled Readiness (GR) notation, the new standards will form part of LR's rules for gas-fuelled ships and so reflect all the safety and technical requirements needed to meet global standards for gas operations.

Moreover, owners and operators looking at gas-fuelled futures will have varying appetites for levels of investment and preparedness based on the clarity of their options at the newbuild stage and, of course, throughout the vessels' operational lives.

LR's Global Strategic Marine Marketing Manager, Luis Benito, commented: "We identified a blocker to progress in this area and listening to, and working with, shipyards and owners we have developed this notation with clearly identifiable levels to enable technical and contractual decisions about what different levels of gas readiness mean.

"This means shipyards can be clear about what they are offering and buyers know what they are getting – and at what price. This is a vital tool for agreement at a contract stage for levels of readiness, allowing contracts to be flexible if the owner wants to make changes as and when he needs to do so and even during construction. The fact that this notation has already been reviewed by yards and owners – and agreed in our last technical committee – is a real strength and demonstrates that the full insight of the shipping industry has been involved in the development process."

Leonidas Karistios, LR's Global Gas Technology Market Leader, said: "Lloyd's Register is the first classification society to develop a notation acknowledging levels of readiness for LNG as a fuel. The in-house experiences of previous gas-fuelled projects on ships operating with gas as a fuel in co-operation with industry technology leaders makes us ideally placed to have the gas fuelled readiness (GR) notation as part of our classification services to clients."

Preparing your vessel for gas fuel operations

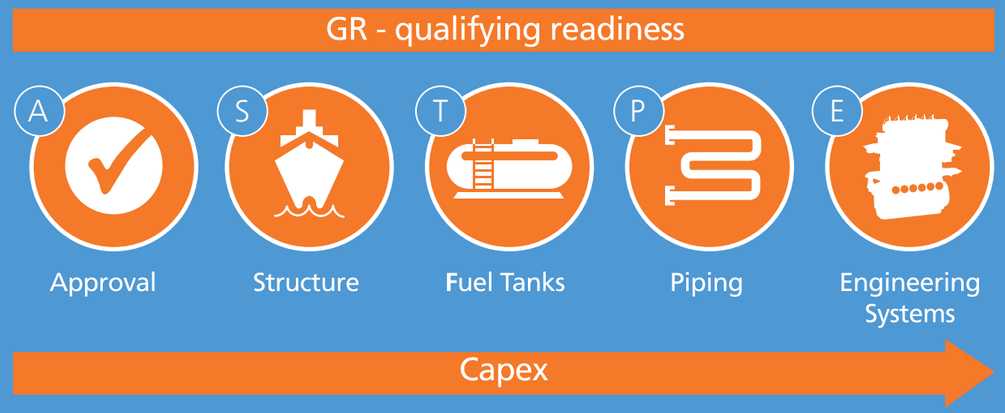
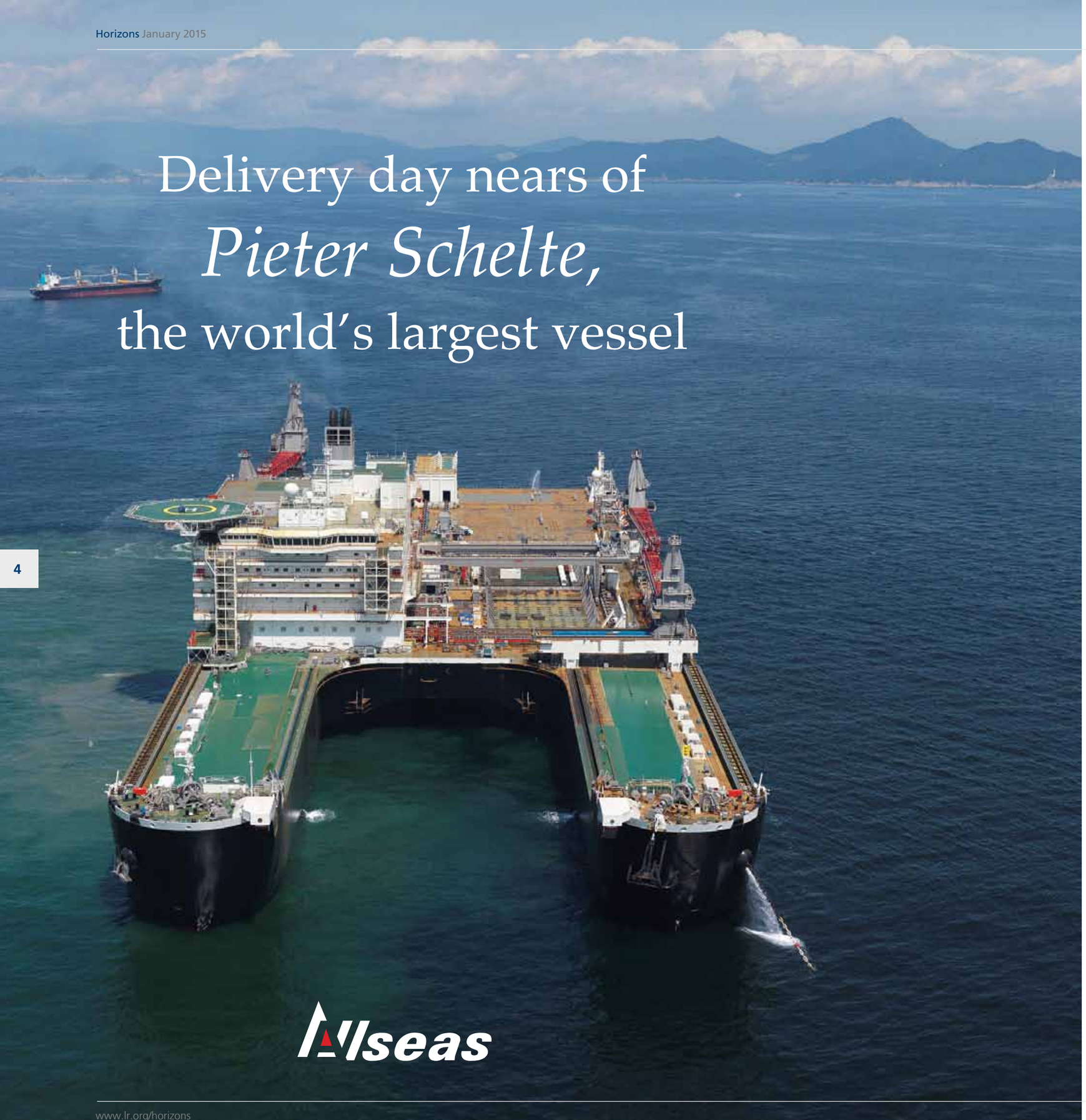


Diagram shows the five key options you need to follow - in any combination - when converting your vessel to LNG-as-a-fuel

Delivery day nears of *Pieter Schelte,* the world's largest vessel



Lloyd's Register has been involved with the building of Allseas' giant heavy-lift and pipelay vessel from the original planning stage until her final completion in a few months' time

Quite apart from helping to oversee the construction of the world's largest-ever vessel, the classification and approval of Allseas' *Pieter Schelte* heavy lift and pipelay vessel has been and continues to be one of the most ambitious and complex projects Lloyd's Register has ever undertaken.

The giant vessel which was built at DSME's Okpo shipyard in South Korea is due to arrive at the Netherlands port of Rotterdam on 10 January for the installation and testing of her main mission equipment. It is anticipated she will be operational in four months' time.

Twin-hulled

The 382-metre-long, 123.75-metre-wide, 403,342gt installation/decommissioning and pipelay vessel is a twin-hulled vessel named after the offshore pioneer Pieter Schelte Heerema, father of the Swiss-based Allseas Group's owner Edward Heerema. When plans for the vessel were drawn up, the original idea was to link together two converted VLCCs – a design that Lloyd's Register was asked to approve in principle (AiP). After several more AiPs by LR, Allseas decided to build a vessel from scratch.

LR was awarded the basic engineering plan appraisal contract in 2007, followed by a detailed engineering plan appraisal contract in 2010. Many alterations were made to meet market forces and changing demand from the offshore decommissioning sector at this stage. These included design of the vessel's pipelaying equipment – the tensioner capacity of 2,000 tonnes is double the capacity of the Allseas-owned *Solitaire*, currently the world's largest S-lay pipelaying vessel – and, subsequently, its stinger.

"During those years, and certainly during the years 2011 to 2014, the co-operation was very intense in order to arrive at a sound and safe design of the vessel and its lifting equipment. The design was novel in almost all respects, and extreme loading requirements were needed on many elements of this very large ship, leading to high steel grades and heavy plate thicknesses. Equally intense was the effort and energy spent on site at DSME's shipyard by both the Allseas and Lloyd's Register teams in order to make sure that the design on paper became reality as we see it now," says Edward Heerema.

The vessel's unique design and safety requirements, size and scale, meant that one of LR's major tasks was to align the design with LR Rules and Regulations and to international legislation such as SOLAS, MARPOL, other major IMO regulations and, of course, continental shelf regulations.

"Many of the vessel's major and complex structures were designed and reviewed on the basis of finite element calculations. LR's London and Rotterdam teams worked very closely with the Allseas engineering team in their main office in the Netherlands and at the builder DSME's shipyard at Okpo, South Korea, to create the most effective design plan. Calculations were modified over and over again and reviewed at each stage to reach the final optimised design," says Piet Mast, LR's Area Manager for Western Europe who is also LR's Project Sponsor.

Unique design

To meet the vessel's unique design and safety requirements, a package of safe return to port criteria was agreed with the Panama Registry with which *Pieter Schelte* is flagged. Since the requirements are exclusively for use

for passenger ships we had to go back to the initial source of the regulations to make the correct interpretations for the *Pieter Schelte*.

LR also needed to set new standards for the vessel's topsides lift (TSL, capable of lifting platform topsides of up to 48,000 tonnes), jacket lift systems (JLS, for lifting jackets of up to 25,000 tonnes) and the stinger installation, as the current regulations for lifting appliances do not provide rules for these types of lifting equipment. The stinger and pipelay systems are able to handle pipe diameters between 6 in and 68 in at water depths from 20m to more than 4,000m and at a maximum bottom tension capacity of 700 tonnes to 2,000 tonnes.

When building work started on *Pieter Schelte* in 2011, the plan approval process was supervised by an LR team led by pre-site Project Manager Flans Kemp from the Rotterdam Technical Support Office (TSO) and later by Nader Mansouri from the same office.

The vessel has been built to the standards of the Norwegian Marine Authority, which governs vessel operations in the Norwegian sector. NMA's standards are more demanding than SOLAS requirements and are tailored to the tough operating conditions in the Norwegian area. For example, cranes must be fitted with additional safety features and the vessel has to include thermal protection aids, extra lifesaving equipment and a sauna.

In particular, enhanced measures needed to be taken to prevent spill incidents. All of these factors in excess of SOLAS requirements, had to be captured and managed to ensure that they were incorporated correctly on the vessel.

Pieter Schelte during a manoeuvering procedure

Pieter Schelte's electrical systems conform to Norwegian Directorate for Civil Protection and Emergency Planning (DSB) standards. It combines elements of the IEC Code, IMO resolutions and ISO standards. Risk assessment must be carried out on all vessel installations complying with this code and electrical installations have to be checked every five years by a competent person.

Both of these items go over and above the normal classification work for the vessel, which required specialist on-site examination and appraisal. Liaising with LR specialists from London and Copenhagen, LR's Rotterdam team reviewed, approved and re-approved approximately 10,500 plans to meet evolving changes in the vessel.

The building of *Pieter Schelte* was verified by a team of LR specialists and at least 10 surveyors, led by LR's Site Project Manager, Kamal el Fassi. Based at DSME's South Korean shipyard, the team worked closely with the Rotterdam team to handle the design changes made during construction. The team also linked up with surveyors from China and parts of South Korea where many of the vessel's parts had been built, making sure they complied with Allseas' classification requirements.

