

7th International Naval Engineering Conference and Exhibition 2004 (INEC 2004)

Marine Technology In Transition

Amsterdam, The Netherlands
16-18 March 2004

ISBN: 978-1-7138-6233-8

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2004) by Institute of Marine Engineering, Science & Technology (IMarEST)
All rights reserved.

Printed with permission by Curran Associates, Inc. (2022)

For permission requests, please contact Institute of Marine Engineering, Science & Technology (IMarEST)
at the address below.

Institute of Marine Engineering, Science & Technology (IMarEST)
1 Birdcage Walk
London, SW1H 9JJ
United Kingdom

Phone: +44 (0)20 7382 2600
Fax: +44 (0)20 7382 2670

www.imarest.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

Contents

DAY ONE: MARINE TECHNOLOGY IN TRANSITION

- 1 Trends in marine engineering in the Royal Netherlands Navy**
Cdr J Spoelstra, Ing P J F M Kerklaan, Ir B van der Ploeg, Royal Netherlands Navy, The Netherlands
- 9 Hydrogen storage in future warships**
Lt Cdr M T W Bolton, Defence Procurement Agency, UK
S L Jones, Accentus plc, UK
- 17 T-AKE: leveraging commercial IPS into an affordable and superior naval platform solution**
T C Dalton, D Sleipness, US Navy, USA
M McGowan, P Thompson, V Watson, ALSTOM, USA
C Longthorn, ALSTOM, UK
J Jodka, B Jones, NASSCO, USA
- 32 Development of the Advanced Cycle Low-power Gas Turbine Alternator (ACL-GTA)**
Lt N R McCallum, Cdr C R English, Ministry of Defence, UK
B Watier, Turbomeca, France

PARALLEL SESSIONS: SIMULATION AND MODELLING

- 43 A common database for different power system simulation programmes**
Dr J J A van der Burgt, B H Evenblij, R van Maasdam, TNO Prins Maurits Laboratory, The Netherlands
E van Dijk, A J Blokland, Ministry of Defence, The Netherlands
- 53 Co-operative steady-state and dynamic analysis for optimised performance of large-scale marine electrical systems**
Dr G Dudgeon, Dr C Booth, Prof J McDonald, University of Strathclyde, UK
Dr J Hill, A Kinson, Rolls-Royce Marine Electrical Systems, UK
- 62 Presentation of an equivalent model of an electrical propulsion drive adapted for the study by simulation of the interactions with the electrical network**
M Francis, M Béguet, Technicatome, France
- 74 Enhanced control of generators within a marine electrical power system**
P Deverill, Ministry of Defence, UK
Dr A Bennett, N Healy, Dr R Hyde, Dr P Rottier, The MathWorks Ltd, UK

PARALLEL SESSIONS – PEOPLE

- 85 Complementing highly automated frigates – principal requirements and military key issues**
Cdr C Bastisch, Naval Office, Germany
- 96 Manpower planning in the Royal Navy**
Cdr C C Crossley, Royal Navy, UK
- 106 Human-system integration issues for a low-cost, optimal manning high performance frigate**
Cdr A Carta, Cdr A Cataldi, Italian Navy, Italy
A Molini, S Ricco, C Bisso, CETENA, Italy
- 125 The new Italian navy habitability standard**
Capt C Boccalatte, Italian Navy, Italy

DAY TWO: PARALLEL SESSIONS – DESIGN

- 132, **The implications of an all electric ship approach on the configuration of a warship**
Prof D Andrews, Dr A R Greig, R Pawling, University College London, UK
- 147 **Application of naval damage control philosophy to merchant ships**
N Rattenbury, Lloyd's Register of Shipping, UK
Dr A R Greig, University College London, UK
Lt D Brideaux, Canadian Armed Forces, Canada
- 162 **Minimising fire damage**
R van der Wal, TNO Prins Maurits Laboratory, The Netherlands
- 172 **US Coast Guard Cutter Healy – really remote support**
S M Farrell, ALSTOM Power Conversion Ltd, UK
- 180 **Making green ship a reality**
K L Lee, L K Ong, K S Leow, Republic of Singapore Navy, Singapore
- 191 **Imposing environmental impact criteria on warship design philosophy**
Cdr D Lahiri, Indian Navy, India

PARALLEL SESSIONS – AUXILIARY AND CONTROLS

- 197 **The use of high speed static automatic bus transfer switches for mission critical shipboard power systems**
J M Commerton, L3 Communications, USA
J McCarthy, Rolls-Royce Marine Electrical Systems, UK
G Reid, BAE Systems Type 45 Project, UK
- 212 **All electrical systems are grounded – the difference is in the type and degree of isolating impedance**
T C Dalton, NAVSEA, USA
B Desai, Consultant, USA
- 221 **A fresh view on propulsion control**
Prof D Stapersma, Lt P J M Schulten, Royal Netherlands Naval College, The Netherlands
H T Grimmelijs, Delft University of Technology, The Netherlands
- 241 **The design and installation of a modern control and monitoring system for the USNS LCPL Roy M Wheat**
P A Oakey, Rolls-Royce Marine Electrical Systems, UK
- 249 **Recent developments in integrated platform management systems for naval vessels**
F Perotti, A Stefani, ABB Solutions SpA, Italy

