Design and Operation of Containerships

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being raised concerning the structural integrity of larger containerships. It is now clear that some ships in service were designed with inadequate buckling strength. All containerships in the relevant size range currently classed with Lloyd's Register have been checked (apart from a small number which have transferred into Lloyd's Register class and for which we are still awaiting the detailed construction plans) and the Class society confirms that they all satisfy the agreed standards of strength.

The Marine Accident Investigation Branch's inquiry and report into the circumstance of the loss of *MSC Napoli* has also raised questions concerning containership operations. It is clear that shippers, port operators and ship operators must work together to find a solution to ensure the correct recording of individual box weights. Likewise, ships trying to maintain high service speeds in heavy seas will impose additional loads on hull structures. Navigators need to be aware of the boundaries of operation in different operating conditions and exercise discretion. Losses of containers overboard are another significant concern. Solutions to this problem need to be pragmatic rather than mathematical. *NA*

Growth in ship sizes creates challenges for designers, builders and Class.

ABS on a parametric roll

ABS has awarded three ships in the Hyundai Merchant Marine Co (HMM) fleet with what is believed to be the first Class notation specific to parametric roll issued to the containership industry.

The first optional Class notation has been issued against criteria contained in the ABS Guide *For The Assessment Of Parametric Roll Resonance In The Design Of Container Carriers*, which provides design and analysis measures to determine if a particular vessel is vulnerable to parametric roll and the potential magnitude of the roll motions. This is reckoned to be the first Class criteria addressing the subject that is firmly based on ship motion analysis supported by extensive simulations.

The 'PARR C1' notation has been granted to the 4700TEU *Hyundai Forward*, and 8600TEU vessels *Hyundai Faith* and *Hyundai Force*. In discussing the importance of the notation, HMM executive vice president and head of the marine division 'Joo-Suk Kwon' said: 'The award of the ABS Parametric Roll notation to our container carrier newbuildings further demonstrates HMM's commitment to safe operation.'

ABS offered a two day training course on the evaluation of parametric roll for container carriers in Busan in April. 'We are ensuring our technical and operational staff participate in this training to enhance their awareness and allow them to take prompt action to mitigate [against] parametric roll risks,' added Mr Kwon.

Criteria in the *Guide* are based on some of what is claimed to be the most advanced analysis done to date in the industry, through joint research by ABS and Hyundai Samho Heavy Industries Co (HSHI).

According to ABS engineer Dr Vadim Belenky, a ship motions specialist and former academic who led the multi-year research project, by applying the criteria in the *Guide*, designers can determine if a ship may be vulnerable to parametric roll in worst case scenarios. 'If the design is vulnerable, several options exist to address this vulnerability,' he said. These include design modifications such as the inclusion of flume tanks and conducting numerical simulation studies and model testing to develop a series of diagrams that will define the combinations of speed and course, that, given sea state and load conditions, might be dangerous. These diagrams can be placed onboard the vessel to provide guidance to the Master and navigating officers. *NA*

Give them enough Eurolest rope

The Netherlands-based rope manufacturer Lankhorst has introduced a synthetic rope to connect container barges when inland.

Rope supplier Lankhorst has developed a new synthetic rope designed to replace the steel wire traditionally linking container-bearing barges pushed inland by specialised vessels. The Dutch supplier says the synthetic material Eurolest is being released to the market with 'high expectations.'

The new rope is lighter than steel wire and can therefore be put more quickly into place by fewer personnel. 'These ropes will be time savers, especially on vessels with a limited crew,' says the company. 'The trick of the rope is in its high performance core and its highly abrasion-resistant jacket.' The jacket is non-load bearing and thus meant for protection only.

Long term field trials have proven that the performance is excellent and the life time equally good, according to the company.

Lankhorst says it has brought several types of these ropes to market, with excellent feedback. 'The elongation and friction properties have to be optimal,' the company says. 'This technology is also used in the offshore industry with the mooring of production islands in deepwater situations. The environment of the offshore ropes is much different from those used in the maritime industry, of course. The sheer size of the offshore ropes is tremendous. Reels over 50tonnes a piece in weight, with ropes bearing well over 1000tonnes of breaking strength, in lengths of 800m and more, require special machines. But in the end, both sectors want maximum strength with excellent lifetime properties.' *NA*

New synthetic rope specifically for connecting container barges for inland duties.