



Monday 9 November

1300-1645

Industry visit, Babcock, Rosyth

Tuesday 10 November

0615

Becky's run club - 5k run around Arthurs Seat

0845

Registration and coffee

0915

Introduction from the Conference Chairs: Neil McCallum MIMarEST, Captain Rinze Geertsma, FIMarEST, Netherlands Defence Academy

0930

Rear-Admiral Brian Metcalf, Deputy Portfolio Acquisition Executive Maritime for Combatants, US Navy

945

Rear-Admiral Rachel Durbin, FIMarEST, Head of Naval Engineering. Royal Australian Navy

1000

Rear-Admiral Steve McCarthy, FIMarEST, CNEO. Royal Navy

1015

Vice Admiral Sanjay Sadhu, AVSM, NM, Indian Navy

1030

Keynote Discussion

1100

Coffee Break

1130

Morning Parallel Sessions

1200

Future capabilities

**Power and propulsion
system control**

Digital support

Interactive Sessions

The internal battle

Survivability

Survivability

Room

Pentland

Prestonfield

Holyrood

Salisbury

1200

7NE
Autonomous Mine
Hunting Capability Data
Exploitation: Charting a
Course Through the
Digital Minefield
Stephen Taylor

23SC
Transient Optimisation of
Variable Speed Generators
in Naval Applications
**Lars Mulder, Andrea
Coraddu, Rinze Geertsma
and Udai Shipurkar**

16NE
Pirate Maths, Data Lions
and Robot Birds:
Emergent behaviour and
misaligned incentives in
the digital transformation
of RN Support
Suzanna Seagrave

74NE
3D Naval Visualizations for
increased Situation
Awareness within the
Internal Battle for Future
Ready Navies
**Bart-Peter Smit, Robert
Voûte and Jasper
Wieringa**

84NE
Supporting Naval
Damage Control
Cognition with AI
Igor Lapin

70NE
Sick Boat Syndrome (SBoS)
among Naval Ship Crews: The
Importance of Indoor Air
Quality (IAQ) Monitoring and
Standard Compliance
**Amirul Faiz Kamaruddin, Nur
Sarah Fatimah Tamsi, Arman
Ariffin, Noor Artika Hassan,
Nur Alyaa Tasnim Mohammad
Zin, Muhammad Zaki Ramli
and Maryam Zahaba**

