



Lloyd's
Register

Group Review 2014





Global technology centres

The cover and photograph on this page show our new building on the University of Southampton campus, housing the Southampton Global Technology Centre (GTC), the cornerstone of our marine research and technology network. The GTC draws together the engineering excellence of LR, the university and other industrial collaborations to deliver innovation.

We aim to create centres of excellence for technology, innovation and research that will benefit our clients, the local economies, industry and society at large. By investing in our GTCs in Southampton and Singapore, we will globalise research and development, and take a truly international approach to tackling tomorrow's challenges.

Contents

02 Lloyd's Register at a glance	22 Energy
04 Chairman's review	28 Management Systems (LRQA)
06 Highlights 2013/14	32 Chief Financial Officer's report
08 Chief Executive's review	34 Public benefit
10 Technical excellence and innovation	36 Our employees
12 Marine	38 Governance
18 Transportation	40 Glossary

 [Read more](#)

 [Find out more online](#)

 [Case study](#)

 Find out more at
www.lr.org

**Technical excellence:
the key to our business.**

**Our expertise and deep insight
into the interface between assets,
systems, people and processes
mean we can offer services that
clients value and trust.**

**The difference we make on projects,
large and small, has been vital in
creating a safer world for today
and for the future.**

Making a difference



**Technical excellence
and innovation**

[Read more on page 10](#)



Chairman's review

[Read more on page 04](#)



Chief Executive's review

[Read more on page 08](#)



Public benefit

[Read more on page 34](#)

Lloyd's Register at a glance

Who we are

Lloyd's Register (LR) is a global engineering, technical and business services organisation wholly owned by the Lloyd's Register Foundation, a UK charity dedicated to research and education in science and engineering. Founded in 1760 as a marine classification society, we now operate across many industry sectors, with some 9,000 employees in the organisation worldwide.

LR has a long-standing reputation for integrity, impartiality and technical excellence. For many of our clients, we are their trusted independent adviser. Our compliance, risk and technical consultancy services give clients confidence that their assets and businesses are safe, sustainable and dependable. Through our global technology centres and research network, we are at the forefront of understanding the application of new science and technology to future-proof our clients' businesses.

What we do

LR provides professional services – independent assurance and expert advice – to companies operating high-risk, capital-intensive assets in the energy and transportation sectors. And through our business assurance services we help companies manage their systems and risks across a wide range of sectors.

We help our clients to ensure the quality construction and operation of critical infrastructure – ships, oil rigs, industrial plant, railways. We do this by checking assets against internationally agreed rules and standards, some of which we have helped to develop. We go beyond basic compliance as our risk management services help to ensure that our clients' integrity strategies are focused on operational and safety-critical areas.

Why we do it

The mission of the organisation is:

- to protect life and property through securing high technical standards of design, manufacture, construction, maintenance, operation and performance, and
- to advance public education.

LR's work is directly instrumental in fulfilling the first part of this mission and our profits help to promote education, training and engineering-related research, through our funding of the Lloyd's Register Foundation.


We are driven by this mission: working together for a safer world by advancing rules and standards, protecting the environment and advancing technology through people and research. Doing all this well means we can continue to fulfil our mission in a sustainable way.

 [Read more about our public benefit activity on page 34](#)

How we do it

Our strategy is simple: to add value to society and achieve sustainable growth through independent assurance and expert advice for clients operating the critical infrastructure upon which society relies.

Clear strategic objectives guide us to achieve our goals under four key themes. The success of the strategy results in the sustainability of the organisation and the fulfilment of our mission to make the world a safer place.

 [Read more about our work to lead technology change on page 10](#)

Drive external focus

to make sure we consistently deliver the best possible value to our clients.



Step change in efficiency and effectiveness

an emphasis on service quality.



Right people, right place, right time

a focus on having good people and strong leaders who all put safety first and enable us to deliver an excellent service.



Lead technology change

developing and delivering on pioneering thinking through collaborative research to keep us at the forefront of the industry.

Our businesses



Marine

As a marine classification society, we set safety and environmental standards for the design, construction and operation of ships. But we are not just about surveying ships; we are dedicated to supporting the development of new technologies and innovations that will play a vital role in the immediate and long-term future of shipping.

[Read more on page 12](#)



Transportation

Our Transportation business is centred on providing assurance and expert advice for the rail sectors in three core areas: Asia; Europe; and the Middle East. Our clients range from some of the world's largest rail administrations to niche component suppliers.

[Read more on page 18](#)



Energy

We are an independent provider of risk management services to the energy sector. Our technical experts and risk engineers evaluate the integrity of plant and processes, and focus on delivering practical advice. We give stakeholders confidence that they are effectively addressing today's economic, legislative and corporate responsibilities.

[Read more on page 22](#)



Management systems

LR Management Systems (LRQA) is a leading independent provider of assurance services including assessment, certification, validation, verification and training, across a broad spectrum of standards, schemes and customised assurance programmes. We deliver our services to thousands of clients operating in all of the major sectors worldwide.

[Read more on page 28](#)



Chairman's review

Our new organisational structure allows us to meet the current challenges in the best possible way

There is no doubt that the general economic climate has remained challenging over the last 12 months. I am therefore pleased to report that, overall, Lloyd's Register Group Limited (LR) has achieved a very positive performance over the 2013/14 financial year, exceeding £1 billion in turnover for the first time.

LR made its largest ever investment in energy services company Senergy in September 2013 to expand our range of technical assurance and consulting services to the oil and gas sector. Now known as LR Senergy, its engineers bring well, sub-surface, and reservoir engineering skills to LR's existing Energy business.

Turnover for the year was 11.8% higher at £1.03 billion, which includes the Senergy group from September 2013. Turnover excluding acquisitions, but on a constant currency basis, grew by 3.9%. Operating profit before exceptional items increased by 4.1% to £73.7 million compared with last year (2013: £70.8 million).

As LR supports the fulfilment of the Lloyd's Register Foundation's public benefit activities – by continued funding and directly through our services to make the world a safer place – our performance is particularly significant. In the year 2013/14, our donations to the Lloyd's Register Foundation had a value of £4.0 million.

In everything we do, the focal point is always safety and quality. I am very proud that our Marine business achieved the lowest percentage of vessel detentions by European port state control in 2013, achieving the top ranking in the quality list of the Paris MoU (Memorandum of Understanding). This success reflects the breadth of our drive to continually help improve safety and operational performance in shipping.

"Our independence from shareholder dividends means that we have the time to make the right decisions for our business and for the benefit of the community."

Thomas Thune Andersen

Chairman, Lloyd's Register Foundation and
Chairman, Lloyd's Register Group Limited



I am also pleased to report we have continued to reduce our total recordable injury incident rate, down to 0.39 per 200,000 worked hours, a 23.5% reduction on last year's figure. In the last three years, the number of lost time events has been reduced by 95%. Now our personal safety record has improved greatly, we will be turning our focus to the health of our employees and to the area of process safety, looking at the wider safety issues of the sites that we visit.

Board matters

We are fortunate to have a full complement of highly experienced and committed people as Board directors, who direct and govern the company. To ensure that the Lloyd's Register Foundation understands and can help direct the trading entity, two of its trustees serve as directors on the Board of Lloyd's Register Group Limited.

It is pleasing to see how the boards of the Foundation and LR are enthusiastically engaged in our activities. As Chairman, I offer sincere thanks and appreciation to my fellow directors for everything we have already achieved and continue to achieve.

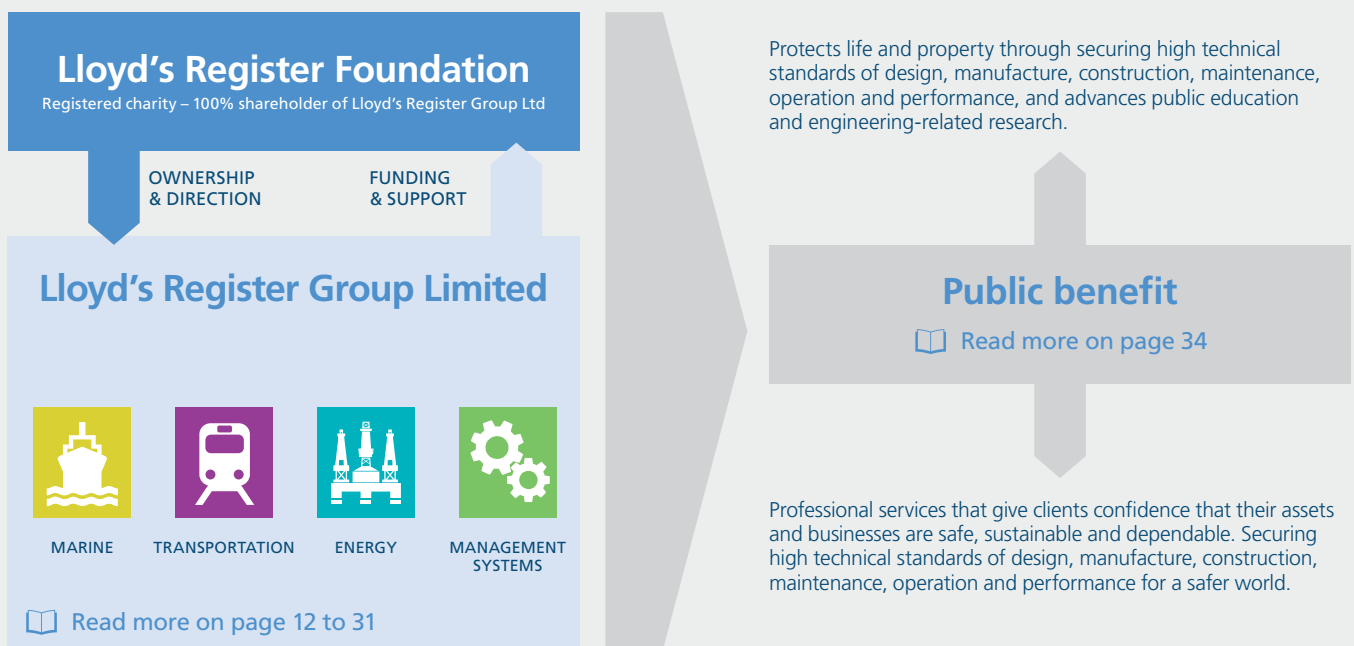
I would like to formally welcome Michael Lykiardopulo who joined the Board of LR in January 2014. Michael was part of the Lloyd's Register board which helped formulate the plans for the 2012 restructure and he served as a trustee to help oversee the initial development of the Foundation. His experience and profound knowledge of the organisation will help us achieve our objectives going forward.

The directors would like to extend their thanks to their two executive Board members, Richard Sadler, LR's Chief Executive Officer, and Alastair Marsh, LR's Chief Financial Officer, for their firm leadership of the trading company during continued challenging economic times, and to the LR management and all of its employees worldwide, who work together for a safer world.

The world around us is constantly changing which means that, to achieve our ambitious plans for growth and add more value to society, we must continue to listen to our clients and respond to their needs. With our public benefit mandate, we make a difference to people's lives and I am confidently looking forward to our further developments in 2014/15 and beyond.

Our structure

The Lloyd's Register Foundation, a charity, is the parent of the organisation. Our operating company, Lloyd's Register Group Limited (LR), is a professional services business which generates the profits that fund our public benefit activities.



Our year 2013/14

As usual, the year has involved an impressive range of activities worldwide.

From announcing a contract supporting the development of LNG (liquefied natural gas) bunkering in Singapore to a new Energy graduate training programme in the Middle East, 2013/14 has been a year of continued progress as we work together with our clients and across our organisation for a safer world.

The news items on the following page give a flavour of our year and you will find key highlights under each business section on pages 12 to 31.



Ice-class LNG carriers for Dynagas

July 2013: Dynagas took delivery of two ice-class LNG carriers at Hyundai Heavy Industry (HHI) Ulsan shipyard, Korea. Classed by LR, the ships have advanced design, containment and operational features and the ability to cope with the harsh environment of the Arctic and cold places. "It is a great honour to have been chosen to class the lead ships in this project... We have worked closely with HHI in supporting and helping enable the technological development required in these ships," Jose Navarro, LR's Gas Technology Principal Specialist, said.

Talisman Sinopec Energy UK contract

November 2013: We announced a £25 million contract with Talisman Sinopec Energy UK to deliver a suite of integrity management services. The five-year deal will support the operator's commitment to meet the global demand for energy in an efficient, safe and environmentally responsible manner. It was a significant win for LR, as Talisman Sinopec Energy UK is one of the North Sea's largest operators and has installations on some of Scotland's longest-established oil fields.

Consolidated income of LR up on 2013 figure despite the current subdued global economy.



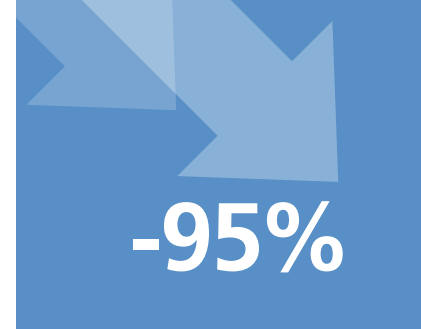
CDP alliance

April 2014: LRQA renewed its verification partnership with CDP, an international, not-for-profit organisation providing the only global system for companies and cities to measure, manage and disclose vital environmental information. CDP works with 767 institutional investors holding US\$92 trillion in assets. The alliance will see LRQA represented on CDP's verification working group, which will work to further develop CDP's approach to the verification of climate change data and support disclosing companies.