The largest modification during construction was prompted by a decision to widen the vessel by 6.75 metres from 117m to 123.75m. It meant she had to be cut at centreline into two pieces, then a 6.75m wide and 254m long section placed at the centre line, before the two main sections could be finally assembled and welded. All this had to be done under strict control so as to minimise of residual stresses, during which LR guided the owner and yard.

The LR team gave the appropriate advice about the welding process, part of which was carried out while the vessel was in the water.

During the vessel's five-week sea trial, eight LR surveyors worked in shifts to review all her systems and witness the many tests she needed to undergo.

Finally, a global team of LR surveyors and specialists – headed by Mission Equipment Manager Martin Smolders, a specialist in lifting equipment, welding and NDE from LR's Rotterdam office – handled the approval of the key mission equipment such as the TLS, JLS, stinger, winches, tensioners and other pipelaying equipment. The team ensured that the equipment met LR's Rules for Classification of Lifting Appliances in a Marine Environment, Allseas' requirements and all the relevant industry regulations and codes.

A team of 60 LR surveyors then oversaw all stages, handling the surveys and testing of the various components in close liaison with the Mission Equipment Manager. The work was largely carried out in the Netherlands, Belgium, France, China, Czech Republic, South Korea, the UAE, Italy, Germany, the UK and the USA, although many other countries were involved as well. The three main LR teams were co-ordinated by LR's Project Sponsor, Piet Mast, who liaised with and reported back to Allseas.

El Fassi says: "A project of this complexity and technicality could easily have failed or been massively delayed through any number of reasons, but it was due to the skill, diligence and hard work of the people involved that brought the project through to successful conclusion at DSME. Widening the vessel by 6.75m during construction required all the drawings, tonnage calculations, machinery installations and other key technical factors to be altered during build."

Edward Heerema adds: "Allseas first thought up the concept of *Pieter Schelte* in 1986 and in that year started on the vessel's design. Allseas and Lloyd's Register have been working together on the design and certification of the hull and the lifting equipment of *Pieter Schelte* from 2000 to the present day. The co-operation between Lloyd's Register and Allseas has been very good throughout those years, and certainly both parties learnt much from each other."

> "The largest modification during the construction was prompted by a decision to widen the vessel."
>
> Kamal el Fassi, LR's Site Project Manager

Specifications:

Length overall (including tilting lift beam and stinger): 477 metres (m)

Length overall (excluding tilting lift beam and stinger): 382m

Beam: 123.75m

Topsides lift capacity: 48,000 tonnes

Jacket lift capacity: 25,000 tonnes

Stinger length (including transition frame): 210m

Operating draught: 10-27m

Maximum speed: 14 knots

Total installed power: 95,000kW

Accommodation: 571 people

Dynamic positioning system: LR DP (AAA), fully redundant Kongsberg K-Pos DP-22 and 2x cJoy system

Allseas owner Edward Heerema

Profile of the **Allseas Group**

Allseas Group SA, based in Switzerland, is a global leader in offshore pipeline installation and subsea construction. The company employs more than 2,500 people worldwide working from 10 global offices and operates a versatile fleet of specialised pipelay and support vessels, designed and developed in-house.

The group was founded in 1985 by Edward Heerema, who is still the sole owner and president of the company. Allseas' approach is to support clients already in the conceptual design stage, and offer services for project management, engineering and procurement up to and including installation and commissioning. Where and whenever necessary, it develops new techniques and applications.

Allseas operates four pipelaying vessels including the *Solitaire*, which until now has been the world's largest pipelayer. It also operates the *Calamity Jane*, a trenching support and subsea construction vessel. All the group's vessels and equipment have been built and/or converted to Lloyd's Register Rules and Regulations.

Since 1985, Allseas has installed more than 18,000 kilometres of pipelines in over 240 projects. Apart from lifting, commissioning and decommissioning of offshore platforms, the current newbuild project, *Pieter Schelte*, will be able to lay pipe and has double the tensioning capacity of the *Solitaire*.

The Allseas Group's safety programme, 'Allsafe', has an ultimate goal to lower incident rates to zero.

People news

The recent move by our UK Marine team to the Southampton Global Technology Centre and the growing diversity of the needs of our clients globally has created a large number of opportunities and changes for Lloyd's Register staff worldwide

Theodosis Stamatellos is LR's new Marine Area Manager for Greece, the Eastern Mediterranean and the Adriatic (GEMA). Theodosis recently took over from Apostolos Poulovassilis who had held the post for 24 years. Theodosis will have high-level responsibility for marine activities in Italy, Malta, Croatia, Slovenia, Serbia, Bulgaria, Romania, Turkey, Israel, Cyprus and Greece.

Meanwhile **Spyros Anastassovitis**, who was LR's Classification Manager based at Southampton in the UK, has returned to Piraeus to be Regional Deputy Manager for the GEMA region as well as GEMA's Operations Manager and LR's Devolved Class Executive (DCE) Manager.

Another important recent staff change was the appointment of **Tim Hall** as the new Manager of the Technical Investigation Department based at the Southampton GTC. Tim was previously Manager at LR's South Asia Technical Support Office (SaTSO) at the Singapore office.

Tim's replacement at the Singapore office is **Bruce McDonald**, who was until recently LR's Technical Manager for Fire and Safety at the Southampton office. Bruce's successor is Ben Geary, who joined LR as a Senior Specialist for Fire and Safety in 2013.

Tom Dalling, who was Area Technical Performance Manager for UK&I and SWE, is the new Regional Marine Technical Performance Manager for Europe, the Middle East and Africa (EMEA). While **Ian Miller** recently became the new Deputy Regional Manager for EMEA Operations. Ian will continue in his current role of UK&I Naval Business Manager based at LR's Bristol office.

Iain Wilson is adding to his responsibilities as Regional Marine Manager for Asia by overseeing the management of the Middle East and Africa. While **Tony Field**, who was the Piraeus-based Marine Business Manager for SE Europe, has moved to LR's Dubai office as Area Manager for the Middle East and Africa.

James Forsdyke, until recently a New Construction Project Manager for Naval Vessels at LR's Shanghai office, has moved to the Singapore office to be LR's Marine Sales and Marketing Manager for Asia. In the Americas, **Chris Desmond** who was LR's Houston-based External Affairs Manager, is the new Manager of the Technical Performance Group for the Americas at the Houston office.


Theodosis Stamatellos


Spyros Anastassovitis


Tim Hall


Bruce McDonald


Tom Dalling


Ian Miller


Iain Wilson


Tony Field


James Forsdyke


Chris Desmond

GTT and LR sign innovative LNG projects MoU

A time of exciting change at LR with the transformation of our Marine team, and the move of our UK Marine members to the Southampton Global Technology Centre (GTC), has led to a growing number of major collaboration projects with key players in the gas technology and engineering markets.

One of these is the recent signing of a memorandum of understanding (MoU) with GTT, the world leader in the design of membrane cargo containment systems.

Among key projects the partnership is handling are the evolution of the LNG tank membrane system and improvements to address the technical challenges for use with LNG-as-a-fuel applications, optimisation of boil off gas handling via improved insulation or tank pressure optimisation, improvements in the mechanical performance of the systems and the development of GTT's new Mark V system.

"The agreement demonstrates the importance of LR's and GTT's roles in the burgeoning LNG technology sector where our shared expertise and experience can meet provide such developments as highly efficient cargo containment systems and innovative technologies for alternative fuel projects," said David Colson, GTT's Commercial Vice-President.

"We are very pleased with the effective co-operation we and GTT have fostered, as GTT is a significant stakeholder that complements LR's missions, values and leadership in the gas technology market. We are certain that the efficient working methods we create will provide shipowners, operators and charterers with the confidence to adopt innovative technology," said Leonidas Karistios, LR's Global Gas Technology Market Manager.

- GTT has been active in meeting the current challenges in the gas market, bringing more than 50 years of experience in the evolution of significant technology with improvements in the boil off rate of LNG containment systems with the Mark III Flex, NO Evolution and new developments such as the NO Max project, the introduction of Mark V solutions and improvements in the fabrication and flexible application of membrane containment systems on applications in the gas trading sector (ethane and multigas), and the emerging market of gas-as-a-fuel.

Computer-generated image of a multi gas carrier (MGC) fitted with a GTT containment system

News

Briefs

Danish Maritime Days success

Lloyd's Register's 'Maritime Forum – the Future of Shipping' was one of the highlights of the 2014 Danish Maritime Days, a week of shipping events in Copenhagen attended by more than 200 leading shipping industry players.

South Asia construction guide revised

An updated version of Lloyd's Register's popular Guide to New Construction in South Asia has been issued. The guide, which has information about leading shipyards, vessel designers and newbuilds, can be downloaded at www.lr.org/southasia

LR takes holistic approach

Lloyd's Register held a forum 'Energy Efficient Solutions: A Holistic Approach' about the fuel-saving challenges facing shipowners and operators in Athens recently. The forum which was hosted by Aegean Shipping Management attracted more than 100 delegates from the shipping industry

A winning case for windpower

Dimitris Argyros, Lead Consultant at Lloyd's Register's Environment & Sustainability team, presented 'The Case for Wind: technical and commercial considerations for the application of wind-assisted propulsion in shipping' at a ship management seminar in Paris in December.

LR's Type Approval service proves a big draw at SMM

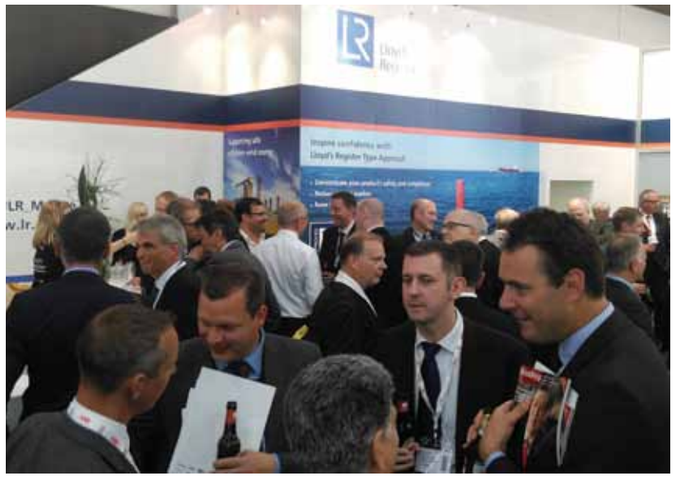
More than 2,100 exhibitors and 50,000 global visitors thronged Hamburg's SMM (Shipbuilding, Machinery and Marine Technology) exhibition, one of the world's foremost marine technology events, in Hamburg, in September.

The Lloyd's Register stand had a continuous stream of interested visitors ranging from shipping company CEOs and company managing directors to maritime students. LR's Type Approval (TA) services were a particular highlight, and the LR team handled more than 130 contact forms from clients wanting further information.

Björn Schöneberger, LR's Client Relationship Manager and Surveyor, said: "It was a great opportunity for us to raise awareness of our Type Approval service. We met a very large number of potential new clients wanting to find out how we could support them with obtaining new and future products that have been LR type-approved. It was a really busy few days and a great team effort from colleagues manning the stand. We now have many leads to follow up and help us grow our Type Approval business."

LR's latest Global Technology Report was unveiled at the event and clients who stopped by the LR stand were among the first to get a copy. Issue number one of the report focuses on new generations of large container ships and introduces LR's Structural Analysis & Hydrodynamics team. The report, which is only available in hard copy, pays particular attention to LR's expertise in whipping and springing – the term used to describe the varying effects of waves on the hull girder. You can order a copy of the report at: http://www.lr.org/en/marine/marine-technology-report.aspx.

Jürgen Gerdes, LR's Hamburg-based Marine Business Development Manager, said: "We are very satisfied with the number of opportunities collected and are overwhelmed by the positive customer feedback. We are now busy following up on the sales leads we identified and look forward to seeing the results of our efforts."



