

# SUBMITTING IMPACTFUL ABSTRACTS FOR WINDEUROPE OFFSHORE 2019



**Wind**<sup>•</sup>  
**EUROPE**

**OFFSHORE  
2019**  
26-28 NOVEMBER  
COPENHAGEN

IN COLLABORATION  
WITH:

DANISH WIND  
INDUSTRY ASSOCIATION

[windeurope.org/offshore2019](http://windeurope.org/offshore2019)

Press + to  
expand the  
question box

Type your question  
and hit 'Send'

# Got a question?

File View Help

Audio

☐ Telephone

☒ Mic & Speakers [Sound Check](#)

**MUTED**

Microphone (Logitech USB Headset)

Speakers (Logitech USB Headset)

Talking:

+ Handouts

- Questions

[Enter a question for staff]

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Webinar ID:

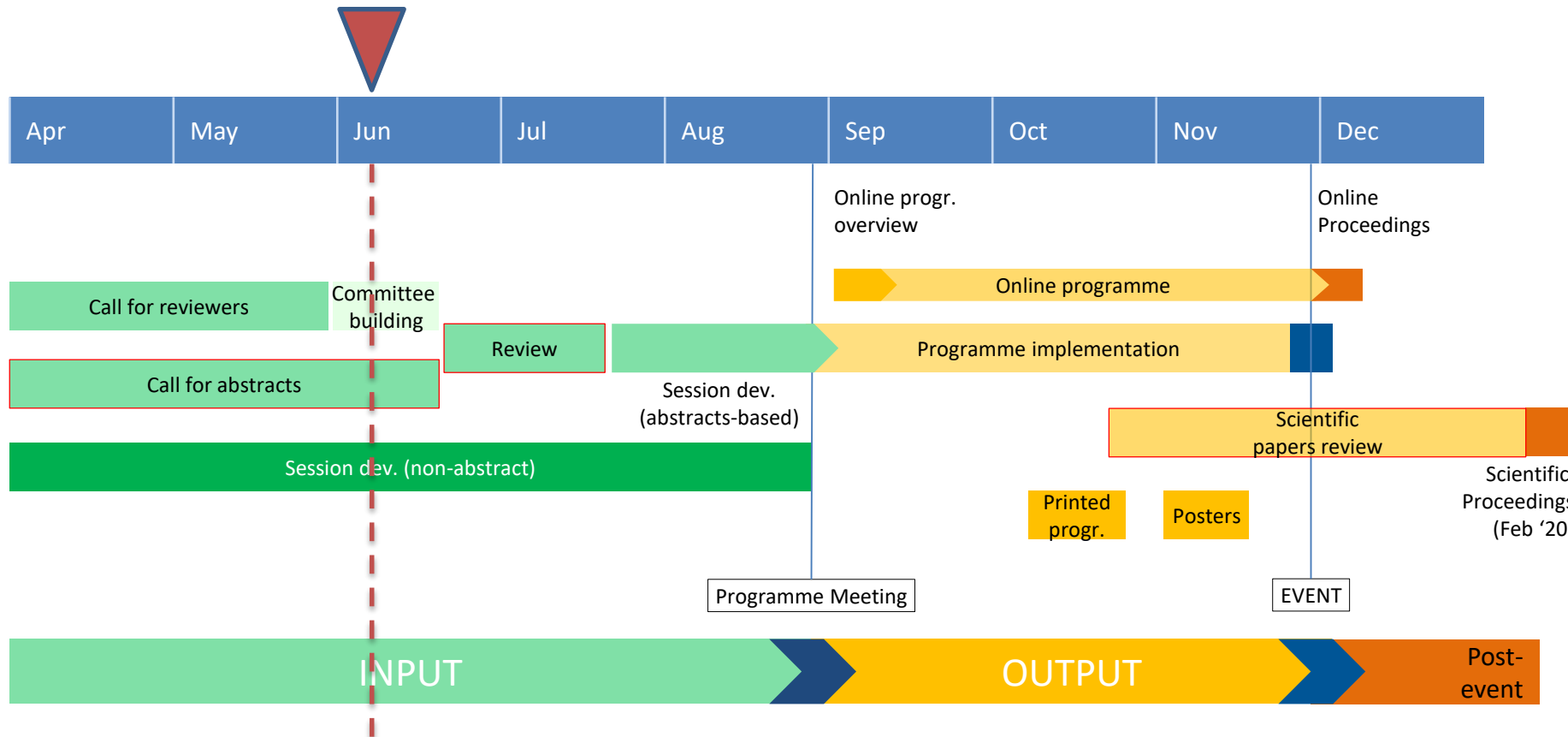
This session is being recorded.