EU rolling stock project

June 2014: We joined a pan-European project to support an increased use of composite materials in the manufacture of rolling stock. REFRESCO (REGulatory FRamework for the use of Structural new materials in railway passenger and freight CarbodysHells) brings together manufacturers, operators, infrastructure managers, composite suppliers and independent advisers, such as LR, to examine the existing regulatory framework and debate whether, and where, changes would help introduce these new materials.

We reduced our total recordable injury incident rate to 0.39 per 200,000 worked hours. In the last three years, the number of lost time events has been reduced by 95%.



2013

July: LRQA launches its range of assessment and training services to the maritime security standard, ISO/PAS 28007.

September: We made our largest ever investment when we invested in energy services company Senergy, a business with a £121 million turnover.

October: Opening of the Global Technology Centre (GTC) research lab and LR Energy – Drilling Training Academy in Singapore.

November: The Society of Naval Architecture of Korea presented the coveted Uam Prize to LR. This was its first award to a foreign company rather than an individual and underlines Korea's appreciation of the pivotal role we have played in developing its shipbuilding industry.

November: We win a US\$10.6 million contract to support South Korea's nuclear power commitment to best practice safety and risk management.

December: LR and Nantong COSCO KHI announce a project to develop an LNG-fuelled multi-purpose vessel (MPV), designed to meet current and future environmental and efficiency targets.

December: We helped to set up OPTION, a €3.9 million research project to address the key challenge of enhancing oil recovery from reservoirs.

December: We launched our refreshed brand identity and new logo.

2014

January: We signed the contract for the first ever new construction project to be built to LR class in Bangladesh, a passenger vessel to be built at the Chittagong-based Western Marine Shipyard for the New Zealand Ministry of Foreign Affairs and Trade.

February: To help resolve some of the questions raised around offshore container certification we published a new guide, Offshore Container Certification: When, Where and Why.

February: LRQA verified baseline water consumption at the National Stock Exchange of India Limited.

March: We published Global Marine Fuel Trends 2030, new research from LR and University College London's Energy Institute, exploring the drivers for the future energy mix in shipping in 2030.

March: LR won the UK's Rolling Stock Excellence award for the design of a biomass freight wagon for Drax Power Station.

April: We published our LNG Bunkering Infrastructural Survey 2014, indicating that major ports around the world are either planning for, or anticipating, the wide-scale development of LNG bunkering.

May: We were named as the preferred provider for third-party inspection and certification services by Control Flow Inc., one of the most widely respected names in the petroleum industry for manufacturing oilfield equipment.

May: LRQA was awarded global accreditation to deliver ISO 50001 certification services, a standard to increase energy efficiency and performance.

June: Paris MoU announced that we topped the European port state control rankings in 2013.



To find out more visit www.lr.org/gr2014

Chief Executive's review

The year 2013/14 has seen us take huge strides in our strategy for growth

We aim to secure our future in an increasingly competitive and consolidating marketplace by growing our existing business and acquiring new companies in line with our strategic plan. A measure of our ambition is illustrated by our investment in energy services company Senergy, as highlighted in the Chairman's review.

The year has seen LR attain some notable achievements, some of them included here in my review of performance by business.

Our financial performance is a major achievement, given the continued difficult market conditions as the world economy struggled to gain momentum. Our Marine business had a very strong financial performance, with a change in the mix of activity towards materials, equipment and components work, but also benefiting from the cost savings resulting from a restructuring. The other business divisions have performed in line with our expectations, despite a combination of external price pressures and investment for future growth.

In December 2013, we refreshed our brand identity to reflect the changes to the market, our clients and other stakeholders, with a logo that works in the digital age. We took inspiration for our new logo from the LR stamp – the true 'brand' that our surveyors have stamped into steel as proof of approval since 1884. This is not a name change – we will continue to be called Lloyd's Register, recognising the value that the Lloyd's name has around the world as a mark of quality. Our new identity reflects our heritage and our continued commitment to independence, technical excellence and public benefit, and it has been well received.

We are pleased to announce that John Wishart, Energy Director, has been appointed as the new Chairman of the Industry Technology Facilitator (ITF), the leading technical organisation for the energy industry. The ITF is a not-for-profit organisation, driving technology development and collaboration within the oil and gas industry, and this is a great accolade for LR and for John.

We have continued to illustrate our commitment to technical excellence through the development of our two global technology centres (GTCs) and research network. The Southampton GTC has just moved into its new home on the University of Southampton campus. Our GTCs will drive innovation and commercial and environmental performance, all underpinned by our commitment to safety, for the benefit of LR and our stakeholders.

Marine

Overall, 2013 was a year of achievement in many areas for Marine. The business generated income of £348.8 million (2013: £353.7 million), an improvement on the previous year, up by 2.1% on a constant exchange rate basis (to £361.1 million). Currency exchange rates had a significant adverse impact which belies a strong result for this business. Excluding the impact of foreign exchange, our performance has been even stronger in margin terms reflecting a combination of the type of business won – more global new construction orders than any competitor, including 50% of the LPG market – as well as productivity gains following from efficiencies captured across the Marine business.

The most significant news related to our core purpose: marine safety. Lloyd's Register is now the 'best performing' recognised organisation in the Paris MoU table of port state control performance, as mentioned in the Chairman's review. This aligns with our mission to promote safety and to improve the operational performance of the fleets we serve.

Among other achievements, we ended the year with a positive transfer of class balance for the first time in six years and we developed our naval ship Rules to make them more relevant to both complex and more simple warships.

LR sparked industry-wide debate with the publication of Global Marine Fuel Trends 2030 and the 2014 LNG Bunkering Study. And we have shown the benefit of a decade-long programme of research on containership structural safety in supporting the construction of ever larger ships.

Energy

Excluding the impact of Senergy, our Energy business generated income of £366.4 million (2013: £348.3 million), a 5.2% increase on the previous year (9.9% on a constant exchange rate basis). Including the post-acquisition results of Senergy, total Energy turnover was £463.7 million.

2013/14 has been a year of change for the energy industry and our Energy business. The business saw strong growth in orders primarily in oil and gas, with increasing demand for asset integrity services to extend the life of operating assets safely beyond their designed-for life. The power generation markets showed signs of improving.

During the year, we have been working on some of the world's largest and most complex engineering projects – testament to the depth of our expertise and service quality. Highlights included the prestigious Special Meritorious Engineering Award from E&P magazine for outstanding new technology in the drilling category, to our blowout preventer (BOP) risk model, and the launch of new offshore Rules for floating LNG facilities and mobile offshore units.

We decided at the beginning of the year to drive forward ambitious change in the way we operate to embrace new opportunities and provide quality solutions. To that end, we have invested significantly in innovation, infrastructure and in the global workforce upon whose ability and ambition our current and future success entirely depends.

Transportation

Our Transportation business generated income of £46.1 million (2013: £41.7 million), 10.5% up on the previous year (11.5% on a constant exchange rate basis).

This reflects a number of new contracts achieved, which helped strengthen our position as the preferred safety adviser in our markets of Asia, Europe and the Middle East. Our clients recognise our expertise in the most critical and complex technologies in the industry.

The diverse nature of our skills, the extent of our technical knowledge, and deep understanding of our local markets give us a strong, competitive edge and leave the business well positioned for the future.

Management Systems

Our Management Systems business (LRQA) generated income of £169.8 million (2013: £176.2 million), a 3.6% decrease on prior year (0.5% increase on a constant exchange rate basis).

The provision of assurance services to our 55,000 clients has undoubtedly been influenced by the challenging global economy across the whole market. However, a key activity has been communicating the forthcoming changes to ISO 9001 (quality management) and ISO 14001 (environmental management) to existing and potential clients, and helping organisations understand the potential implications of the new standards.

LRQA's technical expertise is well recognised but, aware of the changing, and increasingly competitive, market we have undertaken a restructure of the business to ensure sustainable growth over the coming years. A clearly defined and strategic transformation programme means we will be able to maximise our exceptional potential to deliver long-term business benefits for our clients and LR. We believe that these changes will result in a more positive outlook for the coming year.

Future outlook

Looking forward, it will be essential that we continue to grow our business further by putting our clients at the heart of everything we do so that we can work with them to identify and resolve their business issues – thereby adding value. LR is unique in terms of the range of skills and expertise that we can offer our clients, and we strongly believe that by leveraging this, we will continue to grow and to maximise our contribution to the Lloyd's Register Foundation.

The success of our results in 2013/14 means that we are in a strong position to be able to cope with anything that happens in 2014/15 and beyond. As always, we could not have achieved our successes without

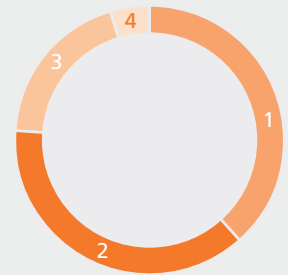
our people. I would like to thank the Board, management team and employees for their hard work and enthusiasm over the last year. With their continued drive and determination, we can continue to deliver for our clients, our communities and the Lloyd's Register Foundation.

Richard Sadler
Chief Executive Officer

"I am proud to say that LR, at 254 years old, is still at the leading edge of technology."

Revenue by business 2013/14

1 Energy	45%
2 Marine	34%
3 Management Systems	16%
4 Transportation	5%



Technical excellence and innovation

Research has an important role to play in maintaining the expertise of our people around the world

Our technical excellence is the key to our business. Our employees understand the industries they work in and the latest technologies – and they can apply this knowledge to offer real value to our clients. You can read more about the difference we make on projects, creating a safer world, in the business sections on pages 12 to 31.

We aim to keep at the forefront of technology and progressively understand the fundamental science and analysis behind new technologies. Our GTCs, in Southampton and Singapore, and our research and development network, are strengthening our work as an independent third party. We are finding new and better ways to improve safety, performance and quality in the industries we serve.

Working with our stakeholders and some of the world's leading academic institutions, we are helping our clients to respond to the challenges and opportunities they face – and provide society and industry with the advanced technologies, systems and solutions required for this increasingly complex world.

Marine technology

As we utilise our oceans more and more, we need to ensure that we do so in an organised, safe and secure way, with minimum impact on the environment. LR aims to ensure that the future of shipping is sustainable, which means that research is crucial to finding solutions to the many challenges we face.



Safer ship evacuation

Several recent passenger ship accidents have shown that, during evacuation and abandonment, difficulties in locating people contribute to the number of fatalities. With passenger ships getting ever larger, the LYNCEUS project (people localisation for safe ship evacuation during emergency) was set up with EU funding.

The three-year project is focused on the development of real-time emergency management and safe evacuation systems that will significantly contribute towards early localisation and rescue of people in danger, on board a ship or in the sea. LR's contribution has included a review of passenger and crew casualty characteristics, and outcomes in evacuation and abandonment incidents. We have developed a comprehensive set of human factors design requirements for the system based on our extensive experience with cruise ship evacuation and emergency response. The project won the prestigious Innovation Award at the Lloyd's List Global Awards 2014.



Assessing the latest sail power technology

Windship Technology Ltd, a consortium of five key players in the shipping industry, is developing a sail power concept. LR was asked to independently assess the concept, known as the auxiliary sail propulsion system (ASPS).

Our computational fluid dynamics (CFD) analysis of the masts on a supramax bulk carrier showed that ASPS has the potential to provide more than 50% of the required propulsive thrust a vessel needs, depending on conditions. In the right conditions, this could save a typical bulk carrier 30% of its fuel costs on a voyage. We are now working with Windship Technology to provide support from design concept to full-scale application.



Getting ready for gas fuelling

LNG as fuel has been adopted in projects that make commercial sense, such as Northern Europe ferry routes. Most deep sea players who are interested in the potential of gas-fuelled operations are not yet ready to commit to LNG fuel but want to have the option to adopt gas as a fuel in the future, built into newbuilding projects (gas readiness).

To provide clarity over options for gas readiness, LR has established clear standards describing different levels of readiness to use gas as a marine fuel. This means that shipyards can be clear about what they are offering and buyers know what they are getting – and at what price. The notation will form part of LR's Rules for gas-fuelled ships, and so reflects all safety and operational requirements to meet global standards for gas operations.

Rail technology



Automation in signalling systems

Recent LR research found that there are undoubted benefits in the use of automation in railway control centres. But there is a debate about avoiding inappropriate automation, or an over-reliance on automated systems, that could actually disrupt the smooth operation of services and, in the worst cases, lead to unsafe conditions. Our research team suggests that automation should only be extended where the technological capability, understanding of the system and ability to address related human factors are properly aligned.

Rolling stock classification research

New research by LR, supported by the University of Huddersfield's Institute of Rail Research, will help close a knowledge gap within the UK rail industry for classifying vehicles along sections of track where differential speeds are in force. The research project was funded by the RSSB (Rail Safety and Standards Board) to determine an accepted methodology for classifying vehicles based on their contribution to track deterioration. The next step in the process will be to implement the proposed methodology.

Management systems innovation



Shaping the industry

Through its membership of the Independent International Organisation for Certification (IIOC), LRQA participates in all of the major committees helping to shape the future of ISO standards including ISO 9001 (quality management), ISO 14001 (environmental management) and ISO 45001 (the new standard for occupational health and safety).

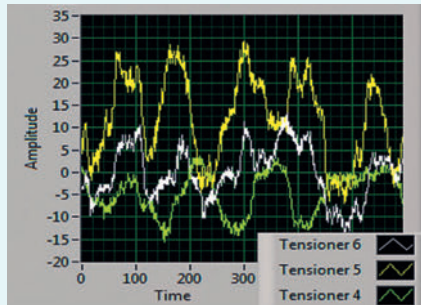
Companies providing certification and training services are gearing up for potentially the single largest increase in activity in the history of the management systems organisations. Quality, environmental, and health and safety managers and consultants and certification bodies are all trying to interpret the changes as they happen.

