

Research Wind Farm **WiValdi**



General description of WiValdi

The German Aerospace Center (DLR) is developing the research wind farm together with its partners from the Research Alliance Wind Energy (DLR, ForWind and Fraunhofer IWES). The wind farm is designed for long-term research in the fields of aerodynamics, wind resource assessment, wind farm control and structural dynamics and beyond. It will provide a unique research environment for academia and industry.

The research wind farm consists of a total of three wind turbines and five meteorological masts: two state-of-the-art wind turbines of the 4MW-class (WTG 1 and WTG 2) are flanked by a IEC-compliant met-mast upstream in main wind direction (MET-MAST 1) and three met-masts between the turbines (MET-MAST ARRAY). The wind farm is completed by a smaller experimental wind turbine in the 500 kW-class (WTG 3), which is complemented by the fifth met-mast (MET-MAST 5).

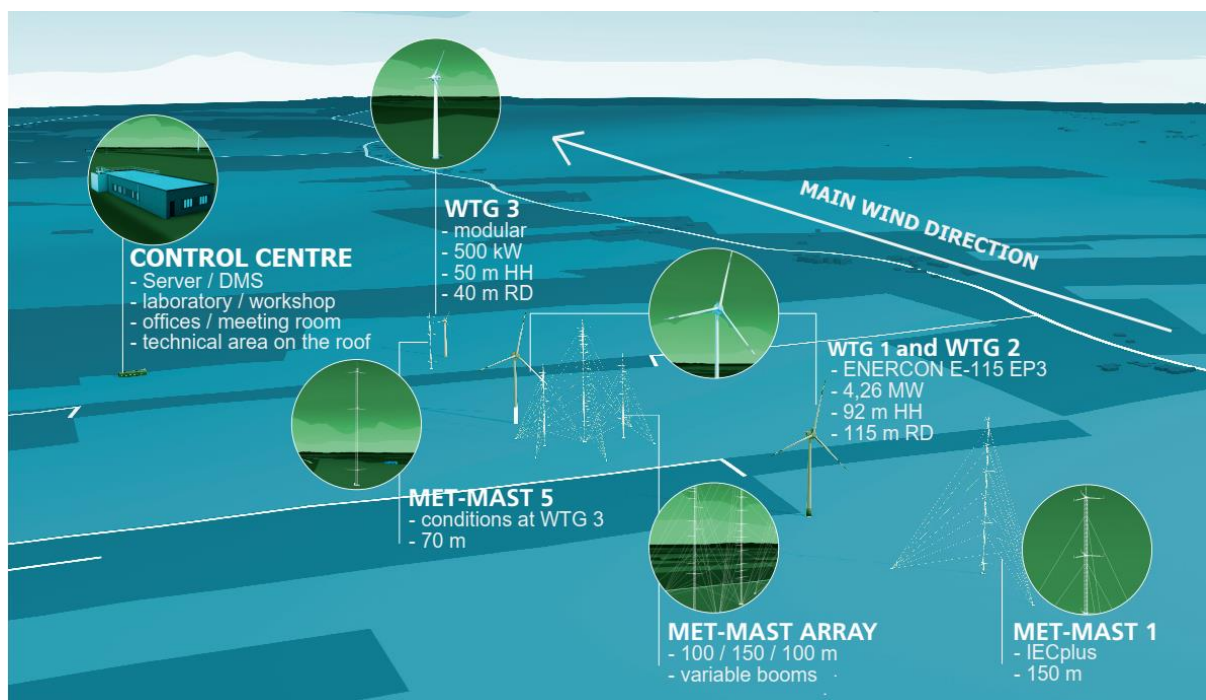


Figure 1: Layout of the research wind farm with three wind turbines (WTG) and five met-masts.

Each wind turbine and met-mast will be instrumented tip-to-toe with highly resolving sensors for atmospheric quantities (wind fields, temperatures, fluxes etc.) as well as loads and structural quantities (strains, accelerations etc.). Additional instrumentation, e.g. Lidars, Sodars or microphones, will be installed at the wind farm for specific campaigns. The gathered data is prepared and processed in the control center and can be accessed by researchers from academia and industry via the DLR data management system.

Location of site

Kamp 32, 21732 Krummendeich, Lower Saxony, Germany

Control and measurement systems and signals

The research wind farm WiValdi is currently under construction. The wind turbines and met-masts will be equipped with numerous sensors, several thousands in total. Many of them are already integrated in the wind turbines during production while others will be added during assembly. Detailed information about the sensors and the corresponding data will be available from mid-2022.

First measured data of the site conditions prior to the wind farm installation have been acquired with Lidars and microwave radiometers since late-2020. The data sets are already available here:

<https://windenergy-researchfarm.com/news/measurement-data>

Research possibilities

The ViWaldi research wind farm covers a vast range of research topics and possibilities are in general not limited. The specific conditions for collaborations and data availability are currently being elaborated and will be available from mid-2022.

Contact data and more information

German Aerospace Center – Wind Energy Experiments

Dr. Jakob Klassen

jakob.klassen@dlr.de

Phone: +49 531 295 3380

www.windenergy-researchfarm.com