PARALLEL SESSIONS – AUXILIARY MACHINERY

- 257 **Cross flow filtration – a SMART way to clean fuel**
S R Churchill, QinetiQ, UK
- 265 **Diesel engine exhaust after-treatment using non-thermal plasma on Royal Navy vessels**
Lt Cdr D Riis, Ministry of Defence, UK
Dr R McAdams, Accentus plc, UK
- 277 **A new generation of water chilling plants for navy applications**
Dr P M de Larminat, York International, France

287 **Technology development for steering and stabilisers**
Lt J B Sifton, CCMEA T R Ferguson, Ministry of Defence, UK
N Osborne, BAE SYSTEMS (Land and Sea), UK

301 **Why the world's naval and auxiliary fleets are taking the monitoring of oil mist in their diesel engines, gear boxes and the atmosphere more seriously**
B J Smith, Quality Monitoring Instruments Limited, UK

PARALLEL SESSIONS – ACQUISITION STANDARDS

310 **Applicability of classification rules to combat ships: the Italian experience**
CV C Boccalatte, CF S Simone, Italian Navy, Italy
M Dogliani, F Vaccarezza, RINA SPA, Italy

317 **Acquisition of ALBION and BULWARK – lessons learnt**
Cdr J M Newell, Lt Cdr A J Curlewis, Royal Navy, UK

329 **Selection and use of standards for naval ships**
N Rattenbury, Lloyd's Register of Shipping, UK

343 **Delivering new technology to defence – the impact of third party approval**
D Williamson, W R Barnett, Rolls-Royce Naval Marine, UK

DAY THREE: PARALLEL SESSIONS – CONCEPTS

354 **Technology enablers for a fast military ship**
Cdr P A Erskine, Lt Cdr M T W Bolton, Ministry of Defence, UK
D J Bricknell, Rolls-Royce Naval Marine, UK

366 **Networking architecture design and machinery control rooms of future in warships of developing navy – a proposal**
Lt Cdr S Chhabra, Cdr U C Kothare, Capt (Dr) R K Rana, Indian Navy, India

380 **Future fast flexible frigates**
I Mackereth, R Steel, P Kimball-Smith, R Quilliam, BMT Defence Services Ltd, UK
J Bonafoux, Nigel Gee & Associates Ltd, UK

396 **Naval shipbuilding – marine technologies of the new epoch**
Dr V T Dzhelemanov, V N Poliakov, Krylov Shipbuilding Research Institute, Russia

PARALLEL SESSIONS – PROPULSION EQUIPMENT

402 **ASTUTE propulsor technical innovation summary**
P M Vinton, Rolls-Royce plc, UK

409 **Design and analysis of a 20MW propulsion power train**
J Beno, M Flynn, R Hayes, R Hebner, J R Jackson, A Ouroua, M Pichot, E Schroeder, J Zierer, D Weeks, The University of Texas at Austin, USA

415 **Modern gear technology trends for navy surface ships**
Dr F Hoppe, RENK AG, Germany

425 **Gearing technology in the naval marine context**
Lt Cdr S N Day, P D Gilbert, Ministry of Defence, UK
D A Hofmann, B A Shaw, University of Newcastle, UK

PROPULSION SYSTEMS

438 **Electric propulsion architectures in capital warships**
J A Buckley, Dr M Benatmane, R E Maltby, ALSTOM Power Conversion Ltd, UK

450 **Integration of platform systems and propulsion system on the new RNIN LPD-2 'Johan de Witt'**
M Kyanin, Imtech Marine & Offshore, The Netherlands

459 **De-risking the Type 45 Destroyer – the shore trials programme**
R Gerrard, BAE SYSTEMS, UK
P Eaton, ALSTOM Power Conversion Ltd, UK

POSTER PRESENTATIONS

474 **CEPA 16: a European military forum for marine engineering**
B van der Ploeg, Ministry of Defence, The Netherlands
M Kyanin, Imtech Marine & Offshore, The Netherlands

479 **Platform management – the whole systems approach**
D M Chubb, Ministry of Defence, UK
P J White, BAE SYSTEMS (Land and Sea), UK

489 **Integrated fight through power test results**
H Hegner, NAVSEA, USA
J Cherry, Anteon Corporation, USA
B Desai, Consultant, USA

503 **Automated model building for dynamic simulations**
T Dirix, H T Grimmelijs, Delft University of Technology, The Netherlands
J T Ligtelijn, J C Moulijn, Wärtsilä Propulsion Netherlands, The Netherlands

517 **Simulation of containment test by explicit FEM**
Dipl Ing Th Winter, MAN B&W Diesel AG, Germany
Dr Ing A Huss, Ingenieurbuero Huss & Feickert, Germany

525 **Submarine motion control developments**
G B H Jacobs, Imtech Marine & Offshore, The Netherlands

534 **High power transformer isolated DC-DC converter for DC distribution on board navy ships**
Dr Y Khersonsky, M Zahzah, L3 Communications Power Paragon Inc, USA

541 **Propeller – diesel engine interaction in a turn**
Lt P J M Schulten, Royal Netherlands Naval College, The Netherlands
S L Toxopeus, Maritime Research Institute Netherlands, The Netherlands
D Stapersma, Royal Netherlands Naval College, Delft University of Technology, The Netherlands

549 **The use of Kinetic Energy Storage Systems in marine applications**
C D Tarrant, Ureco Power Technologies Ltd, UK