Technical Meeting

The application of hydrogen fuel cell technology in a zero emission harbour tug

Speakers:	**Jogchum Bruinsma** (Nedstack) and **Herm Jan de Vries** (OSD-IMT)
Date:	Tuesday the 16th of February 2021
Time:	18:45 – 20:30
Venue:	Online. "Log In" details and instructions are given below
Contact:	IMarESTBeNeLux@gmail.com

Dear member or friend,

You are hereby cordially invited to join the coming **online** Technical Meeting of the IMarEST BeNeLux Branch. Details of the programme and additional "log-in" information can be found below. Your attendance to this Technical Meeting will be much appreciated. I look forward to seeing you **online** on the 16th of February. The digital meeting room will be open from 18:45 onward.

Registration is not required this time. There is no additional fee for refreshments for non-members of IMarEST.

Thank you in advance.

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

Detailed Programme
18:45 Digital meeting Room Open
19:00 Welcome by Chairman
19:10 Technical Presentation
19:45 Short break
19:50 Technical Presentation
20:10 Discussion / questions
20:30 Closure

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Event description

All of society, including the maritime industry, is facing the major challenge of decarbonisation in order to reduce the emission of greenhouse gases and other hazardous compounds. The use of hydrogen as a fuel is both promising in this regard, but challenging. It requires a major shift in shore infrastructure, on-board fuel storage and overall ship design. Polymer electrolyte membrane (PEM) fuel cells can play a central role in on board power supply. They can be used to achieve clean, zero-emission on-board power generation at a very low noise level. In this technical lecture we will zoom in on PEM fuel cell technology in general and show how to integrate PEM fuel cells as main power generators in ships. We will present a case study on the concept of a full electric harbour tug. In this study, power generation and energy storage are fully based on the application of fuel cells and batteries, without any ICE and associated fossil fuel on board. Main topics will be the operational profile and energy management, integration of power generation equipment and assessment of safety aspects.

About the speakers

Jogchum Bruinsma
Jogchum Bruinsma is Head of maritime applications at Nedstack. Jogchum holds a Master's degree in Control Systems Engineering and a Bachelors in Industrial Automation of the HAN University of Applied Science. He is co-author of articles on the application of fuel cells and driving cycle characterization. Jogchum Bruinsma has worked in several senior engineering and management positions at Boskalis and Huisman Etech Experts, where he was in involved in many innovative and challenging projects. He is a board member of ZESTA`s and actively involved in the Hydrogen Europe Maritime workgroup and the IEA-HIA task 39 expert group. His first experience with maritime fuel applications dates back to the development of the NemoH2, a fuel cell driven tour boat, for Alewijnse Marine Technology.

Herm Jan de Vries
As Operations manager at OSD-IMT, Herm Jan de Vries heads a team of naval architects involved in the design of a wide range of workboats. He received his Bachelor's degree in Naval Architecture in 1990 at the Haarlem Polytechnic and has worked in the maritime field since. He started as Maintenance engineer at the naval dockyard in Den Helder, after which he moved to Van Voorden Foundry as Propeller design and production engineer. From 2008 on, he has been involved in the tender and newbuild management of mainly tugboats at Smit, and later SmitLamnalco. In this position he has been involved in many projects dealing with alternative fuel and power generation concepts. He now uses this experience in the field of concept- and basic design of workboats at OSD-IMT.

Instructions for logging in

For this occasion, use will be made of the TU Delft online lecture platform, which is being used daily by thousands of students and lecturers. The following steps are required to log in:

1. Click on this link. You could even do this before the starting time to test your connection. If the link does not work for you, you can copy the following into your webbrowser (Chrome, Firefox , Edge (Chromium version) or Safari (iOS).

   https://ysu-eu.youseeu.com/sync-activity/invite/533815/d5e971eb9fc519e2c3e147a35d5cf280?lti-scope=d2l-resource-syncmeeting-list

2. You will see the following screen which also gives instructions about supported web browsers. You are able to test your system further by clicking on the "computer pre-checks" link. we recommend that you do read these instructions carefully to prevent technical problems with your connection.

