

Topic #8 - Offshore

Research goes offshore – RAVE activities launched at Alpha Ventus

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The goal of Germany's 'Strategy for Wind Power Utilization on Sea' is the achievement of 20-25 GW offshore wind capacity up to 2030. As a starting point for the offshore wind power utilization the Federal Government supports the establishment of a 60 MW test platform Alpha Ventus. The operation of the offshore test field will be accompanied by several research projects codenamed RAVE (Research at Alpha Ventus) supported by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). ISET is responsible for the organisation, coordination and linking of all research activities at the test field. The presentation will describe the test field and give an overview of the actual research activities.

The use of the wind energy on sea represents a large technological and organizational challenge. All institutions involved in planning, installation and operation of offshore wind farms as well as organisations, who attend to public interests of planning, permission and politics, must undertake large efforts and follow new paths. Recent years have shown that major challenges and barriers have to be taken, before large scale offshore wind farms can be built in the German bight.

Installation and operation of the planned test wind farm will be accompanied by research projects funded by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. Main objective of the coordination project is to support and to guarantee a structured and concerted procedure of all research activities to the offshore test field. The main players of the different research projects, the research institutes, universities, manufacturers and the operator of the wind farm will be linked, in order to use synergies and to improve the quality of the research. The coordination project will link and support all related research activities by constitution of a steering committee, organizing ad hoc discussion, lobbying and mediation, organizing project related and special topic workshops as well as conferences, performing internet presentation and press releases, presentation of summarized results and by planning and coordination of measuring concepts.

The following research projects are planned or already approved by BMU:

- RAVE - NOISE: Measurement of the operational underwater noise emissions
- RAVE - OWMEP: Monitoring of the offshore wind energy deployment in Germany
- RAVE - GRID: Grid integration of offshore wind farms
- RAVE - OWEA: Verification of offshore wind turbine designs
- RAVE - LIDAR: Further development of LIDAR wind measuring techniques for offshore application
- RAVE – M5000: Development, construction and testing of the M5000 wind turbine under offshore conditions in the German offshore test field alpha ventus
- RAVE –BLADES: Development of an innovative, performance-optimised and cost-efficient rotor blade for offshore wind turbines
- RAVE – COMPONENTS: Development and optimisation of offshore-WT Components with regard to costs, long-living and service
- RAVE- GIGAWIND: Holistic design concept for offshore WT support structures on the base of measurements at the offshore test site alpha ventus