LRQA has been at the forefront of communicating the changes to ISO 9001 and ISO 14001 to existing and potential clients. Our range of services, encompassing gap analysis, training and assessment are designed to make the transition to the new standards as seamless as possible for our clients.

Energy technology



Over recent years the energy industry has seen huge advancements in engineering and technical innovations which are helping the industry become safer, more efficient and productive – addressing the world's increasing demand for energy. LR is committed to working with industry in addressing some of the most complex and challenging demands being faced.



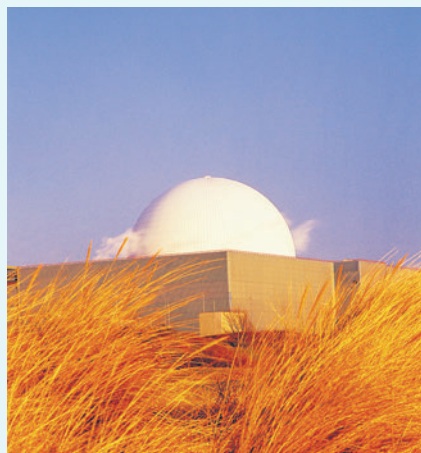
A new and safe way to detect forces on riser tensioners

Failures in marine riser tensioner (MRT) systems can result in costly downtime and lost production. Transocean, a major worldwide drilling contractor, worked with LR and Micron Optics to pioneer work in the application of optical sensors to MRT monitoring. This added information previously unavailable from traditional systems based on pressure transducers. The solution contributed to a better understanding of current operations, improved foresight, and a higher level of confidence in Transocean's operations.



Making waves without water

How high should a fixed platform be above the ocean's surface to avoid getting hit by extreme waves? This question is being addressed by the Singapore GTC's and Institute for High Performance Computing's (IHPC) joint research into the use of wave simulations to assess impact on offshore platforms and structures. We are creating computer simulations, using advanced computational fluid dynamics (CFD) simulations to create unique wave conditions and calculate the forces of these numerical waves on a virtual offshore platform.



Evaluating the impact of extreme events

In the wake of the events in Japan in 2011, the atomic energy community reviewed its approach to comprehensive safety assessments of nuclear power plants.

A specific focus was on how to evaluate the robustness of the existing plant in terms of design features and procedures against the impact of extreme events.

LR has been working with the International Atomic Energy Agency to develop the assessment approach. The result is a new method, fault sequence analysis, and software tool to assist in the evaluation of the impact of extreme events on nuclear power plants. The method utilises the output from probabilistic safety analysis, an approach that has been widely used in the nuclear industry for decades, along with design deterministic parameters – namely, operability limits of the facilities structures, systems and components to assess the results of hazardous events as well as combined extreme events.

Optimising oil production

This year we have helped to set up OPTION (optimising oil production by novel technology integration), a joint industry and university project funded by InnovationsFonden – Denmark. The project aims to tackle the challenge of enhancing oil recovery from reservoirs. For more details see page 26.



Marine

“

As a leading marine classification society, we set safety and environmental standards for the design, construction and operation of ships. But we are not just about surveying ships; we are dedicated to supporting the development of new technologies and innovations that will play a vital role in the future of shipping.”



Marine review

Safety focus, risk management and understanding the industry's performance needs are driving our evolution



"Our technical expertise and understanding of risk help industry make the best possible safety and performance decisions. We then provide the global operational delivery they need."

Tom Boardley
Marine Director

Always we talk about our main priority being safety at sea – and how it underwrites all that we do. So, it was particularly satisfying for Lloyd's Register (LR) to reach the top of the Paris Memorandum of Understanding's (MoU) table of recognised organisations in 2013. We have been transparent in our desire to be consistently at the top of this table.

Overall, Marine's performance has been strong, reflecting a combination of an outstanding newbuilding performance and further improvements in the efficiency of our service delivery. The scale and breadth of our activities in the past year reflects the continued growth of shipping and of demand for support in meeting the challenges and risks involved in shipping activities.

One of the key roles we continue to play is in the qualification of new technologies. Right now, we are involved in scores of projects at various stages with designers, builders, operators and equipment manufacturers – such as engine makers – who need to understand what will work, and what will meet the needs of regulators (especially when no regulations exist).

Emissions regulation in particular is driving change and we have to help our clients make future fuel decisions while also helping them control their operational costs. We are seeing this with the expansion of the take-up in demand for LNG as fuel: LR has taken a lead in supporting the international expansion of gas-fuelled shipping as the market taps into our capabilities as the society with the most gas ships in class. This year, we marked 50 years of global gas leadership and we will continue to invest in this area as the world looks for a regulatory landscape to support worldwide operations and safe LNG bunkering.

While great attention, rightly, is paid to technology and questions about where shipping is going, we do not lose sight of the importance of our surveyors working in shipyards and on ships all around the world, 365 days a year. Our men and women in shipyards, supported by our people in

offices worldwide, remain the foundation through which all our research, innovation and insight are ultimately delivered. They also remain part of the key primary feedback loop to help ensure that we know how to continue to contribute to the future of shipping.

Marine fuel debate

We sparked industry-wide debate with the publication of *Global Marine Fuel Trends 2030* and the *2014 LNG Bunkering Study*. Building on work in previous years, LR's reports and insight are proving to be key thought leadership as the shipping industry addresses big challenges.

Key highlights

Top Europe port state control ranking

LR is now the 'best performing' recognised organisation in the Paris MoU table of port state control performance. In 2009, LR was in eighth position in the rankings and took action – both for our own reputation and to protect clients from the disruption of detentions. We set out to improve our position, with the initial aim of attaining a top three position and then remaining there. Achieving number one reflects the effectiveness of Marine's response to promote safety by working with owners and managers to help them improve compliance with the classification and statutory requirements before they become either at risk or fall below the required standards.

Top three, Paris MoU 2013

Class	Inspections	Detentions	Score
LR	11,405	10	-1.89
ABS	5,323	4	-1.89
DNV	10,382	9	-1.89

LR's improving position in Paris MoU rankings 2008–2013

Year	Inspections	Detentions	Position
2008	14,748	51	5
2009	15,423	50	8
2010	15,364	29	5
2011	14,112	18	4
2012	12,636	9	3
2013	11,405	10	1

3,150

SERS now supports the owners
of over 3,150 vessels.

Supporting effective MLC compliance

LR's Marine inspectors have been providing the support that ship managers need to certify efficiently and cost-effectively their compliance with the requirements of the Maritime Labour Convention.

Emergency response role

LR's Ship Emergency Response Service (SERS) won industry-wide plaudits for its role in supporting the *Maritime Maisie* casualty after a collision and fire in the Sea of Japan/East Sea. SERS now supports the owners of over 3,150 vessels and is the largest such response organisation in the world.

Containership safety

We are leading in the understanding of containership structural safety. A decade-long programme of research and innovation – into factors such as 'whipping' and 'springing' – is continuing to provide shipping and global trade with the framework, through our containership Rules, with the insight and capability to support the construction of ever larger ships. LR has celebrated the delivery of the largest containership built to LR class, the *MSC London* – at 16,652-teu the largest vessel in MSC's current fleet.



Top of new construction league

LR has won more global new construction orders than any competitor, including 50% of the LPG market and is the global leader in LNG carrier and passenger ship classification.

Our year

Future fuels

LR's work into future fuel options continued in the year as we looked at the broadest possible range of options available for the industry to meet regulatory, technical and commercial requirements. Following the success of the scenarios-based Global Marine Trends 2030, in March 2014 we released Global Marine Fuel Trends 2030 – a report looking at the potential future market share of different marine fuel options. The report indicated that by 2030, assuming the continuation of current trends, 11% of the world's bulk carriers, containerships and tankers would be burning LNG.

LNG as the current fuel of the future has been an area of high activity for LR. The growing number of projects we are involved in demonstrates LR's capabilities, reflecting our deep gas technology capability as shown by our leading positions in the LNG and LPG sectors.

Among the many projects under way, Capital Ship Management Corporation is working with Lloyd's Register and DSME to develop LNG-fuelled ultra-large container ships of the future. The project is a cornerstone of Capital's business strategy inspired by, and applying, the key principles and goals of the International Maritime Organization's (IMO) strategy for sustainable maritime transport systems. Capital is incorporating key imperatives and goals, as defined by IMO, in the company's management systems across its operations. The big response to this announcement on LR's Facebook page illustrates its importance.

LR Marine's LNG-fuelled firsts

Our activity during the year included:

- supporting development of LNG bunkering in Singapore and Portsmouth in contracts to develop operational procedures and technical standards required to develop LNG bunkering capabilities
- classification of an LNG-fuelled icebreaker for the government of Finland
- class on Norwegian-based UECC's new LNG-powered car carriers
- delivery of the first LNG-fuelled ferry destined for North America, the *F.A. Gauthier*, built at Fincantieri
- class contract for the LNG-fuelled bulker for Erik Thun of Sweden
- classification of the exciting new gas, battery and solar-powered ferry, *Texelstroom*, for operation in Dutch waters
- GE Marine and LR signed a memorandum of understanding to collaborate on applying gas turbines to power commercial ships
- GE Marine, Dalian Shipbuilding Industry Company and LR jointly developed a design for a gas turbine-powered LNG carrier; this carrier will provide low lifecycle cost, high environmental performance and flexible design
- LR to class BC Ferries' three gas-fuelled Intermediate Class newbuildings.

Containership structural assurance

A decade-long programme to research and understand the forces involved in operating large containerships has culminated in improved rules and procedures for these vessels.

Understanding the risks is vital. Modern containerships have very large deck openings, long hull forms, a large bow flare (the projection of the forward deck outwards above the waterline) and operate at fairly high operational speeds (roughly 18 knots or over). They must, of course, meet the structural strength and fatigue requirements imposed by all sea conditions. Our understanding of containership structures addresses the critical challenges and identifies the ships at risk.

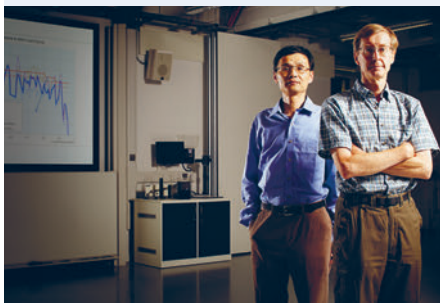
LR's research included a full-scale measurement programme conducted over five years on a large containership. This research has helped to identify the challenges faced by builders and operators of such ships and ensure that the ships' structures are both properly designed and remain within acceptable limits throughout their operational lives. More generally, LR's research and operational experience have provided the tools to effectively assess the forces involved in large containership operation and thereby provide the appropriate rules and guidance.

LR's 2014 containership Rules have had major revisions, which explicitly address the principal design challenges mentioned above. The Rules came into effect in July 2014. They are supported by the development of new LR's ShipRight Procedures covering whipping and springing for ships at risk.

While the basic rules that underpin containership structural strength are well established, as ship sizes increase, new challenges emerge making continued research into the implications essential. To some extent, the scales now possible mean we may be moving beyond the gradual evolution of ship rules to a revolution in rule development.

Getting ship structures right – and fulfilling our mission to benefit shipping and society

The Structural Analysis & Hydrodynamic Team, based at LR's Global Technology Centre in Southampton, are researching the challenges of containership structures. They are part of the wider Marine Technology & Engineering Services group, and work with design support colleagues worldwide. They are giving meaning to technology through pure research, developing the technical understanding that leads to the effective classification rules that the shipping industry demands.



Supporting navies worldwide

We have developed Naval Ship Rules to make them more relevant to both complex and more simple warships as we move naval class into new markets.

An accelerating move to commercial procurement practice and the need to comply with government procurement policy are major challenges for navies. LR is finding that providing support much earlier in the procurement cycle to de-risk decisions is a critical success factor for projects. With major projects such as the UK's aircraft carrier, Australia's landing helicopter dock and Canada's joint support ship, we have provided support from early concept stages where decisions about acceptance criteria and how assurance can be achieved have been found to be highly valued.

Our deep technical understanding of the challenge that naval ships represent continues to be recognised both by navies and shipbuilders, shown by their selection of LR for many projects in the year. These include several patrol boat projects such

as ones for Sri Lanka and Colombia, plus corvettes for Indonesia and in the UK for both the Type 26 frigate and the very recently announced offshore patrol vessels.



Industry overview

We certainly live in interesting times.

The industry continues to face questions for which there are no immediate or easy answers. Technical decisions taken today could spell either riches or ruin in the future. The variables of regulation and the market are affecting different sectors at different speeds. Bulk carrier and tanker owners trading worldwide have had more time to consider their future fuel options while Northern European and North American ferry and domestic operators have had to make some decisions very quickly.

We have seen a growth in projects that are looking to benefit from the 'free' propulsive power of the wind. Could this timeless source of energy have a role to play in the future of an efficient, safe shipping industry? Answers and verification are needed if wind power and other efficiency and energy reduction measures are to be adopted.

As they look for solutions, designers, builders and operators need technology that has been qualified. Does it work? What will the regulators say? Will they approve it? Can it be built? Can it be operated safely?

And challenges, such as the increased scale of containerships, require robust approaches. While there may be enormous gains in efficiency through building ever bigger ships, there is also enormous concentration of risk and the structural integrity of ships remains paramount. Society needs ships more than ever, but we need to help ensure they are safe and fit for purpose.



