

# POWER AND ENERGY STUDENT SUMMIT 2017

26<sup>th</sup> – 28<sup>th</sup> June 2017  
FAU Erlangen-Nuremberg

## Conference Program

# SIEMENS



**Netze BW**



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FRIEDRICH-ALEXANDER  
UNIVERSITÄT  
ERLANGEN-NÜRNBERG



**ees**

Lehrstuhl für  
Elektrische Energiesysteme

## **PESS 2017 Conference-Team**

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- Prof. Dr.-Ing. Matthias Luther

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- Dr.-Ing. Dieter Braisch, FAU Erlangen-Nuremberg
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- M.Sc. Julian Dobusch, FAU Erlangen-Nuremberg
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- M.Sc. Markus Lehmann, FAU Erlangen-Nuremberg
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- Dipl.-Ing. Mathias Ramold, Siemens AG

- M.Sc. René Sander, Karlsruhe Institute of Technology
- M.Sc. Christian Scheibe, Siemens AG
- Dipl.-Ing Rainer Schmidt, ZAE Bayern
- Dipl.-Ing Markus Schröder, FAU Erlangen-Nuremberg
- Dipl.-Ing. Dipl.-Wirt.Ing. Gaby Seifert, FAU Erlangen-Nuremberg
- M.Sc. Anatoli Semerow, FAU Erlangen-Nuremberg
- M.Sc. Kishan Veerashekar, FAU Erlangen-Nuremberg
- M.Sc. Lorenz Viernstein, TU Munich
- M.Sc. Sebastian Weck, TU Darmstadt
- Dipl.-Ing. Klemens Wegehaupt, Siemens AG
- M.Sc. Sabine Wellhöfer, FAU Erlangen-Nuremberg
- Dipl.-Ing Simon Wenig, Karlsruhe Institute of Technology

### **Organization Team**

- Dr.-Ing. Gert Mehlmann, FAU Erlangen-Nuremberg
- M.Sc. Jakob Schindler, FAU Erlangen-Nuremberg
- M.Sc. Michael Richter, FAU Erlangen-Nuremberg
- M.Sc. Simon Resch, FAU Erlangen-Nuremberg
- B.Sc. Alexander Raab, FAU Erlangen-Nuremberg
- B.Sc. Andre Gütlein, FAU Erlangen-Nuremberg
- B. Sc. Steffen Weghorn, FAU Erlangen-Nuremberg

### **Conference Secretariat**

For further information: <http://ees.eei.uni-erlangen.de/pess-2017/>

For any enquiry, please contact us via email:

[ees-pess@fau.de](mailto:ees-pess@fau.de)

