INSTITUTE OF MARINE Engineering, Science & Technology

Monday 4th November				
13:00 - 16:45	Industrial visit to Cammell Laird shipyard			
	Tuesday 5th November			
09:00	Registration			
10:00	Introduction from the Chairs			
10:15	Keynote: Rear Admiral Steve McCarthy, **Royal Navy**			
10:35	Keynote**:** Rear Admiral Rachel Durbin, *Head of Navy Engineering* **Royal Australian Navy**			
10:55	Keynote: Rear Admiral Tom Anderson, **US Navy**			
11:15	Discussion			
11:30	***Coffee Break***			
	Standard 25 minute presentations			Simultaneous Interactive sessions
12:00	**Ship design and integration**	**Auxiliary equipment**	**EU safe navigation special session**	**Human machine Integration**
12:00	T26 global combat ship – More than just a submarine hunter ***Royal Navy***	Improving energy efficiency of HVAC systems on navy ships ***Babcock International***	A structured simulation framework to validate marine collision avoidance algorithms ***University of Genoa***	Improving the internal battle in a navy ship by adding situation awareness by means of using a 3D geospatial model combined with a linked data model of this ship. Design phase

12:25	Widening the net of the future air dominance system ***Steller Systems Ltd***	Supplementing experience-based platform system robustness requirements to network theory ***Delft University of Technology***	Continuous integration for the development of a COLREG-compliant decision support system ***Sirehna***	***Delft University of Technology & Material and IT Command Netherlands*** Enhancing internal battle operations through the battle damage repair tool ***RH Marine, TNO & M&IT Command, Netherlands*** RESILIENT: Advance a ship's HM&E resiliency through contextual information models and innovative ML/AI analytics At-The-Edge ***Rockwell Automation, Thor Solutions***
12:50	Physical resistance components of a hydrofoil as a function of submergence ***University of Canterbury & Emirates Team New Zealand***		Comprehensive approaches to enhance maritime wireless networks: A survey ***Global Maritime Services***	
13:15	Session discussions			
13:30	***Lunch***			
14:30	**EDDI &Green fuels**	**People**	**Autonomous navigation**	**Power systems**
14:30	Truth behind green alternatives for future ship design ***BMT***	A revised operating model for the marine engineering general service to improve the lived experience of surface fleet marine engineers ***Royal Navy***	Neuro adaptive integral sliding mode control based on composite learning for path following of underactuated underwater vehicle : Blucy ***University of Bologna***	Validation of power system control methodologies using a microgrid testbed employing low and medium voltage (MV) AC and DC sources ***UT Arlington***
14:55	A suggested energy efficiency index for warships ***BMT***	Addressing the modern need for electrical skills in the maritime sector	Development of a low cost unmanned surface vessel for autonomous navigation in shallow water ***Sheffield Hallam University***	Power management system load power regulation for zonal

15:20	Optimization of propulsion layout & energy management system for future marine powertrains using co-design ***Damen Naval***	***NTU Athens, University of Strathclyde, & Hellenic Electricity Distribution Network Operator***	Towards design of an autonomous navigation framework for unmanned surface vessels using marine robotics unity simulator ***Sheffield Hallam University***	secondary DC-grids survivability: A load priority-based approach ***Royal IHC***
15:45	Session discussions			
16:00	***Coffee Break***			
16:30	**Regulations & autonomy**	**Hydrogen Fuels**	**Energy Storage/DC architecture**	**Safety assurance and autonomy**
16:30	Charting the Course: Navigating the Royal Navy's autonomous challenge with synthetic assurance ***NavyX, Royal Navy***	Application of quantum technology for generation of green solar hydrogen from sea water for naval applications ***Banaras Hindu University***	Energy profiling and planning and multi-objective optimization algorithms comparison performance ***RH Marine***	Autonomy is the answer, but what was the question? ***Cranfield University / Royal Navy*** Is Regulation really the barrier? Exploring the opportunities and challenges in certifying maritime systems with increased automation and autonomy ***Safeguard Engineering Limited*** Test and assurance of radical new ship designs ***Nova Systems*** Ensuring maritime cyber resilience ***Indian Register of Shipping***
16:55	Analysis of the current regulatory landscape for autonomous and remotely operated vessels in development and use by the Australian Defence maritime enterprise ***Royal Australian Navy***	Solid hydrogen carriers as an alternative fuel and impact damper ***Delft University of Technology***	Battery energy storage system sizing strategy for naval vessels through multi-objective optimization ***University of Genoa***	
17:20	Certifying for operate safely – Building trust in Naval USVs ***MOD***		Selecting the Energy Storage Technology for Surface Combatants with DC Power Distribution ***ABB***	
17:45	Session discussions			
18:00	**Welcome Reception**			