GoToWebinar

# Short Recap Processes and timelines



# General event timeline



WindEurope  
Secretariat

Members

EAWC

Non-Members

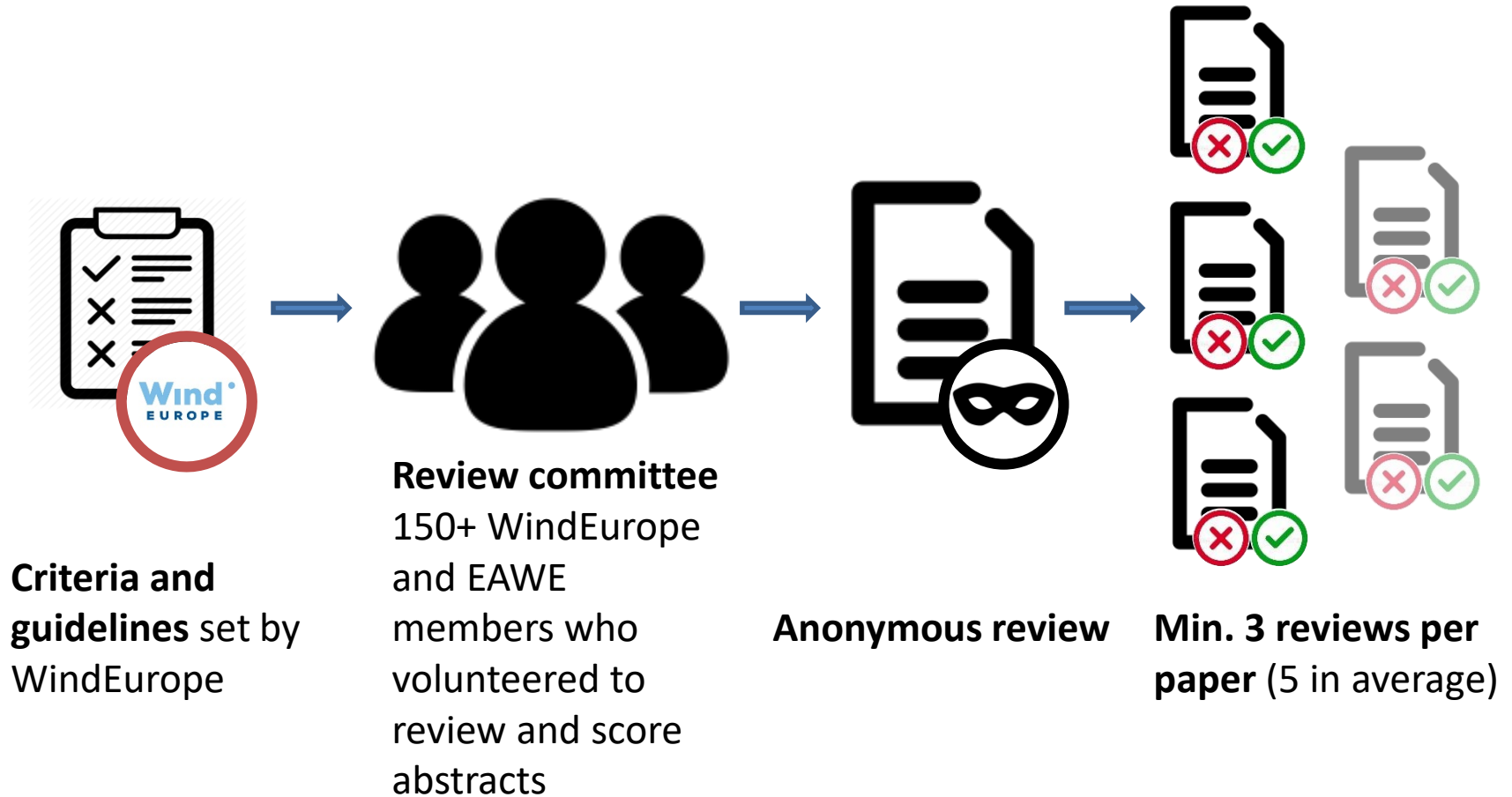
Danish  
Associations

**OA**  
Oxford Abstracts



Wind  
Europe  
DB

# Review process (June-July)



# Grading criteria

## Essential criteria

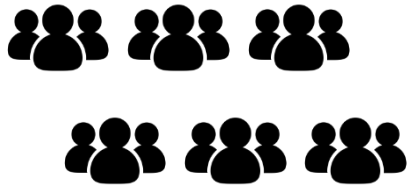
Innovative content

Contribution to industry knowledge

Relevance to topic

Clarity of presentation

# Selection process (July–August)



**Programme committee**, drawn from WindEurope working groups and advisory bodies + from EAWE network, receives review outcomes.



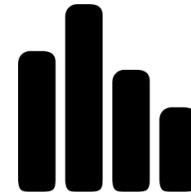
Committee members draft **session proposals**.



Committee considers average grade, reviewer comments and recommendation.



WindEurope & committee review and discuss session proposals at **programme meeting**.



Committee draws shortlist, groups of abstracts by theme.

