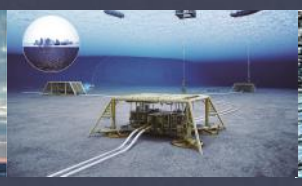





# SAROSS 2016

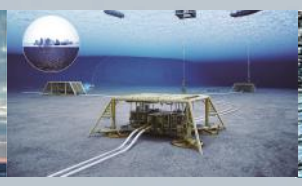
## 2nd International Conference on Safety and Reliability of Ships, Offshore and Subsea Structures

## 15th — 17th August 2016

**The Corinthian Club**
**191 Ingram Street**
**Glasgow**
**UK**

- Drinks Reception and Conference Dinner
- Workshop on Structural Reliability
- Keep up to date with Advances in the Maritime Industry






- **Drinks Reception and Conference Dinner**
- **Workshop on Structural Reliability**
- **Keep up to date with Advances in the Maritime Industry**

# Conference Programme Day One: 15th August

**08:25 — 08:55** Delegate Registration

**08:55 — 09:00** Welcome Address

**09:00 — 09:40** Keynote Paper: Structural compliance to arctic conditions
***Professor Soren Ehlers,*** *Hamburg University of Technology - TUHH, Germany*

**09:40 — 10:20** Keynote Paper: Structural Health Monitoring in Support of Structural Longevity of Naval Ships, ***Dr Seref Aksu,*** *Defence Science and Technology Organisation, Australia*

**10:20 — 10:40** Predictive Risk Modelling in Maritime Environments (PRIME): Developing a structural assessment model, ***B. Dymond,*** *Frazer-Nash Consultancy, UK*

**10:40 — 11:10** Break

**11:10 — 11:30** Invited Paper: Quantifying the effect of inspections in ships considering the spatial variability of corrosion, ***H. J. Kim, D. Straub,*** *TU München, Germany*

**11:30 — 11:50** Prediction and Assessment Method of Residual Strength of Aging Ships
***L. Hua, F. Wu,*** *Naval University of Engineering, China*

**11:50 — 12:10** Development of a risk based examination framework for non-destructive examination of new built ships, ***P. Amirafshari,*** *TWI, UK*

**12:10 — 12:30** Risk Study of Ship Navigation in Low Temperature Environment
***M. Zhang, Z. Li, D. Sun, Y. Lin,*** *Dalian University of Technology and Dalian Shipyard*

**12:30 — 14:00** Lunch

**14:00 — 14:20** Design Principles of Offshore Floating Wind Turbines
***O. Khattab, P. Das,*** *Independent Consultant, ASRANet Ltd*

**14:20 — 14:40** Ultimate Strength and Collapse Mode of Cross-stiffened Deck under Uniaxial Compression
***J. Zhenhua, W. Deyu,*** *Shanghai Jiao Tong University, China*

**14:40 — 15:00** The buckling analysis of the stiffened plate with initial deflection
***C. Liu, F. Wu,*** *Naval University of Engineering, China*

**15:00 — 15:30** Break

**15:30 — 15:50** The effect of load case distribution on reliability of hull girder ultimate strength for bulk carriers ***D. Zhang, W. Tang, L. Zou,*** *Technology Research Development Centre of China Classification Society, China; Shanghai Jiao Tong University, China*

**15:50 — 16:10** Risk Based Design Principles of River and River – Sea Integrated Vessels Consisted Of Vessel Pushers and Barges, ***A. Egorov,*** *Marine Engineering Bureau, Ukraine*

**16:10 — 16:30** Real Salvage Operation of River - Sea Tanker with Damage Control and Advanced Strength Analysis, ***G. Egorov, A. Nilva, O. Vorona, V. Chernii,*** *Marine Engineering Bureau, Ukraine*

**16:30 — 16:50** Reliability-Based Assessment of Routes and Operational Conditions for Short Term Transit of a Damaged Ship, ***U. Akpan, T. S. Koko, B. Yuen, F. Lin, M. Smith,*** *LR Applied Technology Group, Canada; DRDC Atlantic, Canada*