1225	51NE Design and Development of a Large USV Series Jelle W. Moerdijk, Sander Knegt, Jaap L. Gelling and Austin Kana	25SC Extracting Control Rules for Series-Parallel Hybrid boat from Dynamic Programming Luca Di Biase, Federico Miretti and Daniela Anna Misul	32NE Designing Future Naval Support: A Requirements-Led Digital Architecture Shaped by IPS, HFI, and Enterprise Data Steve Wilding	89NE Improving the contribution that centre fed hose reels can make to firefighting response on ships and submarines James Glockling and Richard Alker	46NE The Importance of Radar Cross Section Prediction to the Survivability of Modern Surface Combatants in the Future Operating Environment Kirrie Wallace, Malcolm Robb and Jill Savva	9SC Non-Causal Multi-Agent Control for Proactive and Smart Maritime Search and Rescue in Stochastic Wave Environments Yutong Song, Tianyi Zeng, Yao Zhang and Richard Bucknall
1250	41NE Arctic: the Next Generation of Naval Platform Robert Taylor, Pilar Morales and Andrew Vanner	27SC Analytical derivation of a real time control strategy for hybrid powertrains Francesco Novello, Federico Miretti and Daniela Anna Misul	76NE Development of a Health Risk Assessment Screening Tool for Shipboard Indoor Air Exposure Nur Sarah Fatihah Tamsi			
1315	Session discussion	Session discussion	Session discussion			
1330	Lunch					
	Afternoon Parallel Sessions					
1430	Nuclear	Autonomous and uncrewed vessel control	System integration and assessment	Interactive Sessions - Smart maintenance	Interactive Sessions - Smart maintenance	Interactive Sessions - Smart maintenance
Room	Pentland	Prestonfield	Holyrood	Salisbury		
1430	4NE Energy System Design for a Nuclear-Powered Refuelling Vessel Supporting Unmanned Maritime Vehicles Ismar Klomp and Gert Jan Meijn	13SC Control strategies for multi-vessel formation control; escorting a vessel in fixed, flexible, or changing formations Bas de Kruif and Ed van Daalen	27NE Very Light Reading: The Next Phase of Ship-LDEW Integration Hayden Cole and Fred Ogilvie	5NE Unlocking Autonomy Through Tribological Condition Monitoring Jake Rigby and Matthew Knight	43SC A Generalizable Unsupervised Health-Monitoring Framework across Heterogeneous Time-Series Data Nicolò Faggioni, Alessandro Caviglia, Marco Antonelli and Giovanni Orrù	2NE Strategic autonomy for naval structures: Approach to and economic feasibility of the remanufacturing of reclaimed stiffened panels Marije Deul, Massimo Coppola, Bernardete Goncalves Castro, Kevin Runge and Jeroen Pruyn
1455	31NE The Consideration of Working Fluids for Naval Micro Nuclear Reactors John Buckingham and Amelia Timothy	21SC Traceable Virtual Sea Trials in a Maritime Unity Simulator for Manoeuvring Assessment of Unmanned Surface Vehicles Paria Rezayan	52NE Next-generation technology integration in naval vessel platforms through Product Line Engineering	35NE Lifecycle Assessment to Minimise Emissions in Ships Stewart Downie	3SC Exhaust-Gas Fault Detection in a Multi-Cylinder Natural Gas Engine Using Gas-Wise Autoencoder Residuals Cem Çaldağ, Luka Coremans, Gijs Begthel,	19NE Data-driven decision support for maritime operations Remco Hageman, Fenneke Sterlini, Marcel Wokke, Douwe Rijpkema, Bas de Kruif, Bulent Duz and Yvette Klinkenberg

			Job Perdon, Micha Stam, Koen Droste and Austin Kana		Teun Augustinus, Marcel Roberscheuten, Youri Linden and Andrea Coraddu	
1520	58NE Considerations for commercial nuclear reactor types on medium sized ships Martijn Hoogeland, Sjors Kremer, Casper Versteyleen, Gert-Jan Meijn, Robert Van de Ketterij and Klaas Visser			92NE Admiralty Salvage at a Crossroads - Evolving Maritime Recovery for Next-Generation Naval Platforms Jake Guest	81NE Towards Net-Zero Shipbuilding: A Mathematical Model for Emissions from Construction and Maintenance Phases with a Case Study Ahmed Balata, Çağatay Iris, Joseph Spencer and Andrew Plater	
1545	Session discussion	Session discussion	Session discussion			
1600	Coffee Break					
1630	Modern naval power and propulsion	Autonomous navigation	Climate economics	Interactive Sessions: methanol on warships	Interactive Sessions: Alternative fuels	Interactive sessions: Environmental impact reduction
Room	Pentland	Prestonfield	Holyrood	Salisbury		
1630	37NE Novel Naval Power Generation: Utilising Modern Technology to Challenge Conventional Concept Design Josiah Carron, Elliot Brown and Romana Majid	50SC Learning to Approach: An AI-Driven Decision Support System for Underwater Manipulation Planning from Expert Demonstrations Sara Aldhaheeri	71NE Challenge response with a retrofit Andreas Junglewitz, Franco Michele Bennati and Moustafa Abdel Maksoud	17NE Methanol on Warships: Quantifying the Risk of Vapour Cloud Explosions and Toxic Exposure Marnix Rhijnsburger, Dorien Stroeve, Chris de Ron and Farah Bzikar	16SC An integrated analysis on energy, economic and environmental performances for an ammonia-fuelled large passenger vessel. Simone Piccardo, University of Genova - Thermochemical Power Group	93NE Passive Air Lubrication through Salvinia-Inspired Surfaces for Vessel Drag Reduction and Decarbonization: A Review of Coating Mechanisms, Biofouling Interactions, and Operational Performance Mansi Chawla, Debesh Lahiri, Pravin Roy and Devarshi Dutta
1655	41SC Transform Shipboard Power and Propulsion Plant operational data at-the-edge to gain smart, optimized, and sustainable performance	8SC An Explainable Symbolic COLREG Classifier for Autonomous Ships Nicola Sabatino	79NE Sustainable power plant for modern defence assets Panagiotis Karvounis and Gerasimos Theotokatos	73NE Benefits of two-stage turbocharging in static and dynamic operation for conventional diesel fueled and high-pressure direct injection methanol fueled medium speed generator sets.		57SC Long-term environmental and economic assessment of cruise ships under Maritime regulations. Simone Piccardo, University of Genova - Thermochemical Power Group

