LAND BRANDENBURG

be Berlin



Energy Grids and Storage Systems

in the Capital Region Berlin-Brandenburg

THE GERMAN CAPITAL REGION

excellence in energy technology



The micro smart grid at EUREF Campus Berlin



The ENERTRAG hybrid power plant in Prenzlau

Companies

50 Hertz Transmission
BAE Batterien
BELECTRIC
Berliner Erdgasspeicher
Beton- und Energietechnik Heinrich Gräper
Blockheizkraftwerks-Träger- und Betreiber-gesellschaft Berlin
Bosch SI
BTC Business Technology Consulting
deematrix Energiesysteme
DEIG
E.DIS
ELTEL Infranet
Energiequelle
Enertrag
Flexim
Fuss-EMV
Heliocentris
General Electric
Grundgrün
GASAG
IBAR Systemtechnik
Knorr-Bremse PowerTech
KKI
MAN Turbo
McPhy Energy
NBB Netzgesellschaft
Parabel
PSI
Schneider Electric
Siemens
Stromnetz Berlin
T-Systems
Umetriq
Vattenfall Wärme
WEMAG
WinBat Technology
WWF SOLAR
Younicos

Energy transition pioneer

Berlin-Brandenburg is a pioneer of the German “Energiewende”. Here in the capital region, a quickly growing supply of renewable energy in Brandenburg is encountering the high demand of Berlin, a major city. The challenge is to match supply and demand along the individual dimensions of generation, energy grids, energy storage and consumption – in an intelligent manner.

The companies in the capital region have special advantages in the areas of:

- Construction and operation of energy grids with a high share or renewable energy
- Transformation and storage of energy in the form of electricity, gas and heat for needs- compatible supply and grid stabilization
- Information and communication systems for future energy supply structures
- System security for complex energy grids
- Flexible power plants, innovative gas turbines and innovative products for maintenance, repair and overhaul (MRO)

Many significant innovations have come from the region. In September 2014, Europe's first commercial battery power station started up. It was developed by Younicos, a company from Berlin. The fully automated station with 5 megawatts of lithium-ion storage stabilizes short-term fluctuations in line frequency with standby energy. Additional battery storage projects are operating in Solar Park Alt Daber and the small village of Feldheim in Brandenburg, which has been energy self-sufficient since 2010. ENERTRAG in Prenzlau operates the first hybrid power plant in the world, which generates hydrogen in addition to electricity and heat. In 2013 E.ON established a power-to-gas pilot plant in Falkenhagen.



»GridLab – the European training and research center for the safety of electrical grids – operates a grid simulator to test critical grid situations under real-world conditions, train personnel and develop, define and certify standards. With its excellent logistics and very high share of both renewable and conventional energy, the capital region is an ideal location for us.«

Dr. Bernd Benser
Chief Business Officer
GridLab GmbH

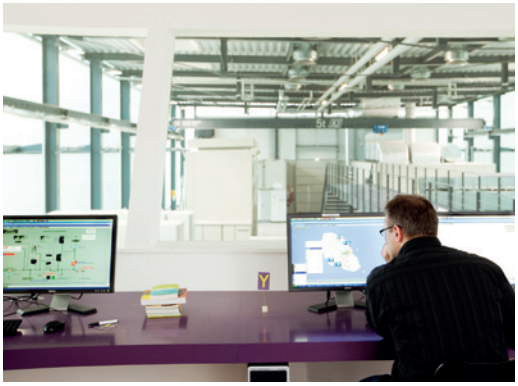


»Renewable energy has been pooled as a power plant and fed into a 380 kV supergrid on demand for the first time at 'Hybrid Power Plant Prignitz'. Our goal is to generate and use energy in ONE region – Berlin and Brandenburg – so we can avoid an expensive grid expansion.«

Holger Ruletzki
Chief Executive Officer
Parabel GmbH

Ideal location for development and testing

The synergies in the region function across state borders, creating an attractive environment for development and testing for local companies and grid operators as well as for players outside the region. There is a very large supply of renewable energy in the regional transmission and distribution network. All of the energy-relevant network lines of business (electricity, gas and district heat-



In the Younicos Technology Center the supply of any region with renewable energy can be simulated.