**16:50 — 17:10** Rationalisation of g(.) function & Reliability analysis of aluminium structural components for use in ship structures, ***G. N. Alex A V, S. Benson, R. Dow, F. Cheng, P. Das,*** *DNV GL, UK; Newcastle University, UK; Lloyd's Register, UK; ASRANet Ltd, UK*

**14:00 — 17:30** Parallel Session — See Page 7 for more details
Workshop on Monte-Carlo Simulation for Structural Reliability & Response Surface Method for Structural Reliability, ***by Dr Lei Yu,*** *Longch Marine Limited, UK*

**15:00 — 15:30** Break

**19:00** Civic Reception
***Glasgow City Chambers,*** *George Square, G2 1DU*

# Conference Programme Day Two: 16th August

**09:00 — 09:40** **Keynote Paper: Reliability and risk-based planning of operation and maintenance of offshore wind turbines** ***Professor John Sorensen,*** *Aalborg University, Denmark*

**09:40 — 10:00** **Invited Paper: Expected utility theory for monitoring - based decision making**
***C. Cappello, D. Zonta, B. Glisic,*** *Univeristy of Strathclyde, UK*

**10:00 — 10:20** **Reliability based format for the design of wind turbine Monopile foundations**
***P. Das; M.R. Notley; E. Padayattil; I. Cortizo; T. Hodgson; G. McCann; T. Camp,*** *ASRANet, UK; AtkinsGlobal, UK & DNV GL, UK*

**10:20 — 10:40** **Design Fatigue Factor and Fatigue Reliability of Side Shell Longitudinal Connections of a FPSO**
***L. Yu,*** *Longch Marine Limited, UK*

**10:40 — 11:10** **Break**

**11:10 — 11:30** **Reliability Based Approach on The Design of Suction Piles**
***M. Kumar, P. Das,*** *Interocean Marine Services, UK; ASRANet, UK*

**11:30 — 11:50** **FEM simulation analysis on collision performance of large floating structure**
***Z. Yanchang, L. Kun, W. Jiameng, J. Baojin,*** *Marine Design and Research Institute of China, China; Jiangsu University of Science and Technology, China*

**11:50 — 12:10** **Investigation of the performances of the mooring system with varying properties of a SPAR platform based on an efficient time-domain model,** ***M. Chen; L. Zhu,*** *Wuhan University of Technology, China*

**12:10 — 13:40** **Lunch**

**13:40 — 14:00** **Time Domain Approach for Structural Reliability of Marine Components with Combined Stochastic Stresses,** ***N. White, U. Akpan, T. S. Koko, S. Rathnayaka,*** *LR MTES/Structural Analysis and Hydrodynamics, Canda; LR Applied Technology Group, Canada*

**14:00 — 14:20** **Multi Scale Reliability Approach to Analyse Composite Marine Structures**
***U. Mutlu, A. Sobey, J. Blake,*** *University of Southampton, UK*

**14:20 — 14:40** **Next generation material failure model for impact analysis**
***N. Autar, M. Hoogeland, A.W.Vredeveldt,*** *TNO Netherlands; Delft University of Technology, Netherlands*

**14:40 — 15:10** **Break**

**15:10 — 15:30** **Structural Integrity assessment of fixed offshore structures**
***S. Kelangath, P. Das,*** *TWI, UK; ASRANet Ltd, UK*

**15:30 — 15:50** **Invited Paper: Recent Experience with Reliability of Offshore Structures**
***M. Manzocchi,*** *Atkins Global, UK*

**15:50 — 16:10** **The mathematical modelling of ring-stiffened convex cone-toroid-cylinder combined shell's original geometrical imperfection** ***E. Zhang, F. Wu, Y. Lv,*** *Naval University of Engineering, China*

**16:10 — 16:30** **Failure Consequence Analysis of Cracked Welded Joints in Ship Structure during Collision Accidents** ***A. Nair, K. Sivaprasad, C. Nandakumar,*** *Cochin University of Science and Technology, India*

**16:30 — 16:50** **Case Study of SS Richard Montgomery**
***C. Chalk,*** *Frazer—Nash Consultancy, UK*

**16:50 — 17:10** **Vibration analysis of hollow circular laminated composite beams - a stochastic approach**
***S. Naskar, S. Sriramula,*** *Lloyd's Register Foundation (LRF) Centre for Safety & Reliability Engineering, UK*