	Wednesday 6th November			
08:00	Registration and coffee			
09:00	Plenary – Industry collaboration			
09:15	CDRE I Flos *Program Director* **International Maritime Materiel Collaboration**			
09:35	Lino Magnoni, *Head of Unmanned Integration Department* **Fincantieri – Naval Business Unit**			
09:55	Keynote: Sarah Kenny, OBE, *Chief Executive*, **BMT**			
10:15	Discussion			
10:30	Coffee Break			
11:00	**Nuclear**	**Efficiency & Electrical DC**	**Maintenance**	**Workshop**
11:00	Dynamic power behaviour of a nuclear power plant integrated in naval vessels ***Damen Naval***	Enhancing U.S. naval power through energy supportability and demand reduction ***US Navy***	Enhancing remote inspection in ship machinery spaces with telexistence capability ***Cranfield University, Defence Science and Technology Laboratory, & Grenoble INP***	BMT workshop
11:25	Molten salt reactors: Current technology status and the challenges for maritime applications ***Occam Group Ltd***	DC secondary distribution grids on future naval ships: a comparison with conventional AC distribution systems and their safety aspects ***Power Systems & RH Marine***	A future green navy – sustainable support to the Royal Navy ***Ministry of Defence***	
11:50	Mobile marine fuel generation based on a micro nuclear reactor ***UCL***	Validation of power system control methodologies using a microgrid testbed employing low and medium voltage (MV) AC and DC sources	Towards a data-driven naval maintenance organisation: the importance of a social roadmap ***Royal Netherlands Navy***	

		UT Arlington, Clarkson University, Florida State University & NSWC - Philadelphia		
12:15	Session Discussions			
12:30	**Lunch**			
13:30	**Hull Design**	**Alternative Fuels**	**Resilient Human Machine interaction**	**Safety & Autonomy**
13:30	Design for adaptation – Ships and the systems of the future ***Royal Australian Navy***	Application of commercial advances to support the naval energy transition ***BMT***	Enhancing internal battle operations through the battle damage repair tool ***RH Marine & Material and IT Command Netherlands***	Safety critical items in naval systems ***MOD - DE&S***
13:55	The application of physics-based 3D modelling software in ship design and maneuverability trials **Mekhtaf Design and Engineering**	'Alternative Fuels' or 'Koolaid'?: Maintaining focus and perspective when considering options for future naval fuels ***PGM Environment***	UK's Intelligent ship project phase 3 – Focusing on the human in HAT ***Dstl***	Rationalising safety cases for naval systems ***Defence Equipment & Support***
14:20	Comparative analysis of AI-Based optimisation techniques for a conceptual frigate hull form design ***BAE Systems***	Charting a greener course: A review of mature technologies for lowering vessel GHG emission ***Royal Australian Navy &, Australian Maritime College***	RESILIENT: Advance a ship's HM&E resiliency through contextual information models and innovative ML/AI analytics At-The-Edge ***Rockwell Automation, & Thor Solutions***	Maritime autonomy and safety at sea ***BMT*** Challenges for adapting logistics drone for naval operations ***BonV Aero***
14:45	Session Discussions			
15:00	***Coffee Break***			
15:30	**Vessel design**	**Data exploitation**	**Full electrical architecture**	**Networking & Architecture**

