

*Full service for the aviation industry*

# Wind Tunnel Measurements



**DEUTSCHE**  
**WINDGUARD**

# OUR EXPERIENCE IS YOUR GREAT ADVANTAGE

As a designer, OEM or component supplier in the aviation industry, you require highly professional wind tunnel services for your research and development project or the design verification of a new part. Profit from our long standing experience, our first-class equipment and the high quality standards we set for ourselves and the services we provide.

## AT YOUR SERVICE:

- Deutsche WindGuard's wind tunnel centre with 8 wind tunnels
- DAkkS accredited calibration laboratory according to DIN EN ISO/IEC 17025, MEASNET associated member, IECRE approved and ISO 45001 certified
- Aeroacoustic measurements up to 100 m/s
- Traceability of all measured quantities to national standards
- Redundant measurement system for double reliability
- Over 30 years of expertise in commercial wind tunnel tests and experience of 20,000 accredited sensor calibrations per year
- Full service: from model design to wind tunnel testing, customized post-processing and reporting – all from one single source

## ELECTRIC PROPULSION: PROPELLERS AND DEP

Electric propulsion is here to stay, and we are actively expanding our testing capabilities for this – in the wind tunnel and outside. In the OptiProp research project, we are also developing a test rig for standard tests with the university of Bremen.

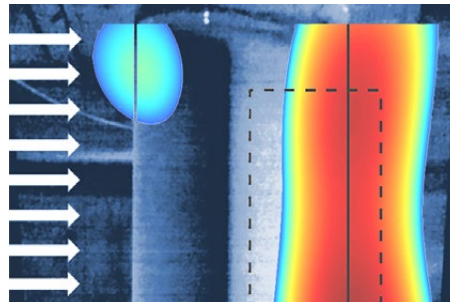


## FEATURES AND BENEFITS:

- Propeller characterization up to 25 kW
- Two fully instrumented test rigs
- Thrust, torque, rpm, power, pitching moment, etc.
- High-speed thermography for propellers
- Wake characterization (PIV, multi-hole pressure rakes)
- Distributed Electric Propulsion (DEP) tests with fully instrumented multi-element airfoils, nacelles, etc.

## OPTIMALLY EQUIPED FOR ACOUSTIC MEASUREMENTS

Deutsche WindGuard's aeroacoustic wind tunnel, coupled with custom made measurement equipment and state-of-the-art post-processing, is silent enough to permit acoustic measurements while operating with a closed test section.

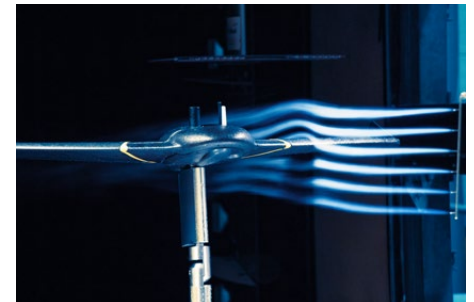


## FEATURES AND BENEFITS:

- Trailing edge noise measurements
- Trailing edge modifications: serrations, flaps, splitter plates, etc.
- 80 microphone, wall-mounted array
- Custom designed array, permits locating sources and filtering unwanted sources
- State-of-the-art post-processing
- In-flow measurements (3D traversing around test item)
- Directivity measurements

## AIRFOIL AND SCALED MODEL MEASUREMENTS

With expertise and experience in testing components and models since 2008, and several thousand airfoil-polars since 2012, Deutsche WindGuard is your competent partner for conducting airfoil and scaled model measurements.



## FEATURES AND BENEFITS:

- Polars up to Re 6 million ( $c = 0.9$  m)
- Surface condition effects: clean, rough, eroded, etc. as well as icing simulation
- In-house manufacturing of test-parts: 7 additive manufacturing systems
- Flow visualization: laminar-turbulent transition and stall-cell detection through thermography, oil-flow and tufts
- Optical deformation measurements, static and dynamic

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