	Warren Johnson and Johnny Walker			Jasper Kole, Jasper Vollbrandt, Dorien Stroeve and Rinze Geertsma		
1720		40SC Reinterpreting COLREG for Autonomous Navigation in Port and Confined Waters: From Rules to Managed Operational Zones Orkhan Khalilov and Mehdi Azimi		10SC Dual-Fuel Engine Low-Load Combustion Optimization and Clean Energy Economic Evaluation Ying Long Luo		
1745	Session discussion	Session discussion	Session discussion			
1800	Welcome reception					

	Wednesday 11 November					
800	Registration and coffee					
900	Opening remarks – Conference chairs					
915	Sir Simon Lister, BAE Systems					
930	Roberto Chiti, Deputy of Engineering, Project Leader of U212 NFS, Fincantieri NexTech					
945	Claudia Hessen, Manager Regulatory & Integrity Energy & Control, Kongsberg					
1000	Discussion					
1030	Coffee Break					
1100	Technology development and safety	Intelligent control	Operations and resilience	Interactive Sessions: Decision support and autonomy	Interactive Sessions: Autonomy and cyber security	Interactive Sessions: Autonomy and cyber security
Room	Pentland	Prestonfield	Holyrood	Salisbury		
1100	45NE Let's Not Tie Ourselves in Knots: Adapting Safety Case Regimes for Spiral Development Programmes Alexander Barker and Jessica Morris	19SC Time-domain simulation tool for propulsion performance assessment of a nuclear-powered naval vessel Eleonora Zanaboni, Veronica Vigna and Luca Maloberti	4SC Enhancing maritime Search And Rescue operations through LiDAR and thermal imaging fusion Filippo Ponzini	8NE Modern Technology and the Redistribution of Human Autonomy Peter Spayne, Laura Lacey and Alistair Saddington	54SC A Preliminary Study of Cyber Attacks on Maritime LiDAR Situational Awareness Giacomo Longo, Giacomo Ratto, Alessio Merlo and Enrico Russo	58SC Securing Shared Accounts in Naval Operational Technology: IAM and Zero Trust Implementation Aligned with ISA/IEC 62443, NIST SP 800-82, and the EU Cyber Resilience Act Patric Dove
1125	53NE Towards the Certification of Naval Systems Employing Artificial Intelligence Matthew Wylie, Stephen Perry and Thomas Howe	14SC Hive-Mind at Sea: Bio-Inspired Swarm Intelligence for Resilient, Decentralized Power Management in Autonomous Marine DC Microgrids Divya Divya and Navneet Krishna	57NE Enhancing Operational Availability of Surfaced Submarines in Waves using a Reinforcement Learning Controller Mathieu Courdier, Gaspard Ducamp and Marta Ibarrondo	2SC Port Vessel Traffic Control for Multi-Type Ships: A Proposed Methodology for Decision Support System Considering Marine Conditions Ferhan Buyukcolak and Silvia Donnarumma	24SC Design and automation of an ROV docking system for an XLUUV Martin Gülland, University of Rostock. Ines Cebulla, Carsten Rethfeldt and Torsten Jeinsch	