3. You will be asked how you would like to join the audio in the following screen. If your setup allows you to use your microphone (left option) we recommend you to do so because this allows for active participation in the discussion and questions. Otherwise you can always use the right "listen only" option, but you will be limited to participation via a chat function.
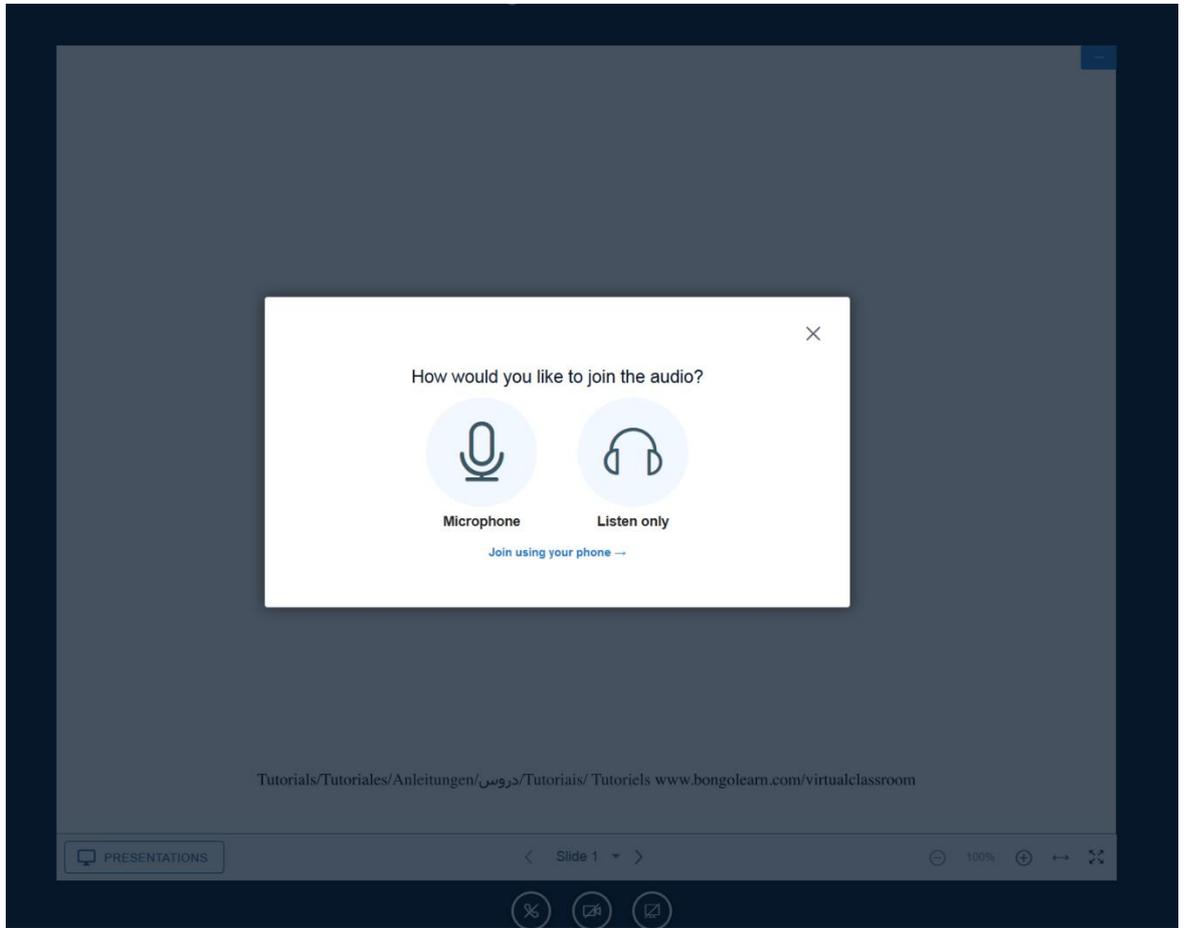
4. When asked you will need to give permission for the software to use your microphone and speaker.
5. All going well, the screen should look similar to below. Camera and microphone can be switched on and off at the bottom. A chat function is available in the upper left corner of the screen.