

EAAW

ENGINE AS A WEAPON VII
International Symposium



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FRIDAY 12 MAY 2017

(2-day attendees only)

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Combat Power at Sea

Tuesday 20 and Wednesday 21 June 2017

No.1 Brunel Square, Bristol, UK



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EAAW at a Glance

- Over 100 expert participants
- Over 20 peer reviewed technical papers
- International attendance
- Continuing Professional Development (CPD) approved by IMarEST
- Excellent networking opportunities
- NEW – Speakers' Corner for further debate and discussion



EAAW VII is organised by FIGS Events Limited on behalf of IMarEST

To register visit www.eaaw.org.uk

+44 (0)20 8304 2373 @ eaaw@figsevents.co.uk



Welcome

Dear Delegate

Welcome to the EAAW International Symposia series, the leading forum which aims to unite the international marine and combat systems communities to discuss relevant thinking and challenges of current and future naval platforms.

EAAW VII aims to further explore the reality of fully integrated engineering systems and equipment and discuss the merits and challenges of delivering combat power at sea. The Technical Advisory Committee's focus has been to ensure that we continue to develop the level of innovation, technical discussions and informed networking that have become synonymous with an IMarEST Learned Society event.

Our theme *Combat Power at Sea* has been particularly well supported with high quality submissions that have allowed the technical committee to develop a very exciting programme making it an unmissable event for all those eager to get the latest thinking and direction from academia, industry, the MOD and overseas navies.

On behalf of the Technical Advisory Committee and IMarEST, we look forward to welcoming you to EAAW VII in June 2017.

Cdr Ian Hassall RN
EAAW VII Symposium Chairman



Symposium Programme (subject to amendment)

TUESDAY 20 JUNE 2017

0830 Registration and coffee

0915 Welcome and introduction

Cdr Ian Hassall RN, EAAW VII Symposium Chairman

0920 Keynote address followed by discussion

ENERGY AT SEA: THE CHANGING LANDSCAPE

Chairman: O Simmonds, GE Power Conversion, UK

1000 Energy As A Weapon, part II

Cdr (ME) Dr P J M Schulten RNLN, Ministry of Defence, the Netherlands; Lt Cdr (E) R D Geertsma RNLN, Delft University of Technology, the Netherlands

1025 Exploiting total ship integration in UK Queen Elizabeth Class Aircraft Carriers – Opportunity knocks

T M Dannatt, Capt S J McCarthy RN, Ministry of Defence, UK

1050 Discussion

1105 Coffee

THE INTEGRATION CHALLENGE

Chairman: A Michael, QinetiQ, UK

1135 Rapidly integrating unmanned systems: Finding clear blue water

G Sturtevant, R Fitzgerald, US Navy, USA; J Voth, A Lowe, Herren Associates, Inc., USA

1200 System integration challenges of delivering a power system update to Type 23 Class

S Hilder, W Roberts, Babcock International Group, UK

1225 Discussion

1240 Lunch

DELIVERING FUTURE MARITIME WEAPONS

Chairman: R Andrews, BAE Systems, UK

1340 Laser directed energy weapons – integration in the maritime domain

K Rigby, J Goodwin, J Dunn, BAE Systems, UK

1405 The challenges of naval weapon system replacement and installation (Type 23 Seawolf to Sea Ceptor)

J Hayter, Ministry of Defence, UK; M Patel, MBDA, UK; M Gill, Babcock International Group, UK

1430 Taking the dragon (fire) to sea: UK MOD efforts to de-risk the integration of laser DEW systems onto warships

P H Cooper, A J Tate, DSTL (MOD) UK; T Rumney, GKN Hybrid Power, UK

1455 Discussion

1515 Tea

ELECTROMAGNETIC LAUNCH

Chairman: Dr I Whitelegg, Rolls-Royce, UK

1545 Integration of electromagnetic aircraft launch systems into aircraft carriers

E Waters, Babcock International Group, UK

1610 Application and optimisation of electromagnetic catapult launch systems, and benefits of integrated energy storage

G R Bellamy, M Southall, M Louati, Dr M Benatmane, K Flint, GE Power Conversion, UK; S Lewinton, Ministry of Defence, UK