1150	80NE When Looking to Win the Race of Technological Advantage, Do Royal Navy Leaders Need to Change? Alexandra Ward			38NE Allocation of Function (AoF) for Human Autonomy Teaming (HAT) Luca Gallo and Eshan Rajabally	59SC High-Resolution Flash Lidar for Short-Range Underwater 3D Perception David Nguyen, Jannis Holzer, Eleonoor Bosch, Enrico Manuzzato, Leonardo Gasparini and Christophe Pache	
1215	Session discussion	Session discussion	Session discussion			
1230	Lunch					
Afternoon Parallel Sessions						
1330	Increasing autonomy and reduced crews	Digital Twins	Resilient naval ship design	Interactive Sessions: MOST 1	Interactive Sessions: MOST 2	Interactive Sessions: Hull fouling and protection
Room	Pentland	Prestonfield	Holyrood	Salisbury		
1330	11NE Temporal Assurance in Autonomous Systems: The Problem of Justifying Decision-Making Under Uncertainty in Open-Environments Liam Talbot	12SC Digital Twins for Naval Gearboxes Nikolas Albrecht, Werner Sigmund and Theresa Sibich	10NE Assessing the Functional Vulnerability of Naval Combatants in early Ship Design Tom Philipson and Stefan Krüger	6SC Improving Maritime Situational Awareness: A Spectral Filtering Method for Weak Target Detection Giovanni Ludeno, Francesco Soldovieri and Gianluca Gennarelli	45SC A Framework for the development of a decision support system for ship underwater radiated noise Fabio Colotto, Tomaso Gaggero, Yuri Cotroneo, Paola De Ruggiero, Simone Di Palma, Massimiliano Esposito, Luigi Gifuni and Giorgio Budillon	94NE The Digitalization of Asset Integrity: Corrosion and Biofouling Control with Copsys Intelligent Digital Skin (CIDS) Farzad Hashemi and Michael Maguire
1355	15NE Use of a Commercial Crew for Sea Trials John Newell and James Charsley	53SC A Digital Twin and Multi-Criteria Optimization Platform for Design and Operation of Ship Power and Propulsion Systems Ahmed Elkafas and Iraklis Lazakis	33NE An early concept-stage resilience network tool for identification of vulnerable connectivity in distributed engineering systems Giota Paparistodimou, Philip Knight and Malcolm Robb, BAE	11SC A Real-Time GNC Architecture for Marine Autonomous Surface Ships Raphael Zaccone and Michele Martelli		54NE Revisiting cathodic protection due to extensive electrification – The Aegis project John Prousalidis and Dora Tsiourva
1420	18NE Aligning Naval Electrical Systems and Minimum Crewing: Challenges,			28SC Quantitative Evaluation of Marine Vehicle		