## General Theme

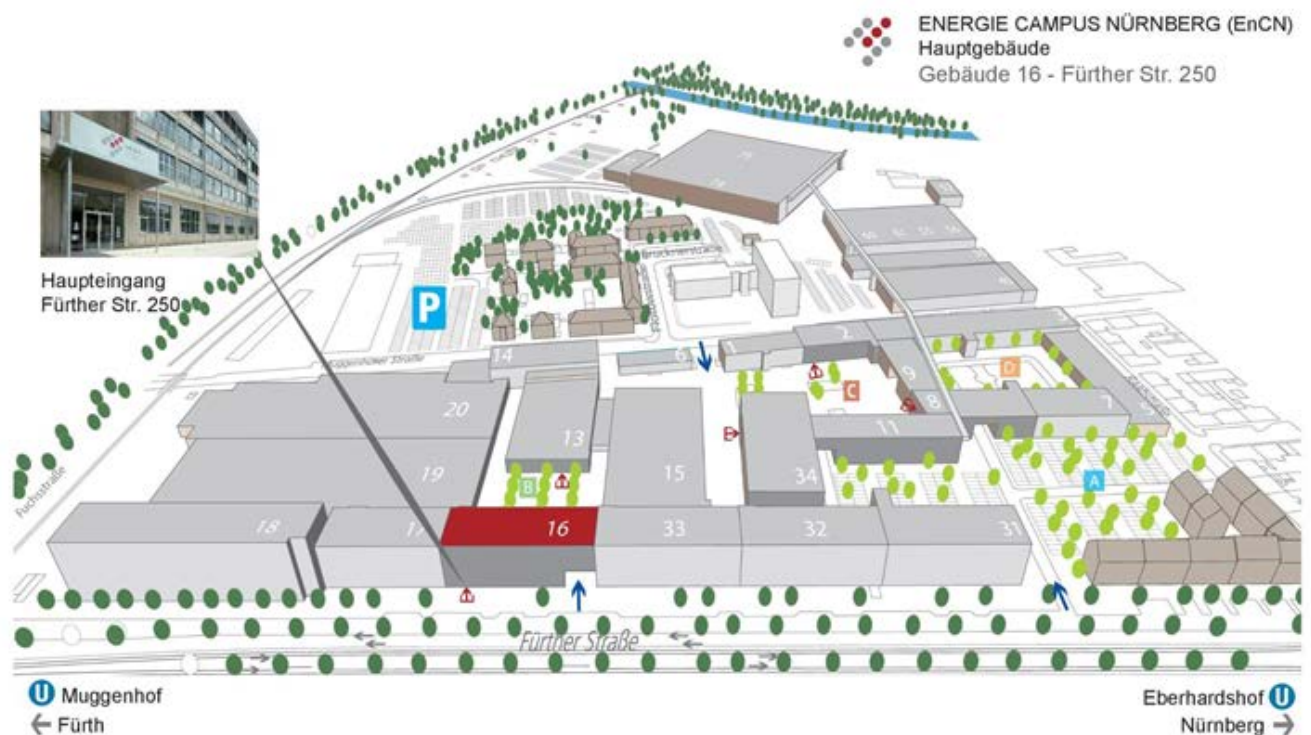
The Power and Energy Student Summit 2017 (PESS) is designed for students, young professionals, and PhD-students in the field of power engineering. PESS 2017 offers the possibility to gain first experience in presentation, publication and discussion with a renowned audience of specialists. Therefore, the Conference is accompanied and supervised by established scientists and experts.

## Venue

The Conference will be held on the 27<sup>th</sup> and 28<sup>th</sup> of June 2017 at the Energy Campus Nürnberg (EnCN).

Entrance Address: Energie Campus Nürnberg (EnCN), Fürther Str. 250, "Auf AEG", 90429 Nuremberg

Parking Address "Auf AEG", Muggenhofer Str. 162-172, 90429 Nuremberg



## Name Badges

Each Conference delegate will receive a name badge after registration or at the welcome reception. The badge is your official pass and must be worn to obtain entrance to all sessions, morning and afternoon teas, lunches, and the Welcome Reception.

## Accommodation and Welcome Reception

The Conference participants are accommodated at the Youth Hostel Nuremberg which is located in Nuremberg Castle.

The Welcome Reception will be held in the same building in the *Eppeleinsaal* on the 26<sup>th</sup> June starting from 18:00h.

Address: Youth Hostel Nuremberg, Burg 2, 90403 Nuremberg

## Conference Dinner

The Conference Dinner will be held at the Restaurant "Altstadthof" in Nuremberg on the 27<sup>th</sup> of June at 19:00h. It's the place where the famous *Rotbier* of Nuremberg is being brewed since the 14<sup>th</sup> century. The restaurant is well known for its traditional Franconian meals, its beer and - since 2005 - also for its own high-class whisky distillery. The distinctive ambience guarantees a beautiful and unforgettable evening. This event is inclusive for registered authors and guests. Admission vouchers for the Conference Dinner will be handed out together with the Conference bag at the registration desk. Please bring them with you to the Dinner.

Address: Hausbrauerei Altstadthof, Bergstraße 19-21, 90403 Nuremberg

## Arrival and Public Transport

Every Conference delegate will receive two day-tickets for public transport in Nuremberg. They should be used for the transfers on the Conference days (27<sup>th</sup> and 28<sup>th</sup> of June).

### Getting from Nuremberg Main station to the Youth Hostel by public transport:

From Nuremberg main railway station, which is located at the south side of the city, it is a 20-minutes' walk through the historic centre of Nuremberg to reach Nuremberg Castle and the Youth Hostel, lying in the north. Alternatively, you can take the **underground line U1 direction Fürth** to **Lorenzkirche** (next stop), from there it is about a 10-minutes' walk.

### Getting to the Youth Hostel by car:

Coming from any direction, follow the signs to the city centre, then *Nördliche Altstadt* and then to the *Youth Hostel, Burg 2, 90403 Nuremberg*.

Please note that the Youth Hostel does not have any parking spaces of its own.