The Southampton GTC, the cornerstone of our marine research and technology network, will house 400+ employees.



Attracting ships in service to class

Operational performance and breadth of capabilities are attracting ships to class. An example of an owner that has sought the increased benefits of class with LR is DFDS, which is currently operating 55 ships, predominantly ro-ro freight ships, ro-pax ships, and passenger ships. With few exceptions, these ships will now all be classed by LR. The increase in ships classed deepens and broadens support provided by LR, the classification market leader in the passenger ship, ro-pax and ro-ro freight ferry sectors. LR's Ship Emergency Response Programme (SERS) has also been contracted fleet-wide to provide damage stability and crisis support to DFDS, further underlining the extent of safety and operational services now available to DFDS.

Kasper Moos, Vice President of DFDS and heading the company's technical organisation, commenting on the decision to choose LR, said: "The DFDS fleet has been growing because of recent acquisitions, and this means that by coincidence we have our ships registered in various classification societies. We have therefore decided to transfer a number of our ships to LR in order to reduce the number of partners and achieve a leaner process in our daily work with the class. LR has already proven that it has the size and the services we need for fully covering our needs for a safe and efficient operation of our ships."

Looking to the future

Marine will take the broadest possible approach to helping marine industry players to understand and address the challenges that they face. Our role is to help stakeholders make the best commercial and regulatory decisions based on the best technical advice, insight and surveying. We will continue to lead in developing rules, procedures and approaches to help shipping face the future.

As 2013/14 ended, our lead business departments were getting ready to move into their new home – the GTC in Southampton, on the university's campus. This move into a beautiful new building symbolises how our Marine activities have evolved. We will be increasingly connected to pure research and industrial development both in Southampton and through a network of universities and researchers worldwide.

We cannot say we are reinventing class (although we did invent it in the first place) but we are repositioning our activities. We have always taken the broadest approach to technologies and the urgent challenges of the maritime world. We put safety first, but also better performance, as we work on the future of shipping.



The stamp of approval

A new easy-to-use online service is a more convenient and faster road to the valued LR Type Approval mark. This provides the assurance that a client's product conforms to recognised national and international industry quality standards, and the LR Rules.

Drawing on our technical expertise and capability, we provide dedicated support throughout the Type Approval process of independent design review, sample testing and verification of production controls. LR's truly independent approach to product verification provides the industry with the confidence and assurance it needs.



Working closely with equipment makers

We have appointed a senior manager to ensure our services to materials, components, equipment and systems manufacturers are fully aligned.



To find out more about our Marine business visit www.lr.org/marine





Transportation



With expertise across all rail disciplines, we are working with organisations throughout the industry to help improve the safety, quality and performance of the world's rail systems.”

Our teams of rail engineers and technical specialists offer an extensive range of expert assurance, advice and analysis services aimed squarely at helping clients make informed strategic decisions, reduce costs and take advantage of new technologies in a safe and efficient manner.

Whether supporting one of the world's largest rail administrations or a niche component supplier, our clients turn to us because we are trusted as a source of clear and impartial advice and as a partner with a shared commitment to making every journey safe, reliable and sustainable.

Transportation review

An emphasis on the rail industry's critical and complex technologies is fast becoming the USP that sets us apart from the competition



"International standards for rail technologies and processes are helping to push back technical and administrative differences that have restricted cross-border services and complicated supply chains."

Paul Seller
Transportation Director

Our Transportation business provides independent assurance and expert advice, primarily for the rail sector, across three core regions: Asia, Europe and the Middle East.

Over the past year, we have continued to secure a number of contracts that have helped strengthen our position as the safety adviser of choice in these markets and ensured we exceeded revenue targets.

This performance is a reflection of a strategy that emphasises our expertise surrounding the industry's most critical and complex technologies. This is fast becoming the USP that defines Lloyd's Register (LR) in this fiercely competitive market.

Of particular note, 2013/14 saw our UK, Middle East and Denmark operations continue the strong external sales growth from the previous year. Meanwhile, our Netherlands operation, which accounts for around half of our workforce, also delivered an improved sales performance, bolstered by a major contract with the UK's national rail infrastructure manager, Network Rail, to install our asset monitoring technology across the network (see key highlights below).

Our Asia business reported slightly reduced margins, the result of generally harsher trading conditions across the region. Recruitment, in particular, has also remained a challenge in this region and has meant that, while our Asia order book has been consistently strong, it has at times been difficult to secure the additional resource quickly enough to meet the demand. In response, we are restructuring the regional management team for the coming financial year and providing extra resource management support to progress the expansion of our project teams.

Key highlights

Intelligent Rail

Network Rail, the UK's rail infrastructure manager, installed 30 of our wheel impact load detection units to monitor gradual wear and tear of mainline track around the country. The system, part of our Intelligent Rail service, will also provide operators with valuable information about the wheel conditions of their fleets so that they may better co-ordinate maintenance needs. By August 2015, the wheel condition of over 80% of trains in the UK will be under the watchful eye of our monitoring systems.

Etiihad Rail

Freight services on Etiihad Rail began operating on a test basis between Habshan and Ruwais in September 2013, with Shah-Habshan services to follow before the end of 2014. The new railway is a 1,200km route across the UAE, stretching from the Arabian Gulf to the Indian Ocean. As the independent safety assessor, we are helping to ensure safety at every stage of its development, from design through to the commencement of passenger services in 2017.

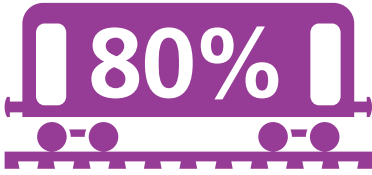
Beijing Metro Yan Fang Line

LR has been appointed as independent safety assessor for Beijing Metro's Yan Fang Line. This will be the first driverless line in China with all sub-systems developed and supplied by a domestic manufacturer. The scope of our assessment will extend across rolling stock, track, telecommunications, depot equipment and station facilities such as platform screen doors, elevators and access controls. This is the first time a Chinese client has requested independent safety assessment beyond the signalling technology.



Crossrail: 1,400 assessments

We are now two years into our role as the Notified Body for Crossrail, the first time a UK project of such size – it is Europe's largest construction project – has been subject to the EU interoperability requirements. Given the scale of the project, managing the volume of evidence and documentation (drawings, statements, calculations) is a major exercise in itself, with the team receiving design evidence from over 50 separate project teams and performing around 1,400 individual evidence assessments during the design phase alone.



The wheel condition of over 80% of trains in the UK will be under the watchful eye of our monitoring systems.

Our year

Asia – new opportunities open

Asia remains central to our future plans and as a market continues to open up opportunities.

For example, while China has experienced a slow-down in the growth of its high-speed programme, it has accelerated investment in urban transit systems. In each of the past two years alone, it has built on average 270km of rapid transit lines. More than 25 cities currently have firm plans to begin constructing extensions or entirely new systems in the near future.

And these new projects will commence during a time of increasing interest in safety and assurance within China – as demonstrated by the award to LR of the pioneering contract for Beijing's Yang Fang Line.

Beyond China, we anticipate new opportunities to emerge from Hong Kong's development plans. Meanwhile, this year saw the opening of our first permanent Transportation office in Japan as we seek to exploit opportunities among domestic manufacturers looking increasingly towards export markets.

Europe – growth in local transport markets

In Europe, we obtained accreditation from the German and Danish authorities to operate as a Designated Body within their respective markets. This means we can begin offering clients in these territories national, as well as international, certification services – as we already do in the Netherlands, the UK, Sweden, Norway and Spain. This is an important step given the increased focus on cross-border certification in member states, and the European Commission's drive for interoperability across mainline networks.

The year saw us secure a stronger foothold in the local transport market. Building on the success of work with Amsterdam's metro operator GVB, our Netherlands office secured new contracts to provide quality inspections of new SG3 Bombardier

vehicles for RET (Rotterdam), acceptance testing of Siemens Avenio trams for HTM (The Hague), and safety management services for the Belgian operator, De Lijn, during the signalling renewal of Antwerp's underground tram system.

In the UK, in addition to securing a major contract to introduce our condition monitoring technology on the national network, we continue to support some of the country's largest rail projects, with assurance roles on the upgrade of the Great Western mainline and London's Crossrail and Thameslink schemes, as well as risk management services on Hitachi's Super Express trains that will replace the ageing Intercity 125 fleet from 2017.

Middle East – experience valued

A characteristic of the global rail industry is the varying degrees of maturity from one territory to the next. In some markets, the industry is well established, with clients looking for support to improve efficiency or increase capacity on their overcrowded networks.

But elsewhere, such as the Middle East, rail services are being introduced for the very first time. The immediate challenge here is to ensure that build quality, operational performance and standards of safety are sufficient to break existing transport habits. We are proud to have positioned LR as one of the region's leading safety assessors, with the team supporting the construction of the Etihad Rail in the UAE (see key highlights) and the Qatari national rail construction programme, and well placed for upcoming projects in neighbouring Saudi Arabia and Oman.



Industry overview

The clear pattern emerging is that all regions recognise the role of rail in the face of some of the world's most complex long-term challenges.

The rapid population growth of major urban centres, rising costs of fuel supplies, and international pressure to cut carbon emissions all mean that demand for rail is growing across the world. Over the next four decades, global passenger and freight travel is expected to be double 2010 levels.

And this renaissance has reignited the industry's appetite for innovation, from train control systems that can safely manage increasing volumes of traffic on existing track layouts to the introduction of lighter, quieter and smarter trains with on-board technology that will prioritise their own maintenance requirements.

Meanwhile, the increased adoption of internationally recognised processes and standards is helping to improve performance and promote supply chain efficiency. Almost half of all worldwide investment in ERTMS – the train control technology that is the basis of interoperability – is for non-European countries such as China, Saudi Arabia and Turkey, proving that the desire for common technical standards to support cross-border travel is not just a European ambition.

Looking to the future

Taken together, these themes serve as strong evidence for the long-term demand for the technical, safety and risk services provided by our Transportation business. It is why our focus on the complex and critical technologies that safeguard the industry will remain an important constituent of our strategy, and this is where we will continue to invest in our capabilities.

But, above all, the diverse nature of our skills, the extent of our technical knowledge, and deep understanding of our local markets give us a strong, competitive edge and leave us well positioned for further growth.



To find out more visit
www.lr.org/rail



“

Every day, we give energy-producing companies the confidence that their people, plant and processes perform as intended, safely and consistently – safeguarding their reputation.”

From concept through to decommissioning, our independent technical experts and risk engineers work together with industry to tackle some of the largest, most complex engineering challenges in the commercial world.

Clients use Lloyd's Register to: deliver projects on time and to budget; meet legislative and corporate responsibilities; improve reliability and productivity; maximise asset performance and reduce downtime; enhance the quality and integrity of assets, processes and operations; and identify and minimise risk to people and the environment.



Energy review

This has been a transformative year for our Energy business



“Change is the only constant throughout the energy industry. And a changing energy mix, innovative drilling techniques and new energy sources are driving change in the way we provide our technical services that enhance safety, risk management and operational integrity. No one across the supply chain can afford to be complacent. It is innovation in safety and technology that is driving the best performing companies.”

John Wishart
Energy Director

We have seen strong growth in orders, particularly in oil and gas, where there is an increasing need for asset integrity services to extend the life of operating assets safely beyond their designed-for life. Power generation markets remain stable and are showing signs of improvement.

During the year, we have been working with some of the world's largest and most complex engineering projects – testament to the depth of our expertise and service quality. We have invested significantly in innovation, infrastructure and in the global workforce to ensure continuous improvement in our offer.

We have restructured our operating model and adapted both our sector strategy teams and our operational delivery service lines in order to give operators confidence that they are effectively addressing tomorrow's economic, legislative and corporate requirements. These changes have enabled us to deploy skilled people around the world, and significantly improve on-time delivery.

The merger of all our capabilities and acquired companies into one Lloyd's Register Energy brand has reinforced our reputation and technical capability for advancing safety, asset reliability and business performance across the supply chain.

A significant development was the partial acquisition of the leading global energy services firm Senergy. This new collaboration – LR Senergy – will provide a broad service portfolio to the upstream sector of the energy industry, from reservoir to refinery and beyond. It will continue to operate as an independent company until 2016, by which time we will have acquired the balance of Senergy shares.

We expect good growth in revenue and profit over the coming year, with further improvement in the return on sales and operational efficiency. Our focus is on growing our market position in oil and gas, including opportunities in pipelines and LNG.

In power generation, we will benefit from any recovery in industrial demand for electricity and we expect an increasing drive in offshore wind as part of the wider energy mix.

Key highlights

- Drilling training academies opened in Singapore and in Houston.
- Major first – appointed the certification and verification agency for the first ever floating storage and offloading vessel to be operated in Indian waters.
- Contract win as global inspection provider for Australia's Browse Basin.
- European oil production project launched with the Technical University of Denmark and Weltec.
- New Offshore Rules launched for floating LNG facilities and mobile offshore units.
- First UKAS nuclear inspection accreditation with Apave.
- Approval from UKAS for wind turbine type certification accreditation.
- Investment in LR Senergy.
- Queen's Award for Enterprise in International Trade and two major industry awards.
- £25 million integrity management contract with Talisman Sinopec Energy UK.
- Equipment certification work for Texas oil and gas drilling equipment manufacturer, Control Flow Inc.
- Named as preferred independent inspection agency by IHI Corporation for major LNG tank projects in India.
- Pacific Gas and Electric Company (PG&E) awarded ISO 55001; a first for LR in the USA.