1635 Enhancing electromagnetic launch capability: Design of a small launch system for large UAVs

T Cox, T Yang, C Gerada, The University of Nottingham, UK

1700 Development and characterisation of an electromagnetic payload launcher

C Watts, Babcock International Group, UK; T Konefal, York EMC Services, UK

1725 Discussion

1815 Symposium Reception

The Promenade Deck, ss Great Britain (concluding at 2000 hours)

Visit EAAW's website for latest news
www.eaaw.org.uk

Symposium General Information

Venue: EAAW VII will be held in the **Great Eastern Hall, No.1 Brunel Square (part of the ss Great Britain complex), Great Western Dockyard, Gas Ferry Road, Bristol BS1 6TY, UK**; this venue is located close to the centre of Bristol.

Welcome BBQ: All attendees arriving early on Monday 19 June 2017 are cordially invited to a Welcome BBQ at the Avon Gorge Hotel from 1900 hours. This will give everyone an opportunity to enjoy an informal supper with colleagues, friends and new acquaintances. Please note that pre-booking is required and tickets may be purchased when registering for the Symposium.

Technical papers and programme: Papers will be presented in English, with time allocated for questions and discussion. Each registered attendee will receive a hard copy of the proceedings in colour together with access to electronic copies of the papers, where available.

Dress code: All delegates both civilian and military are requested to wear business/lounge suits for the Symposium. For those attending the Welcome BBQ and Symposium Reception aboard ss Great Britain, informal dress is welcome.

EAAW VII Technical Advisory Committee:

Chairman: Cdr Ian Hassall RN, Ministry of Defence, UK;
Vice Chairman: Oliver Simmonds, GE Power Conversion;
Dr Sal Ahmed, Office of Naval Research Global; Rob Andrews, BAE Systems Maritime – Naval Ships; Roger Bartlett, MBDA; Prof Fred Eastham FREng FRSE, University of Bath; Lt Marcel Den Hartog RNLN, Ministry of Defence, UK; Keith Howard, Babcock International Group; Steve Mason, Ultra Electronics PMES Ltd; Lt Tom McKenna RN, Ministry of Defence, UK; Eur Ing Andrew Michael, QinetiQ; Christopher Pollard, BMT Defence Services Ltd; Dr Zareh Soghomonian, HII Newport News Shipbuilding; Andrew Tate, Dstl; Dr Ian Whitelegg, Rolls-Royce

EAAW VII Patrons:

Rear Admiral Nigel Guild CB FREng; Cdre Peter Knipping MBE RNLN, Director, Directorate of Materiel Support, Royal Netherlands Navy; Mr Henry Parker CB, Director Ship Acquisition, Ministry of Defence, UK

For further information and to register online visit www.eaaw.org.uk

Symposium Programme (subject to amendment)

WEDNESDAY 21 JUNE 2017

0830 Registration and coffee

EFFICIENCY AND SUSTAINMENT AT SEA

Chairman: Lt M Den Hartog RNLN, Ministry of Defence, UK

0900 Air-conditioning for a more survivable warship
J Buckingham, Naval Design Partnering Team, UK

0925 Efficient power system design when incorporating heavy replenishment at sea capability on to the modern naval auxiliary vessel
Dr J Stevens, J Short, J McCarthy, Rolls-Royce, UK;
Dr X Liu, G Wilson, Rolls-Royce, Singapore

0950 Lighting up the future - Reducing the hotel load in warships
D Capper, R Gerrard, BAE Systems, UK

1015 Sustaining power at sea; applicability of electrical propulsion for future fleet replenishment vessels
H Schweidler, D Megran, Babcock International Group, UK

1040 Discussion

1100 Coffee

POWER AND ENERGY SOLUTIONS

Chairman: Prof F Eastham FREng FRSE, University of Bath, UK

1130 Time domain model of a lead-acid cell
D Harrington, BMT Defence Services Ltd, UK

1155 Model based design for complex high integrity systems
Dr F Bryan, Dr N Mason, Ultra Electronics PMES, UK

1220 Variable speed power generation and energy storage
J Buckingham, J Allen, Naval Design Partnering Team, UK

1245 Discussion

1300 Lunch

UNMANNED SYSTEMS, SHIP SUPPORT & INTEGRATION

Chairman: Dr S Ahmed, Office of Naval Research Global, UK

1400 Achieving integrated command and control of unmanned systems – the Unmanned Warrior experience
W Biggs, QinetiQ, UK; Dr P Smith, Dstl, UK