### Getting from Nuremberg Main station to the Conference location by public transport:

Take the **underground line U1 direction Fürth** and exit at the station **Eberhardshof**. The Conference location *Energie Campus Nürnberg (EnCN), Fürther Str. 250, "Auf AEG", 90429 Nuremberg* is located only a few minutes' walk from the station.

Please refer to the map above.

### Getting to the Conference location by car:

The Conference location can be reached by car on the motorway A73 via N4 (*Frankenschnellweg*) and Fürther Straße to:

**Energie Campus Nürnberg (EnCN),  
Fürther Str. 250, "Auf AEG",  
90429 Nuremberg**

Parking is possible at: "Auf AEG", Muggenhofer Str. 162-172, 90429 Nuremberg (no parking fee). Please refer to the map above.

### Getting from the Youth Hostel to the Conference location by public transport:

It is a 10 minute walk from the Hostel to the station "Lorenzkirche".

Take the **underground line U1 direction Fürth** and exit at the station **Eberhardshof**. From there, the Conference location *Energie Campus Nürnberg (EnCN), Fürther Str. 250, "Auf AEG", 90429 Nuremberg* is only a few minutes' walk.

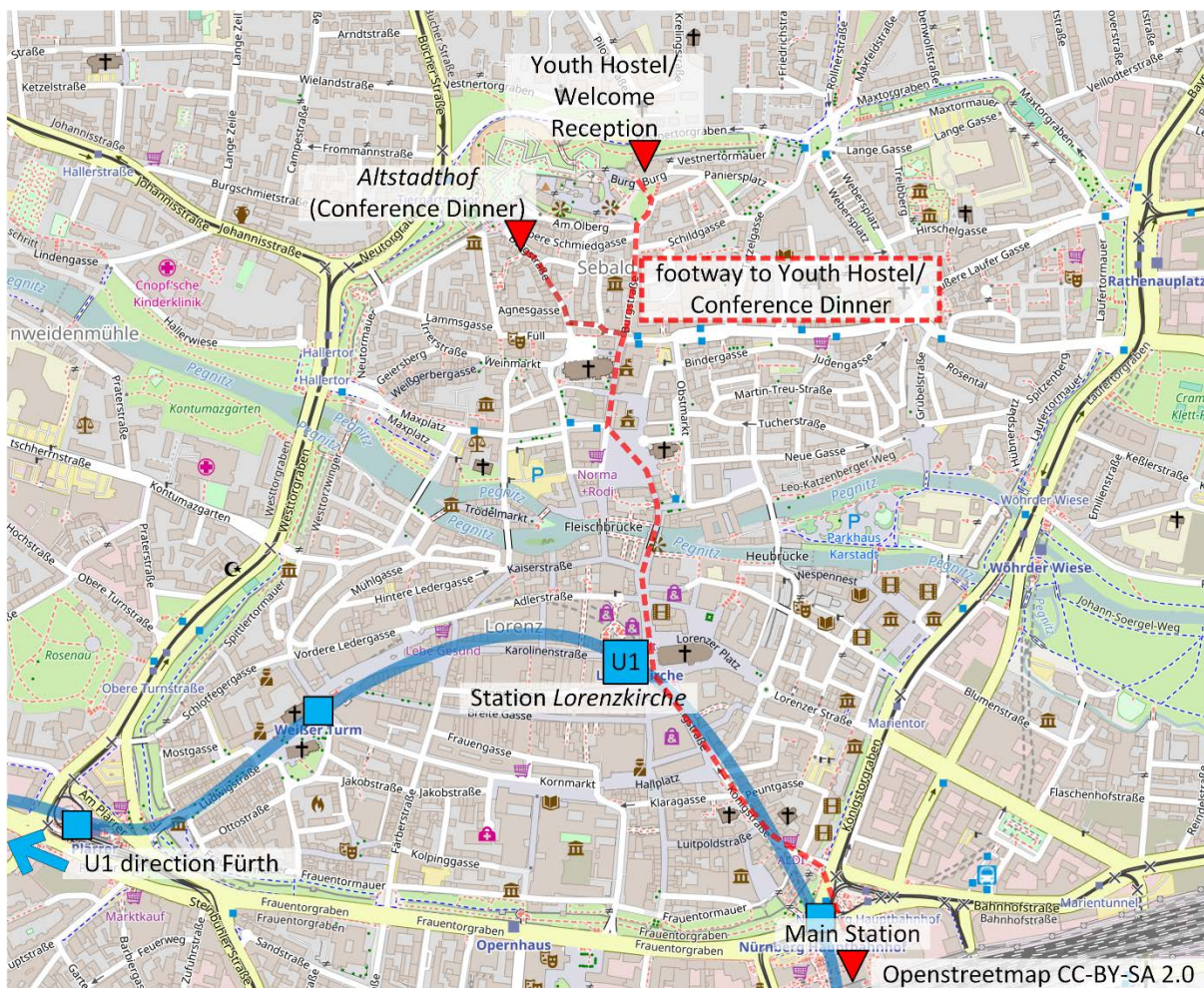


Getting from the Conference location to the Conference Dinner or Youth Hostel:

It is a 5 minute walk from the Conference location to the station “Eberhardshof”. Take the **underground line U1 direction Nürnberg Messe** and exit at the station **Lorenzkirche**. From there it is a 10 minute walk to the Conference Dinner or Youth Hostel. Please refer to the map below.

Getting from the Conference location to the Technical Visit:

A special bus transfer will be provided to bring you from the Conference location to the transformers plant. After the visit, the bus will make a stop at the main railway station and the Conference venue.



**WLAN**

Guest Wlan and Eduroam is available.

WLAN: EnCN-Guest

Passwort: 123456789ZAE

## **Technical Visit**

The transformers manufactured in the Nuremberg plant are complex, almost exclusively hand-made products, which can reach dimensions comparable to whole houses. Their inner life, however, often needs to be built to a precision of millimeters. Each of the high-tech products is specifically designed for parameters such as voltage, power, climate, noise level and much more. On this trip, you can get an insight into the high requirements for such a production and its dimensions.

