



Energy Consultancy

World-class power and gas system expertise

ENERGINET/DK
Energy Consultancy A/S

Access to expert know-how

Best in class TSO

Energinet.dk Energy Consultancy is part of the Energinet.dk Group. Employing more than 800 people, the Energinet.dk Group is responsible for the main electricity and natural gas transmission systems in Denmark. On behalf of the Danish society, Energinet.dk maintains security of supply and ensures well-functioning electricity and gas markets and a high level of preparedness in the electricity and gas sectors. The consumers contribute to Energinet.dk's activities via their electricity and gas bills.

As transmission system operator (TSO), we are an independent public enterprise owned by the Danish Ministry of Climate, Energy and Building.



You will get access to world-class expertise gained from managing the unique Danish energy system.

We have an annual revenue of about EUR 1.3 billion and an equity of around EUR 0.8 billion.

In the latest benchmark from 2013, European Efficiency analysis for Electricity Grids, Energinet.dk was ranked among the top 8 most efficient operators in a comparison of 21 European TSOs.

Using international and market-based solutions, Energinet.dk is facilitating the increased use of renewable energy and contributes to meeting the global energy and climate challenges.

A clear mission within consultancy

Energinet.dk Energy Consultancy is manned by highly skilled employees from the Energinet.dk Group. Few companies in the energy sector offer the same competencies, and perform the same pioneering tasks as Energinet.dk. By collaborating with Energinet.dk Energy Consultancy, you will get access to world-class expertise gained from managing the unique Danish energy system and benefit from our expert know-how.

Having experts within many different areas, we customise our assistance from project to project. Depending on the project, our help comes in many shapes and forms. We organise workshops and training sessions with a variety of subjects and participants.

We offer twinning, which is a capacity building tool that provides direct exchange of experience between organisations through the practical implementation of specific tasks. Twinning is a two-way process where organisations work together to share information and knowledge in order to foster collaboration and partnership and, thereby, strengthen the capacity of the organisations to carry out their responsibilities. Identifying twinning activities is generally based on the strengths of the one organisation and the requirements of the other. Twinning generally includes the secondment and attachment of staff between the participating organisations. Finally, we prepare reports, models and recommendations.



Unrivalled expertise

Energinet.dk is responsible for integrating large amounts of renewable energy into the power system; we support research and development of environmentally friendly power generation; and we administer the public fundings for renewable energy.

With a wind power share of more than 42%, Energinet.dk's hands-on experience with efficient integration of variable and distributed RES is unique. Energy plans deci-

ded by the Danish parliament will increase the wind power share to 50% by 2020, and Energinet.dk is very dedicated to developing the Danish energy system by optimising the utilisation of wind power while maintaining security of supply and improving market functioning.

For 2050 Energinet.dk is planning a coherent energy system independent of fossil fuels in line with the political goals of the Danish government.



We enable the green transition by integrating electricity, heat, gas and transport sectors into a coherent and flexible energy system balancing large amounts of variable RES. We do so without compromising security of supply and energy markets.

Energinet.dk is also responsible for ensuring adequate emergency preparedness in the electricity and gas sector in Denmark.

We are tasked with implementing a heavy investment programme for the transmission systems. Ambitious Danish plans on underground cabling of high-voltage transmission lines have brought Energinet.dk into a position as a global front-runner in this area.

Denmark is also a global front-runner when it comes to developing an intelligent power system – a Smart Grid – where the generation, transport and consumption of power are linked intelligently. This means a power system featuring demand response, for example in the form of electric boilers, electric vehicles and heat pumps, so that wind energy can be used when it is available in ample volumes.



State-of-the-art system development

Energinet.dk Energy Consultancy helps our clients to plan and develop coherent energy and power systems. And we do so ensuring system stability and security of supply.

Integration of Renewable energy sources

Due to the entrepreneurial role that Denmark has played in developing wind power and integrating it into the existing power system, we have extensive experience with power system operation with high shares of wind power. We can provide analysis and identification of technical and institutional obstacles for an efficient integration of wind power from both on- and offshore wind turbines with respect to grid planning and operational procedures. This often also involves giving advice



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on additional facilities as measuring, protection, SCADA and specialised operational tools required to prepare for wind power integration, improve system operation and estimate system integration costs.

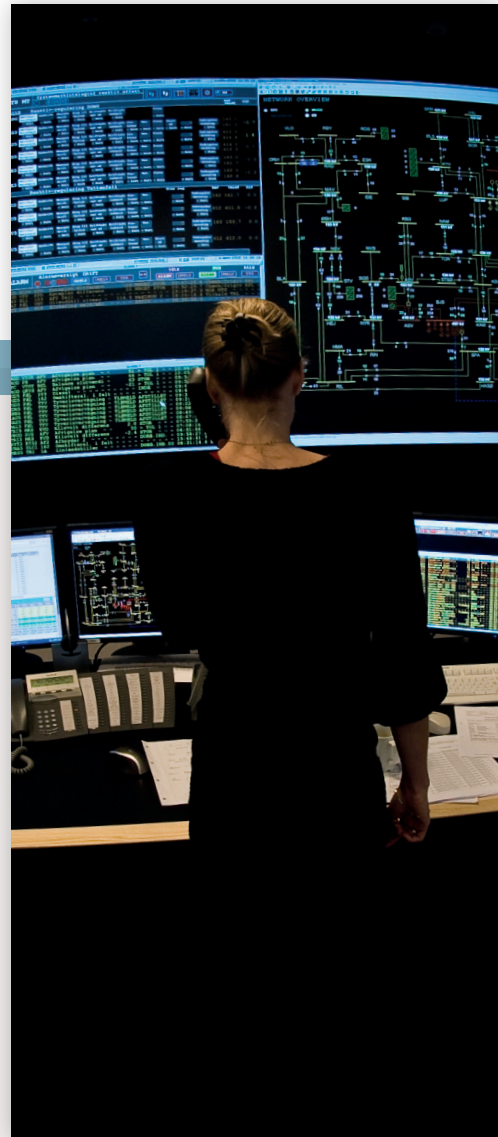
Another important aspect where we can provide know-how is renewable energy forecasting in the operational planning process. Estimating the expected generation from wind power and photovoltaics and integrating the forecasts into the operational planning systems is essential in order to balance the power system. Also, it is a key aspect to optimal integration of variable renewable energy into electricity systems.

We deliver assistance regarding the overall aspects and challenges of renewables in the electricity network such as network planning, customer handling procedures, electrical market aspects, environmental assessment procedures, cost-benefit analysis on provision of ancillary services from renewables and grid code aspects focusing on renewables.

Being a front-runner in developing a flexible and intelligent power system, we can offer highly qualified consultancy in this area too.

Market development and operation

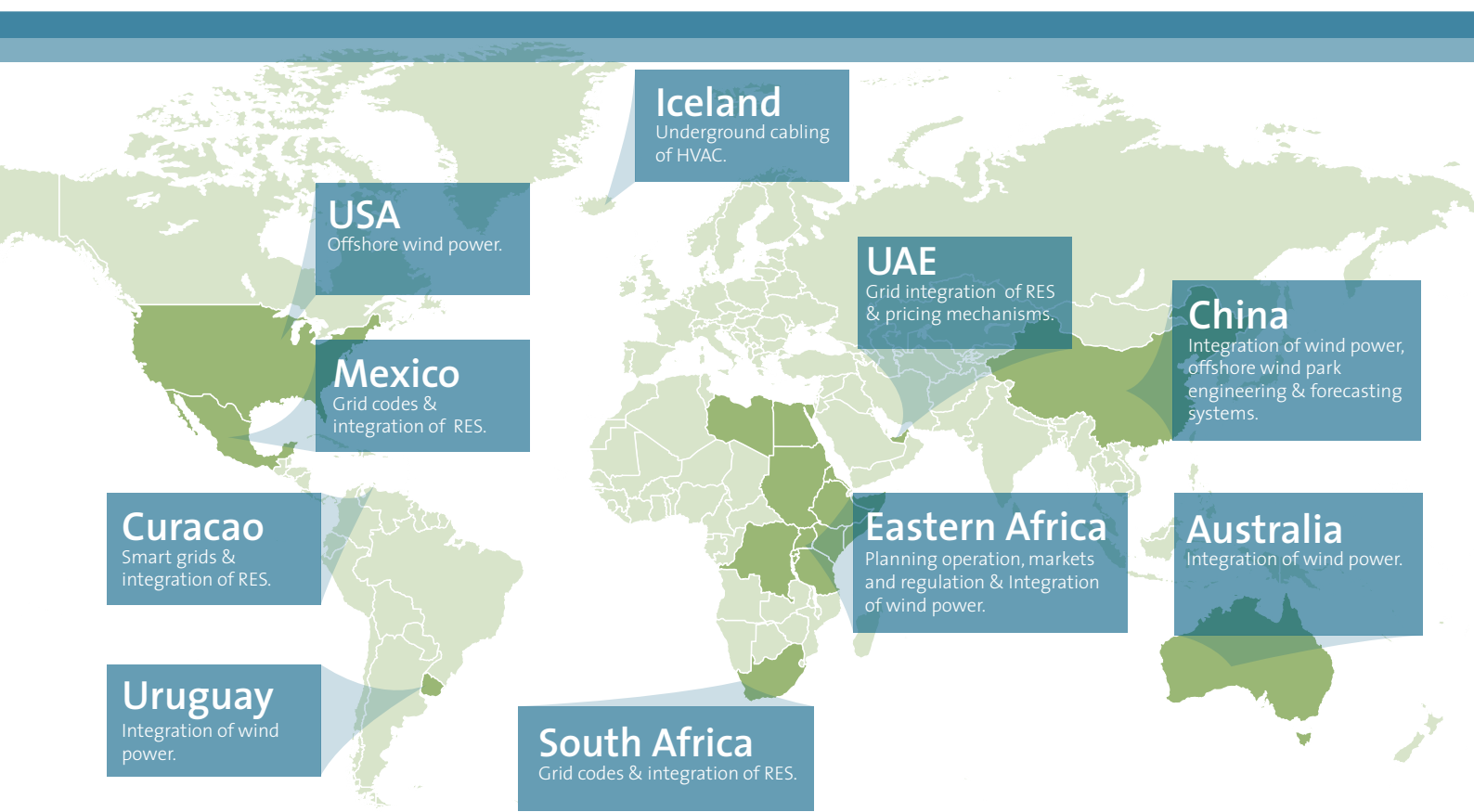
Energinet.dk plays an important role in developing the European electricity market and is actively involved in coupling the electricity markets. We can deliver know-how on different aspects of market design and allocation of cross-border transmission capacity. Along with this, we are skilled at developing and recommending pricing mechanisms to support and incentivise renewable energy.



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– part of the Energinet.dk Group

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Iceland

Underground cabling of HVAC.

USA

Offshore wind power.

Mexico

Grid codes & integration of RES.

Curacao

Smart grids & integration of RES.

Uruguay

Integration of wind power.

South Africa

Grid codes & integration of RES.

UAE

Grid integration of RES & pricing mechanisms.

Eastern Africa

Planning operation, markets and regulation & Integration of wind power.

China

Integration of wind power, offshore wind park engineering & forecasting systems.

Australia

Integration of wind power.