

Superconducting Generators: A Fresh Breeze in Renewables

April 20, 2016

Around the globe, wind energy accounts for an increasingly large share of the electricity supply. Environmentally this is a very positive trend, but it also results in a steady push for lowering the cost. Of course, the high standards of grid supply are not to be sacrificed. Thus as industry and as a society we thus need to keep innovating.

Superconductors could become a very useful innovation in wind turbine generators. From a fundamental point of view, they have almost no electric resistance, they can be cheaper than copper, and they can be efficiently cooled. They generate powerful magnetic fields with minimal energy expenditure. Rare earth metals are used only in negligible quantities. In short, superconductors carry electricity in an ideal way.

Are superconductors and wind turbine generators a perfect match?

The feasibility and viability of superconductive wind turbine generators is the single topic of this highly focussed one-day seminar. We have invited renowned experts from industry and academia to discuss various aspects of feasibility and viability:

- Are practical designs possible with superconductors?
- What is the cost basis – is a low-cost superconducting drive train a realistic prospect?
- Where will superconductive generators break-even with conventional ones?
- How about reliability – is there longer-term experience?
- Where are superconductors currently used, and how do they perform?
- Are such generators compatible with trends in the wind industry?

In this seminar experts from the wind industry can talk to producers of superconductors and to their current customers.

The time is right for such a discussion, since a lot has happened recently in the realm of applied superconductivity:

- Two projects looked into feasibility of superconductivity for offshore 10 MW class. Scope included all the essential aspects of electric conversion, integration and manufacturability,
- With superconductor cost coming down, one recent design study looked into the mass market in the range of 2–4 MW and concentrated on cost reduction relative to established drive systems,
- Lastly, a consortium aims at demonstrating the world's first superconducting low-cost and lightweight superconductive wind turbine drivetrain. The ambitious goal is to manufacture the superconductive generator before the end of 2016, and to subsequently demonstrate it on a modern 3.6 MW direct drive turbine.

We are looking forward to very fruitful and interesting discussions in Osnabrück!

Program

<u>Time</u>		<u>Time</u>	
09:00	Check-In, Opening	12:30	Joint lunch
09:45	Welcome and Introduction <i>Dr. Heinrich Bottermann,</i> Deutsche Bundesstiftung Umwelt (DBU)	13:30	A Strategic Integrated Approach to Innovation in the Energy Sector <i>Dr. Georg Menzen,</i> Bundesministerium für Wirtschaft und Energie (BMWi)
10:00	The Challenges of Being Innovative in a Mature Market – Life Cycle Cost and Inventiveness <i>Niels Emsholm,</i> E.on Climate & Renewables, Nordic	14:00	Suprapower and other Superconducting Devices for the Optimization of Renewable Electric Power Systems <i>Prof. Dr.-Ing. Mathias Noe,</i> KIT, Karlsruhe
10:30	Attempting to Shift a Paradigm: HTS Generators for Cost-Sensitive Applications <i>Dr. Carsten Bühler,</i> ECO 5 GmbH	14:30	Coffee Break
11:00	Coffee Break	15:00	More than 10,000 hours of Operating Experience on Superconductive Electric Machines <i>Dr. Jörn Grundmann,</i> Siemens AG, Corporate Technology
11:30	WindSpeed – Technical Aspects of Designing with the Superconductor MgB₂ (a Public Domain Approach) <i>Dr. Jan Wiezoreck,</i> ECO 5 GmbH	15:30	Status of Superconductor Industrialization: Reality or Rocket Science? <i>Dr. Werner Prusseit,</i> THEVA Dünnschichttechnik GmbH
12:00	MgB₂: From Research to a Commercial Production Plant <i>Dr. Giovanni Grasso,</i> Columbus Superconductors SpA	16:00	Panel Discussion
		16:15	End of Workshop



