

Unique European Network of Excellence

The European Academy of Wind Energy aims at integrating the activities of the highest level academic and research institutes in Europe working on Wind Energy. Particular attention will be paid in spreading excellence through joint education and training activities.

The benefits of past R&D in the wind energy sector have been clearly demonstrated by the increasing sizes of turbines and the lower production cost per installed capacity of electricity. Production costs of wind turbines have been reduced drastically. Today, wind energy is close to being cost competitive with other forms of electrical generation at locations with a good wind resource.

At present, Europe is leading in the wind energy field, both with respect to industry, installations and research. This is a unique position in a rapidly growing international market characterised by major development in technology, size and application.

To maintain the position and fully exploit the growth perspectives requires both continued technology development and education and training of a highly qualified workforce in Europe.

Continued R&D in long-term aspects is essential to provide further reductions in cost and uncertainty, strengthen acceptability and reliability and increase the overall value of wind power in order to realise the anticipated level of deployment. The nature of the long-term research needed is highly multidisciplinary in the technological sense and trans-disciplinary in the implementation sense (different wind-climates, offshore-flat terrain-complex terrain, large scale integration – isolated island grids etc). It is the kind of research particularly well suited to be performed by a network of excellence at the European level.

If further R&D is one necessary component for the future success of Wind Energy, qualified human resource at all levels (technical and non-technical) is a second. High level education and training is a key issue for developing the human resource needed to support the anticipated wind energy market boom. Moreover, high level education and training are hallmarks of a living research network.



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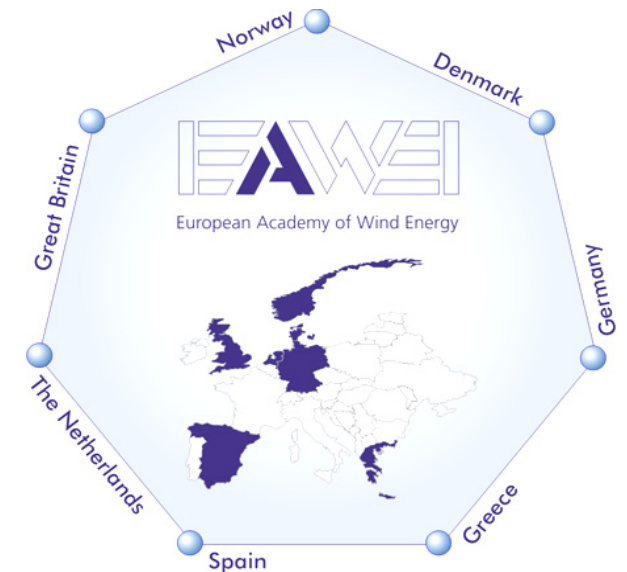


The European Academy of Wind Energy

The EAW E is a co-operation on wind energy R&D of research institutes and universities in 7 EU countries: Germany, Denmark, Greece, Netherlands, Spain, UK and Norway.

The Academy is founded to formulate and execute joint R&D projects and to coordinate high quality scientific research and education on wind energy on a European level.

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The Partnership

The members of the European Academy of Wind Energy include at present 27 entities, representing 7 EU countries and more than 80% of the long-term research activity in the field of Wind Energy. During the years, the group members have established strong links through a systematic collaboration under the European Framework Programmes and through common participation in human networks, including European and International Standardization and Certification bodies. All partners have an outstanding position in their national Wind Energy research activities.

The network will advance knowledge in the area of wind energy, by pooling a critical mass of competence and skills. The group is structured with national nodes, represented by major wind energy research institutes with associated partners from universities or other research institutes.

The network includes the following entities with an outstanding experience in Wind Energy research:

Denmark: Aalborg University, DHI, The Technical University of Denmark (DTU)

Germany: ISET, University of Kassel, Leibniz Universität Hannover, Otto-von-Guericke-University Magdeburg, Universität Stuttgart, Carl von Ossietzky University of Oldenburg

Greece: National Technical University of Athens – NTUA, Centre for Renewable Energy Sources (CRESES), University of Patras

Netherlands: Delft University Wind Energy Research Institute (DUWIND), The Energy research Centre of the Netherlands (ECN)

Norway: SINTEF, Institute for Energy Technology (IFE), The Norwegian University of Science and Technology

Spain: The Spanish National Renewable Energy Centre (CENER)

United Kingdom: Centre for Renewable Energy Systems Technology – CREST, Durham University, Imperial College London, Manchester Metropolitan University, STFC Rutherford Appleton Laboratory, University of Manchester, University of Strathclyde, University of Surrey, Loughborough University

Integration activities

PhD-Exchange

In training better young European scientists, the Network of Excellence will contribute to bridging the gap it has with the United States and Japan in terms of density of researchers per inhabitant thus allowing businesses to hire personnel trained in high and new technologies.

Exchange of scientists

Short term exchange of scientists among the network's participants in order to promote the integration of R&D contributes to the education of PhDs and the preparation of dissemination activities.

Exploitation of existing research infrastructures

WT test-stations, blade-testing rigs, wind tunnel facilities, atmospheric and sea-state field measurement systems etc. are made available for all academy members and its students.

Activities of spreading the excellence

Development

of international training courses to provide a suitable vehicle for the training of researchers, students, engineers and industrial executives (in particular for SMEs), and of other potential users of the knowledge produced within the network. Such clearly identified training activities should contribute to the professional development of the persons concerned and incorporate a mobility aspect. The member institutes will create and perform joint courses of different levels and durations. Practical training will be included. These courses will be offered to European and extra-European customers.

Dissemination of knowledge

- Web site: public access to R&D outputs
- Intranet work communication and partner meetings
- International seminars
- Summer schools for graduate and PhD-students

Services in support of technological innovation in SMEs

- Training courses for industry technical staff
- Development of computer software for technology development
- Targeted R&D news service

Standardisation

Specific R&D for the preparation of proposals, evaluation and participation in CENELEC and IEC technical committees and working groups in the R&D fields of the network.

Long-term research activity

The following thematic areas and topics are identified as first priority long-term R&D issues for EAWE's joint programme of activities:

Long-term Wind Forecast

- Wind resources,
- Micro-siting in complex terrain,
- Annual energy yield,
- Design wind conditions (turbulence, shear, gusts, extreme winds) offshore, onshore and in complex terrain

Wind Turbine External Conditions

- Characteristics of wind regime and waves
- Atmospheric flow and turbulence
- Interaction of boundary layer and large wind farms
- Prediction of exceptional events

Wind Turbine Technology

- Aerodynamics, aeroelasticity and aeroacoustics,
- Electrical generators, power electronics and control
- Loads, safety and reliability
- Materials and composite structures, fracture mechanisms
- Material characterization and Life Cycle Analysis
- New wind turbine concepts

System Integration

- Grid connection and power quality issues
- Short-term power prediction
- Wind farm and cluster management and control
- Condition monitoring, Maintenance on Demand
- New storage, transmission and power compensation systems

Integration into Energy Economy

- Integration of wind power into power plant scheduling and electricity trading
- Profile-based power output, Virtual power plants
- Trans-national and –continental supply structures
- Control of distributed energy systems