Piping system at Shah Deniz

In January 2014, LR was contracted to estimate the service lifetime and optimised design of the liquid process piping system on one of the largest gas developments in the world: stage 2 of BP's Shah Deniz project in Azerbaijan.

+250



For more details of our survey results see www.lr.org/gr2014

Over 250 industry professionals took part in our Energy Technology Radar survey.

Our year

Training industry

During the year, we launched two new training academies – in Singapore and Houston – offering training programmes specifically for the drilling segment of the oil and gas industry.

Both facilities feature a hands-on workshop area with functional drilling equipment and, as with our training centre in the Netherlands, provide the framework needed to deliver all IADC-accredited technical drilling training. In 2013/14, these facilities have trained thousands of people in the latest drilling technologies.

Training is an area we will build on during the coming year. We are currently setting up a graduate training programme with universities in Oman, Saudi Arabia and Abu Dhabi to develop local engineering talent. A further such programme is being considered in South Africa.

The influence of human behaviour

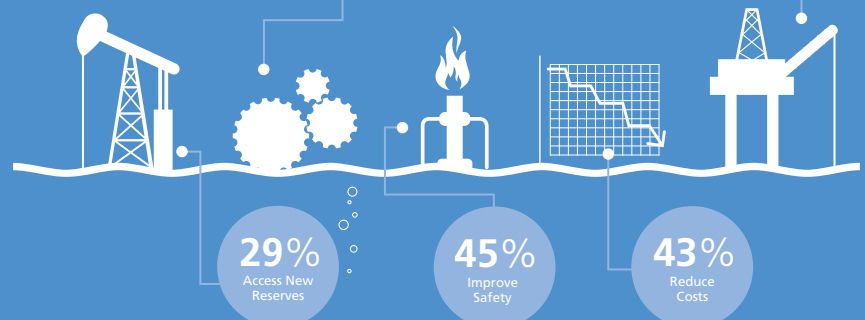
We continue to help stakeholders better understand the role of human factors in improving human/system integration around the use of equipment, technology and management processes, and in improving safety. We believe this is key to ensuring a sustainable energy supply.

In Europe, we have supported the findings of the new Offshore Safety Directive and we also support the International Labour Organization's (ILO) recommendations that industry should try to retain its 'tribal knowledge', the collective wisdom and capabilities of an organisation, which goes a long way to maintaining a mature safety culture and improving operational excellence. The development of strong social partnerships between government and groups representing employees and employers, also recommended by the ILO, is at the core of our strategy.

Over the past year, we have supported a number of clients in this area. We also hosted a high profile industry webinar on the human factor-related causes of hydrocarbon releases on offshore platforms, attended by operators in Europe, America and Brazil. Key insights were later presented in Korea and at Offshore Europe in Aberdeen, UK.

The innovation imperative

Investment Drivers



Technology Radar Survey, 2014: www.lr.org/technologyradar

Our PSE (people, systems and equipment) scan models are succeeding with new projects with Shell and Saipem. Initiatives are also ongoing with underwriters to tailor our PSE services to the insurance market.



New offshore rules

In July 2014, we launched our new Rules for Offshore Units, amalgamating the Rules for Mobile Offshore Units and the Rules for Floating Offshore Installations at a Fixed Location into one document. It includes several new topics such as high-voltage electrical, cryogenic spill and FLNG offloading – yet has been reduced from over 2,000 pages to under 800.

Driving technology

We are committed to working with all industry stakeholders to promote the understanding of new technologies, new energy sources and future energy demands.

We focus firmly on innovation, often through collaborative research and development. For example, we launched a major piece of research into upstream oil and gas. Called Energy

Technology Radar, this global survey provides insight on the adoption of key technologies and innovation, the timeline for implementation and the impact technological advancements can have upon safety and efficiency. This helps us to further engage with industry, particularly in support of companies that are innovating to extend the life of current assets or improve uptime and efficiency. For more details see www.lr.org/technologyradar.

We are also applying our technological knowhow in critical operations, such as risk management of blowout preventers (BOPs) on oil rigs. This work was recognised with the Energy Industries Council 2013 Award for Supply Chain Excellence, and also in 2014 with Hart's E&P Special Meritorious Engineering Award for outstanding new technology.



Vibration measurement accreditation

In December 2013, in Denmark we received the ISO/IEC 17025 accreditation from DANAK to perform both laboratory and field noise and vibration measurements in offshore, marine, rail and other industries.

€3.9m

The **OPTION** project could provide a step change in enhancing recovery factors.



Focus on asset integrity

While new technology and new plant are safer by design, operators working with ageing infrastructure face increasingly tough challenges throughout a project's lifespan. Onshore and offshore incidents can change operating environments overnight.

Addressing such challenges can require operators to rethink what safety means, and what it can do for a business – from improved performance and maximised production rates, to cementing business reputation, increasing profit, and reducing risks to the environment.

We are seeing assets now being reassessed for a 50-year operating life – and some operators in the Norwegian sector are potentially seeing assets that may have a 100-year lifespan. With over 450 professional employees dedicated to supporting ageing assets in the North Sea, our work in this area is expanding.

Significant projects this year include a £25 million contract to deliver integrity management services to Talisman Sinopec Energy UK.



Inspection services for oil and gas

Australia's largest independent oil and gas company, Woodside, has awarded LR a potential £5 million contract to ensure that the quality of all components and equipment Woodside procures globally satisfies their specifications. This comes in the wake of our involvement in second-party inspection services with a major gas project with McDermott Australia.

Putting more into asset management

Throughout the year, we have been promoting the fact that good asset management means assets perform better, risks are managed more effectively and regulators are happier.

A new international asset management standard, ISO 55001, was released in January and replaces PAS 55, which we originally helped to develop. ISO 55001 has the potential for much broader application, to include financial as well as physical assets.

Power companies have been among the early adopters of the new standard and clients we are working with include Pacific Gas and Electric, TNB Transmission (Malaysia), Fingrid and EDF Nuclear.

Supporting tomorrow's manufacturers

We have continued to reinforce our position with the American Society of Mechanical Engineers (ASME), whose codes, standards and professional development programmes provide a foundation for advancing technical knowledge.

We are the largest provider of ASME services outside North America, and have experienced increasing demand for the ASME codes to be applied in Asia, in response to the region's manufacturing boom in the upstream oil and gas sectors and also in nuclear.

Successes this year include a contract with Hyflux in Singapore for ASME work, where we have provided the client's employees with training to ensure they fully understand what's necessary for certification audits.

A year of innovation

The pressure to innovate within the oil and gas sector is intensifying, yet a wide range of challenges continues to inhibit innovation, including cost, uncertainty over energy prices, skills shortages, and regulatory and other risks.

This year, we helped establish a joint industry project to tackle the challenge of enhancing oil recovery from reservoirs. The €3.9 million project named **OPTION** – Optimizing Oil Production by Novel Technology Integration – is being funded by the Danish Innovations Fonden, and is a pioneering collaboration between LR Energy and LR Senergy, the Technical University of Denmark (DTU) and Welltec. The consortium is working on the integration and optimisation of reservoir and horizontal well simulation models.

If **OPTION** is successful, it could provide a step change in enhancing recovery factors. Even a 1% increase in oil recovery from Danish fields could, for example, represent an estimated value of DKK 60 billion (approximately €8 billion or £6.8 billion) to the Danish economy.

Nuclear projects

Our nuclear projects activity during the year included the following.

- The Lloyd's Register Apave joint venture became the first organisation to be accredited by UKAS for its nuclear inspection.
- LR and the UK National Nuclear Lab are supporting the Jordanian nuclear regulator. Jordan is a new-entrant country to nuclear technology and the UK has a well-respected regulatory regime. It is also not a reactor vendor.
- We have won a multi-year contract with the independent regulator to provide construction oversight and technical services for a new generation of nuclear power plant in the UAE from design verification to commissioning.
- Our teams have started work on a two-year contract to support the South Korean nuclear industry with independent verification services. We are the only third-party inspection agency able to certify to the applicable Korean codes.

New energy

We are helping bring a consistent, safe approach to new energy sources.

Civil nuclear power has a key role in delivering affordable, low-carbon energy. Our focus is on verifying safety criteria and performance and working with the nuclear industry and countries new to nuclear power to help provide the independent safety assessment and assurance necessary to make informed decisions. To rebuild public trust in nuclear, independent third-party experts such as LR have an important part to play.

Offshore wind will play a key role in stimulating growth and investment in Europe over the next decade. We are taking a leading role in a new EU-funded project, LEANWIND, managing a work package on novel vessels and equipment designed to achieve necessary cost reductions in the installation and maintenance of offshore wind farms.



Thought leaders

Lloyd's Register sees itself as a 'thought leader' in the energy industry. Over the year, our experts have commented on topics ranging from the UAE's development of an oil spill contingency plan to the risks and public perception of nuclear in Japan. Our Asset Integrity team also hosted a briefing in Aberdeen in June to debate the potential impact of the Wood Report – the UKCS Maximising Recovery Review – on the oil and gas market.

Strategic hotspots

Emerging areas in oil and gas include the Arctic, the Caspian, Africa and Brazil – each presenting different technical, cultural, logistical and political challenges. Our immediate goal is to develop local capabilities and to be able to deliver services locally.

We have stepped up our focus in Africa with a dedicated team and new services to better support our existing and new clients operating in this continent.

In Brazil, we are engaged with the challenges of deepwater drilling with the local regulator and Petrobras. We have a fast-growing team of experts focused on providing local support. Because Brazil is primarily a deepwater market, our training and services related to well control equipment are in demand.

Abu Dhabi is a developing territory for our oil and gas business, and significant projects in Iraq, Oman and Saudi Arabia are expected to start awarding contracts early in 2015.



Services to Kazakh's KCO project

We are working with the Kazakh Ministry of Environment to provide independent verification services to the KCO project – one of the country's most important oil and gas developments. We are working on improving technical regulation and the development of an approach to greenhouse gas emission controls.

Industry overview

The world is facing major challenges – demographic change, urbanisation, climate change and globalisation – each demanding practical energy solutions from government and industry.

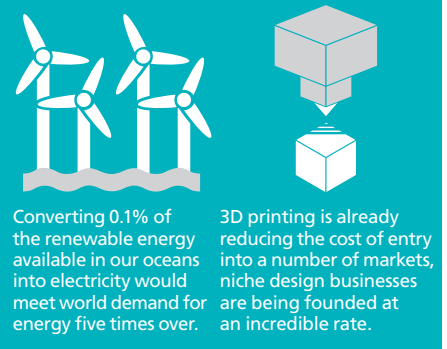
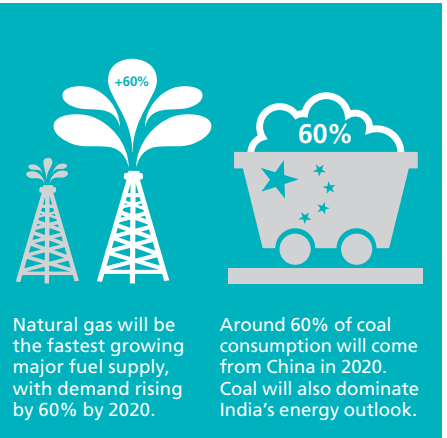
As the demand for energy continues to rise, the energy mix is getting broader as a result of technological innovation, the demand for cleaner energy and the challenges around deepwater drilling.

The pace at which these developments are brought to market, and their sustainability as approaches to providing secure and reliable energy supply, centre on both financial and operational risk. The vexing issues for energy operators involve identifying risks, and assessing and evaluating them accurately, before deciding how far protective and mitigating measures are implemented to reduce risks to acceptable levels.

There are also twin political imperatives: to reduce the impact that energy consumption has on our planet while at the same time ensuring that we can expand access to energy for emerging economies. That circle can be squared through continuous technological innovation in safer power generation solutions.

Looking to the future

Safety in the future will require a blend of the best expertise from business, academia, regulators and governments, all contributing to the understanding of risks. This will combine to make regulation more appropriate, and enable the best risk mitigation in complex environments that are evolving quickly.



In the medium term, the energy industry will focus on increased recovery, developing cleaner and more efficient hydrocarbon technologies, and new forms of energy provision. But, in the short term, cost cutting and production targets always threaten to degrade safety regimes.

Our organisation will continue to adapt to market and technology developments that demand assurance of safety and the reliability of new, clean and sustainable energy sources.

Our teams around the world will continue to challenge energy companies to re-think their approaches to safety, performance and technical innovation in order to secure the world's changing energy supply in a sustainable way.

Collaboration with other independent technical experts will be essential to finding innovative solutions that minimise complexity and risk. We will always support operators that want to push the boundaries, without compromise on safety.



To find out more about our Energy business visit www.lr.org/energy





Management Systems (LRQA)

“
Management systems should allow organisations to learn from the past, manage the present and prepare for the future.”

LR Management Systems (LRQA) is a leading independent provider of assurance services including assessment, certification, validation, verification and training across a broad spectrum of standards, schemes and customised assurance programmes.

We deliver our services to thousands of clients operating in all of the major sectors worldwide. We are dedicated to delivering a range of services that combine integrity, technical expertise and innovation to deliver tangible business benefits.

Management Systems (LRQA) review

Despite challenging times, LRQA has delivered a stable performance with key strategic sectors leading the way



"We are on a strategic journey; through applying our technical expertise, as well as expanding our service portfolio, we are assuring a successful and sustainable future for the LR Management Systems business."

