

Local Communities



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IMarEST BeNeLux Branch - Technical Meeting

Icebreaker RSV 'Nuyina'

Speakers: Johan van der Vorst and Gert-Jan Meijn
Positions: Teamleader Propulsion System Integration / Research Engineer
Companies: Damen Schelde Naval Shipbuilding
Websites: <http://www.schelde.com/>
Date: Tuesday 4 June 2019
Time: 18:30 – 22:00
Venue: Delft University of Technology – 3ME Faculty – lecture room F (Isaac Newton)
 Mekelweg 2
 2628 CD Delft
Contact: IMarESTBeNeLux@gmail.com
Parking: P-Aula or P-3ME; see campus map on <http://www.tudelft.nl/en/contact/>.

Dear member or friend,

You are hereby cordially invited to the coming Technical Meeting of the IMarEST BeNeLux Branch. Details of the programme and additional information can be found below. Your attendance to this Technical Meeting will be much appreciated. I look forward to seeing you on the 4th of June.

Would you kindly let me know if you plan to attend this event by registering [online](#). Please register before Friday 31th of May, so that we can order sufficient refreshments. Please note we have changed our policy concerning refreshments for non-members of IMarEST. We now kindly ask a contribution to refreshment costs of 5 euro's from non-members. The bank account number of IMarEST BeNeLux branch is: NL67 RABO 0364 6179 69 (no refunds).

Thank you in advance.

Yours sincerely,
 Erik-Jan Boonen – Honorary Secretary IMarEST Benelux Branch.

Detailed Programme

18:30 Welcome incl. coffee; meet other attendees
 19:00 Technical Presentation
 19:45 (Coffee) Break
 20:00 Technical Presentation
 20:45 Discussion / remaining questions
 21:00 Drinks / Networking event
 21:45 Closure

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Abstract

Research and supply vessel (RSV) 'Nuyina' is Australia's upcoming icebreaker and will replace the current icebreaker 'Aurora Australis' after roughly 30 years of loyal service. After concept development of the vessel by Knud E. Hansen, design and construction is currently being managed by Damen Schelde Naval Shipbuilding in Vlissingen. Besides operating as a complex vessel in an inclement environment the vessel showcases an innovative propulsion arrangement in order to marry the functionalities of a research vessel, supply vessel and an icebreaker. In the process several engineering challenges had to be overcome. For example, the safe operation and control of the propulsion train under ice-induced loads, or the impact of redundancy on the electrical grid to safeguard DP-operations.



In this technical meeting an overview will be provided on the ASRV project itself, detailing some of the vessel's functions and features that are required to operate in the harsh arctic conditions. The propulsion configuration of the ASRV is atypical with respect to 'classic' icebreakers, having to merge the functionalities of a tanker/freighter with that of a research vessel while maintaining significant icebreaking capabilities. The hybrid (CODLAD) propulsion plant, which includes the RENK Advanced Electrical Drive (AED), was chosen to merge these functionalities into a single propulsion train. In the lecture background is provided on the trade-off that led to this solution, and on the dynamic simulations that were performed to gain insight into the performance of this installation under icebreaking conditions. Lastly the lecture gives insight into how the design of the hybrid propulsion plant is influenced by DP(AA) class requirements and how redundancy requirements are met by this propulsion plant.

About the Speakers

Gert-Jan Meijn

Gert-Jan Meijn graduated as a mechanical engineer with a focus on power and process engineering. He received his BSc. and MSc. (cum laude) in Mechanical Engineering at Delft University of Technology in 2013 and 2015 respectively. He started at Damen Schelde Naval Shipbuilding in 2015 as a trainee, gathering experience from different departments over the course of one year. In 2016, after completing his traineeship, he joined the Research and Technology Support (R&TS) department of Damen Schelde Naval Shipbuilding a technical specialist for power and propulsion.

As a technical specialist his activities include the dynamic simulation of propulsion systems and performing propulsion trade-off studies for various vessels designed by Damen Schelde Naval Shipbuilding. His research interests include control for power and propulsion systems, holistic simulation, energy management and sustainable power generation.

During his traineeship in 2015 he was introduced to the ASRV project. His main responsibility during that period was the initial setup of a dynamic model of the hybrid propulsion plant. This model was initially used to size critical components in the propulsion train and was later used to simulate the dynamic effects of 'ice milling' with the propeller during ice breaking operations.

Johan van der Vorst

Johan graduated as a mechanical engineer from the HZ University of Applied Sciences and has joined Damen Schelde Naval Shipbuilding in Vlissingen since 2005. He started working on integration of auxiliary systems, after few years became involved in propeller shaft alignment and integration of propulsion equipment. From 2009 he became responsible for the power and propulsion system integration for several vessels built by Damen Schelde Naval Shipbuilding and abroad.

Since 2015 he has been involved in the design and engineering of the ASRV. After the project was contracted he was responsible for the power and propulsion system integration of the ASRV, working in close cooperation with the main equipment manufacturers among others on ice breaking capabilities and low noise performance.

Currently he is team leader of a group of young professional propulsion engineers and has a key role in the power and propulsion system integration of the vessels built by Damen Schelde Naval shipbuilding.