

Academic Qualification in Onshore and Offshore Wind Energy within the Framework of the European Academy of Wind Energy and the European Wind Energy Master Program - Examples and Experiences in Germany and Europe

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Many different approaches for academic qualification in wind energy have been developing in Europe. The European Academy of Wind Energy (EAWE) provides a framework for the exchange of ideas, scientists, and the development of strategies. The efforts to join forces in university education started more than ten years ago and resulted in the establishment of the European Wind Energy Master.

EAWE started already in 2004 as a network of universities engaged in wind energy research and PhD education. Today, EAWE's 39 members -- universities and research institutions -- formulate and execute joint R projects and coordinate high quality scientific research and education in wind energy. One of the core activities has always been the exchange of scientists, PhD and graduate students, as well as the annual EAWE PhD seminar. EAWE is now responsible for the Scientific Track of European Wind Energy association's Annual Events and organizes the much appreciated biannual conference series "The Science of Making Torque from Wind". Four EAWE members have joined forces to push international education through a joint master program, the European Wind Energy Master (EWEM). The program was established in 2012 by four universities who have long been active in Wind Energy and Offshore Wind Energy research and education: Delft University of Technology, Technical University of Denmark, Carl von Ossietzky University Oldenburg, Norwegian University of Science and Technology. The master program is supported by the European Union through its Erasmus Mundus excellence program. The European Wind Energy Master is an advanced 2 year program dedicated to specialized research within four areas: Wind Physics, Rotor Design, Electric Power Systems, and Offshore Engineering. Students have to choose one of those four tracks and follow that dedicated curriculum. EWEM graduates receive a double degree by the two (of the four) universities who are responsible for the scientific track. Already three cohorts of students have been taken in, and the number of students is stable. EWEM is supported by a network of 43 associated partners from all over the world: research institutions, universities, and companies.

Putting together a joint master program like EWEM would not have been possible without each partner's longstanding experience in research and education. In fact, EWEM strongly depends on the existence of local programs and degrees being able to contribute to such an extensive wind energy program. While the development at the four partner universities has been different because of the different national university policies, wind energy market developments, and research funding schemes, some general issues can be highlighted when looking at the case of the University of Oldenburg. Already in the early 1980'ies University of Oldenburg started research on renewable energies at the Physics Department. The researchers at the Energy Lab were ahead of their time at the forefront of sustainable energy technology research: they studied different renewable energy sources and their integration into one system. First, university education has only been done as specialization within a classical degree, i.e. Physics, but it was extended through the establishment of one of the first master programs for renewables: the Postgraduate Program for Renewable Energy (PPRE) which now, after 27 years of operation, is supported by a network of 400 alumni in over 80 countries. Apart from that, research and education in wind energy has developed further into a highly specialized field at the University of Oldenburg within the Institute of Physics focussing on the physical aspects of wind as a resource for energy conversion -- and branding this field as "Wind Physics". The institutionalization of wind energy research has eventually been brought forward a major step in the year 2004 when ForWind, the Center for Wind Energy Research, has been founded. Today, ForWind and its three partners, the Universities of Oldenburg, Hannover, and Bremen, have gained national and international reputation, making them an interesting partner for a Strategic Research Alliance with the German Aerospace Center (DLR) and the Fraunhofer Institute for Wind Energy and Energy System Technology (IWES) in 2012. So, becoming part of the EWEM consortium in 2012 is an outcome of successful research, networking, and institutional growth over more than two decades -- and that is true also for the three other partners.

In 2006 ForWind has stretched its educational activities to continuing study programs and part-time education

for professionals in wind and offshore wind. The Continuing Studies Program Wind Energy Technology is one year part-time study program covering all aspects related to the planning, development, and operation of onshore wind farms. It addresses professionals from all disciplines -- technical, commercial, legal -- and provides them with a systematic understanding of wind farm projects. Participants should hold a master degree and have at least three years of professional experience. Much emphasis is based on the exchange among the participants of the courses and the exchange of their expertise. Lecturers of the course are known experts in the field, and they come from companies and universities. The graduates gain important competencies to succeed in the highly interdisciplinary wind industry and business. There is a variant to this course devoted explicitly to offshore wind, the Continuing Studies Program Offshore Wind Energy. Due to the nature of offshore wind farm projects the offshore course is taught in English, and the program has just recently established co-operations with a leading UK institution and a company in Denmark. In the last 9 years more than 220 professionals have graduated and form a vital alumni network with regular meetings at trade fairs and other business events.