

# 66 kV Offshore Wind



The only networking event on 66kV grid development  
30 November – 02 December 2015 | Swissôtel Bremen, Germany

**Presenting highlight companies and institutes:**



**Sponsor:**



- Evaluate **project requirements** to select 66kV inter-arrays
- Explore **turbine requirements** for use in 66kV systems
- Review **certification procedures** for higher voltage equipment
- Evaluate the **technology and cost** impacts on **transformers, cables and switchgears**
- Understand the need for **reactive power compensation** in offshore substations

**Learn from these experts amongst others:**

Kamal Siriwardhana, Associate Director & Technical, Leader – Transmission & Distribution, **Arup**, United Kingdom

Frank Wester, Manager Asset Management, **TenneT**, The Netherlands

Aida Reig, System Design Engineer, **Prysmian Group**, Norway

Georges Colboc, MV-HV Engineer, **Adwen Offshore**, France

Javier Cilla, Grid Integration, **Alstom Wind**, Spain

Co-located with:  
International Conference  
**GIANT Offshore  
Wind Turbines**

**Workshop Day:**

**Workshop A** | Deepwater concepts – floating offshore wind turbines

**Workshop B** | 66kV transmission – impact on turbine design

**Workshop C** | Grid connections for higher output WTGs

**Workshop D** | Challenges for 66kV cables and accessories



## The only networking event on 66kV grid development

66kV Offshore Wind is a technical event for experts in the wind industry. The goal is to provide a clear path to commercial implementation of 66kV array grids. By exploring developer requirements, WTG capabilities and equipment certification, we hope to reduce both uncertainty and time to implementation for 66kV offshore wind.

I look forward to seeing you in Bremen.

### Alastair Grant

Wind Energy Portfolio Manager

### Why attend?

- Case studies from potential international projects provide insight into the requirements for 66kV implementation
- Interactive sessions allow you to get in touch with some of the most important industry professionals
- Insider discussions allow you to understand and react to

### Who will you meet

- Regulatory bodies
- Wind farm operators / owners
- Consulting companies
- Wind turbine manufacturers
- Testing institutes
- Certifiers
- Transformer manufacturers
- Installation companies
- Cable suppliers
- Switch gear manufacturers

### What guests of 66kV Offshore Wind say about the event:

***"This conference offers the unique opportunity to bring together all the major market players for the new generation of 66kV Offshore Windfarms. The industry collectively, needs to understand the main challenges to push forward"*** **Prysmian Group**

***"Well organized. A good opportunity to get to know contacts and new ideas of solutions"*** **ABB**

### Sponsor



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9:00 Registration and welcome coffee

**Who is Who**

Discover who else is participating in the conference. The matchmaking picture wall will help you identify who you want to meet at the conference. In cooperation with **FUJIFILM**

9:50 Opening by  
Joe Corbett, Senior Project Manager,  
**ESB International**, Ireland

**Developer and certifier requirements for 66kV technology**

10:00 **Assessing the scenarios for the first 66kV system, at the Borssele OWF sites**

- Standardised platforms concept to connect 10 wind farms
- Interest and potential for 66kV arrays
- Key CAPEX costs and savings for cables, electrical components and installation

Frank Wester, Manager Asset Management,  
**TenneT**, The Netherlands



10:30 **Modelling the cost/benefit scenarios for 66kV systems – case-study of the Borssele OWF sites**

- Study of the Borssele sites and recommendations to TenneT
- Prospective electrical system for a 66kV wind farm
- Impact of array voltage change on electrical market and turbine suppliers

Speaker tba,

**DNV GL**

**11:00 Speed Networking**

Get in touch with the other conference guests in quick paced 1-1 meetings – make sure you bring a stack of business cards. The session is followed by a short break.

**12:15 Reduction of risks and issues for 66kV inter-array circuits**

- A historical perspective: Assumptions behind early work and how these assumptions have changed
- Availability and reliability for inter-array circuits, taking into account increasing turbine sizes
- Risks and issues: How these have been reduced, and outstanding areas

Dr. Anna Ferguson, Specialist Consultant Regulatory Lead, **TNEI Services**, United Kingdom

**Impact on turbine design and system integration****12:45 Grid integration and power output considerations for 66kV turbines**

- Performance impacts of generators and transformers
- Grid code impacts at changing voltage and current levels
- Safety and reliability constraints

Javier Cilla, Grid Integration,

**ALSTOM Alstom Wind**, Spain

13:15 Networking Luncheon

**15:00 Integration and development of high voltage equipment for wind turbines**

- Development of 66kV transformers
- Space-considerations for 66kV equipment
- Performance impacts for next generation turbines

Paweł Pryliński, Product Manager – Power Trafo,

**ABB ABB**, Poland

15:30 Refreshment break and networking

**16:00 Electrical system design for 66kV turbines**

- Key features of the AD8
- Changes to MV-HV equipment
- Performance differences

Georges Colboc, MV-HV Engineer,

**Adwen Adwen Offshore**, France

**16:30 66kV DeepDive – Choose your main discussion topic and deepen your knowledge in close dialogue with experts in the areas of :**

- Cables
- Electrical equipment
- Project planning
- Testing

17:30 Closing remarks by Joe Corbett

**18:30 Evening Event**

Join us for an informal evening get-together at the restaurant Schüttinger Brauhaus! This is an excellent opportunity for you to meet the other attendees and make new business contacts.