15:30	Margins – their use as metrics and Key Performance Indicators when Designing and building warships ***Gibbs and Cox Australia***	Optimizing fuel management for Halifax class frigates: leveraging sensor data for enhanced efficiency ***L3Harris***	Designing Fit-to-Receive DC power systems for alternate energy sources and future loads ***ABB***	Supplementing experience-based platform system reliability requirements to network theory ***Delft University of Technology*** A triple-network-layer method for designing high resilience system architectures ***BAE Systems*** Designing in reconfigurability and adaptability to deliver lean and mean naval combatants ***Babcock International Group***
15:55	Should royal navy ships designed for optional crewing only enable humans to survive, or also enable them to thrive? ***Royal Navy***	Necessity is the Digital Mother of Invention ***Royal Navy***	From cruise ships to combat - Evaluating power and propulsion technologies for a lean warship ***Rolls-Royce***	
16:20	Advancing unmanned surface vessel design: a circular economy response to global conflict evolution ***SubSea Craft***		Conceptual design and verification of the power, propulsion, and energy system for a future surface combatant ***MARIN***	
16:45	Session Discussions			
19:00	**Event Social, Hilton Hotel, Liverpool City Centre**			
	Thursday 7th November			
08:00	Registration and Coffee			
09:00	**Emissions Part I**	**Electrical Equipment Machines**	**Machine Learning and AI**	**Autonomous power and propulsion**
09:00	Dual Fuel Technology: A route to reduce emissions ***BMT***	Shocking permanent magnet motors for naval applications ***GE Power Conversion***	Real-time critical marine infrastructure multi-sensor surveillance via a constrained stochastic coverage algorithm ***University of Genoa***	Autonomous machinery control systems for naval unmanned surface vessels ***United States Navy***

09:25	Naval sector and Decarbonisation using Industry 4.0 ***Centre for joint Warfare Studies***	Researching residuals and regulations ***GE Power Conversion***	Energy-efficient speed planning considering dynamic environmental conditions for inland vessels ***Delft University of Technology***	A modular and autonomous propulsion system for unmanned marine vehicles ***CNR-INM*** State-of-the-art full-scale simulator for ship hybrid power system in a shuttle tanker ***Kongsberg Digital*** Automatic maneuvering of vessels with power-optimized thrust allocation **University of Rostock, Institute of Automation, Germany**
09:50	Through Life Carbon Emissions and Mitigation Opportunities ***BMT***			
10:15	Session Discussions			
10:30	**Coffee Break**			
11:00	**Data driven and model based optimisation**	**Emissions Part II**	**Electrical Power Systems**	
11:00	Enhancing predictive maintenance in the maritime industry with unsupervised learning ***Fincantieri NexTech & Argo IT***	Experimental and modelling studies on HVO-methanol mixtures separation for superyachts applications ***Feadship & Delft University of Technology***	Power management system load power regulation for zonal secondary DC-grids survivability: A load priority-based approach ***Royal IHC***	
11:25	Digital twin simulation model of hull-propeller-engine interactions for ship condition monitoring in irregular sea navigation ***University of Naples "Federico II"***	Hybrid turbocharging for alternatively fueled internal combustion engines in naval applications ***TU Delft***	Investigation on shipboard power quality on Cruise ships under high penetration of power converters ***University of Genoa & Carnival***	
11:50	Automatic maneuvering of vessels with power-optimized thrust allocation **University of Rostock**		Frequency control and stability of a ship electric power system emulator ***NTUA, School of Electrical & Computer Engineering,***	

12:15	Session discussions
12:30	**Lunch**
13:15	A Lean, Mean, Atomic Queen? - The ultimate mission module Nicholas Smith, *Executive*: *Global Systems Product and Technology Leader*, **GE Power Conversion**
13:40	Closing Keynote: VAdm Marshall
14:05	Presentation of the Sir Donald Gosling Award
14:20	Close of Conference