Clients visiting LR's popular stand at SMM

LR and SMMI examine the role of big data in the marine Industry

The Southampton Marine and Maritime Institute (SMMI) at the Boldrewood Innovation Campus recently hosted discussions of what big data could mean for the marine industry. The event highlighted some of the exciting opportunities likely to arise from big data.

The event was divided into two sessions. The first, 'Current Practice and Cutting Edge Applications', featured delegates from Condor Ferries on infrastructure investment and Wärtsilä on the next generation of systems for optimising vessel performance.

The second session, 'The Future with big data', focused on medium- to long-term issues. Richard Clegg, MD of the Lloyd's Register Foundation, explained the relevance of big data to Lloyd's Register and its vision. The final presentation by GE Software provided a comprehensive view of the challenges ahead, which was followed by a lively debate that included Dame Wendy Hall, Professor of Computer Science at the University of Southampton, on the panel.

SMMI provides an internationally recognised collaborative hub for the University of Southampton's marine and maritime research interests. The institute, headed by SMMI Director, the University of Southampton's Professor Ajit Shenoi, has more than 1,000 affiliated researchers working on cutting-edge maritime projects.

The institute is located by the University's Boldrewood Innovation Campus alongside LR's Global Technology Centre, and LR is a key supporter of SMMI research. Among its latest projects are the development of ways to utilise the ocean to provide new forms of energy, mineral resources, food and medicine, transforming the safety of ships and the goods they transport and the safety and security of ships' crews and passengers.

The institute is actively seeking industry partners to come forward with research proposals on the use of oceans, the ocean environment, responses to climate change, the legal instruments needed in this exciting and futuristic sphere, and the science and engineering solutions to address such challenges.

SMMI was recently granted a £100,000 Research Collaboration Stimulus Award by the Higher Education Innovation Fund for research collaborations with industry. LR's Marine Technical Director, Tim Kent, says: "SMMI has created an environment that will attract leading researchers from all over the world and research funding from agencies and companies keen to address the challenges facing the modern marine industry. Lloyd's Register is very proud to be part of this great venture."

Read Lloyd's Register CEO Richard Sadler's views on big data on pages 26-27.

Lloyd's Register Foundation pledges £10 million to big data research

The Lloyd's Register Foundation recently launched a Foresight review of big data and announced a conditional grant offer of £10 million to support research by the Alan Turing Institute on engineering applications of big data.

The Foundation's Foresight review of big data: towards data-centric engineering, examines how developments in big data could impact on the safety and performance of the engineering assets and infrastructure such as energy, transportation and shipping on which modern society relies.

The report draws on the findings of an international expert advisory panel led by Professor Sir Nigel Shadbolt, Professor of Artificial Intelligence at the University of Southampton and Chairman of the Open Data Institute, and is the second in a series commissioned by the Foundation as part of its emerging technologies research theme.

"Our report concludes that within the next five to 10 years we are going to witness step changes in sensor technology, data-driven intelligent systems, computer science and algorithms for data analysis, impacting all aspects of the business life-cycle – from design to manufacturing and maintenance to decommissioning. This report sets the high-level strategic direction and funding priorities for the Foundation in the field of 'data-centric engineering'," says Professor Richard Clegg, Managing Director of the Lloyd's Register Foundation.

To support four priority action areas, based on the recommendations in the report, the Foundation has offered a conditional grant of £10 million over five years to the Alan Turing Institute to support its research in the engineering applications of big data.

For more details and to download the report see the Lloyd's Register Foundation website news page **http://bit.ly/1vRcQNi.**

News

Computer-generated image of the Pinnacle Class cruise ship

Keel laid of Holland America Line's largest ship

Holland America Line celebrated the keel-laying of a new Pinnacle Class cruise ship – the company's largest-ever ship – at Fincantieri's Marghera shipyard in Italy recently.

The 99,500 gt ship, which will be able to carry 2,650 passengers, will be LR-classed and is due for delivery in February 2016.

A 680-ton block was lowered into the shipyard's building dock to mark the start of construction of the as-yet unnamed vessel, which will be the fifteenth in the Holland America Line fleet.

The ceremony was presided over by Holland America's Senior Vice President, Fleet Operations, Keith Taylor, and Cyril Tatar, Vice President, Newbuild and Technical Operations. LR was represented by Davide Cargnelli, Team Leader at the Marghera Site Office, Susan Pike, Senior Surveyor, Federico Renaldi, Surveyor, and Joshua Evans, Trainee Surveyor.

The 297-metre-long vessel will feature a number of exciting innovations and will be the first Holland America Line vessel to comply with Safe Return to Port regulations. An emissions abatement system is planned to be fitted, allowing the vessel to operate freely in emission control areas (ECAs).

LR Senior Surveyor Susan Pike commented: "We are really looking forward to working with Holland America Line again and to seeing their latest project come to life."

Kyratsoudi speaks at Greek Shipping Summit

More than 300 shipowners, CEOs, directors and senior managers attended the fourth annual Greener Shipping Summit in Athens in November.

One of the highlights was a presentation titled 'Implications of the ECA regulations and the 2020 low sulphur limits for worldwide fuel availability' by Maria Kyratsoudi, LR's Piraeus-based FOBAS Senior Specialist.

The key themes of Kyratsoudi's talk were the options for SO_x compliance; the operational and technical concerns about distillates in 2015; the findings of a recent LR FOBAS FAME study into the quality of distillates; and the key commercial and technical considerations for new blended fuels.


Maria Kyratsoudi

When LR's Class Executive had to make a snap decision

A tricky client-facing situation recently gave Lloyd's Register's Classification Executive a case they could really sink their teeth into.

The Executive is made up of nine senior members of LR's Fleet Services who have a delegated authority to make decisions about the classing of vessels on behalf of the Committee. This can include acceptance into Class or suspension/withdrawal of Class.

Although our Regulations require that clients complete ship surveys on time and in accordance with the Rules, there are situations that can prevent this.

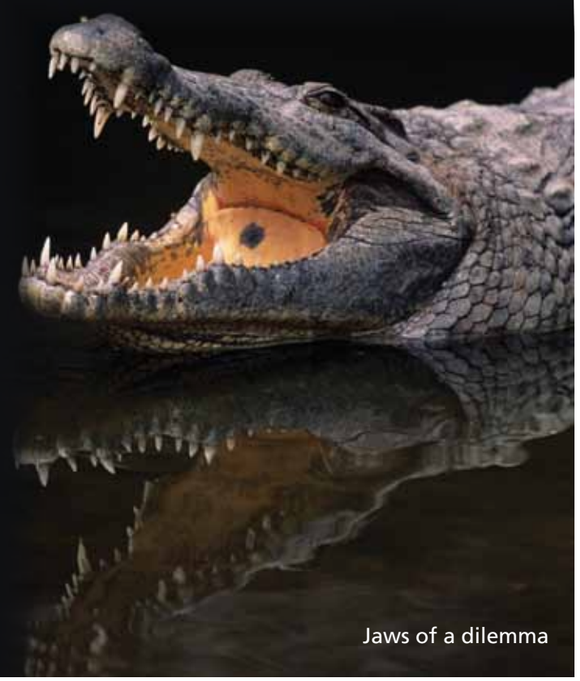
In this case, it was not possible to examine a vessel underwater as the river where it was in lay-up was infested with crocodiles!

LR has an effective process in place to deal with times when a client is unable to follow the requirements of class. Surveyors make day-to-day decisions within the Rules and the Devolved Classification Executives in each Region can make decisions on issues for which they are authorised, such as short postponements. However, the Executive steps in to consider cases that are unconventional or high risk.

Taking an evidence-based approach to assessing risk, and when sufficient evidence is present, the Executive can agree extensions of class on the grounds of *force majeure* or 'exceptional circumstances', defined in Regulations.

Usually an underwater examination is required to maintain lay-up for a vessel that is out of service. After assessing the evidence, including a thorough review of the reported condition and history of the vessel, the Executive agreed that the risk of assuring classification was low enough. The decision allowed class to remain undisturbed, provided a docking is completed before the ship resumes service.

When asked about the case, Classification Executive member, Duncan Duffy, commented: "We have to assess the evidence for each case. As this location was a National Park, the thought that the crocodiles might be 'an action by government employees' (*force majeure*) was briefly considered. However, in the end we agreed that this was one of the more unusual 'exceptional circumstances' we've had to deal with."


Jaws of a dilemma

News

LR signs its largest-ever contract for Norway

Computer-generated image of a SALT 200 AHTS vessel by Salt Ship Design. Design: Salt Ship Design.

Lloyd's Register recently signed a contract with Kleven Verft for the classification and construction of six (with options for four more) anchor handler tug supply (AHTS) vessels.

Owned by Maersk Supply Service, the vessels will be registered under the Danish flag. The hull blocks will be built in Poland, but final erection of the blocks, outfitting, testing, and delivery is planned at Kleven shipyard in Ulsteinvik, Norway.

The first vessel is planned for construction in June 2015 and is due to be delivered at the end of 2016. Each of the sister ships will follow at two-month intervals.

LR's Business Development Manager for Norway, Leif Gunnar Sandvik, commented: "We are very pleased that both Maersk and Kleven have chosen Lloyd's Register. I am confident that we have the experience and willingness to prove that this project will be successful in strengthening our businesses, leading to even more important and exciting projects in Norway."

The level of involvement in this project is indicative of the collaborative spirit of Lloyd's Register. The project began in the first quarter of 2014 and essential support was provided by LR colleagues in Norway, Denmark (who manage the strong relationship with Maersk Supply Service) and group and regional offices to win the contracts for LR.

The size of this contract will provide a substantial workload for LR in Norway until 2018. Morten Jensen, LR's Marine Client Manager, said: "It's great to see yet another order placed by Maersk Supply Service to LR class, confirming the very good relationship between Maersk Supply Service and the business development department in our Copenhagen office. It is rewarding to see that our hard work has ensured that LR is again their preferred choice for classification."

Swedish Navy training vessels transfer class to LR

(Pictured left to right): The Swedish Royal Navy's System Leader for Training Ships Peter Milton; LR Surveyor Hans Ericsson; Lieutenant Commander Anders Agar, Commanding Officer of the Swedish Navy's Training Ship Division; and LR's ToC Project Manager Anders Bergström in front of *HMS Antares* and two of her sister ships

Two Swedish training vessels *HMS Antares* and *HMS Altair* – the first of a group of five – were recommended for acceptance into LR class in September and issued with interim certificates. The remaining vessels are due to be transferred later this year.

Anders Bergström, Senior LR Surveyor and Transfer of Class (ToC) Project Manager, handed over the Certificate of Class to Lieutenant Commander Anders Agar, Commanding Officer of the Swedish Navy's Training Ship Division. "It was a smooth and easy transfer process, the ships seemed practical and efficient for their purposes and they are well maintained... This is a great opportunity to see how the Swedish Navy is working and managing their ships. It has been a very positive experience and I am sure that we will be able to give them the technical support they are looking for," said Bergström.

Jim Gorton, LR's Naval Business Support Specialist, said: "Part of the LR strategy is to grow the Naval business, and this includes the number of ships maintained in Class as well as those constructed to Naval Class. The fact that these ships are transferring to LR is very welcome news. LR's Business Development Manager Anders Hofnell was key in securing this contract for the transfer of these ships to LR."

Gorton added: "We are continually trying to demonstrate the benefits of working with LR for naval ship safety assurance and this is a great example of how a respected navy has accepted this."

Awards

LR's CEO Richard Sadler awarded Maritime Foundation's Maritime Fellowship Award

Richard Sadler, CEO of Lloyd's Register Group Ltd (LR), was honoured with the Maritime Fellowship Award at the Maritime Foundation's Maritime Media Awards, held at the Institute of Directors in London in November. The Maritime Fellowship Award is the highest honour bestowed by the Maritime Foundation and is given to an individual who has made a truly outstanding contribution to stimulating public engagement in maritime issues.