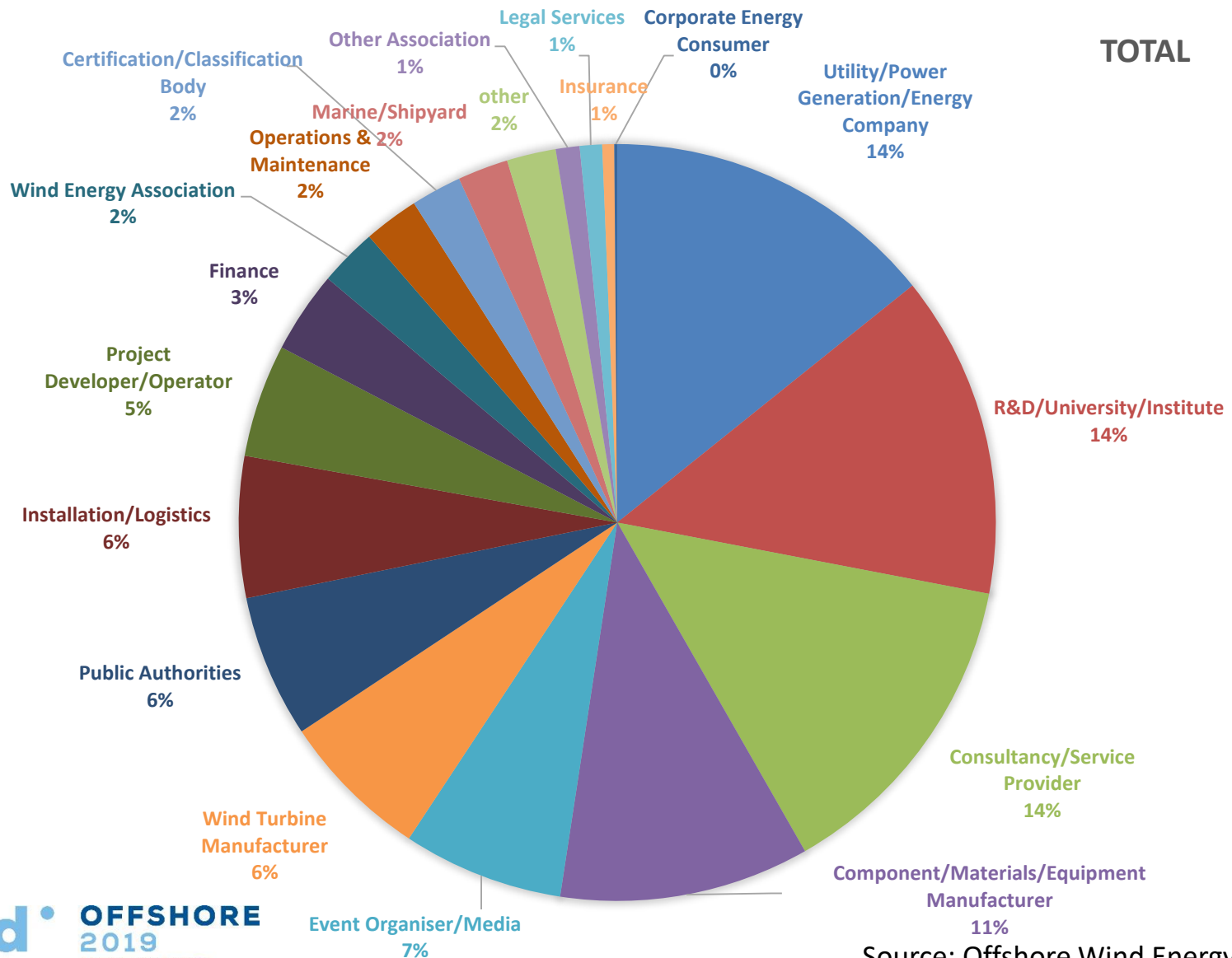


WindEurope EXEC makes final decision and signs off.

# Your audience



# Know your audience



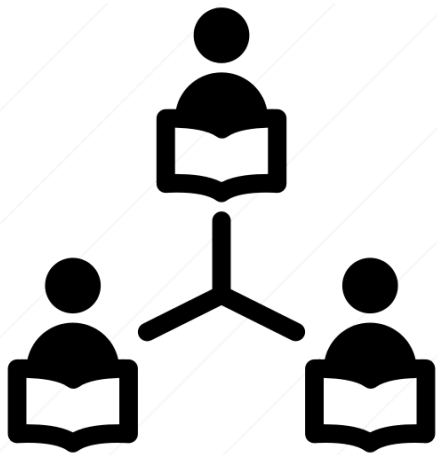
# Know your audience



Source: Offshore Wind Energy 2017

# Know your audience

- What are they looking for:



Learn from their peers  
about **solutions/methods**  
they can **apply** in their  
**daily job**



**Real-world experience and  
examples**



**Analysis of empirical data**

# Know your audience

- What they are NOT looking for:



Paying delegates do not like to hear sales pitches.  
If they want to know about your products, they will visit your exhibition stand.