There will be a special bus transfer provided from the Conference venue to the transformers plant. After the Technical Visit, the bus will transfer to the central station and back to the Conference venue (EnCN).

## **Presentations**

### Oral Presentations

Authors are requested to copy their presentation slides as powerpoint and PDF file at the Conference registration desk during the Welcome Reception. In case you are not able to attend the Welcome Reception, please write a message to: [ees-pess@fau.de](mailto:ees-pess@fau.de)

### Poster Presentations

Authors are requested to hand over their printed poster in A0 format at the Conference registration desk during the Welcome Reception. The Conference Team will set up your poster presentation for the poster session.

## **Schedule at glance**

### **Monday, 26th June 2017**

Arrival *Youth Hostel Nuremberg*  
18:00 Registration and Welcome Reception *Eppeleinsaal*

### **Tuesday, 27th June 2017**

08:30 Welcome Coffee *Energie Campus Nürnberg*  
09:00 Opening Speeches  
Prof. Dr. Friedrich Paulsen, FAU Erlangen-Nuremberg  
Prof. Dr. Matthias Luther, FAU Erlangen-Nuremberg  
09:30 Keynote  
Dr. Timo Christ, Siemens AG  
10:00 Session A: HVDC and FACTS  
Chair: Dipl.-Ing. Georg Deiml, TenneT TSO GmbH  
11:30 Lunch *Kantine Electrolux*  
13:00 Keynote *Energie Campus Nürnberg*  
Dipl.-Ing. Werner Hofer, Maschinenfabrik Reinhausen GmbH  
13:30 Session B: Renewable Energies  
Chair: Dipl.-Ing. Annette Köpken, ESTW AG  
15:00 Coffee Break  
15:30 Technical Lecture  
Prof. Dr. Gerhard Herold, FAU Erlangen-Nuremberg  
16:00 Keynote  
Dipl.-Ing. Joachim Kopp, Netze BW GmbH  
16:30 Session C: Smart Grid  
Chair: Dipl.-Ing. Klemens Wegehaupt, Siemens AG  
18:00 Transfer to Conference Dinner  
19:00 Conference Dinner *Altstadthof*

### **Wednesday, 28 June 2017**

08:00 Welcome Coffee *Energy Campus Nuremberg*  
08:30 Keynote  
Dr. Peter Hoffmann, TenneT TSO GmbH  
09:00 Session D: Grid Control and Planning  
Chair: Dipl.-Ing. Henry Smit Kinderman, Siemens AG  
10:30 Coffee Break + Poster Session  
11:30 Lunch *Kantine Electrolux*  
13:00 Award Ceremony + Closing Speech *Energie Campus Nürnberg*  
14:00 Bus Transfer  
15:00 Technical Visit *Transformer Factory*  
*Siemens AG*  
17:30 Departure (Bus Transfer to main station & EnCN)