The Maritime Foundation is a charity promoting Britain's interests across the entire maritime sector. Its purpose is to inform and raise public and parliamentary awareness of the importance of Britain's maritime industries, commerce and defence through education, training and research, as well as through the Foundation's annual Maritime Media Awards.

Julian Parker OBE, Chairman of the Organising Committee, said: "This year the trustees were unanimous in their choice of a leader who has tirelessly worked not only to develop his own organisation, but also raise the profile of the maritime sector and drive his vision to bring government, business and academia together for the benefit of society.

"The cornerstone of this vision is the world-class Lloyd's Register Global Technology Centre on the University of Southampton campus, which opened its doors last month. This research and development capability operates in tandem with LR's Global Technology Centre in Singapore and more than 40 research institutions around the globe that are funded by the Lloyd's Register Foundation.

"The trustees further wish to recognise his foresight and long-term vision in seeking to raise the profile of the maritime industry at all levels from school leaver to ministers in government. As a Chief Executive with a background in naval architecture he has been able to instil a unique sense of purpose ' Working together for a safer world'.

"In pursuit of this aim his organisation commissioned an authoritative study into 'Global Marine Trends 2030' which demonstrated the close link between shipping, energy and trade until 2030. He was a driving force and first co-chairman of the Maritime Leadership Council, which has sought to bring together representatives from all aspects of marine industry to engage with government."

Lloyd's Register CEO Richard Sadler (r) receiving the Maritime Fellowship Award from the Maritime Foundation's Julian Parker

Countess Mountbatten of Burma, President of the Maritime Foundation, said: "I cannot think of a more deserving candidate to receive the Maritime Fellowship Award 2014. It is only through the leadership and courage of people like Mr Richard Sadler that we can reaffirm our reputation as a maritime nation."

On receiving the award, Sadler said: "I am very honoured to receive this award. We all have an obligation to drive the industry towards better dialogue with government, to speak with one voice, and get government to recognise the importance of UK maritime and the need for a cohesive maritime strategy."

LR hosts inaugural Ship Efficiency Awards

Key stakeholders from across the industry shared insights into new and emerging practices and technologies for improving ship efficiency at the inaugural Ship Efficiency Awards in London recently.

Organised by Fathom and hosted by LR, attendees heard about the latest operational trends, predictions, frameworks for the future and financing efficiency.

Katharine Palmer, LR's Environment and Sustainability Manager, compered the award ceremony, and LR was involved in two of the winning projects. Corvus Energy won the Initiative of the Year award for Scandlines Hybrid Ferries. B9 Shipping, a consortium studying the development of 100% renewably powered sailing hybrid cargo ships, won the The One To Watch award.

(l-r) LR's Katharine Palmer, David Balston, Director, Safety and Environment, UK Chamber of Shipping, Diane Gilpin, Director of B9 Shipping, and LR's Dimitris Argyros

Lynceus project wins *Lloyd's List* Innovation Award

Lynceus, a Lloyd's Register project to improve vessel evacuation techniques, scooped the Innovation Award at the 2014 *Lloyd's List* Global Awards and was later featured in a television documentary on *CNN*.

LR was one of a team of industry partners in the EU-funded project which uses ultra-low power wireless body-area-network technology and lifejacket-mounted reflectors tracked by unmanned aerial vehicles (UAVs) to locate people in danger, either on board vessels or in the sea, swiftly and safely.

More than 500 senior executives from the maritime industry gathered in London to discover the winners at the sector's most prestigious prize-giving and to recognise the people and businesses that have stood out through innovation, acumen and bravery over the previous 12 months.

Jesus Mediavilla Varas, Lead Specialist in LR's Strategic Research & Technology Policy Group, commented: "Winning the Innovation Award is really great news for Project Lynceus and for Lloyd's Register. It shows LR's commitment to continuously improving the safety of passengers at sea, strengthening our brand as an innovative company."

Jesus continued: "We have recently submitted a proposal for the next phase of Lynceus, which aims to further develop the system, commercialise it and apply it to large cruise ships and even ferries. We are hoping that all this positive publicity will support us in securing the EU funding needed to continue this important work".

You can read a full report about Lynceus and LR's role in the project in the September 2013 issue of *Horizons*. You can find out more about the project on **http://www.lr.org/lynceus.**

(l-r) Paul Nichols, LR's Lead Specialist for Passenger Ships, Tom Boardley, LR's Marine Director, and Jesus Mediavilla Varas, LR's Lead Specialist, Strategic Research & Technology Policy Group

LR supported Poseidon Med project is presented with a Technical Achievement Award by DNV GL

Poseidon Med, a European project focused on the development of LNG infrastructure, was presented with the Technical Achievement Award at the 2014 *Lloyd's List* Greek Shipping Awards in December.

Lloyd's Register is one of 18 partners in the Poseidon Med consortium and Theodosis Stamatellos, LR's Regional Marine Manager for GEMA, was one of the representatives that received the award.

Stamatellos commented: "We are proud to be involved in such an ambitious project which will have a great impact on the shipping industry in the Mediterranean and Adriatic markets. Winning the *Lloyd's List* Technical Achievement Award is positive recognition of the importance of Poseidon Med and what it aims to achieve."

Poseidon Med is the first cross-European border project in the Mediterranean and Adriatic Seas with the aim of introducing LNG as the main fuel for the shipping industry and proposing a sufficient infrastructure network for LNG bunkering.

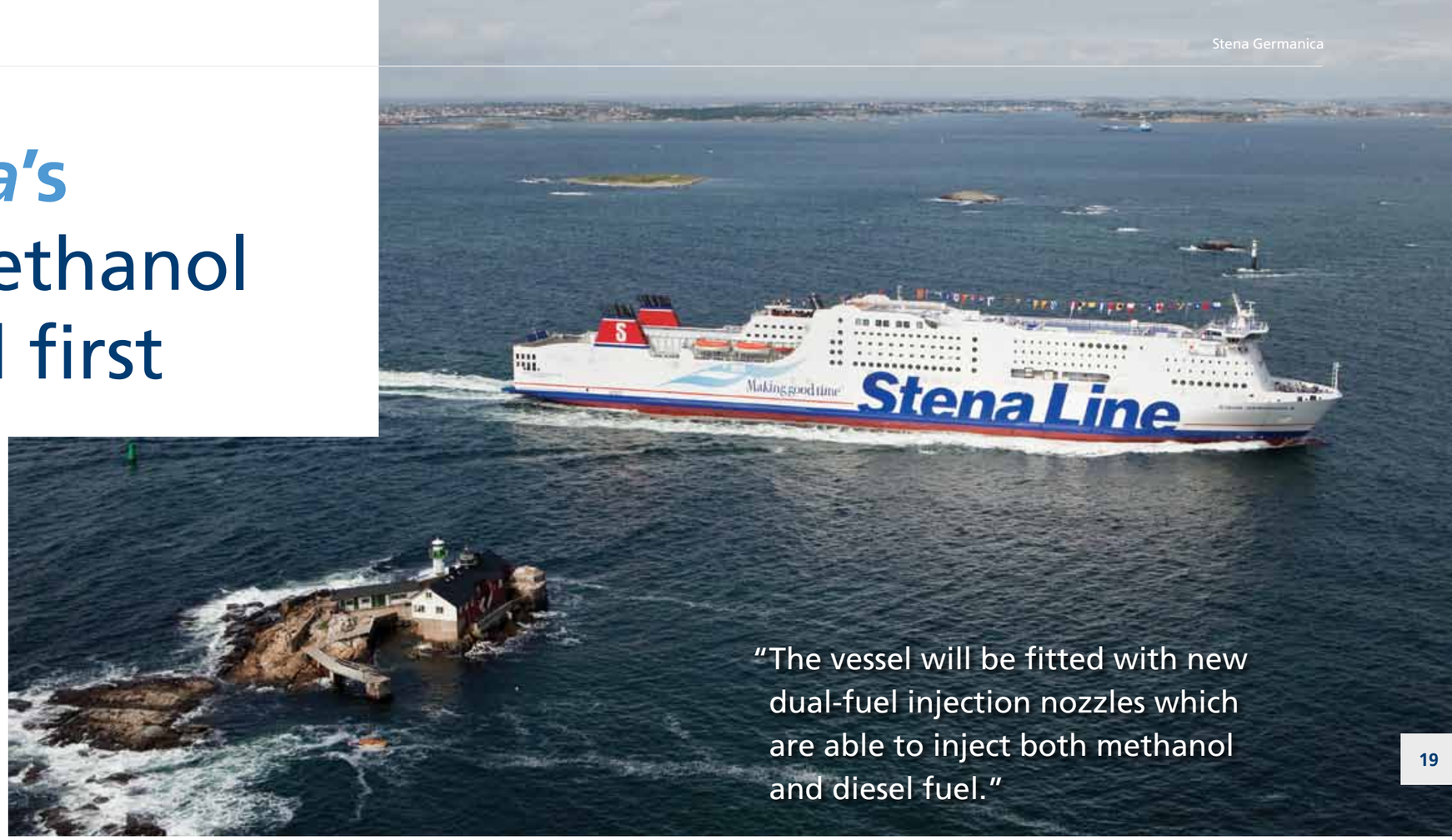
Co-ordinated by QEnergy and co-financed by the EU, TEN-T and Motorways of the Sea, LR supports the project in activities related to regulatory framework, risk management, public awareness and dissemination.

Poseidon Med's ultimate objective is to prepare a global plan of infrastructure development in the eastern Mediterranean area, so that LNG can be widely adopted as a fuel for shipping operations. It will also service the additional needs of the mainland operations, the European Energy Security strategy and the diversification of natural gas sources.

(l-r) Lloyd's Register's CEO, Richard Sadler, Jose Anselmo, Principal Administrator of Motorways of the Sea (MoS), Panayiotis Mitrou, LR Projects & Innovation Piraeus Business Development, and Theodosis Stamatellos, LR GEMA Area Marine Manager

Stena Germanica's conversion to methanol power is a world first

LR is overseeing the approval and classification of the Stena-owned ro-pax ferry after carrying out risk assessment and Type Approval on a dual-fuel Wärtsilä engine in Italy



"The vessel will be fitted with new dual-fuel injection nozzles which are able to inject both methanol and diesel fuel."

Another milestone in the quest for alternative, more fuel-efficient sources of power will be marked by the conversion of the ro-pax vessel *Stena Germanica* to a dual-fuel methanol propulsion system at Poland's Remontowa shipyard at the end of January.

The 240-metre-long, 1,500-passenger ro-pax ferry, which will be converted over a period of 45 days from 28 January, will be the world's first-ever methanol-powered sea vessel.

The new fuel arrangement on the *Germanica*, which is owned and operated by the Swedish ferry operator Stena Line, will combine methanol as its primary fuel with marine gas fuel (MGO) as a back-up power source. SO_x emissions are expected to be cut by 99%, NO_x by 60%, particulates by 95% and CO_2 by 25%.

When work starts on the refit, just one of the *Germanica's* four main Wärtsilä engines will be converted. At the same time the piping and ancillary equipment for all four engines will be installed in Poland and, once the owner is satisfied with the running of the first engine, the others will be converted one by one while the vessel is in service. The plan is for the vessel to be running on all four engines later this year.

Stena RoRo, Wärtsilä and Lloyd's Register representatives at the testing in Trieste

Lloyd's Register has supported the *Stena Germanica* project by applying our Assessment of Risk Based Designs (ARBD) process for unconventional fuel. Part of our consultancy service has been a pre-study to identify any major statutory and classification stumbling-blocks. LR has also facilitated two HAZIDs and HAZOPs to ensure that the design is just as safe as one using conventional diesel fuel oil.

A unique feature of this revolutionary vessel is that it will be fitted with new dual-fuel injection nozzles which are able to inject both methanol and diesel fuel. LR's Senior Project Manager for the conversion, Christian Kammerer, said: "Each engine is supplied by its own high-pressure methanol pump with a working pressure of 600 bar."

