# **Electric Ship Design Symposium (ESDS 2009)**

Back to the Future

National Harbor, Maryland, USA 12 – 13 February 2009

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# Electric Ship Design Symposium 2009

## "BACK TO THE FUTURE" 12-13 February 2009

## Thursday, 12 February 2009

#### Welcome and Introduction:

CAPT Norbert Doerry, USN, Symposium Chairman Mr. Keith Michel, SNAME President

The State-of-the-Art Paper of Integrated Electric Power and Propulsion Systems and Technologies on Ships
Dr. Timothy J. McCoy, Converteam and Dr. John V. Amy Jr., BMT Syntek

#### **Parallel Technical Breakout Sessions**

#### 1. Electric Machinery Systems:

Moderators - Professor Giorgio Sulligoi, University of Trieste, and Dr. Zareh Soghomonian, BMT Syntek Technologies

An Overview of Electric Ships in the Energy Exploration Development and Transportation Sector 7

Peter G. Noble, Conoco Phillips

Electric Propulsion Systems for Offshore Support Vessels 19 Terje Nordtun, Wartsila Norway

An Overview of Diesel Electric Drives from an Operations and Maintenance Standpoint 31 Clark Dodge, CED Consulting (presented by Stephen Gleaves, PE)

All Electric Ship Power Stations: Analysis of Voltage Controls and Protections 36
Aldo Da Rin, Carnival Corporate Shipbuilding, and Piero Raffin and Giorgio Sulligoi, both from the University of

#### Trieste

#### 2. Mobility Systems:

Moderator - Chris Bassler, Naval Surface Warfare Center, Carderock Division

Integrated Power Systems in Cruise ships and Naval Vessels 45

A. Qualizza, T. Perini, S. Michetti & M. Ratto, Fincantieri Merchant Ship Business Unit, and G. Sulligoi, S. Castellan, and R. Menis, University of Trieste

New Conceptual Approach to Large Marine Electrical Distribution Systems 59 Vassili Rozine and Max H. Adams, I&M Engineering Group, Coquitlam, Canada

Advanced Power Management on Next Generation Naval Vessels A. M. Staley, L-3 Marine Systems

Electric vs. Conventional Propulsion: Comparative Analyses for Luxury Yachts Different in Size 71

Vittorio Bucci, consultant, and Alberto Marino, Simone Castellan, and Giorgio Sulligoi, University of Trieste

#### 3. Total-Ship Life-Cycle Considerations:

Moderator - Steve Morris, BMT Designers & Planners

Design Practice Challenges for Electric Ships and Floating Facilities 81 Moni Islam, Guy Hardwick, and Jeff Gamble, L-3 Communications Westwood Corp.

Environmental Impact Considerations in US Navy Ship Power System Design 89 Gerritt Lang, NAVSEA 05D

#### 4. System/Design Integration:

Moderator - Jason Strickland, Naval Sea Systems Command

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P. Prempraneerach, M. S. Triantafyllou, J. Kirtley, C. Chryssostomidis, and G. E. Karniadakis, Massachusetts Institute of Technology and Brown University

#### 5. Ship/System Concepts:

Moderator: Adrian MacKenna, Naval Sea Systems Command

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Bassem Nairouz, Matt Hoepfer, Neil Weston, and Dimitri Mavris, Georgia Tech

Field Demonstration of a Real-Time Non-Intrusive Monitoring System for Condition-Based Maintenance 146

Dr. Robert W. Cox, et al., University of North Carolina, Massachusetts Institute of Technology & active duty U.S.

## Navy

Propulsion Drive Rectifier Design Considerations 158
Jinhui Zhang, Nicholas Benavides, Steven Mankevich, and Dr. Timothy McCoy, Converteam Naval Systems