John Rowley
Management Systems Director

The past year has been a challenging one for both LRQA and the management systems industry as a whole. With our leading role in the ongoing revisions to ISO 9001 (quality management) and ISO 14001 (environmental management), and our growth in the food, maritime security and aerospace industries, we have been able to maintain our reputation for technical expertise across all of our key sectors.

With all the major ISO standards being revised, LRQA has been at the forefront of communicating the changes to ISO 9001 and ISO 14001 to existing and potential clients. Through online tools, innovative training workshops and client briefings, we are helping organisations understand the potential implications of the new standards.

We have had continued success across the global food supply chain, increasing our credibility in this sector by delivering certification, training and customised assurance services to food brands and their supply chains, including Mars, Inc., Gallo Glass and Barilla.

The introduction of ISO/PAS 28007, the maritime security standard, has enabled LRQA to leverage our 250 years of experience in the international shipping industry, and by working with leading companies in the aerospace sector, such as Northrop Grumman, we have solidified our position as experts in helping organisations that are responsible for matters of global security to identify and mitigate their risks.

However, we operate in a changing, and increasingly competitive market, and we ended this year acutely aware that we need to restructure the organisation to ensure sustainable growth over the coming years. Fundamentally, LRQA is in a strong position. We have a strong brand; we are independent, we are underpinned by strong technical excellence and we have great global coverage.

2014 has been a pivotal year for LRQA with a clearly defined and strategic transformation programme that will maximise our exceptional potential to deliver long-term business benefits, not only for our clients, but also for LR.

Since my appointment as Managing Director of LRQA on 1 July 2014, we have put in place a leadership team to diversify LRQA's service portfolio and deliver greater value to our clients.

Key highlights

Maritime security

In March 2014, LRQA received accreditation against its range of services to ISO/PAS 28007, the new maritime security standard. Thanks to LR's strong maritime credentials, we are well placed to offer clients the opportunity to become early ISO/PAS 28007 adopters while also delivering against our stated mission of enhancing the safety of life and property at sea.

Quality

Northrop Grumman's Lake Charles Maintenance and Modification Center received AS9110 certification from LRQA, confirming the facility's ability to perform maintenance, repair and overhaul work to the aerospace industry's highest standard. "For our global customers, the significance of this certification is that our quality management system performs to a high standard for aviation maintenance, repair and overhaul, minimising associated risks," said Ruth Bishop, Vice President, Quality, Safety and Mission Assurance, Northrop Grumman Technical Services.

Environmental

- LRQA provides a range of environmental and water assurance services to some of the world's leading organisations. During the year, Kuwait Petroleum International achieved Responsible Care 14001® certification which broadens the scope of the ISO 14001 environmental standard to incorporate aspects of health, safety and security.
- In April, LRQA verified the Orb Energy Solar Project against the Gold Standard. The project involved the installation of 19,303 solar water heaters and 13,667 solar PV systems which resulted in the provision of more affordable and cleaner energy for the local residents.

Technical innovation

LRQA builds and delivers customised audit programmes for organisations like Mars, Inc. to add an additional level of assurance against client-specific criteria.

Public benefit

LRQA successfully delivered a Verified Carbon Standard contract to the International Development Enterprises (India). The installation of low cost irrigation devices saved almost 33,000 tonnes of CO₂ during the first year of the project.



For more details see
www.lrqa.com

50+

We are recognised by
over 50 accreditation
bodies worldwide.



Our year

Food and sustainability

As the food supply chain becomes more complex, the challenges surrounding brand, reputation and shareholder value inevitably increase. In the food safety arena, by putting our range of assessment services at the heart of the 5,000+ organisations that we serve, we are helping to assure that their supply chains and products are safe and sustainable.



The power of assessment

At the GFSI Global Food Safety Conference in February 2014, Barilla – one of the world's leading pasta and ready-made pasta sauces manufacturers – shared its food safety certification journey. "For an international organisation like Barilla, auditor calibration is important to ensure meaningful food safety assessments. LRQA's sector-specific expertise and approach to auditor competency has helped us to gain more value from our food safety management system," said Giorgio Beltrami, Quality and Food Safety Director, Barilla.

Aligned with the group

LR's new brand identity links all the members in our group together, making our broad service portfolio easier to navigate. This, coupled with our new structure, will open up more cross-stream opportunities with LR Marine, Energy and Transportation through a greater focus on account management and the upselling of our services to clients that sit elsewhere within LR.

Energy

In May, accreditation from the United Kingdom Accreditation Service (UKAS) strengthened LRQA's worldwide ISO 50001 energy management assessment services. According to the latest ISO survey, the number of ISO 50001 certificates has seen a remarkable increase of 332% year on year.



Assuring the future

In June, LR Marine client Orient Overseas Container Line (OOCL) had an emissions data report verified by LRQA as true and accurate, supporting the leading operator's commitment to reducing greenhouse gas emissions from their vessels. Stephen Ng, Director of Trades of OOCL, said: "This demonstrates our long-term commitment to emissions data integrity and environmental performance, but also enhances OOCL's sustainability profile to a wider audience of stakeholders."

Technical excellence

As a testament to the breadth of expertise at LRQA, Theresa Jeary, LRQA's Medical Directives Technical Manager, has contributed to a pioneering book on in vitro fertilisation (IVF). In her chapter, Theresa examines the international regulations governing the approval of the fluid products that are used in the IVF process which, prior to 2008, were unregulated in Europe.

Industry overview

Providers of consultancy, assessment, certification and training services are gearing up for potentially the single largest increase in activity in the history of the management systems industry. Interested parties, including organisations; quality, environmental and health and safety managers; consultants; and certification bodies, are all trying to interpret the changes as they happen.

The publication in May 2014 of ISO/DIS 9001:2014 (quality) followed by the June issuance of ISO/DIS 9001:2014 (environment) signified the first time all current and future users could access and review the proposed changes to two of the world's most widely adopted standards.

Along with the revisions to all of the major ISO standards, demand for certification is levelling off in certain markets. Secondly, and more importantly, our clients' business needs are changing. Organisations are facing tougher stakeholder demands, rapidly changing business conditions and increased competition. As a result, they are seeking more effective control of operations, improved performance and better management of risk throughout their business. Consequently, they want more than just assessment services so we are adapting to market demand.

Looking to the future

We firmly believe that our new strategy builds on our globally recognised strengths, along with our understanding of our clients' changing needs and our awareness of where the management systems industry is heading. This will enable LRQA to achieve our exceptional potential, through diversifying our service portfolio and delivering greater value to the over 50,000 clients that we serve worldwide – including many of the best known brands.

Our new structure will see LRQA functioning as a global business, as opposed to a regional one. LRQA's new business operating system will be the enabler to the new structure by helping us run the new global LRQA efficiently and effectively. This will allow us to focus on what is important: creating value for our clients – many of whom are served by other members of the Lloyd's Register group – which in turn generates revenue for our organisation, thereby helping us contribute more to the Lloyd's Register Foundation.

We are on a strategic journey towards a successful and sustainable future; these changes will enable us to apply our technical expertise and expand our service portfolio in order to continue to gain competitive advantage along with the ongoing growth of LRQA.



To find out more about services
visit www.lrqa.com

Chief Financial Officer's report

Profitable growth through economic instability



"We are delighted to be able to report continued profitable revenue growth despite the difficult economic environment."

Alastair S Marsh
Chief Financial Officer

I would like to comment on selected key numbers from Lloyd's Register Group Limited's (LR) annual report and financial statements for the year ended 30 June 2014.

Our financial performance is another notable achievement, particularly given the currency headwinds that have affected our international businesses due to sterling strengthening against many of our key currencies. This result has been delivered in the continued difficult market conditions as the world economy has struggled to gain momentum.

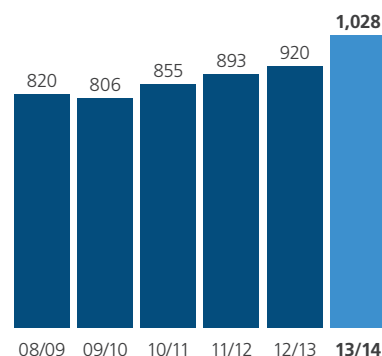
On 2 September 2013, LR acquired a 55% shareholding in Senergy Group Limited to expand its range of technical assurance and consulting services to the oil and gas sector. LR Senergy will bring well, subsurface and reservoir engineering skills to LR's existing Energy business. The transaction marks the largest ever investment in an energy services company in LR's history.

Turnover

Total group turnover for the year was £1.03 billion, including the consolidated results of LR Senergy, an increase of 12% on the prior year reported turnover.

Excluding acquisitions, turnover was £931 million, a 1% increase versus the prior year. Exchange rates have had a significant impact on these results and, adjusting for this, turnover is 3.9% up on a like-for-like basis.

Turnover £m



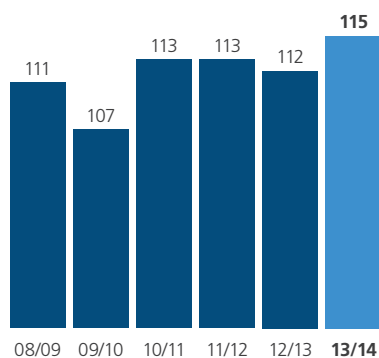
The strongest income performance is within the existing Energy business which has seen strong order growth, particularly in oil and gas where we have seen an increasing need for asset integrity services. The Marine business has seen economic conditions improve as the year progressed and finished with a strong year end.

Operating profit

We continue to invest in the long-term future of the group. In addition to our existing commitments to the Southampton Global Technology Centre, the EMEA shared service centre roll-out and IS-led operating systems, we have also successfully refreshed our brand identity and invested in a client data hub to better deliver value to our client base. These restructuring costs totalled just under £35 million in 2014 (2013: £31 million) and reflect our ongoing commitment to LR's future.

Our normalised operating profit, adjusted for restructuring costs, foreign exchange gains and losses and pension costs, was £88 million for the year which represents a £6 million increase on the prior year. This is mainly due to the strong financial performance of Marine which has seen a rebound in the new building activity and has benefited from productivity gains following efficiencies captured across the Marine operations.

Turnover per employee £000



Profit before tax

The group has reported profit before tax of £51 million for the year.

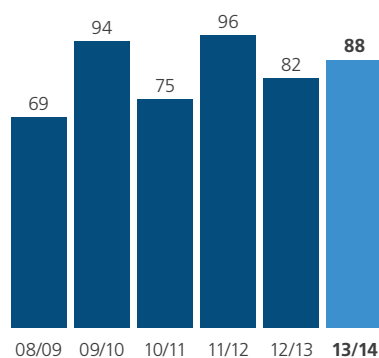
Our profits are used to support the fulfilment of the Lloyd's Register Foundation's charitable activities, through investing back into the operating company for future growth and through direct funding to the Foundation. Regarding the latter, our donations to the Lloyd's Register Foundation had a value of £4 million for the year 2013/14.

Operating cash flow

The operating cash flow for the year was £57 million, an increase of £42 million compared with the prior year. This reflects good cash collections from a strong final quarter's trading at the end of last year and a strong operating performance driven by Marine in the current year.

The most significant non-operating cash flows were the cash payments made in respect of the investment in Senergy and the group's payment of deferred consideration in relation to previous acquisitions.

Normalised operating profit £m



Headcount

The average headcount for 2013/14 was approximately 8,900 employees, 9% higher than the previous year reflecting the organic growth in Energy as well as those employees who joined us through the acquisition of Senergy. The group has managed to increase its turnover per employee to approximately £115,000, a 3% improvement on the prior year.

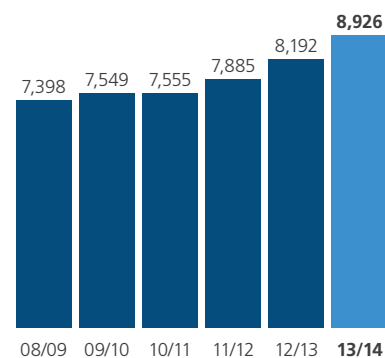
Conclusion

Turnover, operating profit and operating cash flow have all improved year on year. Our business streams have performed well in the face of challenging market conditions in our key markets and against a strengthening of sterling. We have maintained our investment in our long-term strategic initiatives to ensure continued growth and profitability of the LR group in order to maximise our funding to the Lloyd's Register Foundation. While we have seen some signs of improvement in key markets towards the year end, we expect to continue to experience economic instability. The business is, however, well placed for continued growth.

Alastair S Marsh

Chief Financial Officer

Headcount



Public benefit

We are driven by our mission reflected in our new strapline – working together for a safer world

The mission of the Lloyd's Register Foundation and in turn LR, its trading arm, is to protect life and property through securing high technical standards of design, manufacture, construction, maintenance, operation and performance and to advance public education, in particular in transportation and other engineering and technology disciplines.

LR is directly instrumental in helping to fulfil the first part of this mission and our profits help to fund the Lloyd's Register Foundation which supports engineering-related education, public engagement and the application of research. The strong performance of LR means that the Foundation can make the best possible contribution to help tackle society's challenges of the future.

Working with the Lloyd's Register Foundation

An illustration of the additional benefit to the Foundation of having LR as its trading arm is in the recent announcement by the Foundation of a heads of agreement with TWI to provide £15 million research funding to establish the new National Structural Integrity Research Centre (NSIRC) nearing completion in Cambridge. The Foundation will become a Founder Sponsor and Council member of the newly-established Structural Integrity Research Foundation, responsible for industrial support of NSIRC.