Stena's CEO, Carl-Johan Hagman, said: "The emissions from methanol are comparable to LNG, but the requirements for handling and infrastructure are much lower. The construction team are looking at and will use several different exhaust gas treatment technologies and if the methanol project is a success they will convert more vessels."

Meanwhile, LR will carry out plan approval on the ro-pax ferry in Copenhagen. LR has also been authorised to act on behalf of the Swedish flag administration during the conversion project.

In October, well before conversion work was due to start, a Wärtsilä 6ZAL40S engine went through several days of stringent testing at Wärtsilä's laboratory at Trieste, Italy, after it had been modified for methanol burning.

Five LR teams were involved in the tests. They were the Marine Technology and Engineering Services (MTES) department based in Southampton, which handled Type Approval and risk assessment; the Trieste Technical Support Office (TSO), which included an expert in piping and control engineering for the risk assessment; the Copenhagen TSO for the conversion Plan Approval activity; the Gothenburg office team as Owner Client Facing Office (CFO) and the Venice office team as Sustainable Development Outreach (SDO) and CFO for Wärtsilä Italia SpA.

LR's Trieste-based Lead Specialist, Roberto Costantino, said: "We carried out three days of tests on a modified engine at Wärtsilä's R&D laboratory so as to understand the engine performance when running with methanol. While the test engine is a similar type to the four engines on the vessel, it has fewer cylinders, so the builders are converting the existing ones on the ship.

"The testing was extensive and intensive, with Wärtsilä, Stena RoRo and local LR representatives present, and it has given a generally positive result. At the end of the test, Stena RoRo's Project Manager expressed his satisfaction with the results achieved during this trial, which was an important milestone for this important and unique conversion project," added Costantino.

LR project studies new generation of methanol-powered passenger ships

A whole new generation of cruise ships and ro-paxes powered by methanol could be at the forefront of a low-emission, fuel-efficient revolution in today's global fleet.

Just how this might happen is the theme of a project called MethaShip recently launched by the project's three key partners, the German shipyard Meyer Werft, Lloyd's Register and the German shipbuilder FlensburgerFlensburger Schiffbau-Gesellschaft (FSG). Funded by the German government, the project will assess the feasibility of building new methanol-powered vessels.

Two designs for a cruise ship and a ro-pax ferry will be developed during the three-year project, with Meyer Werft overseeing the cruise ship design, Flensburger co-ordinating the ro-pax ferry concept and LR carrying out the approval in principle (AiP) for both schemes.

LR's Hamburg-based Project Manager, Dirk Schroeder, said: "I believe methanol has great potential as a fuel for ships. While LNG has been widely promoted as the fuel-efficient alternative for shipowners and operators seeking low-emission alternatives to heavy fuel oil (HFO), recent research into methanol-as-a-fuel has revealed a number of benefits. The design of ships' operating systems for using methanol as a fuel is similar to existing fuel systems, although they will need to be adapted to deal with the low flashpoint and low energy content disadvantages of methanol."

The introduction on 1 January of the 0.1% sulphur limit in sulphur emission control areas (SECAs) will have a major impact on the global fleet in general and cruise ships and ferries in particular. "In ECAs, methanol is widely regarded as a better alternative to HFO than LNG. It is easier to handle, because it is a liquid at ambient temperature and pressure, and so, unlike LNG, does not have to be cooled down to -163°. In the end, the price and availability of the fuel will determine the extent of its success," added Schroeder.

To minimise the costs of using methanol-as-a-fuel, MethaShip is also investigating the possibilities of using the thermal losses from engines driven by methanol. "While fuels that contain sulphur can generate sulphuric acid in their exhaust gas, at temperatures below dew point, methanol contains no sulphur. Thus it becomes possible to use more of the thermal energy from the exhaust gas as the gas can be cooled down further without forming sulphuric acid," said Schroeder.


A methanol converted engine for a ship

A recently launched partnership between Lloyd's Register, Meyer Werft and Flensburger Schiffbau-Gesellschaft will examine the feasibility of building alternative, low-fuel vessels

The MethaShip partners will be supported by three associate companies. The engine-makers, MAN Diesel & Turbo SE and Caterpillar Motoren, will share their expertise with medium-speed engines and the chemicals group HELM AG will help to examine the infrastructure needed for the key ECA and SECA routes used by methanol-powered cruise ships and ferries.

Another focus of the MethaShip project is bunkering. "We will study options for bunkering methanol and canvass port authorities' attitudes to the fuel to help identify weaknesses in the logistics chain," Schroeder added.

"Arguably the greatest challenge facing our industry is that of sustainable marine power generation, and the widespread use of methanol, potentially a carbon-neutral fuel, would take us much closer to overcoming this challenge. LR has already published Rules and Regulations (see panel, right) to facilitate the use of methanol-as-a-fuel and we continue to work alongside our industry partners in order to truly establish methanol as a future marine fuel option," said Ed Fort, LR's Head of Marine Engineering Systems.

LR introduces Provisional Rules for Methanol-fuelled ships

Rising fuel costs and the introduction of sulphur emission control areas (SECAs) – where the allowed sulphur content for fuel burned in marine engines has been cut from 1% to 0.1% from 1 January this year – have stimulated a quest for alternative fuels.

One of these alternatives is methanol, which is generally derived from natural gas feedstock but has the potential to be produced from renewable feedstocks and is therefore a clean fuel.

Lloyd's Register is currently involved in several projects that are exploring the use of methanol-as-a-fuel in ships and is engaged with builders developing engines capable of burning methanol.

Recognising the rising demand for clean fuels, LR has proposed a new set of Provisional Rules and Regulations for the Classification of Methanol Fuelled Ships. The new rules are principally derived from LR's existing Rules for Natural Gas Fuelled Ships and Rules and Regulations for the Construction and Classification of Ships for the Carriage of Liquid Chemicals in Bulk.

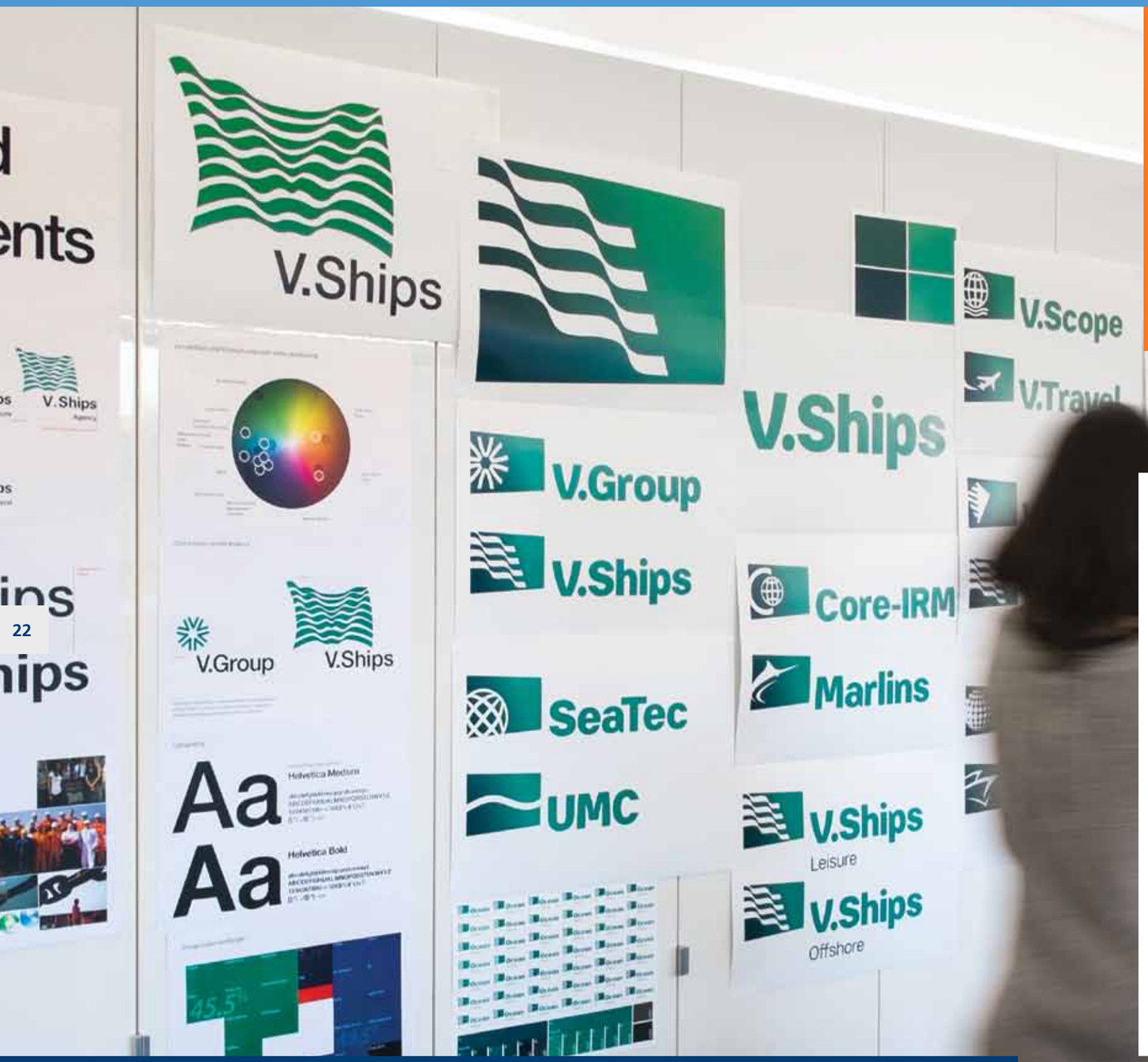
Gary Pogson, an LR Lead Specialist in Marine Technology and Engineering Services, said: "Methanol presents a number of different hazards to LNG. A key difference is that it is stored at ambient temperatures and so the hazards associated with a cryogenic liquid are not present. Consequently, while many design principles such as those for tank construction might be similar to those of oil fuel, it also presents low-flashpoint fuel hazards and brings with it hazards associated with toxicity, corrosion and solvency.

"The requirements of these Rules therefore incorporate, or refer to, requirements from other LR Rule sets in combination with research from a variety of other sources. These are:

- Tank construction requirements, principally referencing those of the Rules and Regulations for the Construction and Classification of Ships for the Carriage of Liquid Chemicals in Bulk, as they take into account not only the structural requirements for the Rules for Ships, but also address hazards associated with the potentially corrosive nature of the fuel;

- Other requirements have been developed from methanol-specific parts of the draft IGF Code that are currently under development.

"Through our continuing involvement in methanol-fuelled projects (see Methaship project on previous page), including assessments of methanol-fuelled machinery and systems design and our active participation in industry working groups, typical solutions for mitigating the hazards will be captured and more prescriptive requirements will be developed, reducing the reliance on the risk-based studies."



Branding is about who you are, not just what you look like

Far from looking back, V.Ships is looking forward to a future of growth as it celebrates its 30th birthday. We spoke to **Bob Bishop, V.Group's Executive Director**, about their vision to be internationally recognised as the number one independent provider of global maritime services and the launch of their new brand.

Bob Bishop
Executive Director of V.Group

Despite being the largest ship manager in the world, V.Ships isn't planning on standing still. As Bob Bishop explains, if you don't move forward then you risk slipping backwards. Rather than getting caught up in the past, V.Ships used its 30th anniversary as a catalyst for thinking about where they were headed and what they wanted to achieve.

V.Ships has achieved organic year on year growth, but they have an appetite to increase volumes and continue to grow. Bob comments that they started thinking about how to achieve growth and very quickly began to think about their vision for the future. Bob explains: "We considered who we are and what we want to achieve, and developed a vision we could all work towards. Ultimately we want to be internationally recognised as the number one independent provider of global maritime services."