**17:10 — 17:30** **Reliability based design of stiffened shells for offshore structures**
***P. K. Das, E. Padayattil,*** *ASRANet Ltd, UK*

**19:00** **Conference Dinner**
***The Corinthian Club,*** *191 Ingram Street, G1 1DA*

# Conference Programme Day Three: 17th August

**09:00 — 09:40** **Keynote Paper: Ultimate Strength of Ship Hull Girder under Combined Longitudinal Bending and Local loads**, ***Professor Masahiko Fujikubo,*** *Osaka University, Japan*

**09:40 — 10:00** **Analysis on Influence of Spherical Bulkhead Reinforcement on Stability**
***Y. Siming, Z. Bin; Z. Jian,*** *Naval Armament Academy, China; University of Naval Engineering, China*

**10:00 — 10:20** **Failure Mode of Ship Curved Plates with Pitting Corrosion under Complex Loads**
***F. Wu, L. Hua,*** *Naval University of Engineering, China*

**10:20 — 10:40** **Discussing the effect of mean stress on fatigue and the mean stress correction factor adopted in HCSR,** ***X. Huang,*** *Shanghai Jiao Tong University; Jiangsu University of Science and Technology, Chian*

**10:40 — 11:10** **Break**

**11:10 — 11:30** **Perla Mega Field; Discovery to First Gas.**
***Aria Baskara,*** *Cardon IV (Repsol), Venezuela*

**11:30 — 11:50** **Composite riser reliability under harsh environmental conditions**
***A. J. Sobey, H. A. Ragheb, D. C. Pham, R. A. Shenoi ,*** *University of Southampton, Institute of High Performance Computing, Singapore*

**11:50 — 12:10** **A computational model for the analysis of 'Vortex Induced Vibration (VIV)' incited fatigue damage on marine riser**
***C. Pallan, R. Sharma,*** *Indian Institute of Technology Madras, India*

**12:10 — 13:40** **Lunch**

**13:40 — 14:00** **Crack shape development in spherical LNG tanks for a Leak-Before-Break assessment**
***M. Bransen, R. Villavicencio, S .Zhang, A. Romeijn,*** *Lloyd's Register EMEA, Delft University of Technology, Netherlands*

**14:00 — 14:20** **Stress Analysis of Inner Pressure Tank with Circumferential Connection Types**
***W. Chunfang, W. Fan, L. Ling,*** *Naval University of Engineering, China; Wuhan Institute of Shipbuilding Technology, China*

**14:20 — 14:40** **Monitoring coating condition in ballast tanks**
***M. Hoogeland, A. Vredeveldt, F. Morales,*** *TNO Netherlands*

**14:40 — 15:10** **Break**

**15:10 — 15:30** **On coupled wave scattering of structures involving flexible boundaries**
***R. Nawaz,*** *COMSATS Institute of Information Technology, Pakistan*

**15:30 — 15:50** **Stress wave propagation and attenuation by using an elastic metamaterial**
***Y. Li, L. Zhu, T. Chen,*** *Wuhan University of Technology, China; Xi'an Jiaotong University, China*

**15:50 — 16:10** **The monitoring and probabilistic modelling of corrosion under insulation using electrochemical sensors,** ***B. Dymond,*** *Frazer — Nash Consultancy, UK*

**16:10 — 16:30** **Prediction of stress distribution along the intersection of tubular K-joints based on a novel structural stress approach,** ***H. Zhou, G. Liu, Y. Huang,*** *Dalian University of Technology, China*

**16:30 — 16:50** **Fatigue crack growth prediction of a surface crack at weld toe of a longitudinal stiffener joint in a container,** ***H. Xiaoping; K. Xiaobing; L. Pan; J. Chunyan,*** *Shanghai Jiao Tong University; Jiangsu University of Science and Technology, China*

**16:50 — 17:10** **A Study on the Bolt Pre-tightening Boundary Condition in an Impact Test**
***M. Zhang, J. Liu,*** *Huazhong University of Science and Technology, China*