The Lloyd's Register Foundation's funding will create up to 83 PhD and EngD studentships. LR will advise on the projects that the PhD students will work on and there could be a potential career path with LR for some of the postgraduates in the future. This 10-year collaboration between the Lloyd's Register Foundation and TWI will inspire and engage the next generation of marine, energy and transportation engineers and experts by providing fundamental science and industry-driven research opportunities aligned with a postgraduate education programme.

The Lloyd's Register Foundation's vision is to be known worldwide as a leading supporter of engineering-related research, training and education. You can find out more on the Foundation's web site www.lrfoundation.org.uk.



A safer world

LR is committed to making the world a safer place through our activities, and our clients benefit from our services which originate from our public benefit ethos. The shares in LR are owned by Lloyd's Register Foundation. Our independence from shareholder dividends means that we have the time to make the right decisions for our business and for the benefit of the community.

Our daily work is a major contributor to the first of the organisation's mission objectives: promoting the safety of life, property and the environment. Through our global engineering, technical and business services, we provide independent assurance and expert advice to help ensure that our clients' assets and processes are safe, responsible and sustainable.

One of the main ways that LR helps to fulfil this objective is through its classification Rules and Regulations (the Rules). These set standards for the design, construction and lifetime maintenance of critical infrastructure – ships, offshore units and land-based installations – to help them function safely and sustainably.

This year saw our launch of the new LR Rules for Offshore Units, an amalgamation of the Rules for Mobile Offshore Units and the Rules for Floating Offshore Installations at a Fixed Location, for the first time including all floating offshore asset types in one document. This signalled a move to modernise the way in which Rules and their guidance notes are presented to industry – and importantly how they are used by designers and operators of offshore units. In addition to the consolidation we introduced topics that are new to the Rule set.

Other Rules development included work on our Naval Ship Rules to make them more relevant to both complex and more simple warships and updated Containership Rules which came into effect in July 2014 following a 10-year research programme. Both these are covered in the Marine report on page 12.

LR continuously develops its Rules and guidelines through industry consultation. For example, the annual meeting of the Offshore Technical Committee this year took place in Rio de Janeiro, Brazil with representatives from offshore owners, operators, designers and shipyards from around the globe.

Some other 'safer world' highlights in the year appear in earlier sections of this annual review, including:

- achieving top ranking as the 'best performing' recognised organisation in the Paris MoU table of port state control performance
- appointment as independent safety assessor for Beijing Metro's Yan Fang Line
- successful delivery by LRQA of a Verified Carbon Standard contract to the International Development Enterprises India (IDEI); the installation of low cost irrigation devices saved almost 33,000 tonnes of CO₂ in its first year.

"We aim to add value to society: making society safer by advancing rules and standards, protecting the environment and advancing technology through people and research."

Sharing our expertise

We contribute to public benefit by making our research publicly available, and our highly qualified experts share their knowledge and experience with academics, students, regulators and professionals through committees, conferences and publications.

This year, we sparked debate in the marine industry with the publication of Global Marine Fuel Trends 2030 and the 2014 LNG Bunkering Study.

Also in 2013/14:

- Max la Cour Christensen, an industrial PhD student working with the Copenhagen fluid dynamics team, was awarded the DANSIS (The Danish Society for Industrial Fluid Dynamics) Graduate Prize 2013 for his thesis on nonlinear multigrid techniques for efficient reservoir simulation.
- We published two downloadable guidance documents on ballast water management.
- Cor Groenveld, LRQA Global Head of Food Supply Chain Services, was re-elected as Chairman of the Foundation for Food Safety Certification (FFSC) Board, with his new term of office being for the next five years.
- Dr Ulrich Foerster, Senior Marine Business Development Manager, Central and East European Area, was elected as Chairman of the Council for the University of Applied Sciences: Technology, Business and Design, Wismar.

“LR stands for a shared commitment to doing the right thing. ...and although, we are financially successful, making our profit count for the benefit of others not generating profit for profit’s sake.”



Girls into engineering

Two Marine and two Energy LR graduates took part in an event run by the Smallpeice Trust in the UK aimed at attracting girls to engineering. The event was sponsored by the Lloyd’s Register Foundation. Participants worked in teams to design, construct and race model boats. The LR graduates gave presentations on the different types of ships that have been sea-going to date and organised activities that would be educational and get girls interested in engineering as a career.



Water Matters

During the year, employees around the world continued work on 26 projects in our corporate community programme, Water Matters. Under this scheme, LR helps to fund water-related projects, organised by our employees, that have a positive impact on society. More information can be found on Facebook at www.facebook.com/lrwatermatters.



Award for visionary excellence

Robin Townsend, a principal specialist in LR, was presented with the ISO/TC8 Ad Van Dyk Memorial Award for Visionary Excellence in June 2014.

Captain Charles Piersall, Chairman of ISO/TC8 (Ships and Marine Technology Committee), presenting the award, said: “The Ad Van Dijk Memorial Award is the only award granted by the committee and this is only the second time it has ever been awarded. It is an extremely selective award for sustained accomplishment and true visionary excellence. It’s ... presented to Robin for his vision and far-reaching impact on the success of ISO/TC8 and the work he has accomplished for the industry, IMO, and IACS.”

The most recent example of Robin’s accomplishments is the development of the ISO/PAS 28007 standard which helps ensure private maritime security companies providing armed guards for ships are compliant, safe and effective. Robin oversaw the whole initiative in only five months from start to finish.

Captain Charlie Piersall went on to say: “Presenting this award not only brings great personal credit to Robin, but is in keeping with the highest tradition of excellence in Lloyd’s Register and LRQA.”



Robin Townsend and ISO TC8 Advisory Group Chairman, Captain Charlie Piersall

Our employees

People make the difference

Aiming for world-class health and safety performance

For a number of years, LR has worked hard and achieved remarkable success in reducing the numbers of accidents and incidents among its workforce.

During the year, we continued to reduce our total recordable injury incident rate to 0.39 per 200,000 worked hours, which is a 23.5% reduction on last year's figure. In the last three years, the number of lost time events has been reduced by 95%. And our Transportation business has now gone more than a year without a lost time injury incident. We have also continued to encourage near-miss and safety observation reporting as this gives us an insight into the unsafe acts and conditions that could injure our employees as well as providing an opportunity to report positive safety cultures. In many cases, it has also given us the opportunity to talk with our clients about how safety can be improved for both their and our employees.

Our Safety Council, the Executive Leadership Team, meets quarterly and acts as the guiding body for how LR will move from its current safety position to one of true world-class performance. It sets the direction for the future and leads by example in terms of the behaviours and attitudes that LR expects from its employees worldwide.

Our Safety Review Group, the senior safety team, also meets quarterly and reviews health and safety performance and considers the effectiveness of our safety management system. This group also acts as the serious safety incident review panel, which reviews the status and effectiveness of formal incident investigations and their corrective and preventive action.

In support of our safety management system, we deliver field safety training and safety leadership training for our senior managers. We have also developed a three-yearly refresher training programme to ensure all our employees maintain their safety competency.

Highlights in 2013/14

In the last year, we have been successful in:

- achieving group-wide OHSAS 18001 certification
- delivery of the senior and middle management safety training programme
- the start of an occupational health programme
- progress with the integration of recent acquisitions into the safety management system.

Looking ahead

The 2014/15 annual health and safety plan is structured around the following key critical safety success factors: increase involvement and engagement in health and safety; positive safety and behaviour culture; safety integration into business as usual; and leadership commitment and visibility.

We recognise that we are at the point of a new cultural shift. Our success in reducing the numbers of accidents and incidents has been achieved primarily through the application of a formal safety management system and a formal safety structure which has seen professional safety personnel located around the world as well as within individual business divisions. This approach has served us well but we now recognise that we need a different approach if we are to achieve a truly world-leading performance.

Instead of developing further formal structures and processes, we recognise the need to change our employees 'from the inside'. This means making greater efforts to understand why our people might choose to behave in ways that are dangerous to them and detrimental to the business. It also means 'selling' the benefits of safety compliance at all levels within the organisation and underscoring the legal, commercial and ethical advantages of so doing. Ultimately, by instilling seven core beliefs in each of our employees, LR's safety performance will be taken to the next level.

Seven core beliefs for employees

- (Almost) every work accident is avoidable
- Avoiding injury is the most important element of every individual's day-to-day work activity
- Achieving our declared safety objectives is of foundational importance to our long-term business success
- Every one of us is our own safety manager – we share a collective and an individual responsibility for stopping injury
- We aim to be safety 'ambassadors' for the organisation by sharing our expertise with clients
- The health and safety aspects of every activity are always considered before any job is begun
- Safe practice starts on the way to the work site, and remains active throughout the job and until safely home.



The HR agenda

The publication of the results of the 2013 employee opinion survey provided some clear input to the 'people' agenda for the year.

On the positive side, people have a good understanding of LR's strategy and how it applies to their roles, have a positive perception of their line managers and great respect for the strong safety culture – work areas are safe and people understand and apply safety behaviours expected of them, and corrective action is taken when needed. Areas for improvement include the management of change, the management of underperformance, recognising and nurturing high performance, collaboration and having the right tools and resources to get the job done.

A journey of continual improvement

Improving the management of performance has been a priority with the introduction of a new appraisal system, rating performance for the first time at the end of the performance year on objectives and behaviours. A new behavioural competencies dictionary and objectives library support this, together with access to online skills learning materials and face-to-face training for managers. A more formal link between performance and reward is under development and will be introduced in subsequent years.

We have enhanced the leadership development programme, adding new learning development centres and integrated essential leadership and first-line manager training programmes. Senior talent development and succession planning are also receiving focus with a talent review board in operation and reporting directly to the Executive Leadership Team.

All the businesses have been undergoing change and transformation programmes in response to changing market circumstances. LR published a new change management procedure during the year and the HR team ensures that the people aspects of change management are addressed and fully incorporated.

As LR grows and becomes more diverse, the challenge to collaborate effectively across businesses, regions and newly acquired companies increases. We have started a project to replace the current intranet with a tool that enables more effective collaboration using social media principles and aim to roll this out in 2015.

During the year, we published a new careers web site. This is now the focal point for all applications to LR. We have completed our employee value proposition, taking input from across LR, and these messages will be used on the website and in various social media channels we use to make contact with prospective employees.

The move of the Marine business to Southampton was satisfactorily concluded during the year. The number of people transferring from London exceeded expectations and the relocation team have won awards recognising the excellence of the way in which the move has been handled.

A new shared service centre for EMEA finance was set up and a number of standard back-office processes were transferred there from country finance offices across the region. We set up a new HR shared service centre for the UK, located with the finance team, and both are now providing an effective support to LR and a model for consideration elsewhere.



Investing in the future: graduate scheme

We pride ourselves on delivering the very highest standards of advice and service to our clients, so our people have to be the best. Through our tailored graduate programmes, we take care to invest in our graduates' development and nurture their talent. We put our graduates right at the heart of our business and deliver a wide breadth of opportunity.

These are some of the work experiences of graduates this year.

- A small ships project, the development of our fishing vessel market. This project involves helping fishing vessel owners develop their knowledge of regulations both present and forthcoming. Graduate: Martin Layng.
- A seed project for LR Consulting assessing the extent of counterfeit, fraudulent and suspect items within the nuclear and other high-risk industries. Graduate: Hussain Quraishi.

- Co-ordination with surveyors in charge around the world to write an updated 'Surveyor in Charge Toolkit', designed to provide a quick reference guide to the behavioural and business skills required, such as leadership and business development. Graduate: Kirsten Henderson.
- Development of Energy's first comprehensive product and services portfolio for our global asset integrity services. Graduate: Shervin Khalkhali.
- New STQ ferries being built in Fincantieri using LNG as a fuel, setting a benchmark in accepting these new ships into classification. Graduate: Philip Hadjisoteriou.
- Review of the graduate basic surveying skills course which resulted in a new training provider offering better training facilities and course content at a more efficient cost to LR. Graduate: Gary Gallagher.

Governance

The Board of Directors and management leadership team work together to govern and direct the activities of the trading element of the group

Board of Directors

The trading entities in the group are owned by Lloyd's Register Group Limited, which in turn is a 100% owned subsidiary of the Lloyd's Register Foundation. The Board of Directors of Lloyd's Register Group Limited is elected by the Lloyd's Register Foundation.

3 Ellis Armstrong
Non-Executive
Director



6 Michael Lykiardopulo
Non-Executive
Director



1 Thomas Thune Andersen

Thomas is the Chairman of the Lloyd's Register Foundation and Chairman of Lloyd's Register Group Limited and first joined the board in June 2010. Thomas was a member of the board for the A.P. Moller-Maersk Group with over 30 years in the maritime and energy sectors. He is Chairman at Dong Energy A/S and a board director of Petrofac and of VKR Holdings, the parent group of Velux.

2 John D Chandris

John is the Senior Non-Executive Director on the Board. He is Chairman of the Chandris Group.

3 Ellis Armstrong

Ellis has had an extensive career in offshore operational, commercial and planning roles, and leadership functions, ending his career with BP as CFO of Exploration and Production. He has a BSc and PhD in civil engineering and a Masters degree in business administration.

1 Thomas Thune Andersen
Chairman



4 Chris Finlayson
Non-Executive
Director



7 Richard Sadler
Chief Executive
Officer



4 Chris Finlayson

Chris is Chairman of InterOil Corp. Formerly, he was Chief Executive of BG Group and an Executive Vice President and Managing Director with Royal Dutch Shell. Chris is a geologist, physicist and petroleum engineer with nearly 40 years' technical and commercial experience in the oil and gas industry.