Having agreed their vision, they then started thinking about the culture at V.Ships and the strengths and commitment of their people. "There's no point having a vision like being number one without being able to back it up", Bob explains. "We're a people business, and we're proud of our execution-led approach. The next part of our journey was exploring our values and celebrating the qualities of our people in helping us attain our vision". Bob comments that **safety** comes first for all ship managers and that remains the number one priority. Next on the list is **teamwork** – V.Ships understands that collaboration leads to results and ultimately their people benefit hugely from an environment where they work closely with one another. Bob comments that V.Ships is proud to offer its customers a **personalised service**: "No two clients are the same, so we're committed to working with them on an individual level, and as a result we create real value and ensure we impact on their bottom lines too. It's about risk: V.Ships works to take the risk out of shipping and by doing so we're **creating value**." V.Ships makes a point of developing trust with its customers and as Bob explains this is only possible if the company remains **accountable** and transparent.

Getting branding right

Miura is the design agency that supported V.Ships (part of V.Group) in their rebranding process. Founded in 2001, Miura helps clients understand and exploit design to drive growth, innovation and value creation.

A full-service agency they have developed a deep understanding of the maritime industry through their work with leading brands such as Lloyd's Register, TradeWinds and V.Group. They have also worked with V.Ships, Peninsula Petroleum, Gibunco Group and SCAMP on a wide range of projects including corporate branding, advertising, print, stand and digital design, as well as developing their own mobile applications.

Lloyd's Register GTC Publication

With Lloyd's Register embarking on a bold move from the City of London to a new, purpose built Global Technology Centre located at the heart of the University of Southampton, Miura were asked to produce a publication to announce the move to the world and reassert the brand as a global leader in marine science and technology.

Global Technology Centre Publication

TradeWinds

As strategic design partner to TradeWinds, Miura developed an interactive exhibition stand for Posidonia 2014. They gave delegates the chance to experience being on the front cover of TradeWinds. The feedback from the event was great: "the cover was the best marketing concept ever and was really popular on social media." (Marina Panopoulou, TradeWinds).

The TradeWinds stand at Posidonia 2014

Bob Bishop (on the right) at V. Group's brand workshop

Standing out from competitors

With their vision agreed and values refreshed, the V.Ships team then started to think about how they're perceived in the market. They were interested in exploring how branding could help them differentiate themselves from their competitors. V.Ships has long been at the vanguard of maritime businesses that manage their image and reputation, but this new focus on brand demonstrates just how hungry they are for success.

Miura, a brand, design and communications agency, helped V.Ships test their perceptions and sense check their new ambitious vision with key customers and influencers across the sector. Bob explains that Miura initiated a series of in depth interviews to help V.Ships understand their position within the market, how they create value and what makes them different from their competitors. These interviews were aimed at developing a brand strategy that was going to provide V.Ships with the focus they needed to grow sales.

'Performance assured'

For Bob, the most important part of the brand process was a workshop where Miura's brand strategists presented back the insights they'd gathered from interviews and competitor analysis. The V.Ships team then considered how they're different from other ship managers, and developed a compelling brand positioning, 'Performance assured'. Bob comments: "we want to deliver the best possible service and generate the highest possible returns for our customers – every time and in every situation. It's really simple: if we deliver then our customers will respond positively and keep coming back to us. 'Performance assured' means we guarantee our customers results and give them the confidence and peace of mind that comes with the knowledge their assets are in safe hands."

Branding isn't just about logos

"Most people mistakenly believe that branding is all about logos and how companies look, but fundamentally how we look is less important than who we are." Bob remains committed to this view and didn't think at the start of the process that they'd consider redeveloping the instantly recognisable V.Ships flag. But there was another pressing issue that they were keen to tackle and so refining their visual identity was the next step.

V.Ships is the core brand in a larger company, V.Group. In the last 30 years V.Group has grown to become the largest maritime services company and includes a range of brands from SeaTec (marine services) to Marlins (language testing), from V.Delta (ship refurbishment) to UMC (underwater marine engineering). Each brand has its own identity and as a group they lack visual cues or similar names to show customers and investors they're part of a larger, more powerful group.

Designing a standout identity

Bob explains: "We're proud of the range of marine operations and services that we provide to our customers and we want to clearly show the connections between our businesses. Each of our 18 brands embodies our motto, 'Performance assured', and with Miura's support we saw there was an opportunity to create a contemporary, unified visual identity across the whole business. I was personally relaxed about the outcome, but I wanted to ensure that our heritage was reflected in any new designs."
Miura has created a wordmark identity system, made up of a stylised flag device, redrawn icons for each V.Group company and a bold new typeface featuring a distinctive (and distinctly ownable) uppercase V that formed the basis of the new group marque. The result is a true identity system with the flexibility to easily assimilate any new companies V.Group acquires, and the strength to represent them effectively in every situation.

Importance of effective communication

There are many in our sector who recognise the importance of more effective communication, and it's therefore significant that someone of Bob Bishop's standing has given a branding process the time of day. Branding is a crucial tool that will enable the shipping industry to sharpen its image and ultimately grow. It's not only about logos, it's as Bob says: "Our brand is who we are and how we communicate with our customers".

"My expectations changed as we got deeper into the process: I assumed the focus would be 'creative', but was really impressed by the analytical rigour of branding. Our refreshed values are crucial to engaging our team, and our new brand is a strong platform to drive growth and build strategic relationships."

James Muir, Group Key Accounts Director, with joint responsibility for managing the branding process on V.Group's behalf

Reimagining an icon

From old to new - V.Ships brand marks

As the number one provider of ship management services, the V.Ships icon is a heavyweight within the maritime industry. Now part of V.Group, and with an ambitious plan for growth, the time was right to rebrand the company and energise the team around a shared vision.

Although instantly recognisable, when deconstructed, the current V.Ships icon is an illustration of many things: a flag, stripes, wind, the letter V, and a ship's wake. This complexity is its biggest challenge. It requires considerable deciphering, is hard to reproduce in small sizes, and looks dated.

Responding to the brief for an elegant, contemporary flag, that is both confident and true to the company's heritage, the team at Miura set to work exploring flags. They considered the shape of flags, icon design, alignment, typography, as well as colour and visual treatments.

The outcome is a new icon that is simple, distinctive and confident. Retaining the movement of the original flag, the rectangle with a forward perspective is dynamic and directed to the future promise of the new V.Ships position statement, 'Performance assured'.

Find out more about the branding process at www.miura.gi/vgroup

My big data vision for shipbuilders, owners and operators by LR's CEO Richard Sadler

Forget all those valuable man hours spent collecting and storing data about ship design, planning and maintenance, the latest nanotechnology could tell us all we need to know – and much faster and at a far lower cost, Lloyd's Register's CEO tells **Carly Fields**, Editor for the Baltic Exchange

Ship designs are in a constant state of flux with ever-more efficient specifications moving from the drawing-board to reality. But could a significant revolution be just around the corner with the introduction of acoustic fibres and nanotechnology, and the acceptance of big data possibilities in the maritime industry?

Lloyd's Register's CEO Richard Sadler is a man with just such a vision. Within 10 years, he predicts that such technologies will be commonplace in shipbuilding and will bring with them improvements in efficiencies that today's shipowners can only dare dream about.

> "Harnessing data from ships to improve monitoring and maintenance will become all the more relevant later this year when Inmarsat's Global Xpress satellite system is launched."

The catalyst for this forward thinking was a comment on costs from shipowners: "For the first time recently I've heard serious shipowners talking about the fact that once you have taken the bunkers out, the cost of crewing is about 60% of the running costs of the ship," he said in an interview with the Baltic Exchange. "The complexity of ships is such that an awful lot of advanced maintenance required on these advanced ships can't be done by the crew. So we have to find a different way of thinking about this."

Sadler envisions a world where data from ship structures, components and machinery is centrally collected and used to enhance maintenance programmes. Technology is already out there to support this move – nanotechnology. In terms of nanopaint and nanomaterials, nanotechnology allows paints, coatings and materials to give signals of performance, allowing us to hear the hull 'talking' in the same way that we already hear pumps and engines 'talking' through sensors, while acoustic fibres can detect minute changes in vibrations, meaning that we will be able to sense engine rooms in different ways.

"There are a lot of shipowners at the moment who cannot comprehend what I'm talking about," says Sadler. "My vision for this is that all the design data collected by major shipbuilders around the world from these technologies would be held in a control centre that could be run by them, or perhaps even by LR. Instead of using prescriptive regulation for maintenance on a time-based system, we would use this data to run the machinery until it shows signs of requiring maintenance."

Harnessing data from ships to improve monitoring and maintenance will become all the more relevant next year when Inmarsat's new satellite system is launched. That move will drastically lower the cost of data transfer which will in turn open up opportunities to transfer increasing amounts of data from ship to shore and vice versa.

"Everyone's talking about 'big data'; I think that big data is a term that's more a concern for the business consumer," says Sadler. "What I'm talking about is machine data analytics. We're not trying to work out the consumption habits of somebody; we're trying to identify through an increasing amount of data the acceptable performance limits of all the complex systems that are onboard ships."

"We are chasing the aviation industry in terms of control centre involvement in the optimisation of an aircraft," adds Sadler. "Sometimes you can go on ships and you can be quite disappointed in the level of technological innovation."

His views might attract scorn from some who believe that ships need to get simpler, not more complicated, but in an industry as conservative as shipping, a visionary is sorely needed. Perhaps Richard Sadler is that man.

"The problem with the maritime industry is it is so conservative and in many ways so far behind other advanced transport industries. We have driverless trains, we have advanced machine data monitoring in aviation, and now we're hearing that Audi and Mercedes and others are driving driverless cars at night to test them. If we can use automation with all the risks and uncertainties of taking a car around a town, then surely we can use the technology to drive ships. Not necessarily to berth them, but certainly from outer buoy to outer buoy across the ocean," says Lloyd's Register's CEO.

But shipowners need persuading and cash is the ultimate convincer: Sadler believes that owners will be receptive when they see how much will be saved on maintenance through the use of machine data analytics. "The first thing," he says, "is not to work on the technical detail, but to give the economic case for this."

He believes that there are also gains to be made beyond pure maintenance. Voyage planning is one example of an area ripe for improvement: "We can improve voyage planning by absolutely integrating the design capabilities of the ship into the voyage planning, so rather than avoiding weather we can optimise routes through weather at optimum speed and optimum trims, based on absolute design criteria."

With investment already being made in the capture and processing of maritime data, Sadler believes this technology could be commonplace by 2025, if the economics can be proved to be viable.

"As the drive comes in the future for greater improvement in fuel efficiency, improved safety and reduced cost of maintenance, all the signs are there that there will be many benefits to be gleaned from this move. But it will require people to work in different partnerships to the way they work at the moment," he says.

So, is LR talking itself out of a job? Certainly not, asserts Sadler. As industry 'knowledge banks', classification societies have long been associated with the collection and valuation of data, he says, but he concedes that this shift will be an "absolute game-changer" for the future role of class societies.

"It means that we will hopefully have a much greater link in data modelling between the shipbuilder, the shipowner and the regulator. I'm hoping that will allow us to enhance designs as well, but there will be a changing level of risk that needs to be managed in a different way."