**17:10 — 17:30** **On more accurate modelling of corrosion data of offshore and subsea structures**
***S. N. Habibullah,*** *Kinnaird College For Women, Pakistan*

**17:30** **Conference Close**

# About Keynote Speakers

## Prof Sören Ehlers

Sören Ehlers, D.Sc., is a professor for design and analysis of ships and offshore structures and the head of the institute for ship structural design and analysis at the Hamburg University of Technology (TUHH). He holds an adjunct professorship at NTNU in the field of sustainable Arctic Sea transport in addition to his adjunct professorship at the Ålesund University College. He is an expert in consequences assessment for accidental events and further in the field of material modelling for non-linear finite element simulations. Furthermore, he is developing new ice material models to assess the ice-structure interaction and design methods for ice going vessels. He is concerned with the overall structural response and strength of ships subjected to extreme conditions. Additionally, he combines optimization techniques with extensive assessment procedures to obtain new concepts. He has more than 130 publications in the corresponding fields. He is the chairman of the international ship structures committee (ISSC) V.6 on Arctic Technology for the second period, organizer of the Arctic Sea Transport and Collision and Grounding Sessions at OMAE, a member of the OOAE Executive Committee, the conference chair of ICSOS2016 as well as a member of the German society of Naval Architects (STG) and RINA besides being the editor for the Ship Technology Research Journal, an associate editor for JOMAE, an editorial board member for Ships and Offshore Structures and Marine Structures and a reviewer for several international journals.

## Prof John Sørensen

John Dalshgard Sørensen is a Professor in Structural Reliability, Aalborg University, Denmark. He obtained his Master of Science in Structural Engineering from the University of Aalborg, Denmark in 1980 and his PhD in Structural Reliability from the University of Aalborg, Denmark in 1984. He, after completion of his MSc he became a research associate at the University of Aalborg, Denmark. He moved on to be Associate Professor in Structural Reliability at the University of Aalborg, Denmark. He became professor with special responsibilities (MSO) in 'Load and Reliability of Wind Turbines', Aalborg University and Risø-DTU, Denmark until 2011. He is the Head of center WEST (Wind Energy Structures and Technologies), Aalborg University, Denmark. Currently he is part of 14 projects and has published 89 journal papers and more than 200 papers at international conferences. He is a member of Permanent Commi□ee for 'Safety and Load', Danish Standards Associa□on and CEN TC250/SC10 Eurocodes, Basis of structural design. He is also member of Steering Committee for MEGAVIND and Hub North. He is a board member for the Energi- og Miljødata. He is a part of editorial board for Structure and Infrastructure Engineering, Structural Safety, Reliability Engineering & System Safety, ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems. He is a member of IEC standardization committee for IEC 61400-1, Wind turbines – design requirements and chairman of Safety factor subcommittee, and Convenor of the new standard IEC 61400-6: Wind turbine towers and foundations.

## Dr Seref Aksu

Seref Aksu obtained his Bachelor of Science degree in Naval Architecture from Istanbul Technical University, Turkey in 1984 and his PhD in Ship hydrodynamics from Southampton University, UK in 1993. Dr Aksu has over 30 years of experience in the maritime field as a researcher, academic and scientist. He joined Defence Science and Technology Group, Australia in 2011. His research interests include ship structures, structural integrity, structural health monitoring, slamming, fatigue, risk and reliability. His current responsibilities are science lead for naval surface platform structures and specialist science advisor – Principal Research Officer contributing to the sustainment and growth of Science and Technology Excellence in DST Group. Dr Aksu is a Chartered Engineer and a Fellow of Royal Institution of Naval Architects.