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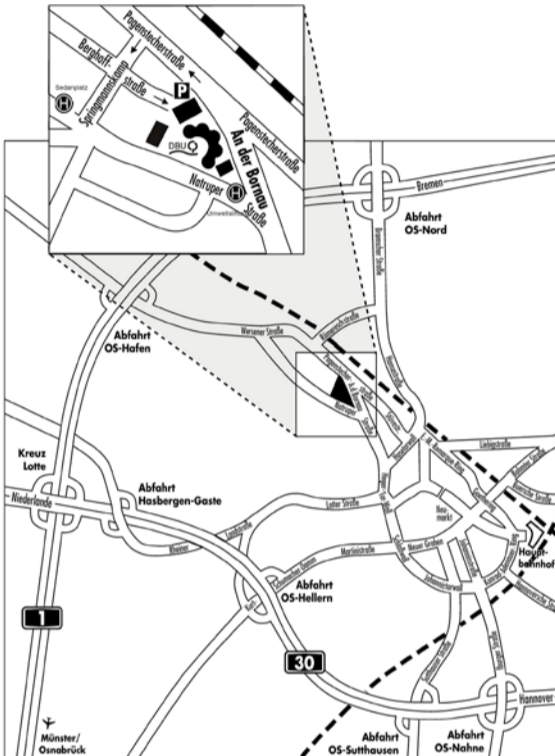
Conference language is English, no translation.

The Deutsche Bundesstiftung Umwelt is organizing this event to promote innovative applications of superconductivity in the field of renewables.

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Deutsche Bundesstiftung Umwelt



Conference venue

DBU Zentrum für Umweltkommunikation gGmbH, An der Bornau 2, 49090 Osnabrück.

How to find us:

- **By train and bus:** Arriving at Osnabrück main station, take bus 31/32/33, 61/62, 81/82 from bus platform 1 (every few minutes) to »Neumarkt«. There, go to platform A2 and take bus 11/R11 (every 10 minutes) to bus stop »Umweltstiftung« (travel time about 20 minutes). The number 21 goes directly – without changing buses – from the main station (»Hauptbahnhof«) to the stop »Sedanplatz«. From there, continue on foot along Street, crossing Springmannskamp and Berghoffstraße to arrive in about 5 minutes at the DBU Zentrum für Umweltkommunikation, at »An der Bornau 2«.
- **By car:** Highway A 1 – Abfahrt Osnabrück-Hafen or highway A 30 and A 33 Kreuz Lotte/Osnabrück auf die Autobahn A 1 (direction Bremen); navigation system: »Berghoffstraße 1« (parking). See also: www.dbu.de/Anreise
- **By plane via Airport FMO (Münster/Osnabrück):** At FMO a regular bus-shuttle-service (X 150) is available; schedule at www.flughafen-fmo.de. The trip takes around 40 minutes and terminates at Osnabrück main station.



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Accommodation

Travel and accommodation expenses are payable by the participants. Please book hotel rooms on your own. Rooms are available at special rates (breakfast inclusive). Reference: »Superconductor«

- **Hotel Welp**
Natruper Straße 227, 49090 Osnabrück
+49 541 91307-0 62 EUR/single room
- **Hotel Westermann,**
Koksche Straße 1, 49080 Osnabrück,
+49 541 981140 67 EUR/single room
- **advena Hotel Hohenzollern** (near railway station)
Theodor-Heuss-Platz 5, 49074 Osnabrück,
+49 541 33170 100 EUR/single room
- **Steigenberger Hotel Remarque:**
Natruper Tor Wall 1, 49074 Osnabrück,
+49 541 6096-0 119 EUR/single room

See also: <http://www.osnabruecker-land.de>

Fax to +49 541 9633-990
Registration »Superconductor«

Please fill in:

name
first name
affiliation
address
phone
e-mail

Conference fee

The conference fee is 70 EUR including 39 EUR incl. 19 % VAT for food and beverage, which is levied on behalf of the company Food & Event, Osnabrück. Thus, a tax-free flat rate of 31 EUR is part of the conference fee.



Deadline for registration: April 13, 2016

Please return this form as a binding registration via fax as soon as possible but not later than

April 13, 2016

to Johanna Spanier, DBU Zentrum für Umweltkommunikation gGmbH, Fax +49 541 9633-990. Please contact us by e-mail (j.spanier@dbu.de) if you have any questions.

Since the number of participants attending this conference is limited, you will receive a separate confirmation and invoice. Please transfer the conference fee to the account designated in the invoice. Furthermore, we point out that the fee is due in full, if you fail to cancel your registration in writing before April 13, 2016.