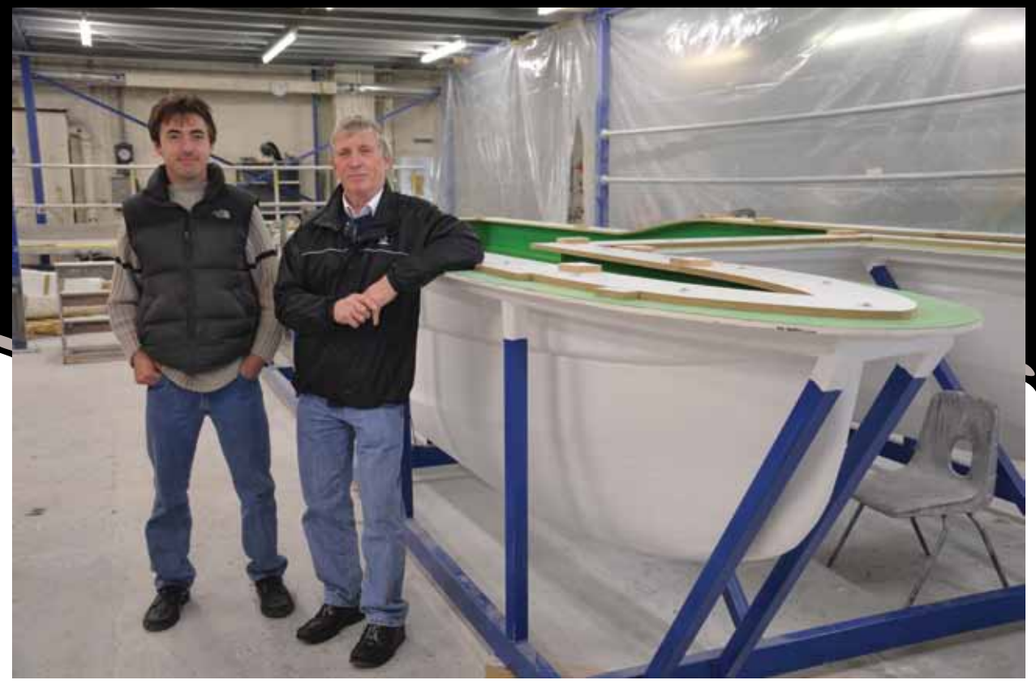
All this could ultimately lead to a fundamental change in the skill sets required by shipbuilders and class societies; so will the next generation of ship 'designers' be made up of mathematicians and chemists, rather than engineers and metallurgists?

> "My vision ….. is that all the design data collected by major shipbuilders around the world from these technologies would be held in a control centre."

LR's CEO Richard Sadler

Inventors launch *Gobbler* – a novel way to remove oil spills

A small team of boatbuilders has developed a fibre-glass vessel that rapidly and effectively recovers spilled oil

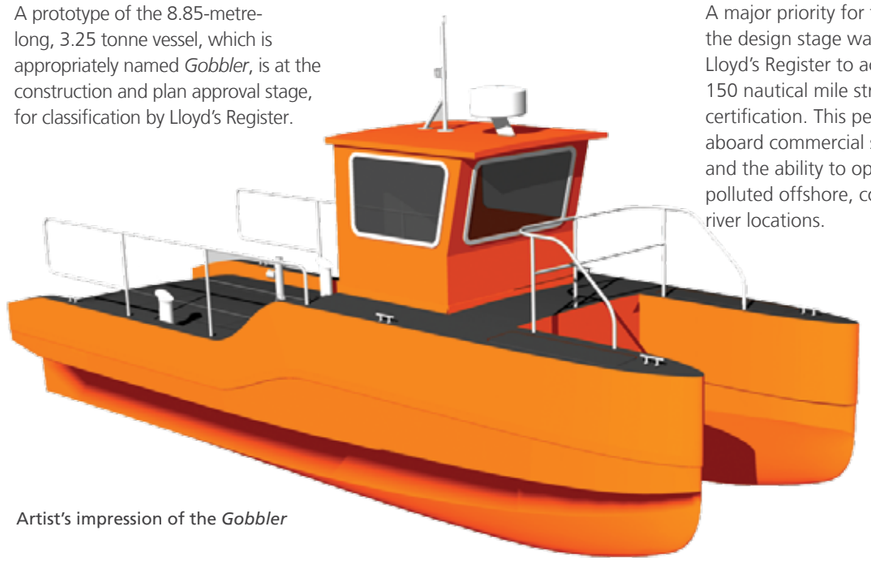


Paul (right) and Simon Jauncey with one of the *Gobbler* moulds at their Portsmouth factory

A revolutionary way to help combat one of the shipping industry's most environmentally damaging and costly scourges – oil spills – has been developed by UK boatbuilders, Gobbler Boats Ltd, the brainchild of father and son team, Paul and Simon Jauncey, and their American partner Jose Suarez.

The Portsmouth-based company has designed an oil-resistant glass-fibre vessel that can remove light and heavy oils from water surfaces in offshore and coastal areas after oil rig failures, vessel groundings, sea spillages and other forms of oil discharge.

A prototype of the 8.85-metre-long, 3.25 tonne vessel, which is appropriately named *Gobbler*, is at the construction and plan approval stage, for classification by Lloyd's Register.



Artist's impression of the *Gobbler*

This month (January), the vessel is due to undergo extensive sea trials in the Solent estuary of the UK's Port of Southampton and the Bay of Biscay offshore zones, followed by working approval by the UK's Maritime and Coastguard Agency (MCA).

The vessel is powered by an Italian 250hp, EIAPP certified marine diesel engine and can travel at up to 23 knots. Each vessel carries a skimmer with a collection rate of up to 40 tonnes per hour of water-free oil (which can be reprocessed and used) and reusable detachable bladders, which are towed astern.

Gobbler pumps the recovered oil via a centrally-mounted bollard into the bladders which are then collected and towed ashore, or alternatively pumped to a nearby mother-ship (see *Gobbler* article in the January 2012 issue of *Horizons*).

During inshore and offshore operations, the two-man vessels can be supplied with fuel and replacement bladders from AIS-equipped quad-pods and octo-pods (carrying four and eight spare bladders respectively). The pods are transported to oil-spill sites by helicopter to enable uninterrupted oil recovery by *Gobbler* vessels until mother-ship support arrives.

A major priority for the company at the design stage was to work with Lloyd's Register to achieve coveted 150 nautical mile structural offshore certification. This permits installation aboard commercial ships and tankers, and the ability to operate in oil-polluted offshore, coastal or inshore river locations.

Importantly, because the *Gobbler* does not carry collected oil on board, the US Coast Guard states that the mandatory surveys for similarly sized vessels do not apply. The waiver both eliminates wasteful downtime and provides a financial bonus for cost-conscious owners and operators.

The vessel's ability to 'disconnect and run' in the event of an emergency or sickness is an important safety feature, particularly as two people died from fumes in the *Deepwater Horizon* spill in the Gulf of Mexico in 2010. To prevent a repeat of such threats to life, every vessel is fitted with reverse cycle air-conditioning and wheelhouse UV air purification, Paul Jauncey told *Horizons*.

The *Gobbler* project gives an intriguing insight into the laws of patent for original ship designs. At the outset, Paul and Simon Jauncey applied for nine patents in the UK, EU member countries and the USA for a range of inventions, enabling *Gobbler* to address multiple scenarios in diverse locations around the world. The majority have now been granted in their respective countries, and recent UK regional government grants will "help progress a flurry of new inventions, with a view to extending the emerging *Gobbler* system, and enable us to move forward for many years to come," said Paul.

Before building the prototype, scale models were extensively tested in the towing tank at the University of Southampton's Wolfson Unit. Hundreds of hours of tests were carried out over a six-month period, the models being checked for handling sea states varying from calm to 2.5 metres.

One option that will allow *Gobbler*s to operate in colder climates is integral skimmer heating, combined with an internal onboard heating system to reduce the viscosity of oil recovered in Polar regions such as the Arctic and Antarctic and aiding the flow through the vessels' hoses.

The prototype is in its final stages with Paul project-managing the building and contract work and Simon overseeing the design and production of many of the *Gobbler*'s components, notably the anti-cloning software.

"Vessels have non-replicative dongles, strategically and invisibly implanted during construction. Access via the secure *Gobbler* database provides a computer read-out of each vessel's owner, registration and serial numbers and build details. The vessels are built to client requirements and global working locations. By using this software vessels are instantly identifiable for servicing and spares through our website," explained Simon.

Once the sea trials have finished, Gobbler Boats plans to build 25 to 50 vessels by the end of 2015. "We have a factory in Portsmouth in the UK, a manufacturing facility in Arizona and options in several other US States. Our eventual target is 500 *Gobbler*s a year per factory, as and when supply catches up with demand," added Paul.

LR's wastewater studies help shipowners save fuel and reduce their carbon footprint

Aided by CFD modelling techniques, Lloyd's Register has approved the exhaust gas cleaning process for 26 ships – with a further 70 vessels awaiting approval

A growing number of operators see exhaust gas cleaning (EGC) as an attractive way to comply with the new fuel sulphur limit of 0.1% in sulphur emission control areas (SECAs), which was introduced on 1 January this year, while continuing to combust residual fuel oil (RFO).

The most popular choice for operators installing these EGC systems on board is wet scrubbing, a simple, robust and effective process that has been used in applications such as electricity generation since the 1930s.

However, despite the established nature of scrubbing, the industry has faced a series of challenges in adopting the technology. There is also the need to verify that washwater discharged to the sea – by means of plume verification – is within IMO's maximum allowable limit for acidity.

The reasons for this can be found in IMO's guidelines. To reduce its acidity, washwater is diluted with seawater. Dilution can be carried out within the ship by employing large dilution pumps to mix washwater and clean seawater. Technically this is simple but it will be no surprise to point out that pumping huge amounts of water from one side of the ship to the other consumes a lot of electricity. Or, to put it another way, the higher-than-normal fuel consumption leads to higher carbon emissions.

IMO allows external dilution provided that the acidity is reduced to an acceptable level (a pH of 6.5) at a point 4m from the ship's side. However, measuring pH 4m from the ship's side with the ship at its service speed might best be described as challenging.

The LR solution

To provide a practical solution for the industry, LR has been actively promoting the use of calculation-based methods and is leading the industry in applying calculation and modelling to establish the pH of washwater discharges, making external dilution practical for ships at all EGC loads.

Working with EGC system manufacturers such as Alfa Laval and our own computational fluid dynamics (CFD) specialists we have approved the pH calculations for 26 ships, and at the time of writing a further 70 approvals are pending.

In doing this we have the necessary support and agreement of the flag administrations. The use of CFD modelling avoids attempting risky and challenging physical measurements while the ship is in transit and allows the use of external dilution to reduce energy demand.

Some environmental groups have criticised the concept of external dilution and called for the pH of washwater to be neutralised before being discharged to sea. Superficially this appears to be environmentally attractive until one considers the higher carbon emissions associated with pumping huge quantities of water around the ship to achieve this neutralising effect.

Several studies have found that water discharges meeting the requirements of the guidelines does not cause harmful acidification of seawater. Indeed it is generally recognised that the most significant cause of ocean acidification is actually carbon emissions, the very same carbon emissions that would be increased if external dilution was to be prohibited.

The calculated methodologies LR is using ensure that the pH emission limit is not relaxed, discharges comply with the intent of the guidelines and pollution shift is prevented. Ship operators are able to use less energy, save fuel and reduce their carbon footprint.

Society benefits through the reduction in air pollution and use of a waste product as a productive transport fuel. This in turn reduces the risk of shipping's switch to costly low-sulphur distillate leading to an increase in the price of goods.

To put it another way, it is a genuine win-win situation for both the shipping industry and society.

"Ship operators benefit from saving fuel as a result of using less energy and, at the same time, reducing their carbon footprint"

An Alfa Laval Pure SOx scrubber tower being installed on a DFDS ro-ro vessel. The exhaust gas passes through the tower while a fine water mist is created by pumping several hundred tonnes of water an hour through specially designed nozzles. This process washes the SOx out of the exhaust gas.

The Holland Jachtbouw-built Rainbow, classed by Lloyd's Register and one of the world's first hybrid sailing yachts

The Yacht Report

The main event

The Monaco Yacht Show is the global yachting industry's biggest event, which is held every year in one of the world's smallest countries. For Lloyd's Register, the 2014 event was an ideal forum for us to highlight our latest work on noise and vibration reduction in yachts and superyachts

A video about noise and vibration – which causes discomfort for both crews and passengers – and how to minimise it was featured on LR's stand at the Monaco Yacht Show – http://youtu.be/0we-64I_qwU with Rasmus Lyngdal-Christensen, LR's Noise, Acoustics and Vibration Specialist, explaining our expertise in this area.

In the glamorous setting of the city of Monte Carlo and a fleet of more than 100 yachts and superyachts, LR played host to clients from around the world, holding seminars and meetings for our clients. We achieved more than 120 opportunities including potential new construction projects, type approval certification, training projects and consultancy.

