Ship and Berth Interfaces

A JOINT PIANC-RINA CONFERENCE

FRIDAY, 28TH JUNE 2019
10:00hrs until 16:30hrs

To be held at the
INSTITUTION OF CIVIL ENGINEERS ONE GREAT GEORGE STREET, WESTMINSTER, LONDON SW1P 3AA
(GODFREY MITCHELL THEATRE)

Ship and Berth Interfaces
Ongoing Developments

This 2019 PIANC/RINA Conference is targeted at progressing the work done at the 8th October 2018 workshop, where four main topics were examined in detail:-

- The ship to fender structural interaction
- Recent unsatisfactory experience with the quality of supply of rubber fender units
- Recent unsatisfactory experience with the quality of supply of bollards
- Issues associated with ship moorings

This in turn had already built on the results of the 14th May 2018 joint PIANC/RINA Seminar which highlighted a number of areas where there was a clear need to harmonise approaches between naval architects and port engineers, event to the point of needing a better common vocabulary for certain issues.

Having highlighted the problems, it is now necessary to identify the impact of these issues on standards and codes of practice, and these presentations, given by speakers with direct experience of these key issues.

For the ship/fender interaction issue, the curious situation where regular damage to ships can be shown to be almost inevitable and yet is seldom reported is noted with examples indicating the expected effect on ship hulls.

For fenders and bollard quality, given a background of recent examples of unreliability in performance, the speakers will explain how this has been overcome.

For moorings, the issue of how to assess the required strength of mooring points is approached from four directions.

a) The effects of line stiffness on mooring analysis.
b) Methods of calculating mooring loads and methods of specifying them for structural design and;
c) The particular example of the mooring of Floating Storage Regassification Units is considered, a currently quite significant requirement with respect to LNG terminals.
d) The gradual adoption of Automooring systems.

In a guided interactive breakout session, a workshop will give delegates a chance to take part in a “hands-on” exercise experience, allowing them to give feedback on the value of the information in the present standards and to suggest specific improvements. Thus delegates will have a direct influence on future upgrades to the standard suite. .

It is recommended to any civil, port or coastal engineers involved in the design and planning of maritime facilities.

Programme

09:30 – 10:00hrs

Arrival, Registration and Welcome Refreshments– Council Room

10:00hrs
Introduction and Welcome
Greg Haigh, Chairman of the UK Chapter of PIANC

10:10hrs
Is there a Phantom Menace?:- What happens to ship damage from fenders?
Steve Osborn, Atkins Fellow and Robert Tustin, Lloyds Register.

At the PIANC Seminar "Ship and Berth Interfaces" on 8th October 2018 the working groups identified that ship hulls on belted RoRo ships should inevitably suffer local damage unless parallel motion fenders are used. Many such berths do not use parallel motion fenders.

Classification Society rules are changed to react to damage reports, but the issue of such fender damage has never, to our knowledge, been raised. For that reason Classification Rules and other codes of practice do not, so far, raise this as an issue. Why?

This presentation will consider the behaviour of examples of ship hulls under line loads and concentrated patch loads and try to identify the reasons why these impacts have never been raised as an issue. The ship hull/fender interface for other types of vessels will also be considered and a debate opened on whether this will impact on existing codes of practice for fender design and current fendering practice.

10:35
Testing of fenders - Believe it or not?
Ben Bullock, Principal Ports & Maritime Engineer, Jacobs

Elastomeric (rubber) fenders are used globally at all types of marine terminals to absorb the kinetic energy of berthing and moored vessels. It is essential to the safe and efficient operation of these terminals that the fender units perform reliably and predictably day-in, day-out.

In order to provide standardisation across the industry and to provide port operators with confidence in the products they procure, current industry practice is to manufacture and verify the performance of these fenders in accordance with the recommendations of PIANC's 2002 WG33: Guidelines for the Design of Fender Systems.

Ben will describe Jacobs' recent experience of fender performance verification testing in accordance with PIANC WG33, what can go wrong during the manufacturing and testing process and will make recommendations of what could be done in future to improve the reliability of fender performance.

