



International Network on Offshore Renewable Energy

**Report on the 6th Annual INORE Symposium
20-25 May 2012
Thisted, Denmark**

If you've never been to an INORE symposium before and are interested in finding out what we do, or if you've been before but couldn't get to this one, then read on. The INORE symposium is a week of knowledge exchange activities for a group of people starting out in research or development activities in offshore renewable energy. This is for people from the range of offshore renewable technologies and the range of disciplines studying in this field.

By bringing researchers together, this event—which is free of charge—helps to achieve INORE's goal of stimulating knowledge sharing and collaborative learning in a cohesive, global offshore renewable energy research community.

To this end, the schedule was packed with activities both professional and relaxed: there were industry speakers, lectures from INOREans, poster sessions, nine different group tasks and a day of site visits; as well as surfing, football, rugby, a fish auction and a barbecue.

Symposium highlights

- Talks from invited speakers
- Visits to wind and wave energy test facilities
- A local area short conference on renewable energy development activities
- Collaboration tasks set by industry
- Posters presented by all INOREans

The symposium in numbers:

Over 40 INOREans from nearly 30 institutions, representing 15 countries
Posters presented: 45
Invited speakers: 6
Number of days: 5
Talks given by INOREans: 3
Visits filmed for TV: 1





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Overview of the week

On Sunday evening, the coach left Aalborg airport with 40 INOREans raring to go for the week. After a sunny journey along the fjord, passing the nature reserve at Vejlerne and the obligatory tall wind farms, the group arrived at the hostel, just outside Thisted.

Straight away, a one-slide "name, place, topic" introduction gave a rough and ready idea of what topics everyone was covering and whereabouts they were doing that.

After a supper of Danish fish, we heard from Jens Peter Kofoed of Aalborg University about the way different offshore renewable energy projects have been progressing in this area of northern Denmark.

Monday started with time for posters. This gave all of the INOREans an opportunity to talk about their work to small groups and to hear about the work of others.

In the afternoon, there was an opportunity to hear from Jon Vindahl Kringelum of Dong Energy how a utility views the current offshore market.

Before dinner, the INOREans made a start on the nine group tasks and kicked off the week's football on the pitch behind the hostel. Tasks were set by companies and institutions: Bosch Rexroth, Dong Energy, MARIN, Ocean Energy Systems, RenewableUK, Spok ApS, Tecnalia, Vattenfall and WaveTrain2. Teams of 4-5 had seven hours of brainstorming time to come up with solutions.

Tuesday found the INOREans with more time to find out about one another's research through their posters and to make a real dent in the group work.

In the afternoon, there was a talk from Nicolai Lovdal of Multiconsult who first had the idea for INORE, and who discussed the pros and cons for Norway's involvement in the offshore wind sector.



We were awake early on Wednesday morning for a trip into the port of Hanstholm to see the largest fish auction in northern Europe. On the morning we visited around 100 tonnes of fish were for sale.

After coffee and pastries, half of the group set off along the beach front to visit Wavestar wave converter and then to go surfing. The surfers had fun crashing and falling in the small waves, fuelled with energy drinks.



The second group heard about the building of the port at Hanstholm: a great engineering achievement in the face of North Sea storms. We then visited areas of interest around Hanstholm.

This group were shown around the new onshore Østerild wind test centre currently under construction at Frøstrup. We also heard about some of the controversies surrounding the building of the site and some of the ways that atmospheric measurement systems are used to run such plants.





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On our trip we were accompanied by a cameraman and a reporter from TV-MidtVest, a station

covering the western area of Denmark. They took the opportunity of the combination of the "Good energy in Hanstholm" day of visits (<http://webhouse.ipapercms.dk/HanstholmHavneforum/2010Skabelon1Havneforum/Goenergi/?Page=12>), the baking Danish sunshine and the international visitors to make a small news item (<http://front.xstream.dk/tvmv/?id=14841>).

INOREans from China, England and Mexico were interviewed about their experiences of offshore renewable energy in

Denmark and worldwide. Their enthusiasm was helped by Laurent Marquis of Wavestar allowing the INOREans the chance of a ride on their floats as part of the tour. We were also able to look behind the scenes at the

control room and ask Mikael Pedersen about the various operations that he could control. Seeing the footage of the plant during a stormy sea made us particularly aware of the power available here, and very thankful that we weren't trying to stay on the buoys under such conditions.

