Lloyd's Register

Horizons

News and information for the marine industry

A Lloyd's Register magazine

Birth of the world's largest-ever ship

Lloyd's Register classes the *Pieter Schelte*

Stena pioneers first methanol-powered ferry

V.Ships celebrates its new brand

and operators lower their carbon footprint

Other stories

terms between owners and yards. LR's notations ensure that owners and yards will be able to define exactly what is required, agree what can be done, and enable any yard to put a price on levels of readiness as well as building readiness flexibility, or options, into contracts.

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

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

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

Nick Brown

Lloyd's Register's Marine COO

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

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

(Left to right), Luis Benito Marketing Manager and Gas Technology Marketin

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

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

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

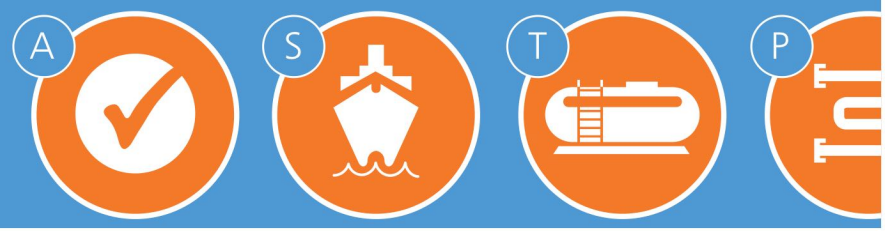
LR's Global Strategic Marine Marketing Manager, Luis Benito, commented: "We identified a blocker to progress in this area and listening to, and working with, shipyards and owners we have developed this notation with clearly identifiable levels to enable technical and contractual decisions about what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

"This means shipyards are offering and buyer – and at what price. Th at a contract stage for contracts to be flexible changes as and when h during construction. Th already been reviewed agreed in our last tech strength and demonstr of the shipping industr development process."

Leonidas Karistios, LR's Leader, said: "Lloyd's Re society to develop a no readiness for LNG as a f of previous gas-fuelled with gas as a fuel in co- technology leaders mal the gas fuelled readine classification services to

Preparing your vessel for gas fue

GR - qualifying readiness



eter Schelte,

rld's largest vessel

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

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

Twin-hulled

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

LR was awarded the basic engineering plan appraisal contract in 2007, followed by a detailed engineering plan appraisal contract in 2010. Many alterations were made to meet market forces and changing demand from the offshore decommissioning sector at this stage. These included design

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Pieter Schelte during a manoeuvering procedure

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

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

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

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

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

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

Finally, a global team of LR surveyors and specialists – headed by Mission Equipment Manager Martin Smolders, a specialist in lifting equipment, surveys and testing of the various components in close liaison with the Mission Equipment Manager. The work was largely carried out in the Netherlands, Belgium, France, China, Czech Republic, South Korea, the UAE, Italy, Germany, the UK and the USA, although many other countries were involved as well. The three main LR teams were co-ordinated by LR's Project Sponsor, Piet Mast, who liaised with and reported back to Allseas.

El Fassi says: "A project of this complexity and technicality could easily have failed or been massively delayed through any number of reasons, but tonnage calculations, machinery installations and other key technical factors to be altered during build."

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

Allseas owner Edward Heerema

Profile of the **Allseas Group**

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

Allseas operates four pipelaying vessels including the *Solitaire*, which until now has been the world's largest pipelayer. It also