11:00
Why you shouldn't buy bollards at the supermarket
Chris Bolton, Associate, Arup

Mooring bollards are an essential, but often overlooked element of the ship to berth interface. Their continued successful performance in operation is easy to take for granted. However, continued growth in vessel sizes has placed increasing demands on existing bollards. At the same time, changes in production techniques and locations has complicated the procurement of new bollards. A reliable, rated performance of a given bollard can be difficult to establish, but bollards are safety critical and cannot be allowed to fail.

Using lessons learned from recent projects, Chris will present methods of gaining higher confidence in the performance of bollards and outline the knowledge gaps faced by operators and specifiers and some ways these gaps can be closed. Techniques for developing the risk profile of existing bollards will be discussed, along with some examples of quality control methods for the production of new bollards."

11:25hrs
Refreshment Break (tea, coffee and biscuits)

11:55hrs
Effects of Fibre Rope Stiffness Behaviour on Mooring Line Tensions
Stephen Banfield, Managing Director, Tension Technology International

The exact nature of the mooring lines serving in vessel mooring system has a radical effect on the mooring line tensions. Stephen Banfield's informative and thought-provoking talk will cover the issues of changes of effects of rope stiffness on a mooring system and also the fact that he stiffness of a nylon or polyester line at the start of its life is different from that at the end of its life. The hysteresis effects arising from the stiffness variations will also be allowed for. This will be an important contribution to the understanding of mooring design and encourage the inclusion of rope cycling effects in the analysis processes.

12:20hrs
Mooring Modelling
Mark McBride, Group Manager, Ships and Dredging, HR Wallingford

The presentation will describe the most common types of ship mooring modelling that are used in many projects, from static to quasi-static to fully dynamic analyses, and will discuss their appropriateness for various scenarios, along with highlighting the benefits of each approach. The presentation will also summarise the work of PIANC Work Group 186, on the mooring of large ships at vertical quay walls and the issues that this creates, including some potential solutions, focussing on those that can be assisted by naval architecture.

12:45hrs
Lunch

13:45hrs
PIANC fender recommendations – How is WG211 going to fix the problems?
Prasanthi Mirihagalla, Associate Director (Maritime), AECOM

Prasanthi will give an introduction to WG211, Guidelines for the design of fender systems, including its purpose, the UK representatives, the other countries that will be representing the group and the varied expertise of WG211 members.

Critical areas that were identified during the kick-off meeting in Rotterdam will be presented. Chapter leads and chapter members will be presented with particular discussion on the chapters that the UK team will be responsible for. Previous and ongoing research and development work already carried out by other teams, such as WG145, will be highlighted together with new research that might be needed to substantiate improvements in this update to WG 33:2000

PIANC UK has set up a support team to the WG whose progress will be discussed together with the overall way forward.

14:10hrs
Implications for Codes of Practice
Interactive workshop chaired by Steve Osborn, Atkins Fellow

Delegates will be organised into 4 breakout groups, three in the Council Room and one remaining in the Godfrey Mitchell Theatre The objective is for each group to discuss one of the four main topics given in the previous 5 presentations in the light of BS 6349 Parts 1.1, 1.2 and 4 and also the PIANC WG33 document "Guidelines for the Design of Fender Systems, 2002" and to identify issues that would benefit from having additional guidance in either BS6349 or PIANC standards The process will be:-

- Each group will comprise up to 30 persons in "classroom" groups with a convenor, a "scribe" and a screen to display the standards listed above and the presentation already given.
- Each person in each group will be given a sheet setting out the task and some questions.
- Each group will relate to either:-
- The tasks will be to identify, with the help of the convenor, the relevant areas of BS 6349 Parts 1.1, 1.2 and 4 and also PIANC WG33 that relates to the issue, to comment on the quality of the guidance that is presently available and to suggest where the guidance might be improved.
- The convenor will later produce a short presentation of the group's conclusions
- The outcome will be presented at the end of the conference

The scenarios will include:-

- the fender/hull interface issue,
- the fender rubber design and specification issues,
- the bollard design and specification issues and;
- the mooring issues

Delegates can request to be involved in specific subject matter by emailing steve.osborn@atkinsglobal.com though we may not be able to guarantee that you can join the subject of your choice. The organisers will allocate delegates that do not express a preference to specific working groups.