## Prof Masahiko Fujikubo

Masahiko Fujikubo is professor at the Department of Naval Architecture and Ocean Engineering of Osaka University. He started his career as an engineer at the Nippon Steel Corporation in 1981. He moved on to become a research assistant at the Department of Naval Architecture and Ocean Engineering of Hiroshima University in 1982.During this period he was a visiting researcher at the Norwegian Institute of Technology. He became associate professor at the Department of Naval Architecture and Ocean Engineering of Hiroshima University in 1989. He also has served as professor at the Department of Social and Environmental Engineering of Hiroshima University from 1999—2008. This year he was appointed as Associate Editor of the Journal of Marine Structures. He also holds the position of Associate Editor of the Journal of Ship Research. He had been in the Board of Directors of ISOPE. Since 2013, he has been a Standing Committee Member of International Ship and Offshore Structures Congress. He also had been Editor — in — Chief of Journal of Marine Science and Technology. He has been awarded SAOS Best Paper in 2015, JASNAOE Best Paper Award twice in 2002 and 2006 also ISOPE Best Paper in 1998.

# Workshop on Monte — Carlo Simulation for Structural Reliability & Response Surface Method for Structural Reliability

## A brief description of the workshop

Using reliability methods for ship structural design was first proposed in the early 1970s. However, WSD (Working Stress Design) method based on factor of safety is still the mainstay in today's Ship Rules. In offshore structural design reliability model is largely in the form of LRFD (Load Resistance Factor Design) format with partial safety factors calibrated by more sophisticated reliability methods behind the scene. Even so the traditional WSD method is still preferred by most practitioners whenever this is practicable. Reliability methods should be viewed as instruments to manage risks in design and focus limited resources on the most critical areas. In other words, rather than simply treating them as means to achieve code compliance the designers should use them to gain edge and differentiate their design. Two reliability techniques will be introduced in the workshop as they can both be used alongside the WSD based analysis models.

## Course Outline

- Introduction
- Random number generation and acceptance test
- Generation of Gaussian process
- Concept of Monte Carlo simulation and importance sampling
- Application of Monte Cargo simulation to fatigue calculation of offshore structures
- Concept of response surface method (RSM) and its variations
- Relationship between RSM and other reliability methods
- Application of RSM to ship and offshore structural analysis

## Learning Outcomes

By the end of the course delegates will have learned about:

- Understanding the advantages and disadvantages of Monte Carlo simulation in relation to other reliability techniques
- Understanding the benefit of response surface method (RSM) in reliability calculation of large and complex structural systems such as ships and offshore platforms
- A quick look at application of reliability methods in offshore structural design

## Material Provided

The attendants will be provided with a copy of the presentation, and copies of relevant journal and conference papers authored and co-authored by the instructor.

## Instructor

Dr Lei Yu, CEng, MRINA, Founder and Principal Naval Architect, Longch Marine Limited, UK. Lei has been practising naval architecture in the ship-building and the offshore industry since 2001. He obtained his PhD in fatigue reliability of ship structures at University of Glasgow (sponsored by Amerada Hess). He is specialised in advanced structural and fatigue design assessments, structural reliability, wave load prediction, and FPSO FEED. He is currently the founder and principal naval architect of Longch Marine Limited, a consultancy serving marine and offshore sectors in the UK. Lei worked for Lloyd's Register for 11 years after his PhD study and was involved in the development, technical support, project and product management of structural and fatigue design systems aimed for automating ship and FOI classification rules. The technical support team he led during 2007-2012 provided hands-on support for many plan approval and initial design projects in shipyards across multiple ship types. He was also a lead trainer and delivered technical trainings to clients on regular basis. He joined Fairlead Maritime in the beginning of 2013 as a naval architect and was involved in the structural and hydrodynamic analyses for various offshore projects, including WTIV, FPSO, and semi-submersibles. Before gaining his independence Lei worked for Crondall Energy, a UK based consulting firm with global presence, as principal naval architect. He was involved in concept design of ship and non-ship shaped FPSOs, 3rd party review of FEED engineering work for multiple oil operators, and developing innovative solutions to address clients' specific needs across different disciplines.

# Registration

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☐ **I wish to register for the Conference at a normal cost of £450 [£300 for students only] plus VAT (UK only)**

☐ **Please invoice me at the above address**

☐ **Please send me information on local hotels**

**Signature** _____

**Date** _____

**The completed forms together with a cheque in pounds sterling payable to ASRANet Ltd. should be sent to us by post or email:**

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- Company advert in the Book of Abstract (A4 Size)
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## Exhibition

**Cost** £1,125

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## Contact

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