# How to write an impactful abstract

Mike Anderson, former CTO of RES

Long-standing member of WindEurope programme committees



# What is an abstract?

- A short, structured text to make people want to hear your story and learn from you.
- It should include:
  - General summary: **why** this work and **what scope?**
  - Approach/method: **how** did you work?
  - Results: **what** did you find?
  - Conclusions: what is the **impact?**
  - Learning objectives: what will delegates **learn?**

# How to write an impactful abstract?

## General summary:

- this section should include the importance of your work, the difficulty of the area, and the impact it might have if successful.
- What *problem* are you trying to solve and what is the *scope* of your work?

# How to write an impactful abstract

## Approach/method:

- *How did you go about solving or making progress on the problem? Did you use simulation, analytic models, prototype construction, or analysis of field data?*

# How to write an impactful abstract

## Results:

- *What's the answer?* Put the result there, in numbers. Avoid vague, hand-waving results such as "very "small", or "significant."

# How to write an impactful abstract

## Conclusions and learning objectives

- *What are the implications of your answer? Are your results *general*, potentially generalizable, or specific to a particular case?*
- *What do you expect *others* to *learn* from your work?*



# Dos and don'ts

- Avoid marketing jargon and superlatives.
- Avoid putting in brand names and trademarks.
- Make it clear that your claims will be substantiated and backed by data or concrete examples.
- Put the emphasis on how your work can bring the sector forward.

# WindEurope Offshore 2019

## Topics & updates

# Abstracts format

Only one format for abstracts...

...but option to apply for a publication in the European Academy of Wind Energy's *Wind Energy Science* journal

- Online submission
- Plain text
- Standard set of review criteria



Before you get started, please download and read the [abstract submission guidelines](#).

STEP 1 - ABSTRACT CONTENT

Select topic \*

Please choose the topic which best matches your submission from the list below.  
Please be sure to choose carefully, as choosing the wrong topic may limit your chances of being selected. You can refer to the website <http://www.eawe.eu/abstracts2019> for a full list of topics and challenges.

Choose here

Select subtitle \*

Please choose the challenge which best matches your submission from the list below.  
Please be sure to choose carefully, as choosing the wrong challenge may limit your chances of being selected. You can refer to the website <http://www.eawe.eu/abstracts2019> for a full list of topics and challenges.

Choose here

Please choose a correct author above first

Title \*

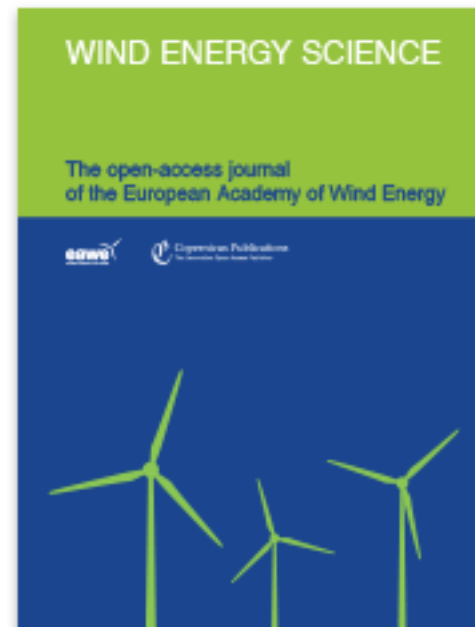
Enter the FULL TITLE of your submission. This will be used for printing in the final programme.

Note: Please use capital letters only for the first letter of the first word of a sentence.

Word Count: 500

Keywords \*

Please enter keywords to help us reference your abstract. Use as many as you wish.



# Topics covered by the call for abstracts



Turbine Technology



Floating Offshore Wind



O&M, installation & logistics



Resource assessment



Grid development, storage, electrification and market integration



Environmental impacts & spatial planning



Skills, health & safety

# Where do abstracts appear in the programme?

At Offshore Wind 2017 in London:

- 56% of sessions (17 sessions out of 30) included abstract content.
- 77% of technical sessions (17 out of 22) included abstract content.



# Where do abstracts appear in the programme?

Tuesday 6 June 2017

09:30-11:00	<a href="#">Opening session</a>			
11:00-11:45	Networking break & <a href="#">poster viewing</a>			
11:45-13:00	<a href="#">Offshore wind and the wider energy system</a>			
13:00-14:30	Lunch & <a href="#">poster viewing</a>			
14:30-15:45	<a href="#">Offshore wind market outlook</a>		<a href="#">Technology developments – scaling up and bringing costs down</a>	
15:45-16:30	Networking break & <a href="#">poster</a> and exhibition viewing			
16:30-17:45	<a href="#">Market developments in China</a>	<a href="#">Offshore wind makes: using operational data to improve models and reduce uncertainty</a>	<a href="#">Making today's technology more competitive</a>	<a href="#">Ports: a cooperative approach to integration in the offshore wind supply chain</a>
17:30-19:30	<a href="#">Networking reception, sponsored by LM Wind Power</a>			