This task is intended to test delegates reactions to the guidance given by BS 6349 and PIANC WG33 and deep expertise of the subjects is not required from all delegates. All opinions are important.

14:55hrs
Refreshment Break (tea, coffee and biscuits)

15:10
Floating Storage Regassification Units for LNG Terminal - Moorings and Interfaces
Sean Barker, Global Practice Leader - Mott McDonald.

The global deployment of floating storage and regasification units (FSRUs) to create floating LNG terminals has increased rapidly over recent years. FSRUs are seen by operators as a fast and flexible means to import LNG to supply growing power requirements of many countries and also to enable the switch from oil-fired generation to gas as a cleaner fossil fuel. This presentation will describe examples of different mooring configurations and product transfer interfaces that have evolved over the past 10 years and set out some of the key issues for mooring design compared to conventional tanker berths. Relevant recommendations for FSRU terminal planning and design using standards and industry guidelines will be discussed, including the status of the update of PIANC Report 153 to cover LNG and floating terminal systems.

15:35hrs
Experience in Automoorings
Mark Willbourn, Programme Manager, Briggs Marine

A crucial element of the Woolwich Ferry replacement programme, managed by Briggs Marine Contractors for Transport for London, was the utilisation of an automooring system at each berth. Whereas the old vessels held their position under propulsion power whilst unloading & loading vehicles and passengers the new vessels would be required to meet current regulatory requirements. The design requirement for the automooring function was for a system that could meet the very high frequency ferry operation in challenging site conditions with a 7.6m tidal range and 5 m/s current whilst holding the vessel in a precise alignment to existing linkspans.

Mark will outline how the integrated project team developed the total solution to meet the operational requirement consisting of a the new berth design and associated automooring equipment along with the new vessels and integrated linkspan / automooring control system to successfully deliver the new ferry service. He will give an insight into the challenges that were overcome, comment on the operational experience to date and lessons learnt.

16:00hrs
Workshop feedback plenary session
Chaired by Steve Osborn, Atkins Fellow

Following the Workshop, the convenors from each group will be given 6 minutes to present the outcome of their deliberations, followed by a 10 minute question and answer session.

16:30
Closing Address.
Greg Haigh, Chairman of the UK Chapter of PIANC

16:35
End of Conference

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Booking is via the link below:

https://www.ice.org.uk/events/bs-6349-maritime-works-london

If you are a PIANC UK, RINA or PIANC International Member please select Supporting Association when booking on.

If you are not a PIANC or RINA Member please select Non-Member even if you are an ICE Member.

Payment will be by credit card when booking via the above link.

The booking system will then generate an invoice for your records and confirmation of payment/booking. Cost options are as follows:

Member of PIANC or RINA	Non-Member of PIANC or RINA
£125	**£250**

Please note that PIANC UK is not VAT registered.

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Terms and Conditions

All participants are advised to bring a copy of their confirmation with them on the day to ensure prompt entry.

Cancellations cannot be made once payment has been received; however, replacement delegates are welcome to attend but you must inform the PIANC UK Secretariat at least 5 working days prior to the event.

Delegates cannot attend the event without advance payment.

PIANC UK reserves the right to cancel any event. In this case, the full fee will be refunded.

Please note that whilst speakers and topics were confirmed at the time of publishing circumstances beyond the control of PIANC UK may necessitate substitution, alterations or cancellations of the speakers and/or topics.

The event will be held at the Institution of Civil Engineers, One Great George Street, London, SW1P 3AA, The Godfrey Mitchell Theatre.

If you have any queries please contact Elira Alushi on elira.alushi@ice.org.uk or 020 7665 2232.

Certificates of attendance will be made available electronically following the event for PIANC UK Members. To request your certificate please tick the certificate box when signing the attendance register on the day.