- Capital region is an energy transition pioneer
- Leading in the development and management of energy grids with a high share of renewable energy
- Development and integration of energy storage technology for grid stabilization
- Pilot projects for hybrid power plants and Power to Gas/H_2
- System security know-how for complex energy grids
- Management of multi-sectoral infrastructures (electricity, heat, water) and optimization with respect to efficiency and safety

ing) and supply structures already exist and can be used as part of integrative approaches. Products and processes for efficient infeed, distribution and storage of renewable energy in the existing infrastructure for electricity, gas, heat and mobility are key aspects for reorganizing the system.

On EUREF Campus in the heart of Berlin, the vision of the “intelligent city” of the future is being developed and lived. With the help of a local micro smart grid, NBB Netzgesellschaft Berlin-Brandenburg is realizing a practically carbon-neutral energy supply via centralized load management. Together with Siemens, Vattenfall and German E-Cars, researchers at BTU Cottbus – Senftenberg are testing the use of vehicle batteries as a storage system in the electricity grid in the project “SMART Capital Region”. The key factor in the process is communication between a control system, the charging infrastructure and the electric vehicles.



»The specific combination of Brandenburg, a region with a high level of wind energy conversion, and Berlin, which has a high population density, offers outstanding potential for integrating renewable energy. Smart grid technology can be used to control storage systems and flexible loads, and managing cross-medial grids for electricity and heat.«

Prof. Dr.-Ing. Kai Strunz, Head of Department Sustainable Electric Networks and Sources of Energy Technische Universität Berlin



»At BTU Cottbus, we work on very extensive projects in partnership with industry in order to find new solutions for integrating renewable energy and electromobility into the grid. We also do basic research, for example on high voltage direct current and vacuum switches.«

Prof. Dr.-Ing. Harald Schwarz Chair of Power Distribution and High-Voltage Engineering BTU Cottbus – Senftenberg

Close cooperation between science and business

In GridLab, jointly established by 50 Hertz Transmission and BTU Cottbus – Senftenberg, the region has a unique research and training infrastructure at its service.

BTU is also operating a hydrogen and storage research center in partnership with ENERTRAG and TOTAL Deutschland. The center has a test system in which hydrogen is generated using pressure electrolysis of up to 60 bar and the optimal adaptation to the electricity infeed from wind power stations. Innovation Centre Energy at TU Berlin interconnects the expert knowledge in the energy field and provides a centralized platform for communication and collaboration with partners in industry and external researchers. Hochschule für Technik und Wirtschaft (HTW) Berlin has a special focus on the intelligent link-up between photovoltaic systems and battery and heat storage systems. The Berlin-Brandenburg Energy Technology Cluster management plays a key role in initiating R&D partnerships and joint showcase projects.

Science and Research

Beuth University of Applied Sciences Berlin
Brandenburg University of Applied Sciences
Brandenburg University of Technology Cottbus – Senftenberg
Eberswalde University for Sustainable Development
Fraunhofer FOKUS
Fraunhofer IPK
Fraunhofer IZM
Gridlab
HTW Berlin
Technical University of Applied Sciences Wildau
Technische Universität Berlin
Telekom Laboratories

Associations/Initiatives/ Networks

BDEW German Association of Energy and Water Industries
Berlin Brandenburg Energy Network
BSW – German Solar Industry Association
Bundesverband Energiespeicher
BWE
Cebra
EIT ICT
ETI
green with IT
KIC InnoEnergy
NetzwerkE
NOW
performing energy
RegioEnergieNetzwerk

Our aim: your success!

Berlin and Brandenburg support the focal area Energy Grids and Storage Systems with an economic policy developed across state borders in the Energy technology cluster. The cluster is managed under the aegis of the Brandenburg Economic Development Board (ZAB) and Berlin Partner for Business and Technology.

Our aim is to provide comprehensive support to companies and scientific institutions interested in inward investment or further development in the capital region.

We are ready to assist you with:

- **Finding a site**
- **Funding and financing**
- **Finding contacts and cooperation partners**
- **Technology transfer**
- **Cooperating in networks**
- **Recruiting personnel**
- **Developing international markets**

Reach out and contact us!
www.zab-brandenburg.de
www.businesslocationcenter.de

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