	Implications, and Design Principles for Future Platforms Tania Berry and Sacha Eke-Duchars			Cooperative Control in Harbour-Like Experiments Angelo Odetti, Enrica Zereik, Gabriele Bruzzone, Filippo Ponzini and Michele Martelli		
1445	Session discussion	Session discussion	Session discussion			
1500	Coffee Break					
1530	Mission modularity	Cyber Security	Energy Management	Interactive Sessions: Energy optimisation	Interactive Sessions - Power systems hardware in the loop	Interactive Sessions: Power system loads
Room	Pentland	Prestonfield	Holyrood	Salisbury		
1530	13NE Beyond the Blueprint: Mission Modularity's Impact on Modern Naval Design, Assurance, and Operations Kaya Nightingale	6NE Electronic Warfare: The Invisible Enemy of Maritime Autonomy Peter Macaulay	34SC Techno-Economic Framework for Hybrid-Electric Propulsion Retrofitting in Harbor Tugboat Fleets: A Pathway for Sustainable Port Operations in Developing Maritime Infrastructure Iddi Sungura	7SC Time-Indexed Mixed-Integer Optimisation of Electric Harbour-Fleet Assignment, Routing and Shore-Power Charging Andrea Coraddu, Sankarshan Durgaprasad, Yasho Bharat Boggarapu, Sharul Baggio Bin Mohamed Roslan, Xin Wang and Chuan Beng Tay	20SC Developing a suite of Hull, Mechanical, and Electrical (HM&E) Control Systems Vincent Piesetzkie, Graig Jolley and Peter Grech	51SC Modelling Extra-Propulsive Loads in Shipboard Power Systems Federico Graffione, Marco Gallo, Federico Silvestro and Fabio D'Agostino
1555	28NE Thinking inside the box. Deployable capability for the future navy Steven Howick and Jessica Scott	9NE The Combat Network as the Weapon Morgan Colbeck	60SC Fuel cells operating on methanol as power supply for naval ships Carsten Cremers and Maximilian Jaekel	46SC A Short-Term, AI-based Electric Load Forecaster for a High Responsive Shipboard Energy Management Daniele Belvisi, Francesco Bellotti, Massimo Figari and Riccardo Berta	31SC Hardware-in-the-Loop Validation of a Decentralized Economic Dispatch for Marine Power Systems Joseph Amato, Kevin Lin, Sarah Ellis, Qing Dong and Sina Zarrabian	85NE Autonomous Vessels – Don't forget to bring the brainpower. Thoughts on how to feed the 'crew' on an unmanned warship Nick Smith
1620	48NE Evaluation and validation of the added value of modularity for specialized ships during concept exploration: A critical systematic review Micha Stam, Austin Kana and Jeroen Pruyn	30NE Adopting the IMO MASS Code for Naval USVs: A Class Perspective on Network and Cyber Resilience Srinivas Revuru		17SC Development of a Holistic Multi-Domain Model for Data-Driven Operational Energy Optimization of a Cruise Vessel Giovanni Vaccarini, Luca Casaburi, Riccardo Colotti, Andrea Salvo and Luca Micoli	29SC Closed-loop back-to-back testing for replacing obsolete naval gas-turbine control systems George Tucker and Teyseer Satti	

1645	Session discussion	Session discussion	Session discussion			
1900	Industry Dinner Edinburgh Suite Sheraton Grant, Hotel & Spa Edinburgh					
Thursday 12 November						
800	Registration and coffee					
900	Introduction from the Chairs					
915	Capt Mo Magzoub OBE, FIMarEST, Head of Force Development. Royal Navy					
930	Dr Bas Buchner, Programme Director of Maritime Uncrewed. Royal Netherlands Navy					
945	Discussion					
1000	Coffee Break					
	Morning Parallel Sessions					
1030	Autonomous ships and systems	Diesel engine maintenance	The internal Battle	Interactive Sessions: Ship design and build	Interactive Sessions: Ship design and build	Interactive Sessions: Ship design and build
Room	Pentland	Prestonfield	Holyrood	Salisbury		Duddingston
1030	18SC Development of a Reference Architecture for the Integration of Autonomous Systems in Naval Ship Design Moritz Luckey, Paul Dahlke and Frank Mantwill	26NE Reducing Maintenance Burden and building resilience for naval engineering systems Tamsyn Hills and James Fawcett	12NE Structural Damage Detection in Ships Using a TCN Autoencoder and Motion Response Anomaly Scoring Ieza Souza Ramos	26SC Design and Development of an Advanced Robotic Fish Marco Bibuli, Elena Ciappi, Elena Paifelman, Angelo Odetti, Edoardo Spirandelli, Antonio Carcaterra, Antonio Culla and Silvia Milana	24NE Beyond the Business Case: Structured Evaluation of Digital Transformation Projects in a Naval Shipyard Miguel Calvache, Jeroen Pruyn, Javier Calderon-Tellez and Diego Cabuya	82NE Battle Barges and Mega Modules – possible applications for multi-part vessels Rachel Pawling
1055	22NE Conceptual Architecture and operational design considerations for a large unmanned surface vessel in anti-submarine warfare Wytse Hogeveen	43NE Memory-safe physics-based modelling of marine diesel engines using Rust Mieszko Kaminski and Chaitanya Patil	38SC Fail-Graceful Ship Control Architectures for Secure and Smart Maritime Operations Rajdeep Das	29NE Progressing the understanding of Engineering Maturity for left shifting risk in complex programmes Matthew Cook, Martin Douglass and Andy Carr	14NE From Siloed Systems to Connected Decisions: Systems Elements Analysis in Early-Stage Naval Ship Design	BMT/RN Workshop Hybrid Navy: What Could Stop Us Getting There?

