

# Ports Shipping

i n d u s t r y

## Constant Tension

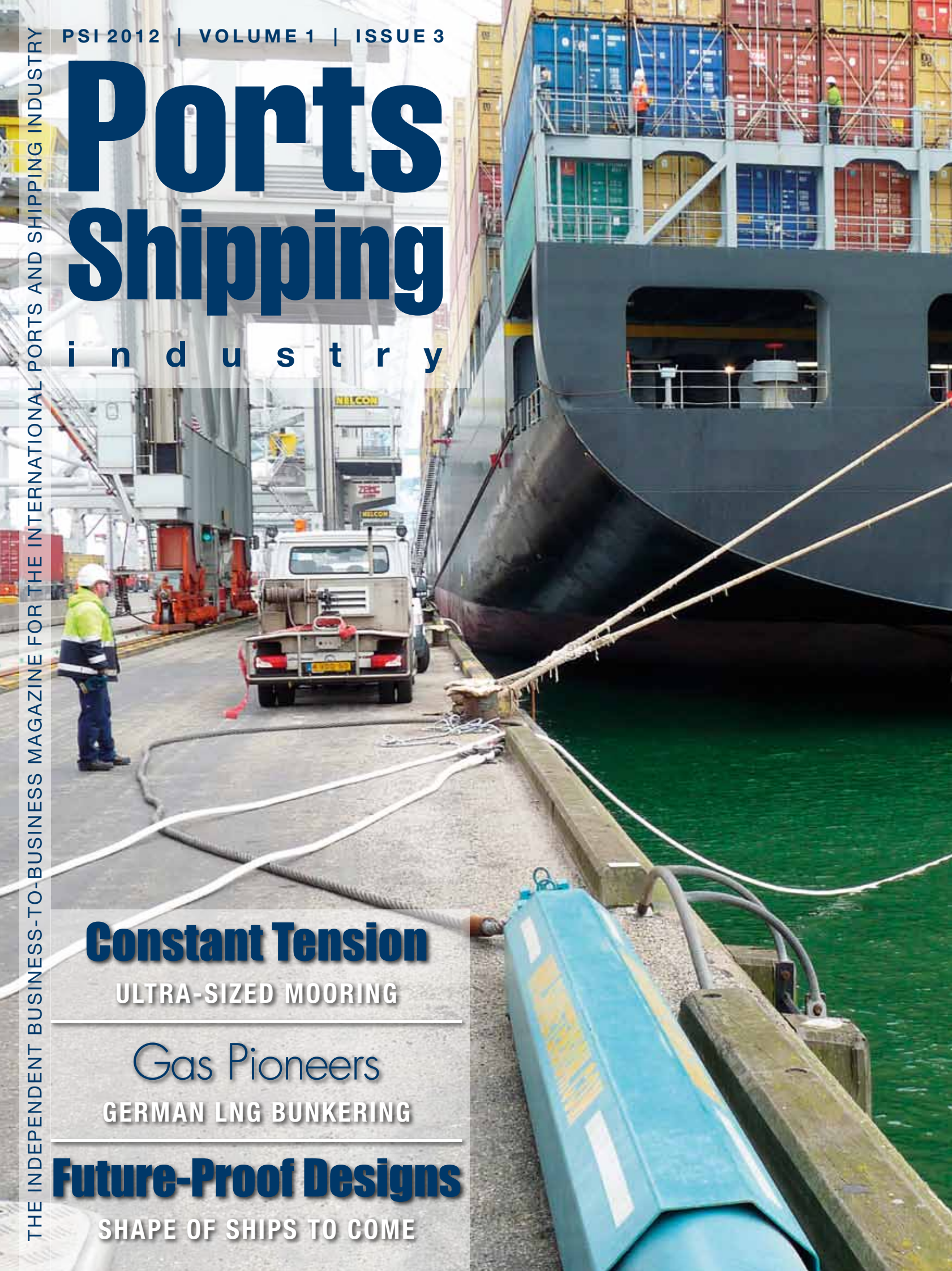
ULTRA-SIZED MOORING

## Gas Pioneers

GERMAN LNG BUNKERING

## Future-Proof Designs

SHAPE OF SHIPS TO COME



# Safe Berthing



*Wash can cause moored ships to come loose and also affects the safe loading and unloading of vessels.*