Wednesday 7 June 2017

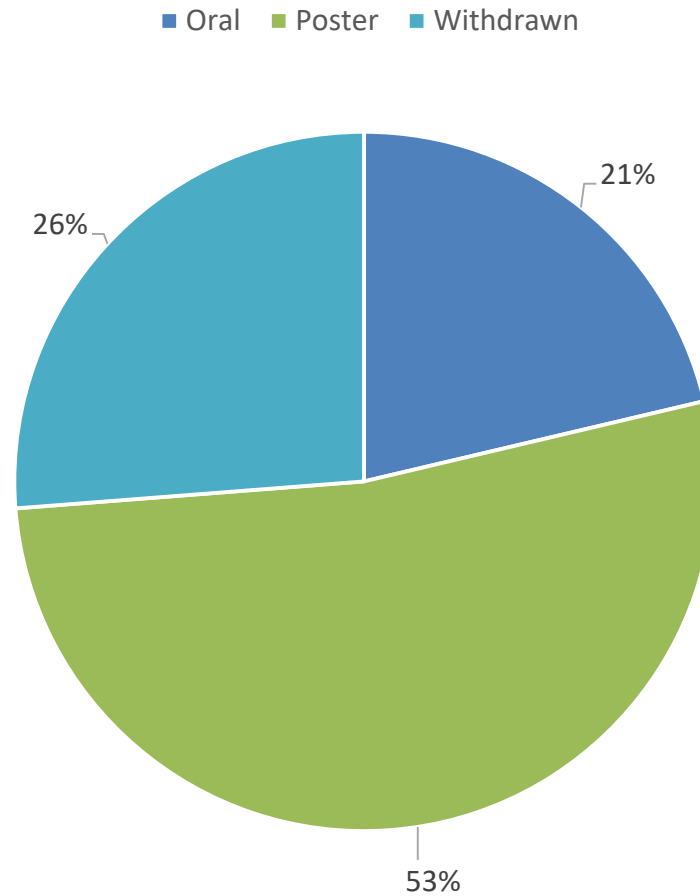
09:30-10:45	<a href="#">Global market developments</a>	<a href="#">Sensing offshore wind</a>	<a href="#">Software: Advances in control technology and software simulation for transmission and multi-connection grids</a>	<a href="#">New initiatives to improve health and safety</a>
10:45-11:30	Networking break & <a href="#">poster</a> and exhibition viewing			
11:30-12:45	<a href="#">Share Fair: Winning contracts in offshore wind</a>	<a href="#">Advancing technology by better design and validation</a>	<a href="#">Further reducing the cost of capital</a>	<a href="#">Learning from offshore wind incidents</a>
12:45-14:15	Lunch & <a href="#">poster</a> and exhibition viewing			
14:15-15:30	<a href="#">Working with your neighbours: cross-border in the North Sea &amp; Baltic</a>	<a href="#">Modelling offshore wind</a>	<a href="#">Dealing with long-term price risks</a>	<a href="#">Improving planning of offshore wind farms &amp; coexistence with increasingly busy seas</a>
15:30-16:15	Networking break & <a href="#">poster awards ceremony</a>			
16:15-17:30	<a href="#">The role of site tendering vs. leasing in delivering cost reduction across Europe</a>	<a href="#">Innovative technology for offshore turbines</a>	<a href="#">O&amp;M game-changers</a>	<a href="#">Using innovation to address operating risk</a>
17:30-18:30	Exhibition visiting time and stand parties			
18:30-19:30	<a href="#">Gala Dinner Cruise: Cruise the Thames on the Silver Sturgeon, sponsored by JDR (separate ticket required)</a>			

Thursday 8 June 2017

09:30-10:45	<a href="#">Hardware: new technologies for offshore energy transmission and connection</a>	<a href="#">Making floating wind energy commercially competitive</a>	<a href="#">Installation challenges &amp; solutions</a>
10:45-11:30	Networking break & <a href="#">poster</a> and exhibition viewing		
11:30-12:45	<a href="#">Offshore wind in the UK: a forward look</a>	<a href="#">Design and analysis of floating wind turbines</a>	<a href="#">Making the most of synergies between oil and gas and offshore wind</a>
12:45-14:30	Lunch & <a href="#">poster viewing</a>		

# In numbers...

## Presentations at Offshore Wind Energy 2017



# Oral, poster or both?

# Why posters?

- Often, the amount of good content exceeds the number of slots available in conference sessions. We offer poster presentations to avoid missing out on such content.
- For presenters: this is a different way to present your work and a great opportunity to network.
- You can **combine an oral presentation with a poster**

# What is a poster?

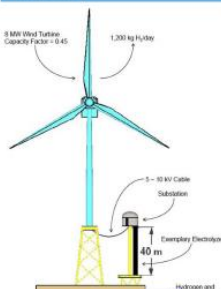
- A presentation of your work that is more detailed than your abstract but more concise than a full article...

