24th International HISWA Symposium on Yacht Design and Yacht Construction
14 & 15 November 2016, Amsterdam, The Netherlands
RAI Amsterdam - Emerald Room

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PROCEEDINGS

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November 2016

Organized by HISWA – Holland Marine Industry body in the Netherlands
METS – the Marine Equipment Trade Show 2016
Delft University of Technology
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INTRODUCTION

I hereby welcome you to the 24th edition of the HISWA International Symposium on Yacht Design and Yacht Construction. The HISWA Symposium has started in 1969 and is the oldest symposium in the area of yacht design and research and is recognised as one of the world's most appreciated symposiums in this field. It is bi-annually organised by HISWA Association, Delft University of Technology and RAI Amsterdam organizer of METS, the Marine Equipment Trade Show held annually in Amsterdam.

This symposium is also my first as Chairman of the Organizing Committee. Compared to the programmes of the previous HISWA Symposia we have increased the number of papers to be presented from an average of 15 to 23. To be able to do this within the same time frame of one and a half day the time for each speaker to present his paper has been shortened to 20 minutes for presenting his paper. Time for questions and discussions is made available in the programme only at the end of each session. This way we can offer a more efficient, diverse and, therefore, hopefully a more attractive programme for our participants. So we hope that this new concept will also meet your expectations.

There is a lot happening in the yachting world at this moment with respect to the introduction of new materials, design tools and innovative and alternative solutions for better sailing and seakeeping performance and energy reduction. New yacht designs for exploring the arctic waters is another trend at this moment also covered by some of the papers at this symposium.

Unfortunately, since the last HISWA symposium held in November 2014, also a number of well-known yacht designers past away. In this context I would like to commemorate in particular Professor Fabio Fossati from Milan Polytechnic University in Italy, who was a regular speaker at our symposia. His departure in December 2015, at the age of 53 is a big loss for the sailing and scientific community. His latest book “Aero-Hydrodynamics and the Performance of Sailing Yachts: The Science behind Sailboats and their Design” that came out in 2010 has already become a worldwide reference text book for sailing yacht theory in use by many designers and students.

Also this time we were again very successful in attracting students to this symposium. This interesting and challenging yachting industry needs creative, innovative and enthusiastic people that are able and willing to make the yachting industry more attractive, high performance but also affordable industry. In the coming years a lot of very experienced and well known designers and researchers in the field of yacht design and construction will leave the “business” or have already left. Unfortunately, some earlier than expected.

Finally, on behalf of the Organizing Committee, I would like to express my gratitude to our sponsors, Damen Shipyards, Maritime Research Institute Netherlands, Feadship and the Axe-bow foundation, without whom this symposium would not be possible at an affordable price. To conclude, I hope this was an ideal opportunity, especially for the students, to meet the elder, more experienced, generation.

Hans Hopman
Chairman Organizing Committee
Scientific Committee
Program Monday November 14, 2016

Moderator: Hans Hopman

12.00 – 13.00  Registration

13.00 – 13.15  Opening

Session 1
13.15 – 13.35  Keynote - From ‘Antinous to A’, Yacht design of the past three decades
Marcus Krall, BOOTE Exclusive, Germany

13.35 – 13.55  Fibre optics sensing in the America’s Cup
D. Constantini, S. Arrivabene, Micron Optics Inc. Switzerland

13.55 – 14.15  Through life load monitoring of superyacht carbon fibre rigs experience and new applications
E. Wilkinson, D. Roberts, Magma Structures/Global UK

14.15 – 14.35  Local and global analysis of large motor yacht superstructure
D. Boote, University of Genoa, Italy

14.35 – 14.50  Questions

14.50 – 15.20  Coffee break

Session 2
15.20 – 15.40  Developing the DAMEN SeaXplorer range of expedition yachts
J. van der Velde, Damen Shipyards

15.40 – 16.00  Computational sustainability: a life cycle perspective approach for eco design and large
yachts construction
V. Eleuteri, VSY and Eulabor Institute, Italy

16.00 – 16.20  Energy analysis on a propeller operating in open water using a rans method
B. Schuiling, Maritime Research Institute, The Netherlands

16.20 – 16.40  Comfort draft
Y. Chellaoui, G. Gaillarde, Maritime Research Institute, The Netherlands

16.40 – 17.00  Questions

17.00 – 18.00  Reception

18.15  Dinner cruise (on pre-registration only)
# Program Tuesday November 15, 2016

**Moderator:** Hans Hopman

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<td>09.35-09.55</td>
<td>Keynote - Techno transfer: benefits for the yacht industry E. Zijlstra, Materia BV, The Netherlands</td>
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<td>09.55-10.15</td>
<td>Hydrodynamics of wind assisted ship propulsion, modelling of hydrodynamic forces N.J. van der Kolk, Delft University of Technology, The Netherlands</td>
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<td>10.15-10.35</td>
<td>A comfort analysis of an 86m. yacht fitted with fin stabilizers versus Magnus-effect rotors J. Ooms, L.R.P. Sosa, Quantum Controls, the Netherlands</td>
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<td>Norse Power Flettner rotor, operational experiences and results from the first reference installation J. Väinämö, Norse Power OY LTD, Finland</td>
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<td>From operational profile to hybrid propulsion P. van Zon, P.T. van Loon, FEADSHIP, The Netherlands</td>
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<td>Structural design inspired by nature D. Leidenfrost, Dykstra Naval Architects, The Netherlands and Alfred Wegener Institute, Germany</td>
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<td>Motions and loads of high speed craft in regular waves, prediction and analysis F. Prini, Newcastle University, United Kingdom</td>
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<td>Pushing processes and performance by parametric design of yachts S. Harries, C. Abt, Friendship Systems, Germany</td>
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Program Tuesday November 15, 2016 (continued)

14.45 – 15.05 Coffee break

Session 6
15.05 – 15.25 The IMO Polar Code and large yachts
(J6-1) J. Gravina, BMT Nigel Gee Ltd, United Kingdom

15.25 – 15.45 TU Delft Solar boat team
Delft University of Technology, The Netherlands

15.45 – 16.05 Deep blue hybrid, integrated energy management system
(J6-2) Ralph Plieninger and Jens Biebach, Torqeedo GmbH, Germany

16.05 – 16.20 Questions

Session 7
16.20 – 16.40 A life cycle cost analysis of hull vane application on motoryachts
(J7-1) K. Uithof, Hull Vane BV (A company established by Van Oossanen), The Netherlands

16.40 – 17.00 Exploring the limits in sail design and construction
(J7-2) R. Doyle, Doyle Sails, United Kingdom

17.00 – 17.20 Glass as a supporting structure in yacht building
(J7-3) F. Verbaas, Lloyds Register, The Netherlands

17.20 – 17.35 Questions

17.35 Closing
Symposium Papers