## Oral Presentations Day 1 – Tuesday, 27 June 2017

### Session A: HVDC and FACTS

Time: 10:00h – 11:30h

Chair: Dipl.-Ing. Georg Deiml, TenneT TSO GmbH

- S\_A.01      Analysis of an AC Benchmark Transmission System with High Share of Renewable Energy Sources  
**Juan Temboury Jimenez, Sebastian Weck, Jutta Hanson**  
TU Darmstadt
- S\_A.02      Temperature-dependent and anisotropic electrical conductivity of resin-impregnated paper  
**Karina Hopf, Sebastian Sturm, Isabell Wirth, Markus Zink, Andreas Küchler**  
UAS Würzburg-Schweinfurt
- S\_A.03      Comparison of different Control Concepts for Multilevel VSC HVDC Systems  
**Johannis Porst, Christoph Hahn**  
FAU Erlangen-Nuremberg
- S\_A.04      Commissioning of a twelve-pulse-bridges LCC-HVDC Analog-Hybrid-Simulator  
**Alexander Raab, Christoph Hahn, Klaus Schneider, Gerhard Czerwenka, Johannes Floth**  
FAU Erlangen-Nuremberg

### Session B: Renewable Energies

Time: 13:30h – 15:00h

Chair: Dipl.-Ing. Annette Köpken, ESTW AG

- S\_B.01      Investigation of the Impact of Coupling between Electricity and Heating Networks Using an Exemplary Network Model  
**Simonas Černiauskas, Dominik Maihöfner, Tim Plößler, Benjamin Braun, Jutta Hanson**  
TU Darmstadt
- S\_B.02      A Resonant 150W DC/DC-Converter with GaN Devices switching at 30.3 MHz  
**Pelle Weiler, Philipp Schülting, Rik W. De Doncker**  
RWTH Aachen
- S\_B.03      Recommissioning and optimization of a modular photovoltaic multilevel-inverter  
**Yujia Hei, Gert Mehlmann**  
FAU Erlangen-Nuremberg
- S\_B.04      Doubly-fed Induction Generator in Frequency Domain  
**Marco Köhler, Robert Dimitrovski**  
FAU Erlangen-Nuremberg

### **Session C: Smart Grid**

Time: 16:30h – 18:00h

Chair: Dipl.-Ing. Klemens Wegehaupt, Siemens AG

- S\_C.01      Bad Data Detection and Identification in Distribution Power Systems  
**Tim Streubel, Daniel Groß, Krzysztof Rudion**  
University of Stuttgart
- S\_C.02      Heterogeneous Modeling: A Need to Model Future Energy Systems  
**Pierre Kehl, Raja Rehan Khalid, Georg Frey**  
Saarland University
- S\_C.03      Evaluation of Energy-Storage for Reducing Grid Reinforcement in High Voltage Grids  
**Nils Kaiser, Pascal Wiest, Ouafa Laribi, Krzysztof Rudion**  
University of Stuttgart
- S\_C.04      Flexible power plant schedules to reduce the demand for control power  
**Zheng Liu, Hui Cai, Teng Jiang, Steffen Schlegel, Dirk Westermann**  
TU Ilmenau

### **Oral Presentations Day 2 – Wednesday, 28 June 2017**

#### **Session D: Grid Control and Planning**

Time: 09:00h-10:30h

Chair: Dipl.-Ing. Henry Smit Kinderman, Siemens AG

- S\_D.01      Optimized PMU placement by combining topological approach and system dynamics aspects  
**Jonas Prommetta, Jakob Schindler, Johann Jaeger**  
FAU Erlangen-Nuremberg
- S\_D.02      High Temperature Superconductor Cables in the German High Voltage Grid  
**Leonard Kluss, Gerrit Schlömer, Lutz Hofmann**  
Leibniz University of Hannover
- S\_D.03      A Computer Program to Calculate the Current-Carrying Capacity of Overhead Power Lines  
**Jan Kircheis, Jens Haubrock**  
UAS Bielefeld
- S\_D.04      Feature Extraction and Signal Classification of Travelling Wave Reflection Patterns for Line Fault Locating  
**Haris Rehman, Björn Keune**  
TU Dortmund