Engeljan de Boer, LR's Yacht Segment Manager, said: "The market for large yachts is buoyant. It is a special niche market with its own peculiarities, not only because of its clientele but also because of the technical challenges it proposes. With the efforts of the members of LR's Yacht Focus Group together with our technical expertise, Lloyd's Register has become the premier classification society in the industry and this was evident in the number of opportunities and the positive client feedback we received at the show."

Each year we produce a *Yacht Focus* magazine specially for the event. You can read it online at bit.ly/YachtFocus2014.

One of our key areas of expertise is to show yachtowners and captains how to keep their vessels in class, as yachts must conform to the standards required by LR's rules and undergo periodical surveys to be classed as well as to remain in class.

To keep pace with changes in technology, market trends and new legislation, LR is dedicated to an ongoing programme of research and development to enhance existing technical standards and publish new rules. The latest revision of these rules and regulations contains a number of amendments which can be seen here: www.lr.org/SSCInfo. While the new rules can be downloaded from www.lr.org/SSCRules.

The Lloyd's Register team at the Monaco Yacht Show

LR's other key yacht-focused events

Among the many other yachting industry events LR was involved with in 2014 were a **Seminar for Yacht Captains** chaired by Engeljan de Boer and Scott Kennedy, LR's Marine Surveyor in Charge for France. It included issues linked to risk management, survey matters and an interactive workshop.

Did you know?

LR classes 75 of the world's top 100 largest yachts, according to figures from Superyacht UK.

There were also some significant wins and awards for LR. These included:

The LR-classed conversion of a UK government-owned fisheries protection vessel into an expedition yacht won the Best Conversion category in the **2014 World Superyacht Awards** in Amsterdam. While the LR-classed *Equanimity* from the Dutch yacht-builder Oceanco which was launched in the summer was the world's first **Passenger Yacht Code** (PYC) compliant superyacht. Deboer said the delivery marked a "new era of technology and luxury….for a yacht built in compliance with the new PYC and LR rules."

On a historical note, *Sumurun*, a yacht built in 1914 and classed throughout its navigable life by LR, celebrated her 100th birthday at a special celebration in New York. *Sumurun*'s owner Armin Fischer was presented with a special Certificate of Appreciation by LR's Marine Director, Tom Boardley.

Why more yachtowners are choosing the green approach

Meanwhile Lloyd's Register's Yacht Focus Group is studying the safest and most compliant ways yachtowners and operators can use to reduce their carbon footprints. A set of new SSC (Special Service Craft) Composite Rules devised by LR have created new openings for designers and builders to construct LR-compliant ships that are lighter, faster and more fuel-efficient than ever before.

One of the technologies the group is considering is hybrid propulsion using lithium-ion (li-ion) batteries as an alternative for yachts, enabling them to manoeuvre quietly and at anchor.

Other benefits of hybrid technology include a dramatic shrinking of vessels' environmental footprints, a substantial reduction in the fuel required to generate the hotel load, and a similar drop in the maintenance costs for the power plant in hotel load.

Part of Barcelona's famous MB 92 marina

LHDs strengthen Australian Navy's global presence

A three-phase project to build two amphibious assault ships (LHDs or Landing Helicopter Docks) – both classed and approved under LR's Naval Ship Rules – was carried out in two different hemispheres

The recently delivered *HMAS Canberra*

"The supply chains for these two ships, being constructed in two hemispheres, are extensive and complex. Since the ships are being classed to LR's Rules, we have been a key part of the assurance activity in these supply chains"

The recent delivery of *HMAS Canberra*, the first of two amphibious assault ships (LHDs), will make the Australian Defence Force one of the most capable and sophisticated air-land-sea amphibious deployment forces in the world.

The two 48,000-tonne Canberra Class LHDs will be capable of landing a force of more than 2,000 personnel by helicopter and watercraft.

The prime contract for this project was won by Tenix, an Australian company which has since been taken over by BAE Systems (Australia), and they in turn sub-contracted the build and outfitting of the two hulls to Navantia in Ferrol, Spain based on Navantia's successful Juan Carlos design. The superstructures, combat and communications systems were assembled and installed by BAE Systems in Williamstown, Australia.

Steel cutting for *HMAS Canberra* started in September 2008 and she was launched in February 2010. For the next phase of her construction, she was transported from Ferrol to Williamstown where she was delivered to her owners, the Commonwealth of Australia (CoA), in September 2014. Building work on her sister ship, *HMAS Adelaide*, began at Ferrol in early 2010 and she is due for delivery to the CoA in mid-2015.

Lloyd's Register has been closely involved with this project from the early concept phase some 10 years ago and continues to work with the shipbuilders and the CoA in supporting the delivery of ships that meet the CoA's requirements for safety assurance. As part of our early services to the CoA, LR was involved in conducting a review of the function and performance specifications supplied by contract bidders in respect of Classification aspects. This review was to assist the CoA with their project risk management.

The selection by the CoA to have these ships designed and built to LR's Naval Rules was an integral part of their strategy to identify, manage and mitigate project risks and to ensure that the delivered platforms met the CoA's requirements to demonstrate an effective safety management system.

In addition to the use of LR's Naval Ship Rules, a 'Tailoring Document' was developed between the designer Navantia and LR to clearly identify the standards and requirements of the CoA to be used for the design, construction and assessment criteria to be applied to these ships.

The supply chains for these two ships, being constructed in two different hemispheres, are extensive from a geographical perspective and complex. Since the ships are being Classed to LR's Rules, we have been a key part of the assurance activity in these supply chains. This is to ensure that there has been a consistent application of standards to the many items contributing to the ships that fall under the scope of Classification.

Robert Tully, LR's Project Manager, said: "This has provided value to the end client (the CoA), the shipbuilders and Navantia's technical office in obtaining assurance on the ship and the equipment being supplied to it being within the scope of LR's Naval Ship Rules as tailored to meet the associated Commonwealth's requirements.

"LR has applied these Rules consistently over the past seven years to a very complex project using sound processes being executed by a team of very competent LR Surveyors in the LR Project Design Support offices and the LR shipyard site offices in both Ferrol and Williamstown.

These Surveyors have been supported by LR's global workforce of Surveyors and Inspectors who have carried on supporting the project to out-surveys and inspections in manufacturers' premises in different locations throughout the globe."

Because of the nature of this project, LR decided early that our Project Manager should be assigned to the full project and, as such, Robert Tully has moved from Australia to Spain and now back to Australia again as the ships reach the final phases of their construction.

As the first of class heads off to Sydney for the final preparations for entering service with the Royal Australian Navy, Tully and the team can concentrate their efforts on working with Navantia and BAE in bringing her sister ship, *HMAS Adelaide*, to her in-service date.

LR's LHD project teams:

LR's surveyors in Melbourne, Australia, with *HMAS Canberra* in the background

LR's surveyors with *HMAS Canberra* in Ferrol, Spain

Lloyd's Register's presence in the naval sector continues to grow around the world. You can read about our other naval projects and initiatives in our latest Naval Focus: **www.lr.org/Naval Focus**

Australian LHD: facts and figures

The LHD *HMAS Canberra* will carry and deploy an embarked force (Army in the case of the Australian Defence Force but could equally be an allied Army or group of Marines) with their equipment and aviation units, and carry out and/or support humanitarian missions.

It is built with a conventional steel monohull design with the superstructure located on the starboard side of the flight deck. There are four main decks: the well dock and heavy vehicle deck for heavy vehicles and/or cargo; main accommodation deck, including the primary casualty reception facility (PCRF); hangar and light vehicle deck for lightweight vehicles and cargo; and the flight deck.

The LHD has been designed with the shallowest possible draft to allow it to operate in secondary ports and harbours as well as manoeuvre tactically in the shallow waters commonly found in the littoral regions. Maximum speed is in excess of 20 knots with a range of 6,000 nautical miles (nm), a sustained maximum speed of 19 knots under full-load conditions and an economic cruising speed of 15 knots with a range of 9,000 nm. It can also reverse with full directional control at up to 8 knots.

The vessel has a stern ramp/door that provides access to the well dock for landing craft and vehicles along with a fixed ramp (steel beach) between the well dock and the heavy vehicle/cargo deck (1,410 m²). Additionally two lateral ramp doors are located on the starboard side and provide wharf access to the heavy vehicle/cargo deck for vehicles weighing up to 65 tonnes. Vehicular access between the heavy and light vehicle decks is achieved via a fixed ramp located on the port side.

The well dock is 69.3 metres long and 16.8 metres wide (1,165 m²) and the LHD will normally carry four LCM 1Es. The main accommodation deck is located above the well dock and heavy vehicle/cargo deck and includes crew accommodation, mess decks, medical spaces, galley facilities, office spaces and recreation rooms. Accommodation is provided for 1,400 personnel - approximately 400 crew members including the watercraft and flight deck crews and 1,000 embarked force personnel including the PCRF, embarked flight, HQ staff and landing force. The LHD will be jointly crewed with personnel from the Navy, Army and Air Force forming the ship's company.

The LHD's flight deck is 202.3 metres long and 32 metres wide (4,750m²), allowing the ship to operate a range of ADF rotary wing aircraft including:

- MRH-90 helicopter
- CH-47 Chinook helicopter
- UH-60 Blackhawk helicopter
- S-70B-2 Seahawk
- Armed reconnaissance helicopter
- MH-60R Romeo Seahawk

Specifications:

- Overall length – 230.82 metres
- Moulded beam – 32 metres
- Beam waterline – 29.5 metres
- Flight deck height – 27.5 metres
- Draft at full load displacement – 7.08 metres
- Full load displacement – 27,500 tonnes

The LHD utilises an electric drive system similar to that used by major cruise companies such as Cunard. The propulsion/ generating plant includes the following main elements:

- One gas turbine (LM 2500) turbo generator of 19,160 kW
- Two MAN 16V32/40 diesel generators of 7,448 kW each
- Two Siemens azimuth POD units of 11.0 MW each fitted with two propellers of approximately 4.5 metres in diameter
- Two bow thrusters of 1,500 kW each
- One Progener-Mitsubishi S16R PTA emergency diesel generator of 1,350 kW

LR certifies three-mast flagship for Royal Navy of Oman

Key parts of the royal flagship were built according to Lloyd's Register's recently introduced Certification of Masts, Spars and Standing Rigging

The Shabab Oman II in full sail

Recently delivered by Damen Schelde Naval Shipbuilding, *Shabab Oman II,* the Royal Navy of Oman's new 87-metre-long flagship is a steel-hulled three-mast, full square rigger.

The vessel was built to design principles set for the iconic tea clippers of the 19th century, benefiting from 21st-century technology and comfort and featuring a fully unfurled sail area of 2,700 m².

The certification, which was completed following successful sea trials under sail, included the design appraisal and survey of the masts, the assembly of the standing and running rigging and certification of all associated components in accordance with LR's recently introduced Certification of Masts, Spars and Standing Rigging.

"The *Shabab Oman II* will travel around the world as an ambassador for Oman. Protecting the safety of the people on board and of the vessel itself and thus assuring that the Royal Navy of Oman can do this in the safest possible way is of the utmost importance to Lloyd's Register," commented LR's Project Manager Wilko Groeneveld.

Image courtesy of Damen

"The vessel was built to design principles set for the iconic tea clippers of the 19th century"

Offshore innovation

LR is meeting the concept, design, construction and in-service challenges to support innovation in the OSV sector.

We have strengthened our services in this area to give even better design, construction and in-service support to the offshore market.
As a world leading classification society with Global Technology Centres in Southampton and Singapore we are at the forefront of ship and machinery design. And with qualified people in almost every country, we are never too far away.

New Subsea Mineral Sampling Vessel designed by
Marin Teknikk and being built to LR class at Kleven Verft.

Discover more at www.lr.org/osv

Lloyd's Register
Marine

Working together
for a safer world