					Zacharias Panagiotis Oikonomou, Jeroen Pruyn and Austin Kana		
1120	67NE Designing the Future Fleet: An Immersive Mixed-Methods Approach to Evaluating Operational Management Concepts Nikki Okkels and, Heike Diepeveen. Marin	62NE Exploring the Added Value of In-cylinder Pressure for Anomaly-Based Fault Detection in Marine Diesel Engines Youri Linden, Rinze Geertsma, Luca Oneta and Andrea Coraddu	49NE Improving Fire Safety Design Methods to Reduce the Impact of Fire and Smoke upon Naval Warship Capability and Safety Simon Fleisher, Cameron Wilkinson and Tobias Fuhrmeister	95NE Synthesis of an Architecture for the Integration of Autonomous System Behaviour in Naval Ship Design Moritz Luckey, Niels Demke, Paul Dahlke, Robert Burmeister and Frank Mantwill	47NE Integrating Risk-Based Design into Model-Based Systems Engineering for Naval Ship Design Niek Verhoeven, Koen Droste and Austin Kana		
1145	Discussion						
1200	Lunch						
1300	Autonomous ships and systems		DC power systems		Human machine interface		
Room	Pentland		Prestonfield		Holyrood		
1300	23NE Naval Engineering Collaboration to deliver Capability in a world of ever-growing Competition. Simon McCowan		55NE Investigation of harmonic distortion in modern ships with On-shore Power Supply and high integration of power electronic converters Panos Kotsampopoulos and John Prousalidis		36SC From Theory to Practice: Implementing CRM Principles in Safety-Critical Systems (2011-2026) Daniel Kelly & Robert Sgroi		
1325	66NE The Challenge of Crewing Future Surface Combatants Malcolm Robb, Ewan MacIntyre, Matthew Ashley and Simon Saunders		85NE Autonomous Vessels – Don't forget to bring the brainpower. Thoughts on how to feed the 'crew' on an unmanned warship Nick Smith		5SC Human-in-the-Loop AI for Safe and Intelligent Ship Control Systems Sajid Hussain		
1350	44NE Leasing Lethality: Rethinking naval procurement in today's fast moving technological battlespace William Edge and Harry Schweidler		83NE Added value of supercapacitors in the dynamics of a variable speed genset in a maritime DC architecture; an experimental study. Menno Merts, Udai Shipurkar, Bas Boerrigter and Jeroen Willemsen		47SC The Critical Role of the Graphical User Interface in Modern Shipboard Control Systems Chetan Vajapey and Jeffrey Cohen		
1415	Discussion						
1430	Coffee Break						

	Closing Plenary Session
1500	Plenary Session
1525	Discussion
1540	Closing Keynote: Sarah Kenny OBE, CEO, BMT
1555	Presentation of the Sir Donald Gosling Award
1610	Closing remarks
1625	Close of conference