**PO.009**

**Abstract**

GTA developed and tested a scalable laboratory prototype electrolysis apparatus for offshore production of renewable hydrogen and oxygen. We measured a steady stream of 99.8% hydrogen, 0.2% oxygen plus water vapor emerging from the cathode side of the electrolyzer. This primary stream was converted to 99.999% H<sub>2</sub> and <10 ppm O<sub>2</sub> in a single catalytic burn step.<sup>1</sup> We also present scale drawings and calculations for an 8 MW offshore wind turbine for hydrogen and oxygen production at the offshore site. Based on linearly extrapolated current-voltage data from the lab prototype, we calculated an average production rate of ~1,200 kg H<sub>2</sub>/day per 8 MW turbine for a capacity factor of 0.45.

**Objectives**



500,000 Metric Tons CO<sub>2</sub> per Year Offset  
Curtailed of Steam Methane Reforming  
Envisioned TRL 9 Electrolysis System

127 X replication of the illustrated system will produce 56,000 metric tons renewable H<sub>2</sub> per year and eliminate annual CO<sub>2</sub> SMR emissions of 500,000 metric tons.

The equivalent height of the exemplary electrolyzer can be 1 x 40 m or 2 x 20 m or 4x10 m depending on water depth.

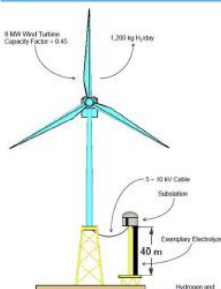
**Offshore Wind Energy Hydrogen Production with a Scalable Submersible Electrolysis System**

Elias Greenbaum  
GTA, Inc.

**Abstract**

GTA developed and tested a scalable laboratory prototype electrolysis apparatus for offshore production of renewable hydrogen and oxygen. We measured a steady stream of 99.8% hydrogen, 0.2% oxygen plus water vapor emerging from the cathode side of the electrolyzer. This primary stream was converted to 99.999% H<sub>2</sub> and <10 ppm O<sub>2</sub> in a single catalytic burn step.<sup>1</sup> We also present scale drawings and calculations for an 8 MW offshore wind turbine for hydrogen and oxygen production at the offshore site. Based on linearly extrapolated current-voltage data from the lab prototype, we calculated an average production rate of ~1,200 kg H<sub>2</sub>/day per 8 MW turbine for a capacity factor of 0.45.

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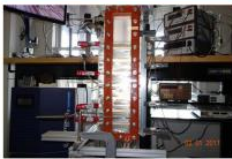


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**Methods**



Photograph of the TRL 4 prototype electrolysis cell and ancillary test and measuring equipment. The outside dimensions of the orange silicone gasket are 15.2 cm x 61.0 cm.

The electrolyzer was constructed and operated according to reference 2. Pluralities of anode and cathode Nickel 200 alloy ribbon wire electrodes were applied to the opposing faces of a planar porous polyethylene diaphragm and positioned between the edges of two hemi-enclosures. The assembly was fastened to make a leak-tight single enclosure. Aluminum busbars contacted the anode and cathode electrode arrays. The busbars were connected to a programmable Kepco KLN-750W DC power supply that powered the apparatus and enabled I - V data logging via an RS-485 communication bus. The electrolyte was an aqueous solution of 25% KOH. Oxygen content of the hydrogen stream was measured with an AMI Model-1000RS Trace Oxygen Analyzer.

**Results**

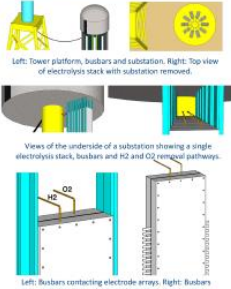


Current vs. voltage data for range 2.0 - 3.5 V. Each reading has 3 superimposed data points spaced 5 seconds apart.

Two results are reported. First, as noted in the abstract, 99.999% H<sub>2</sub> can be produced from the apparatus with a single purification step. Second, we used the I - V data from the lab prototype to calculate the size and establish a form for a scaled 8 MW electrolysis system that is located adjacent to the offshore wind turbine support structure and, like the support structure, is submerged in the waters beneath the tower platform and turbine.

**Results - Continued**

The result we arrived at is an electrolysis system with a turn-down ratio of 70:1 that is comprised of 10 stacks, wherein each stack is comprised of 7 electrolysis cells. When arranged radially, the stacks fit in a circle with 14 m diameter and are 41 m tall, exclusive of the busbars that rise a short distance above the electrolyzers to receive power from an overhead substation. Further calculations show that the unfilled cells are buoyant, which facilitates installation. Based on linear extrapolation of the laboratory prototype data, we prepared the scale drawing of the TRL 9 apparatus illustrated in Objectives. Additional views of the TRL 9 follow.



Views of the underside of a substation showing a single electrolysis stack, busbars and H<sub>2</sub> and O<sub>2</sub> removal pathways.

