



## Workshop "Development of offshore grid in the Baltic/North Sea area"

Organised and chaired by Mr G. Adamowitsch, European Coordinator for Connections to offshore wind power in Northern Europe

17 March 2009 15:00 – 18:00, Palais des Arts, room Gyptis



EWEC 2009, 16-19 March 2009, Marseille (Parc Chanot) - [www.ewec2009.info](http://www.ewec2009.info)

### SESSION SUMMARY

This workshop was announced in the European Coordinator's first annual report and constitutes an essential deliverable of his workplan for 2008/2009. The aim was to disseminate the main results of the Coordinator's activities and of the working group analysis. The message was that it was necessary to progress by means of an open and transparent discussion on technical information to necessary actions, which are supported by the citizens. The event focused on Kriegers Flak as a best practice case and on the modular development of an offshore grid in the North Sea.

National TSOs, industry stakeholders, national governments, regulators, financial institutions (including the EIB), academics & research institutions, environmental NGOs, and consultants from 12 EU Member States (AT, BE, DE, DK, EL, ES, FR, IE, LV, NL, SE, UK), Norway, Switzerland, USA and Canada were represented at the workshop.

#### Facts

Mr Adamowitsch gave an overview of his mission and the visits carried out in the countries in the North Sea and Baltic Sea areas. Then he described the four actions which constitute his work programme for the second year (2008/2009) of his mandate. The European coordinator has established an open, multi-stakeholder forum bringing the various players together (Member States, regulators, TSO's, investors, NGOs) to identify problems and define common cross border solutions: the "Working Group for offshore and onshore grid development in Northern Europe (North Sea, Baltic Sea)".

He emphasised that Europe had to progress from a fragmented and national approach to a European solution for exploiting the potential of offshore wind generation. Krieger's Flak could in his opinion constitute a "best practice case". He was optimistic that significant progress could be made in the architecture of the needed offshore and related onshore grid.

#### Presentations

The results presented are based on analysis of the "Working group for offshore and onshore grid development", and highlight the:

- TSO-based planning of the three-legged interconnector for Kriegers Flak;
- TSO-based modular design of a North Sea Grid;
- Need to progress from national to regional/European solutions including a "To do list" for technical standardisation.

#### "First European Offshore Grid at the Baltic Sea - Kriegers Flak: Techniques, Economics and Challenges"

Mr. Rüdiger Reinisch (Vattenfall Europe Transmission) and Ms Antje Orths (Energinet.dk) presented a pre-feasibility study for a three-legged interconnector solution and showed the socio-economic benefit of such an integrated solution. (see attached map 1)

#### "Modular design for the development of the offshore/onshore grid in the North Sea"

Mr Kjartan Hauglum (Statnett) as Rapporteur of the Working Group for offshore/onshore grid development in Northern Europe (North Sea, Baltic Sea) showed the links which were currently under consideration in the countries of the North/ Baltic Sea region. The Working Group followed a "**modular approach**", where several modules would complement each other and constitute the future off-shore grid. The feasibility studies were made by TSO's, i.e. by the engineers, following a **bottom-up approach**.

Mr Hauglum laid down that standardization was needed now – a top down approach. This standardisation is the first step towards a European solution. The European offshore grid could be specified when the physical

power flow followed the needs. This envisaged offshore grid was presented in form of the "North Sea Power Wheel". (See attached map 2)

### **"Financing renewables and transmission infrastructure projects"**

Ms Paola Bresesti (European Investment Bank) stated that the European Investment Bank was prepared to support financially the increase of renewable generation and the related transmission.

### **Discussion with the audience**

The discussion was based on interventions given in a prescribed format and on comments from the audience.

Fourteen statements from the audience have been formally submitted to the European Coordinator (See list of interventions attached in annex). The views were expressed in form of 'interventions', the prescribed template enabling adequate documentation. The statements addressed the need for regional offshore grid planning, additional projects including 'best practice' cases, development of needed regional regulatory and market measures and barriers given by the industry supply chain.

The audience acknowledged that the coordinator's work had progressed significantly and was of great interest to a wider audience. The discussion addressed the needed grid in relation of the generation potential.

The results derived by the working group and presented by the speakers were well accepted and led to proposals for concrete further actions. In particular, the "North Sea Power Wheel" was seen as a valuable design for the implementation of a European solution in the North Sea and set the ground for the discussion about the next step European solution.

The audience supported the idea that a roadmap on how to tackle the obstacles to its implementation (in particular regulatory and financial issues) shall be delivered in the second annual report of the European Coordinator.

### **Conclusions**

The accepted facts were:

- (1) A crucial feature is that off-shore wind power in Northern Europe is a European project, not limited to coastal states. Thus, an integrated European approach is needed for releasing the full offshore potential.
- (2) However, based on national support schemes and national regulation a "first thing – first" local approach is followed at present. It will require additional and costly investments to employ a regional strategy; therefore the fragmented national approach will be very costly to consumers and governments and also lead to an unnecessary burden on the environment.

Mr Adamowitsch stated that there was clearly one European concept for Kriegers Flak which required decision making both at political level and at company level. There was one common target which translated into three national targets comprising regulation and market rules. The in-depth discussion reflected his strong interest in an integrated solution.