9:15 Registration and welcome coffee

9:45 Opening by Kamal Siriwardhana, Associate Director & Technical, Leader – Transmission & Distribution, **Arup**, United Kingdom**10:00 Future outlook for 66kV development**

- What project considerations are best suited to 66kV voltage level?
- Technology and supply chain readiness
- 66kV Options and potential projects

Kamal Siriwardhana, Associate Director &amp; Technical Leader – Transmission &amp; Distribution,

ARUP **Arup**, United Kingdom**Advances in 66kV cables and array-grid layout****10:30 Optimising wet design submarine cables for higher voltage wind applications**

- Experience and developments with 66kV submarine cables
- Designs and tests for wind farm cables
- Future research for optimal next generation cables

Aida Reig, System Design Engineer,

**Prysmian Group**, Norway

11:00 Refreshment break and networking

**11:30 Developing standards relating to higher voltage inter array cables and accessories**

- Gaps in standards, existing routes for qualification of cable systems
- Technology readiness
- Further steps to prove technology standardisation

Alex Neumann, Asset and BD manager, HV Electrical,

**ORE Catapult**, United Kingdom**12:00 Reliability and life prediction of 66kV wet design cables**

- 66kV wet array cable design with WTR-XLPE insulation
- Life prediction: electrical stress levels and other factors
- Defining tests for life prediction at 66kV
- Full size Wet Age testing – experience to date

Jeremy Featherstone, Product Development,

**JDR Cables**, United Kingdom**12:30 The switch to 66kV, a cable installers perspective**

- Installation asset implications
- Impacts on ancillary equipment
- Burial and pull-in challenges for 66kV cables

Alex Gauntt, Business Development Manager,

**Siem Offshore Contractors**, Germany

13:00 Networking Luncheon

**Developments in 66kV transformers and switchgears****14:30 Challenges in electromagnetic transient modeling of offshore wind parks**

- Cable models for 50/60 Hz and harmonic studies
- Transformer models for high-frequency interaction and internal resonance studies
- Example: electromagnetic transients in offshore wind farms
- Example: cable-transformer high-frequency interactions and internal voltage magnifications

**SINTEF** Bjørn Gustavsen, Chief Scientist, **SINTEF**, Norway**15:00 Integration and performance of higher voltage switchgears in wind farms**

- Development of tailored switchgears for offshore wind applications
- Major performance issues experienced from other industries
- Future designs in the event of an SF6-GIS ban

Stefania Guerra, Product Manager – PASS Family,

**ABB**, Italy**15:30 Idea Wall – Road to Implementation**

Got a good idea in mind? Add this to the board throughout the conference and benefit from further discussion and audience insight in this open-mic session.

When will we start to see 66kV projects? How can suppliers and project owners support each other to make this a reality? What issues still need to be resolved?

16:00 Closing remarks by Kamal Siriwardhana

16:15 End of the conference and farewell coffee

Co-located with:  
International Conference**GIANT Offshore  
Wind Turbines**



**Workshop Day** | Wednesday, 02 December 2015  
For both conferences "66kV Offshore Wind" & "Giant Offshore Wind Turbines"

09:00 Registration and welcome coffee

10:30 Refreshment break and networking

## Workshop A | 09:30 – 12:30

### Deepwater concepts – floating offshore wind turbines

The issues in focus for this session are:

- Design standards, trends and technology readiness
- Fabrication and supply chain constraints
- Road to commercialization and key market barriers

Project owners, OEMs and contractors will discuss main technological challenges and commercial assessment for next generation floating turbines.

Guillaume Ardoise,  
Business Development,  
**Principle Power**, France



## Workshop B | 09:30 – 12:30

### 66kV transmission – impact on turbine design

This session will explore:

- Influences of technical challenges on current turbine design
- Adaptability of current electrical systems for higher voltages
- Challenges for transformers, switchgears and cabling

Developers, OEMs and suppliers will contribute developments and design ideas to overcome constraints with higher voltage offshore turbines.

Georges Colboc,  
MV-HV Engineer,  
**Adwen Offshore**, France



12:30 Networking luncheon

14:30 Refreshment break and networking

## Workshop C | 13:30 – 16:30

### Grid connections for higher output WTGs

Participants will discuss:

- Changes to the electrical systems
- Power stability at higher rated-output and voltage levels
- Coping with higher electrical loads

All stakeholders are invited to share their experience and work through challenges with grid connection.

Rachel Hodges,  
Managing Director,  
**TNEI Services**, United Kingdom



## Workshop D | 13:30 – 16:30

### Challenges for 66kV cables and accessories

This session will explore:

- Upgrades to wet design power cables
- Issues for cable terminations
- Testing and certification of cables and accessories

All stakeholders are welcome to work through cable developments for 66kV arrays.

Anders Jensen,  
Head of Submarine Cables,  
**Hellenic Cables**, Germany



16:30 End of workshop day

### Sponsorship

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# 66 kV Offshore Wind



30 November – 02 December 2015 | Swissôtel Bremen, Germany

Co-located with:

International Conference

## GIANT Offshore Wind Turbines



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<input type="checkbox"/> <b>Gold Package</b> 2 day conference + 2 workshops	€ 3.399,- + VAT
<input type="checkbox"/> <b>Silver Package</b> 2 day conference + 1 workshop	€ 3.099,- + VAT
<input type="checkbox"/> <b>Bronze Package</b> 2 day conference	€ 2.599,- + VAT

Please indicate your choice of workshop on Wednesday, 02 December 2015

- Workshop A | Deepwater concepts – floating offshore wind turbines
- Workshop B | 66kV transmission – impact on turbine design
- Workshop C | Grid connections for higher output WTGs
- Workshop D | Challenges for 66kV cables and accessories

Only one discount applicable per person.

- CAN'T MAKE IT TO THE CONFERENCE? PURCHASE THE 2-DAY DOCUMENTATION FOR € 990,- +VAT. Documentation will be sent 6 weeks after the event

### Delegate Details

Please fill out in Capitals!

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### Venue and Accommodation

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