Left: Busbars contacting electrode arrays. Right: Busbars removed showing cathode and anode electrode arrays.

**Conclusions**

Implications of the present work for the offshore wind energy industry are (1) expansion of the present business model of offshore wind energy; (2) solving the intermittency/curtailment problem of offshore wind energy; (3) reduction on dependence of costly high-voltage export cables; and (4) reduction in the number of law suits/claim settlements that are associated with the cables.


**References**

- Oxlowe 130, 0.3% Pt on AgClO<sub>3</sub>, 2-4 mm beads. Research Catalysts, Inc., Houston, Texas USA.
- United States Patent 8,808,512; European Patent 2,917,386, etc. "Electrolyzer Apparatus and Method of Making It", entry 22 January 2013, assigned to GTA, Inc.

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EUROPE 2017

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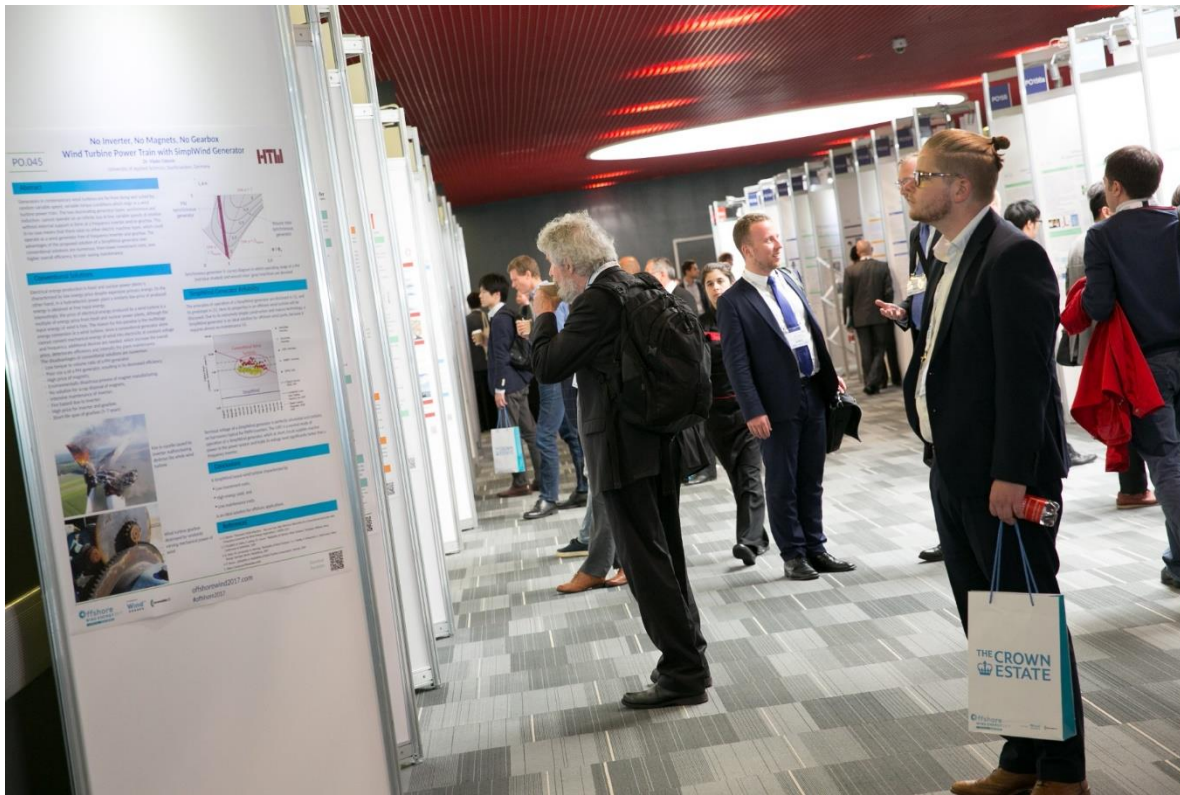
Download the poster





# What is a poster?

- ...displayed in an area of great traffic!



# What is a poster?

- A great basis for **one-to-one** and **in-depth conversations** and **networking**



# What is a poster?

- An easy way to share your work, through onsite downloads via the **embedded QR codes** and after the event, via the **online proceedings**.

## Offshore Wind Energy Hydrogen Production with a Scalable Submersible Electrolysis System

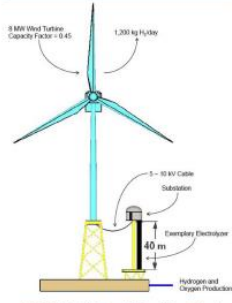
Elias Greenbaum  
GTA, Inc.