## Poster Presentations Day 2 – Wednesday, 28 June 2017

Time Series Analysis and Forecasts with Holt-Winters-Method

***Hermann Kraus and Gaby Birgitt Seifert***

FAU Erlangen-Nuremberg

Evaluation of the Electrical Insulating Properties of Paraffin

***Christian Dotterweich, Stephan Harrer and Markus Zink***

UAS Würzburg-Schweinfurt

System identification for dynamic equivalent model

***Xinya Song, Teng Jiang, Dirk Westermann and Steffen Schlegel***

TU Ilmenau

Asymptotic Time Domain Evaluation of a Single-Phase Cascade H-Bridge PWM Inverter Voltage and Current Quality for Non-Equal DC Sources

***Nurzhan Zhuldassov and Alex Ruderman***

Nazarbayev University

Effect of the sampling rate on the analysis of measurements of photovoltaic systems

***Marcel Meyer, Simon Resch and Rainer Schmidt***

FAU Erlangen-Nuremberg

Grid supporting operation of lithium-ion battery storage systems for grid-connected photovoltaic systems

***Florian Pol and Simon Resch***

FAU Erlangen-Nuremberg

Synthesis of domestic load curves for low voltage grid simulations

***Nicolas Nau***

TU Kaiserslautern

Simulation and Comparison of Inverter Models in Inverter-dominated Power Distribution Grid

***Zheng Liu, Teng Jiang, Steffen Schlegel and Dirk Westermann***

TU Ilmenau

Impact of DFIG-based Wind Generator on Dynamic Behavior of Power Systems during Over-Frequency Events

***Yonggang Zhang***

Otto-von-Guericke-University Magdeburg

Methods to eliminate the deviation of secondary control power supplied by electric vehicle pool

***Zheng Liu, Yuelin Zeng, Teng Jiang, Steffen Schlegel and Dirk Westermann***

TU Ilmenau

Comparison of Implicitly Restarted Arnoldi Algorithm with Jacobi-Davidson Algorithm for the Calculation of Eigenvalues

***Marcel Hundscheid and Robert Dimitrovski***

FAU Erlangen-Nuremberg

<u>Monday - 26.06.2017</u>		<u>Tuesday - 27.06.2017</u>		<u>Wednesday - 28.06.2017</u>	
<b>Venue</b>	Nuremberg Castle	Energie Campus Nuremberg, Fürther Straße 250, Nuremberg, 2 <sup>nd</sup> floor			
8:00			Welcome Coffee	Welcome Coffee	
8:30			Welcome Coffee	Keynote (Dr. Peter Hoffmann, TenneT TSO GmbH)	
9:00		Opening Speech (FAU Vice President Prof. Dr. Paulsen, Prof. Dr. Luther)		Session D	
9:30		Keynote (Dr. Timo Christ, Siemens AG)		Grid Control and Planning	
10:00		Session A		(Chair: Dipl.-Ing. Henry Smit Kinderman, Siemens AG)	
10:30		HVDC and FACTS		Coffee Break + Poster Session	
11:00		(Chair: Dipl.-Ing. Georg Deiml, TenneT TSO GmbH)			
11:30		Lunch		Lunch	
12:00		(Electrolux-Canteen)		(Electrolux-Canteen)	
12:30	Arrival				
13:00		Keynote (Dipl.-Ing. Werner Hofer, Maschinenfabrik Reinhausen GmbH)		Award Ceremony + Closing Speech	
13:30		Session B			
14:00		Renewable Energies		Transfer by bus	
14:30		(Chair: Dipl.-Ing. Annette Köpken, ESTW AG)			
15:00		Coffee Break			
15:30		Technical Lecture (Prof. Dr. Herold)			
16:00		Keynote (Dipl.-Ing. Joachim Kopp, Netze BW GmbH)		Technical Visit	
16:30		Session C		(Siemens AG - Transformer Plant )	
17:00		Smart Grids			
17:30		(Chair: Dipl.-Ing. Klemens Wegehaupt, Siemens AG)			
18:00	Registration	Transfer		Departure by bus	
19:30	+			(with stop at main station and back to Energie Campus)	
19:00	Welcome Reception	Conference Dinner			
19:30		(Altstadthof, Nuremberg)			
20:00					