1425 Testing integration of naval electrical engineering systems at the Power Networks Demonstration Centre
Dr K Jennett, Dr F Coffele, Power Networks Demonstration Centre, UK; S Lewinton, Ministry of Defence, UK

1450 Improving the warfighting effectiveness of the operations room team
C Vance, T Hughes, D Leahy, MBDA UK Ltd, UK

1515 Testing the boundaries of virtual reality within ship support
J M Newell MBE, BAE Systems, UK; S Luck, BMT Defence Services Ltd, UK

1540 Discussion

1600 Closing summary:
Rear Admiral Nigel Guild CB FREng

1620 Close of Symposium

EAAW VII, Tuesday 20 and Wednesday 21 June 2017

No.1 Brunel Square, Bristol, UK

Priority code: EW17/VIPv1

4 easy ways to register

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London N1 7GU, UK

Delegate details

Please print clearly or attach business card – your details may appear incorrectly listed if this part of the form is unclear.

Surname/family name _____

Title (Prof, Mr, Dipl Ing, Cdr) _____

Initials _____

Name for badge _____

Job title _____

Organisation/company _____

Address _____

Postcode _____

Country _____

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IMarEST member Yes No

Membership no: _____

Registration fees including 20% standard UK VAT

TWO DAY ATTENDANCE

1. IMarEST Member **£1,080**
 2. IMarEST Marine Partner* **£1,320**
 3. Non-member **£1,560**

ONE DAY ATTENDANCE

Please circle which day(s) you will be attending:

Tuesday **Wednesday**

4. IMarEST Member **£600**
 5. IMarEST Marine Partner* **£720**
 6. Non-member **£840**

AUTHORS

Please circle which additional day you will be attending:

Tuesday **Wednesday**

7. IMarEST Member **£480**
 8. IMarEST Marine Partner* **£600**
 9. Non-member **£720**

* The IMarEST Marine Partner rate includes: IMarEST Marine Partners, Sponsoring organisation employees, Supporting organisations' members, Academics and Navy personnel

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Registration fees continued including 20% standard UK VAT

GRADUATE TRAINEE/APPRENTICE

Limited number of places available; application to be supported by the employee's Head of Department

10. Graduate/Apprentice **£480**

CONCESSIONS

Includes retired and student members of IMarEST

11. Retired/Student Members **£180**

BBQ TICKET

12. Evening, Monday 19 June **£36**

EARLY BIRD DISCOUNT (registrations received before

Friday 12 May 2017; fees 1-3 subtract £180)

TOTAL PAYABLE £

Payment

Upon receipt of your completed registration form, you will be sent an electronic invoice which will enable you to click a 'Pay now' button which links directly to an online SagePay system allowing you to pay by either debit or credit card, alternatively, the BACS information is detailed if this method is preferred. A cheque in Sterling may also be sent to the address given above made payable to 'FIGS Events Limited'.

Cancellations

Cancellation of a registered place must be received in writing no later than 26 May 2017; a charge of £100 plus VAT will be made for cancellations received before this date. It is regretted that no refunds will be issued after this date but substitute delegates are welcome.

Registration

To register, please access the online registration portal at www.eaaw.org.uk/register or complete and return this form together with your chosen payment. The completion of the registration form constitutes a confirmed booking. The Symposium fees cover participation in the technical sessions, administration, hard copy colour proceedings, access to electronic proceedings and refreshments including lunch and the Symposium Reception. You will receive a confirmation email together with further information following receipt of your registration form.

Group discounts

Group bookings of 5 or more delegates will receive a discount of 10% and applies to full 2-day delegates only. Please contact FIGS Events for the appropriate discount code: eaaw@figsevents.co.uk.

Continuing Professional Development (CPD)

All delegates will be sent a CPD certificate after the event.

Who attends EAAW?

Government attendance is typically drawn from navies and naval procurement officials, at all levels. Commercial attendance includes representatives from a range of companies from prime contractors to SMEs.