## Watch the Wash & Sway

*As larger and faster ships move in and out of ports, a joint industry project is working to understand the effect of wash on port safety, infrastructure and berthing efficiency. Full-scale testing has begun in the Port of Rotterdam, delivering project leader Bechtel valuable guidelines for port design and planning – particularly for hazardous materials. Executive Editor Dennis Vinkoert reports.*

**I**n November the Research On the Passing Effects on Ships (ROPES) group, an international joint-industry project, moved from computer simulation to testing involving ships in the Port of Rotterdam. Led by engineering, project management and construction company Bechtel, the research will set new international guidelines for the design and construction of future ports. “In recent years, the size, speed and power of ships have increased dramatically, increasing the size of their wash,” explains Marco Pluijm, Bechtel’s senior ports specialist and chair of

ROPES. “The impact of the wash is a serious concern which can result in safety issues, environmental damage and financial loss. Until now, little research has been done on this subject. Our research is identifying the full effect of a passing ship’s wash and what can be done in terms of port design to mitigate that.”

### *Complete Write-Off*

Wash can cause moored ships to come loose and also affects the safe loading and unloading of vessels. Damage to vessels and

port infrastructure reduces port efficiency. For example, in September Williams Shipping Agency reported heavy damage at the Port of Santos in Brazil. As the bulk carrier Coal Hunter was leaving the port, her wash impacted another bulk carrier. That vessel, the Yusho Regulus, stood off from the pier, causing severe damage to both ship loaders at the terminal. One of the loaders was completely written-off, leading to increased berthing delays for the many ships anchored at the roadstead of one of Brazil’s busiest ports.

While that incident occurred during the discharge of soya beans, the transfer of oil, gas, or other hazardous materials is potentially far more dangerous for ports. Little wonder that the effects of passing ships formed a major part of berthing studies for the new LNG Terminal on the Calcaseu River in Louisiana, USA.

### *First Understanding*

Given the potential financial and safety risks, the ports and shipping industry wants to understand wash effects better. ROPES involves 26 organisations, from port authorities – including the Port of Rotterdam, Port of Amsterdam and Port of Antwerp – to terminal owners and operators. The list includes consultants, pilots, linesmen, hardware suppliers and marine research institutes. Bechtel is the only engineering and construction company involved in this initiative.

The research began in 2010, conducted in multiple phases including extensive computer simulation, scale-model testing and now full-scale testing. MARIN, Pinkster Marine Hydrodynamics (PMH BV), Svašek Hydraulics and Deltares are applying their knowledge and resources. The project developed a computer programme to predict the forces created by a passing vessel. “The final results will come out in November 2013 and will provide new international



*Marco Pluijm, Bechtel's senior ports specialist and chairman of ROPES: “Our research is identifying the full-effect of a passing ship's wash and what can be done in terms of port design to mitigate that.”*

### *Khalifa Port*

Bechtel is among the most respected engineering, project management and construction companies in the world. Bechtel operates through five global business units that specialize in civil infrastructure; power generation, communications and transmission; mining and metals; oil, gas and chemicals; and government services. Since its founding in 1898, Bechtel has worked on more than 22,000 projects in 140 countries on all seven continents. One of the ongoing projects is a major new port and industrial zone for the United Arab Emirates. Khalifa Port and Khalifa Industrial Zone Abu Dhabi (Kizad) in Abu Dhabi will be one of the world's largest combined port and industrial zone developments when it opens in late 2012. It is set to support Abu Dhabi's vision of sustainable economic growth in the United Arab Emirates (UAE). When open, the flagship Khalifa Port will be one of the most modern ports in the



world. It is equipped to handle an initial capacity of two million TEU containers and twelve million t of general cargo annually. It is the only automated facility of its kind in the region for 3,000 miles in any direction. The port was designed to accommodate the largest ships currently at sea and those planned for the future. By 2030, capacity can rise to 15 million TEU containers and 38,6 million t of general cargo a year if future phases are required.

guidelines for the planning and design of ports in relation to passing ships,” Mr Pluijm notes. “The results will provide Bechtel with the latest state-of-the-art planning and design tools and guidelines. As these results are only

available to the participants for a well-defined period of time, it provides Bechtel with a competitive advantage over others.”

**i. [www.bechtel.com](http://www.bechtel.com)**



*Following model tests of the effects of passing ships at Delft based research institute Deltares, the project has now begun full-scale testing at the Port of Rotterdam.*