In the afternoon, we were invited to a special session on renewables projects in the Thisted region, moderated by Kjeld Vang and with talks from the CEO of Hanstholm Samlecentral, Freddy Nielsen; the financial manager of Thisted Kommune, Torben Juul Jensen; the marketing manager for the port of Hanstholm, Mogens Ketler; the head of the wind



energy division of Risø DTU, Peter Hjuler Jensen; the project engineer for Dexa wave, Christian Lysdal; the marketing manager of Global Wind Power, Simon Leed; and associate professor Jens Peter Kofoed of Aalborg University. After this whistle stop tour of the Danish renewables sector, we returned to the hostel for a self-cooked barbecue.

After a traditional Aalborg breakfast, Thursday was a day of talks. Hans Christian Sørensen of consultancy Spok ApS

described ways of many organisations working together to fill knowledge gaps through synergy. On a more technical note, Sebastien Gueydon of MARIN looked into the problems with the scaling of air and water in experimental set-ups. We heard also of the technical requirements for hydraulic transmissions from Yukio Kamizuru of Bosch Rexroth. Peirpaolo Ricci of Tecnalia described how they are involved in all stages of the development of grid-connected marine energy farms. Miguel Lopes of the Wave Energy Centre told us his views on how non-classical approaches to business and knowledge sharing can help to advance the industry.

On our final afternoon in Thisted, the results of the collaborative sessions were presented, with the group who answered the question from DONG Energy on the synergies between offshore wind and wave energy announced as most effective at capturing the task.

During the final fish banquet, prizes were given for the best poster from a returning INOREan

and best poster from a first time INOREan. This turned out to be a clean sweep by the two Canadians present.

After farewells on the Friday morning, some of the group visited the tank and flume facilities at Aalborg University, where INOREans had been performing collaborative experiments the previous week.





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New committee members

Before our final evening banquet, we had the elections for the new committee. There was an opportunity for 11 INOREans to tell us why they wanted to be part of the committee. All were done very well, with seriousness mixed with fun.

The committee is thus now:

Kate Freeman: Committee Chair

Alana Duerr: Coordinator for the Americas

Hannah Buckland: Event Coordinator (Europe)

Elizabeth Christie: Treasurer

Joshua Davidson: Website

Dale Jacques: Communications

Thomas Kinsey: Sponsorship/Events (North America)

Andrew MacGillivray: Sponsorship (Europe)

Davide Magagna: Event Coordinator (Europe)



What's next for INORE?

The 1st North American INORE symposium, Massachusetts, June 17th-20th 2012

Workshop event at ICOE, Dublin, October 2012

Symposia in Wales and Nova Scotia in spring/summer 2013



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	SUNDAY 20th	MONDAY 21st	TUESDAY 22nd	WEDNESDAY 23rd Group 1 Group 2	THURSDAY 24th	FRIDAY 25th
07:00				Bus to Hanstholm		
07:30						
08:00		Breakfast	Breakfast	Fish Auction	Breakfast (Sild)	Breakfast
08:30						
09:00		POSTER Session	POSTER Session	Freddy Nielsen	Beach walk	BUS (Thisted - Aalborg Airport - Aalborg University: Facilities & Deep and Shallow water wave basins LUNCH
09:30				(CEO Hansth. Samlecenter)	Wavestar visit	
10:00		Coffee Break	Coffee Break		Coffee Break	
10:30		INOREans Lectures	Group Task	"Der er Go' Energi i Hanstholm"	Lunch:GamleRø Bus to klitm.	
11:00				Frøstrup, Østerild, wind test centre. Dexa Wavestar		
12:00		Lunch	Lunch		Lunch	
12:30		POSTER Session	POSTER Session		SURF Klitmøller Cold Hawaii	
13:00						
13:30		Coffee Break	Key note (Multiconsult)		Key note (Bosch) Key note (Tecnalia) Key note (WavEC)	
14:00		Key note (DONG)	Coffee Break		Coffee Break	
14:30				Conference: -DTU / Risø -Hanstholm harbour -Dexa & Wave Star	Group task Final Presentation	
15:00		Group Task	Group task		Coffee Break	
15:30		Coffee Break	Coffee Break		Group task	
16:00	BUS (Aalborg Airport - Thisted)	Group task	INORE Presentation	Bus to Thisted	Final Presentation	
16:30					New Committee Election	
17:00	INORE intro Welcome package	Football	Football / Walk		GROUP Picture	
17:30	Dinner	Dinner	Dinner	BBQ	Banquet (and awards)	
18:00	Key note (AAU)					
18:30	Group Task	(Free time)	(Free time)			
19:00	Choose Wednesd. Intro. to all Hang posters					
19:30	(free time)			(Free time)	(Free time)	
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Our grateful thanks to all those organisations that supported this symposium:

