Company Profile

EMD International A/S
www.emd.dk

Company
Our Profile

EMD International A/S (EMD) is a software and knowledge centre supplying companies and institutions worldwide with software, consultancy services, training and know-how within the fields of project design, planning, documentation and operation of environmentally friendly energy projects.

EMD has developed several commercial software packages for the design and planning of renewable energy projects as well as for the operation phase. EMD's design and planning software packages are used worldwide and approved by investors, banks and local authorities as serious, independent and knowledge-based assessment and analysis tools. This is leading windPRO and energyPRO to a position as the world's most used software packages within their fields.

We take pride in continuously updating and improving our software packages

EMD is also offering software solutions during the commercial operation of wind farms, cogeneration plants and other types of integrated energy plants. The web-based software service windOPS is used to check the performance of operating wind turbines whereas the energyTRADE software is used by cogeneration plants and other types of energy plants supplying both heat and electricity to calculate the optimal electricity bid prices and quantities at different electricity markets to minimize the net heat production costs.

As wind consultants, EMD has extensive worldwide experience, and our consultancy team is internationally recognised for its independent expertise within wind energy as well as within development of co/tri-generation projects. We take pride in continuously updating and improving our software packages in close cooperation with the great number of companies worldwide that use our software daily. To ensure that the EMD software is upgraded with the latest technology and knowledge available, we participate in various ongoing research and development activities within the renewable energy sector.

EMD was founded in 1986 and is a fully owned subsidiary of the Danish independent association Energi- og Miljødata (Energy and Environmental Data). EMD is located in Aalborg, Denmark, and has regional sales and support offices in Germany, France, Spain, United Kingdom, United States, Middle East and China.

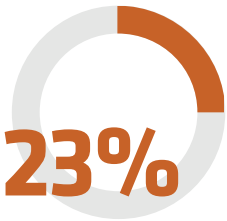
EMD Mission

EMD's mission has three components that underpin the company's strategy and our commitment to constantly improving our products, services and the projects that we take part in:

1. To be at the forefront of the renewable energy industry with dissemination of the latest research and development related to wind energy and distributed energy generation.
2. To transform and implement the latest research results and experience into user-friendly software packages for worldwide distribution with easy access to training, service and support.
3. To offer our know-how and expertise within wind energy and distributed energy systems as independent consultants to selected clients worldwide.

Renewable Energy
A fast growing industry

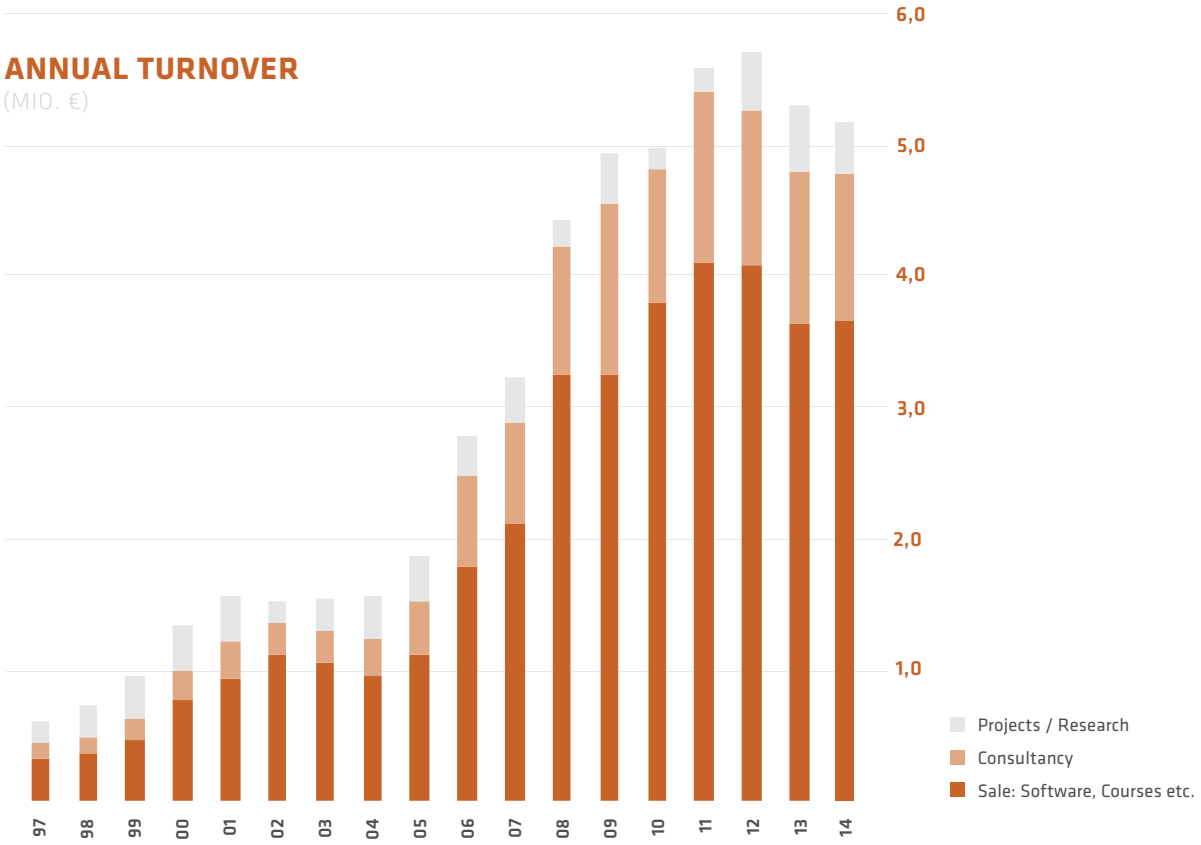
During the last couple of decades, wind energy has seen an initial influx of environmentally driven investments. The increase in funding has contributed to market growth and today, wind power is the fastest growing source of electricity in the world.



Over the past ten years, the installation of wind power has increased considerably with an annual average global growth rate of 23%.

Wind energy is now a global industry, and electric power generation from wind turbines is soaring in most parts of the world. In several countries, the number of new wind turbines has increased significantly, and especially since 2005, the expansion has accelerated. Over the past ten years, the installation of wind power has increased considerably with an annual average global growth rate of 23%.

As the demand for wind energy continues to grow at exponential rates, calculating and documenting the potential of projects as well as reducing costs are now top priorities in order to realise wind and energy projects. This is strongly reflected in the demand of our windPRO and energyPRO software packages which are the world's most used software packages within their fields.



Product Overview

World Leading Software

windPRO

windPRO is the world's most widely used software package for planning and designing wind farm projects. More than 2,200 companies and institutions, including the world's leading turbine manufacturers, project developers, engineering companies, utilities and planning authorities and research institutions are using windPRO.

With windPRO, documentation is easily calculated and submitted. It is possible to determine how much energy the turbines will produce at a specific site, how the site is used optimally in respect for energy yields versus wind resources and environmental restrictions as well as the consequences of connecting the project to the existing grid can be taken into account, both capacity-wise and cost-wise.

The calculation results and documentation from windPRO are acknowledged and approved worldwide by investors, banks and planning authorities. The windPRO software is based on nearly 30 years of experience in planning, designing and documenting wind turbine projects worldwide and is the most comprehensive and user-friendly software package available.

windPRO offers you:

- Unrivalled software facilities
- Superior report facilities
- A logical and user-friendly design
- Day-to-day hot-line support
- Frequent courses

windPRO

Read more about windPRO at www.windpro.com

windOPS

windOPS is a web-based software service designed for wind farm owners for monitoring, independent performance and availability analysis and management overview of both individual wind turbines and complete wind farms.

As input, windOPS is using data from the turbines SCADA system, which is uploaded to the EMD server every ten minutes. These data are continuously processed, and windOPS users are able to compare the actual production from the turbines with the calculated production (using a refined energy/park model calculation) – windOPS is the only software service on the market offering this feature.

Furthermore, windOPS will calculate what should have been produced during non-operational periods, thus giving a very precise aggregation of lost production. Any lost production is categorized in groups (turbine, grid, environment, etc.) making it easy to see the reasons for low performing turbines and if warranties are kept.

Features for a refined budget follow-up linked to the wind energy index method are included, and revenues based on a given fixed price can be compared to alternative market prices (e.g. spot market prices).

The values in windOPS can be viewed in a resolution of ten minutes up to annual values. The software service is therefore suited for owners checking the performance on a daily basis as well as owners, who just wish to keep track on the wind farm performance on a monthly or annual basis.

Read more about windOPS at: www.emd.dk

windOPS

energyPRO

energyPRO is a modelling software package for combined techno-economic analysis and optimisation of complex energy projects with a combined supply of electricity and thermal energy (steam, district heating or cooling). The main objective is to find the optimal (most cost-efficient) plant configuration based on local conditions such as fuel costs, tariffs and variations in consumer demand.

energyPRO is typically used for techno-economic analysis of projects such as cogeneration plants combined with thermal storage, industrial cogeneration plants, tri-generation plants and biomass/biogas fuelled CHP plants. Other types of projects, e.g. geothermal, solar, photovoltaic and wind or diesel projects, can also be analysed and detailed with this software.

Based on the input, energyPRO's unique programming optimises the operations of the plant, providing a detailed specification for the provision of the defined energy demands, including heating, cooling and electricity use.

energyPRO provides a technical and economic analysis of multi-dimensional energy projects including:

- A detailed financial plan approved by international banks and funding institutions
- A presentation of the operating results for the project (monthly cash flows, income statements, balance sheets and key investment figures)
- Calculations and reports on the emissions by the proposed project (CO2, NOX, SO2, etc.)
- A logical and user-friendly design

Read more about energyPRO at: www.emd.dk/energyPRO

energyTRADE

energyTRADE is a flexible software solution used by cogeneration plants to calculate optimal electricity bid prices and quantities in one or several electricity markets, such as spot market, primary reserve, intraday and regulating power.

As input for calculating the different electricity quantities and bid prices to be offered in each hour in the coming day(s), energyTRADE is constantly receiving updated information such as heating demand forecasts, present heat storage content, fuel prices, O&M costs, technical plant details as well as weather and electricity price forecasts.

The above information is used in an advanced model to calculate the most optimal electricity quantities and bid prices to be offered when considering minimizing the net heat production costs at the plant.

The calculated electricity bid prices and quantities are automatically send to the plant's production responsible party at frequent intervals depending on the number of different electricity markets in which the plant is participating. Once the trading has been finalized, a production plan for the winning biddings is automatically returned to the energyTRADE software solution at the plant.

Read more about energyTRADE at: www.emd.dk

energyTRADE

Services & Solutions

Specialist Consultancy & Research

EMD has been in the wind and renewable energy business for nearly 30 years and offers a wide range of wind and energy consultancy services in connection with the development of new projects, preparation of detailed study appraisals, feasibility analyses, due diligence and second opinion analyses for nearly all types of distributed energy projects.

The consultancy team provides fast and cost-effective services. The majority of our references include European sites, but our studies have taken place in all parts of the world – from Canada to Australia and from Japan to the United States. During the past ten years, EMD has assessed more than 45,000 MW of wind power capacity worldwide.

In order to expand our areas of expertise, we participate in national and international research projects funded by the local government programs, the EU, the World Bank, UNDP and other cross-national organisations.

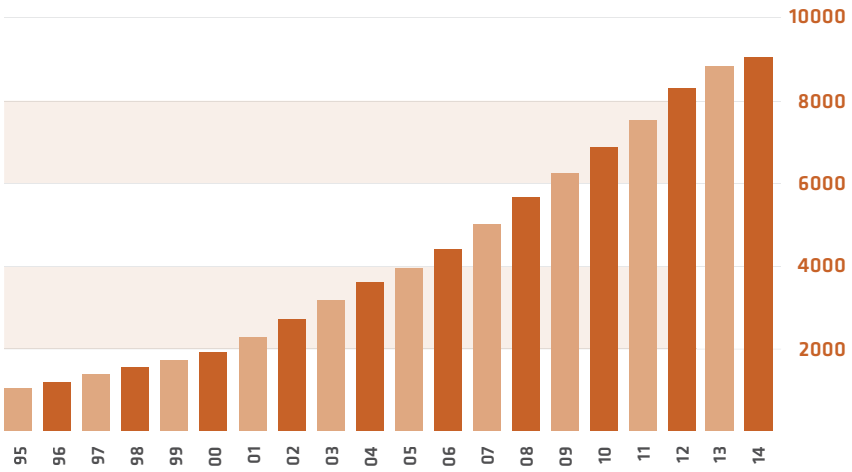
Training – Passing on our Knowledge

Training can be advantageous for hands-on experience in using our software. We arrange training courses for beginners as well as advanced courses for the more experienced users on a regular basis at different locations in Europe and North America.

In addition, we offer tailor-made courses based on your requirements. These courses can take place either at our offices in Denmark or at our client's location. We have successfully held intensive courses for clients in Denmark, Norway, Sweden, Italy, Spain, United Kingdom, Germany, Poland, Ukraine, France, Spain, USA, Canada, Turkey, Kuwait, Kenya, Mexico, Brazil, Pakistan, South Korea, Fiji, Cabo Verde and Iran.

We also provide extensive capacity building training programmes for companies and organisations wishing to get in-depth knowledge about wind energy or other forms of sustainable energy.

Course participant-days at EMD open courses, accumulated.



Project:
National Test Centre Østerild

In February 2009, The Danish Government decided to build a new prototype wind turbine test centre near Østerild in Thy, Denmark. After four years of planning, designing and building, the Østerild National Test Centre was inaugurated in October 2012.

Test Centre Østerild can test up to seven large wind turbines and allows for testing turbines with a total height of up to 250 metres. This makes Østerild the first site in the world where it is possible to make measurements of giant turbines under varying climatic conditions. The location and facilities of the test centre allows for the wind turbine industry in collaboration with research institutions to carry out research, development and test of prototype wind turbines and new wind turbine technology.

EMD International A/S has been involved in all phases of the establishment of Test Centre Østerild both as independent consultants and as supplier of the windPRO software used for calculating the suitability of the Østerild site. By using windPRO, it was possible to calculate the noise impact from the wind turbines, visualise the project in landscape photos to give the realistic visual impression of the wind farm as well as to calculate and document the project's power generation. The calculations carried out by windPRO were used for the assessment of Test Centre Østerild as a suitable site for the largest wind turbines in the world.

windPRO is the most widely used software package for calculating and designing wind turbine projects on a global basis. WindPRO is used for all kinds of wind energy projects around the world – both for testing and commercial purposes.

Get more info on:
www.nationalttestcenter.dk

FACTS ABOUT TEST CENTRE ØSTERILD

110 The maximum length of the blades is 110 metres

7 Contains seven test stands for large prototype wind turbines

250 Allows for mega wind turbines up to 250 metres in height

220 The rotor can be up to 220 metres in diameter

16 The maximum output per wind turbine is 16 MW

112 The combined power production is 112 MW

245 245 hectares plantations have been cleared at the test centre

5 The main road of the test centre is five kilometres

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