PO.009

### Abstract

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### Objectives

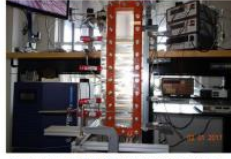


500,000 Metric Tons CO<sub>2</sub> per Year Offset Curtailment of Steam Methane Reforming Envisioned TRL 9 Electrolysis System

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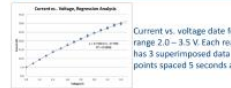
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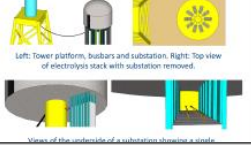
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Left: Tower platform, busbars and substation. Right: Top view of electrolysis stack with substation removed.


Views of the underside of a substation showing a single electrolyzer stack.



Wind CONFERENCE & EXHIBITION EUROPE 2017

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Download the poster



# Did you know that...



1 poster

=



100 downloads

= A full session room!





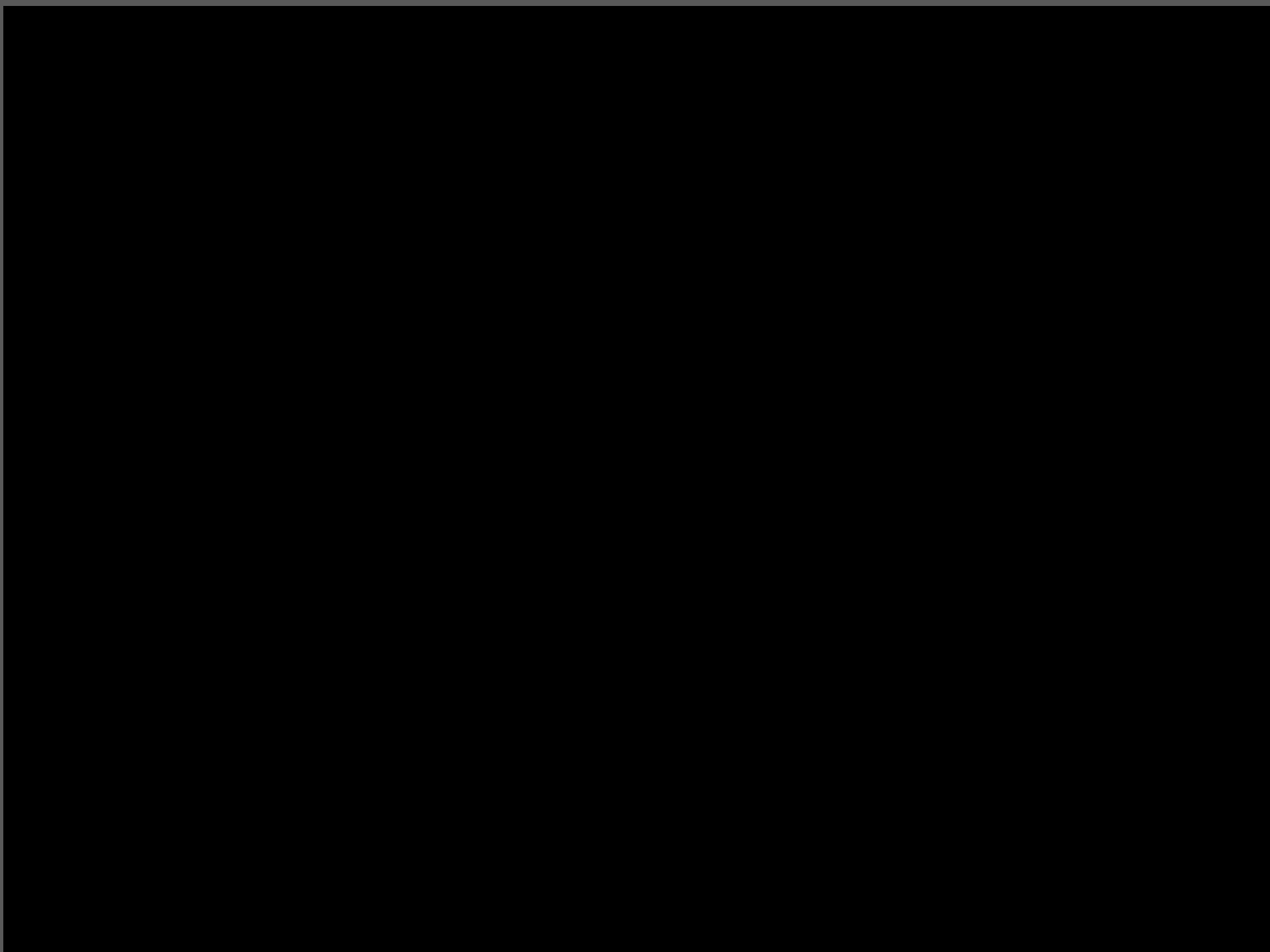
# Poster award ceremony

Winners get a free full conference pass for one of the next WindEurope events



# In practice

## Submitting an abstract with Oxford Abstracts





# THANK YOU

Submit your abstract by 15 June 2019

[windeurope.org/offshore2019](http://windeurope.org/offshore2019)  
[conference@windeurope.org](mailto:conference@windeurope.org)

For membership related inquiries:  
[membership@windeurope.org](mailto:membership@windeurope.org)