Mr Adamowitsch emphasised that the great offshore potential required not bi-lateral solutions but was indeed a European story.

The European Coordinator saw the dissemination of the technical results delivered to a wider audience as a great opportunity for stipulating the necessary steps toward a European solution on the political level. In his words: "Krieger's Flak must not fail", "The success of best practice solutions is essential for reaching the 20 % renewables target in Europe in time".

### **For further information**

Please consult the Europa webpage dedicated to TEN-E European Coordinators:  
[http://ec.europa.eu/energy/infrastructure/tent\\_e/coordinators\\_en.htm](http://ec.europa.eu/energy/infrastructure/tent_e/coordinators_en.htm)





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### Annex

#### Statements formally submitted to the European Coordinator

***Gunar Asplund, ABB Power Systems***

"All major components of a Supergrid exist already today and the remaining ones will soon be ready. (...) There is an urgent need to establish DC voltages for the grid in order for investments in the near future to be compatible with the future HVDC grid."

***Jean Verbeeck, ELIA Transmission System Operator***

"Offshore-Onshore GRID development and creation of the High-Voltage station ZEEBRUGGE (Belgium) [is proposed] as a hub for offshore (inter)-connections."

***Michael P Nielsen, Energinet.dk / Jan van den Berg, TenneT***

"[The] COBRA CABLE contributes to the implementation of more wind energy."

***Jean Verselle, ENTSO-E System Development Committee***

"ENTSO-E will be the European framework to address all network development issues. (...) North Sea and Baltic sea groups have been created and will be focussed on renewables and offshore grid."

***Frans Van Hulle, EWEA***

"The staged network reinforcements as considered by TradeWind (see reference) should be further investigated and promoted as a priority, because of expected wind generation increase after 2015. (...) It is recommended that R&D efforts in meshed HVDC technologies are sped up to enable them to be implemented for network expansion in the North Sea. The TradeWind HVDC meshed grids are proposed for consideration as a basis for developing the EU Blueprint for an offshore North Sea Grid."

***Mainstream Renewable Power***

"An offshore grid infrastructure requires a transformational change in grid design. Strategic European leadership is needed to deliver i) a European offshore transmission system operator (OTSO) that governs the development of new offshore grids (under "enhanced cooperation"), ii) incentivisation of offshore grid delivery, iii) a common regulatory environment, and iv) common grid codes across Europe. Offshore interconnections will deliver significant benefits to European consumers by enabling cross-border trade in electricity."

***Ian Knowles, Prysmian PowerLink S.r.l.***

"We welcome the EU led co-ordination for the very ambitious plans related to offshore wind farm development and an integrated approach to the European grid infrastructure. (...) We may give our possible input though European study group such as CIGRE or direct involvement through EU working group."

***Dace Bite, Public Utilities Commission of Latvia***

"The wind energy offshore development in Baltic states will be reasonable only together with development of new interconnections and market integration. The investment, balancing and operation costs of offshore wind shouldn't impact the end user prices."

***Mike McElhinney, Scottish Government***

"Scotland has very significant onshore and offshore renewable energy potential, and the industry capability, innovation capacity and the practical and political will to work collectively. We look to work with collaboratively with UK and EU partners to develop and deliver a North Sea Grid."

***Phil Hicken, UK Department of Energy and Climate Change***

"UK has ambitious programme to deliver up to 33 GW of offshore wind. Wider inter-connection of offshore wind projects in the North Sea may be desirable in the longer term. The costs, benefits and regulatory challenges of such an approach need to be better understood, but this should not be allowed to delay the deployment of offshore wind generation in the short to medium term."

**Andreas Wagner, Stiftung Offshore Windenergie**

"Regulatory approval of grid infrastructure investment cost needs to be granted to TSOs urgently, and in advance of offshore wind farms being actually built."

**Damien Chardonnerau, T&D Europe**

"Kriegers Flak I, II and III project needs time frame for financial support to be extended beyond 2010 (estimate 2015). The Interconnection of the Kriegers Flak wind farm could be a good example to work out the market rules for interconnections with wind farms in between.

North sea Grid project implies to develop an EU interconnection strategy to structure this process, there are a lot of new interconnections already planned, (i.e. NorNed 2, NorGer, NordLink,...) but without integration of offshore wind farms. This also needs time frame for financial support to be extended beyond 2010 (estimate 2015 or even longer)."

**Han van Asten, TenneT / Imar Doornbos, Ministry of Economic Affairs of the Netherlands**

"In order to fully exploit the full potential in the North Sea, a European solution is necessary on Regulation, TSO planning and EU/national governments guidance."

**Rüdiger Reinisch, Vattenfall Europe Transmission**

"In general we support the development of "green energy" and especially the ideas for offshore grids. In the consequence the vision for super-grids is much challenged. It has to be pointed out that the development of offshore wind power stations and grids needs an adequate extension of the onshore grids. Moreover, infrastructure channels from the coast to the onshore load centres are urgently necessary. However, there is a big risk for stranded investments in this sector. Therefore, a clear framework for making clear decisions by all stakeholders is required."