

Research Projects

Foundation and Support Structures


RAVE – Foundations



A practical design and monitoring procedure for foundations of offshore wind turbines under cyclic loads.

BAM - Federal Institute for Materials Research and Testing

RAVE – GIGAWIND alpha ventus



Holistic design concept for offshore wind turbine support structures on the base of measurements at the offshore test site alpha ventus.

Leibniz University Hanover

Turbine Technology and Monitoring


RAVE – AREVA Multibrid M5000 Improvement



Further development, construction and testing of the M5000 wind turbine under offshore conditions.

AREVA Multibrid GmbH

RAVE – REpower Blades



Development of an innovative, performance-optimized and cost-efficient rotor blade for offshore wind turbines.

REpower Systems AG

RAVE – OWEA



Verification of offshore wind turbine technology with focus on atmospheric conditions, turbine behaviour and load cases in offshore environment.

University Stuttgart

RAVE – REpower Components



Further development of offshore wind turbine components with respect to costs, longevity and servicing convenience.

REpower Systems AG

RAVE – LIDAR



Further development of LIDAR wind measuring techniques for offshore applications.

University Stuttgart

RAVE – Offshore-WMEP




Monitoring of the offshore wind energy deployment in Germany with focus on energy production, availability, service concepts, external conditions, etc.

Fraunhofer Institute for Wind Energy and Energy System Technology IWES

Environment

RAVE – Acceptance



Assessment of the social acceptance of offshore wind energy utilization by residents and tourists in four coastal regions on the North and Baltic Sea.

Martin Luther University Halle Wittenberg

RAVE – Oceanography



Analyzing impacts of offshore wind farms to the marine environment.

BSH Federal Maritime and Hydrographic Agency

RAVE – Hydro Sound



Evaluation of sound reduction measures to minimize impacts on the marine environment.

Leibniz University Hanover

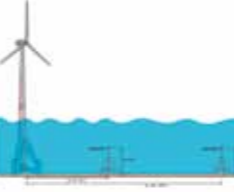
RAVE – Ecology



Ecological research for gaining better knowledge about the impact of offshore wind farms on the marine environment and for evaluating BSH's Standard for Environmental Impact Assessments.

BSH - Federal Maritime and Hydrographic Agency

RAVE – Operational Noise



Assessment of the operational underwater sound immission of offshore wind turbines under varying boundary conditions.

Flensburg University of Applied Sciences

RAVE – Sonar Transponder




Investigation of sonar transponders for offshore wind farms as acoustic warning systems to submarines and integration into an overall technical concept.

Leibniz University Hanover

Grid Integration

RAVE – Grid Integration



Development of strategies and tools for the effective integration of offshore wind power into the electricity supply system.

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Alpha Ventus The first German offshore wind farm



The alpha ventus offshore wind farm is a pioneering project and an extremely ambitious and successful undertaking: situated some 45 kilometres north of the island of Borkum, in water 30 metres deep, the twelve 5 MW wind turbines of the first German wind farm at sea were built in 2009 under genuine offshore conditions. The alpha ventus wind farm will thus gather further fundamental experience with a view to future commercial use of offshore wind power in Germany. With a corresponding total capacity of 60 MW, a yearly energy yield of approx. 220 GWh is expected, which is equivalent to the power consumption of 50,000 households.

Contact / Partners:
DOTI – German Offshore Test Site and Infrastructure Company, a joint company of EWE AG, E.ON Climate & Renewables, Vattenfall Europe Wind Power
Lutz Wiese
www.alpha-ventus.de

German Offshore Wind Energy Foundation
www.offshore-stiftung.de

RAVE – Research initiative Joint research, development and testing



The RAVE research initiative is accompanying the construction and operation of the alpha ventus test site to attain a broad basis of experience and expertise for future offshore wind parks. Several research projects are currently carried out. The main focus is on cost reduction, availability, technology improvement, environmental and ecological impacts of offshore wind energy utilization. In total the German Ministry for the Environment BMU has allocated up to 50 million euros for the research and further development of wind energy utilisation at sea.

Funding body:
BMU – Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
www.bmu.de

RAVE Supervisor on behalf of BMU:
PtJ – Project Management Jülich
Dr. Joachim Kutscher
www.fz-juelich.de/ptj

The RAVE Initiative is funded on the base of an act of the German Parliament by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

RAVE – Coordination Organising the research cooperation



The objective of the RAVE coordination project is to network all the single RAVE projects, to represent them and to achieve the structure for an effective joint program. In order to use synergies and to improve the quality of the results, a balanced concept was developed for the collaboration. The organizational coordination is achieved by the RAVE steering committee. Moreover, the international cooperation is supported through RAVE delegates in the EU Technology Platform Wind Energy and through cooperation within the IEA Wind Implementing Agreement.

RAVE Coordinator:
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RAVE – Measurements and data management



The research initiative RAVE accompanies the setup and operation of alpha ventus in order to acquire a broad knowledge and experience base. Therefore comprehensive measuring data are indispensable. The measurement project has the goal to carry out measurements and to coordinate the measuring demand of the individual subprojects as a service for all involved institutes, authorities and companies. Load conditions, operation sounds, noise immissions during the wind turbine setup phase, oceanographic and geological data are the main measurement parameters.

Project leader:
BSH – Federal Maritime and Hydrographic Agency
Kai Herklotz
www.bsh.de

RAVE
RESEARCH AT ALPHA VENTUS
Eine Forschungsinitiative des Bundesumweltministeriums