5 Ron Henderson

Ron is also a trustee of the Lloyd's Register Foundation. A chartered accountant, he is a former CFO of Network Rail and Balfour Beatty. In addition to other non-executive roles, he also served on the UK Auditing Practices Board.

6 Michael Lykiardopulo

Michael is Non-Executive Director of Lykiardopulo and Co Ltd and is responsible for the commercial management of a fleet of oil tankers and bulk carriers. He is a qualified barrister. Michael was part of the Lloyd's Register Board which helped formulate the plans for the 2012 restructure and he served as a trustee to help oversee the initial development of the Lloyd's Register Foundation.

2 John D Chandris
Senior Non-
Executive Director



5 Ron Henderson
Non-Executive
Director, Chairman
of Lloyd's Register
Audit Committee



8 Alastair Marsh
Chief Financial
Officer



7 Richard Sadler

Richard joined Lloyd's Register in 1976 and worked in the marine, industrial and offshore sectors. He moved to the Royal Bank of Scotland in 2004 as Director Ship Asset Management and rejoined Lloyd's Register in 2006 as EMEA Director. He took up the position of CEO on 1 July 2007. Richard has a BSc in naval architecture.

8 Alastair Marsh

Alastair, a qualified chartered accountant, joined Lloyd's Register in April 2007 and was appointed as Group Finance Director in April 2008. He held previous senior financial management positions at Superscape Group plc, Easynet Group plc, Laporte plc, and NCR Corporation.

Management leadership team

LR's Executive Leadership Team (ELT) takes ultimate leadership responsibility for the company. The ELT together with the Senior Leadership Team works to govern and direct the LR activities.

Tom Boardley
Group Marine
Business Director



John Wishart
Group Energy
Business Director



Jim Harrison
Group Legal
Director



Mike Robinson
Group Customer
Strategy Director



John Wilford
Group Strategy
and Corporate
Development
Director



Chris Coupland
Chief Information
Officer



John Rowley
Group Management
Systems Business
Director



Tim Bower
Group Financial
Controller



Simon Nice
Group Financial
Planning and
Analysis Director



Paul Seller
Group
Transportation
Business Director



Paul Huber
Group Regional
Operations
Director



John Stansfeld
Group Human
Resources
Director



Estelle Clark
Group Safety
and Business
Assurance
Director



Keith Povey
Group Corporate
Secretary



Mark Stokes
Group
Communications
Director



Key

- Board of directors
- Executive Leadership Team
- ▲ Senior Leadership Team

Glossary

A more detailed explanation of some of the acronyms and terms in this review

American Society of Mechanical Engineers (ASME)

The ASME Boiler and Pressure Vessel Code is the leading internationally accepted construction code defining the requirements for the design, manufacture, inspection and testing of many types of pressure vessels and nuclear power plant components.

AS 9110

A standard which defines the quality system requirements based on AS9100 and includes additional criteria for maintenance repair and overhaul facilities serving the aircraft industry.

Blowout preventer

A blowout preventer is a large, specialised valve or similar mechanical device, used to seal, control and monitor oil and gas wells. Blowout preventers are critical to the safety of crew, rig and environment, and to the monitoring and maintenance of well integrity.

Bulker

A bulk carrier, bulk freighter, or bulker is a merchant ship specially designed to transport unpackaged bulk cargo, such as grains, coal, ore, and cement, in its cargo holds.

Bunkering

The act or process of supplying a ship with fuel. Bunker quality is highly variable across the world and LR provides ship operators and managers with independent verification of fuel quality.

Classification

The development, implementation and maintenance of standards (Rules) for the design, construction and operation of ships and offshore units. Compliance with these standards ensures assignment and maintenance of class.

Classification society

A classification society is a non-governmental organisation that establishes and maintains technical standards for the construction and operation of ships and offshore structures.

Clean Development Mechanism (CDM)

A greenhouse gas emissions reduction project in a developing country where the investor is from an industrialised country. Both countries must have ratified the Kyoto Protocol.

Computational fluid dynamics (CFD)

A branch of fluid mechanics that uses numerical methods and algorithms to solve and analyse problems that involve liquid or gas fluid flows.

Deadweight tonnes (dwt)

The maximum weight of cargo and stores that a ship can carry.

Designated body

In the rail industry, designated bodies are independent third parties appointed by an EU member state to assess and verify conformity of projects with the country's notified national technical rules (NNTRs).

European Rail Traffic Management System (ERTMS)

An EU initiative to enhance cross-border interoperability and the procurement of signalling equipment by creating a single Europe-wide standard for train control and command systems.

Floating liquefied natural gas (FLNG)

FLNG refers to water-based LNG operations employing technologies designed to enable the development of offshore natural gas resources. Floating above an offshore natural gas field, the FLNG facility will produce, liquefy, store and transfer LNG (and potentially LPG and condensate) at sea before carriers ship it directly to market.

Floating offshore installation (FOI)

Relates to any kind of floating installation regardless of its capability.

Floating storage and offloading unit (FSO)

Floating production unit which stores oil or gas as it is extracted from the seabed before delivering to export.

Global Food Safety Initiative (GFSI)

A business-driven initiative launched in 2000 for the continuous improvement of food safety management systems to ensure confidence in the delivery of safe food to consumers worldwide.

Gold Standard

An independent certification standard for carbon credits generated from Clean Development Mechanism (CDM) projects or Voluntary Emissions Reduction (VER) projects. It was designed to ensure that carbon credits are not only real and verifiable but that they make measurable contributions to sustainable development.

Gross tons (gt)

Gross tonnage is a function of the moulded volume of all enclosed spaces of the ship. It forms the basis on which manning rules and safety regulations are applied, and registration fees determined.

Human factors

Human factors involves the study of all aspects of the way humans relate to the world around them, with the aim of improving operational performance, safety, through-life costs and/or adoption through improvement in the experience of the end user.

IADC (International Association of Drilling Contractors)

A membership organisation representing the worldwide oil and gas drilling industry. It operates specially designed accreditation programmes, recognised throughout the world, to ensure that contents of critical training programmes adhere to recognised industry standards.

Independent safety assessor (ISA)

ISAs objectively assess the safety aspects of a process, system or organisation. From the evidence gathered in the assessment, the ISA forms a judgement on whether the safety requirements have been met.

International Association of Classification Societies (IACS)

A membership organisation that contributes to maritime safety and regulation through technical support, compliance verification and research and development. More than 90% of the world's cargo-carrying tonnage is covered by the classification rules and standards set by the 13 member societies of IACS.

International Labour Organization (ILO)

A United Nations agency dealing with labour issues, particularly international labour standards and decent work for all; 185 of the 193 UN member states are members of the ILO.

International Maritime Organization (IMO)

The specialised agency of the United Nations with responsibility for safety and security at sea and the prevention of marine pollution from ships. Established in 1948, IMO first met in 1959 and is the only United Nations agency with its headquarters in London.

Interoperability

The ability of a system or a product to work with other systems or products without special effort. In the European rail sector, this is made possible by the implementation of standards under the EC interoperability directives.

ISO (International Organization for Standardization)

An independent, non-governmental standard-setting body composed of representatives from 165 national standards organisations. International standards give world-class specifications for products, services and systems to ensure quality, safety and efficiency. They are instrumental in facilitating international trade.

ISO 9001

The international management systems standard concerned with quality management – what an organisation does to ensure customer satisfaction by meeting customer needs and expectations and applicable regulatory requirements, and continually to improve its quality performance.

ISO 14000

A family of international management standards concerned with environmental management – what an organisation does to identify and manage significant environmental effects caused by its activities, products and services, comply with relevant legislation and continually to improve its environmental performance.

ISO/IEC 17025

This international standard specifies the general requirements for the competence to carry out tests and/or calibrations, including sampling.

ISO/PAS 28007

These guidelines were developed as a maritime industry initiative to provide guidelines for ISO 28000 certified companies deploying privately contracted armed security personnel (PCASP) on board ships. ISO/PAS 28007 requires maritime security companies to fully identify and demonstrate compliance with all the legal requirements to provide PCASP on board merchant ships to guard against piracy in the high-risk areas. ISO/PAS 28000 (specification for security management systems for the supply chain) is an ISO publicly available specification on requirements of a security management system particularly dealing with security assurance in the supply chain.

ISO 50001

ISO 50001 specifies requirements for establishing, implementing, maintaining and improving an energy management system, whose purpose is to enable an organisation to follow a systematic approach in achieving continual improvement of energy performance, including energy efficiency, energy use and consumption.

ISO 55001

An internationally recognised standard that supports best practice asset management in all organisations. It replaced PAS 55 which was developed as a quality benchmark for management practices in asset-intensive industries such as power, oil and gas, and transportation.

Liquefied natural gas (LNG)

Natural gas changes to a liquid at -162C, creating LNG. When liquefied, the gas is reduced to 1/600th of its original volume making it economic to transport in specially designed LNG ships.

Lost time incident (LTI) or event

An injury resulting in the injured person being absent from work the day following the incident, or in an absence of more than eight hours after the incident (but not necessarily the day following the incident) and there is a direct causal link between the injury and the lost time.

Liquefied petroleum gas (LPG)

Not to be confused with LNG, LPG is often called 'propane' as it is made of various mixtures of propane and other similar types of hydrocarbon gases. These hydrocarbons are gases at room temperature, but turn to liquid when they are compressed. LPG is stored in special tanks that keep it under pressure, so it stays a liquid. While the distribution of LNG requires heavy infrastructure investments, LPG is more easily transported.

Management system

The organisation's business system that focuses on the achievement of results, in relation to performance improvement and compliance with legislation, that consists of defined organisational responsibilities, practices, procedures, processes and resources for developing, implementing and achieving a company's policies.

Marine riser tensioner (MRT)

A device used on an offshore drilling vessel which provides a near constant upward force on the drilling riser independent of the movement of the floating drill vessel. It is crucial that the tensioner can manage differential movements between the riser and the rig as the riser is connected to the wellhead on the seabed.

Maritime Labour Convention

The International Labour Organization's Convention, known as 'MLC, 2006' came into force in August 2013, effectively becoming binding in international law. It is currently ratified by 56 ILO member states responsible for regulating conditions for seafarers on more than 80% of the world's gross tonnage of ships. It establishes minimum working and living standards on those ships.

Notified body

A third party appointed by EU member states to perform formal audits of products and quality systems for many of the EU's directives. A notified body is appointed to a particular directive.

Paris Memorandum of Understanding (MoU)

The Paris MoU aims to eliminate the operation of sub-standard ships through a harmonised system of port state control. It consists of 27 participating maritime administrations and covers the waters of the European coastal states and the North Atlantic basin from North America to Europe.

Port state control

The inspection of foreign ships in national ports to verify that the condition of the ship and its equipment complies with the requirements of international conventions and that the ship is manned and operated in compliance with these rules.

Risk management

This term is used in many business sectors including finance and insurance. Our concern is with risk management solutions in relation to technical, safety and commercial aspects of our clients' assets – ships, oil rigs, industrial plant, railways. Risk management supports better decision-making by contributing to a greater understanding and control of risks and their impacts.

Rules

See classification above.

Society

See classification society.

Supramax

Bulk carriers with a capacity between 50,000 and 60,000 dwt. These 'bulkers' are well suited for small ports with length and draught restrictions, or ports lacking transshipment infrastructure.

Total recordable incident frequency (TRIF)

A rate calculated as the total of fatalities, lost time incidents, restricted work cases and medical treatment cases x 200,000/worked hours.

Twenty-foot equivalent unit (teu)

The measure used for container capacity, a teu is a volume measurement equal to one standard 20 ft (length 6.1 metre; approximately 39 cubic metres) container.

UKAS (United Kingdom Accreditation Service)

The sole national accreditation body recognised by the UK government to assess, against internationally agreed standards, organisations that provide certification, testing, inspection and calibration services.

Verified Carbon Standard

The Verified Carbon Standard is a greenhouse gas programme, describing itself as a 'comprehensive quality assurance system used to account for greenhouse gas emission reductions and credits'. It applies to offset projects in the voluntary carbon trading sector and was established by the Verified Carbon Standard Association (VCSA).

Voluntary Emissions Reduction (VCR)

Voluntary Emission Reductions or Verified Emission Reductions (VERs) are a type of carbon offset exchanged in the voluntary or over-the-counter market for carbon credits. VERs are usually certified through a voluntary certification process and created by projects which have been verified outside the Kyoto Protocol.

Lloyd's Register EMEA

T +44 (0)20 7709 9166
F +44 (0)20 7488 4796
E emea@lr.org

71 Fenchurch Street
London
EC3M 4BS
UK

Lloyd's Register Asia

T +852 2287 9333
F +852 2845 2616
E asia@lr.org

22nd Floor
Dah Sing Financial Centre
108 Gloucester Road
Wanchai
Hong Kong
SAR of PR China

Lloyd's Register Americas, Inc.

T +1 (1)281 675 3100
F +1 (1)281 675 3139
E americas@lr.org

1330 Enclave Parkway
Suite 200
Houston
Texas 77077
USA

www.lr.org

Lloyd's Register and variants of it are trading names of
Lloyd's Register Group Limited, its subsidiaries and affiliates.

Care is taken to ensure that all information provided is accurate
and up to date. However, Lloyd's Register accepts no responsibility
for inaccuracies in, or changes to, information.

Copyright © Lloyd's Register Group Services Limited, 2014.
A member of the Lloyd's Register group.

Produced by Lloyd's Register Group Communications

Design and production
CONRAN DESIGN GROUP

Printed by Pureprint