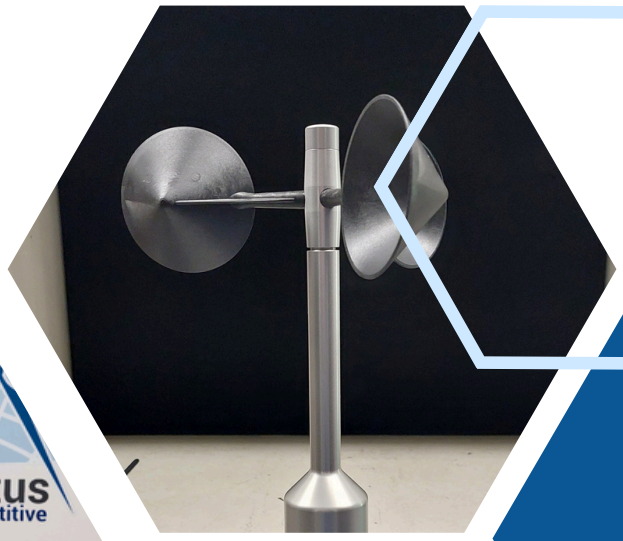
ProfEC | Ventus

closer, committed, competitive



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Company Profile

ProfEC Ventus is an internationally recognized, accredited Testing and Calibration Laboratory specializing in comprehensive wind energy services and bankable expert opinions. Our processes align with the latest international standards, ensuring that our results meet the stringent requirements of banks, investors, and regulatory bodies.
Our dual accreditation as both a Testing and Calibration Laboratory (ISO/IEC 17025) proves the reliability and financial credibility of our work. By adhering to relevant international standards—including IEC 61400 series and MEASNET guidelines—we ensure top-quality data and reporting that facilitate project financing and secure long-term project success.

Standards and Norms Compliance

Our services adhere to critical industry norms, including:

- IEC 61400-12, IEC 61400-12-1, IEC 61400-12-3
- IEC 61400-12-4 (Ed.1), IEC 61400-12-5 (Ed.1)
- IEC 61400-1 (Ed.4), IEC 61400-2 (Ed.3)
- IEC 61400-50-1, IEC 61400-50-2, IEC 61400-50 (Ed.1)
- MEASNET Evaluation of Site-Specific Wind Conditions V.3
- MEASNET Anemometer Calibration Procedure V.3
- FGW TR6 Rev. 12
- FWG TR2 Rev. 18

One Stop
Wind Shop

Our Philosophy

closer committed competitive

- With over 100 years of combined experience and work in more than 70 countries, ProfEC Ventus combines innovative engineering practices with a client-centered approach. From initial site prospection to wind farm optimisation, we deliver results that are fast, cost-effective, and transparent, supporting clients every step of the way.

- We offer a comprehensive suite of services tailored towards end-to-end project planning in the wind energy sector. From meticulous wind resource assessments and energy yield prognoses to cutting-edge power curve measurements and performance verification, our global expertise spans across site selection, measurement system calibration, data evaluation & validation, wind project design optimisations and due diligences.

- Additionally, we incorporate other international and national guidelines where applicable, including BWE recommendations, in which we actively participate as an advisory member. Our services meet the needs of developers, banks, investors, authorities, and turbine manufacturers worldwide.

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Wind Project Development

Virtual Measurement Mast (VMM)

The Virtual Measurement Mast (VMM) uses advanced meso-scale modeling to generate high-accuracy, long-term wind data that mirrors actual on-site measurements. By simulating years of data across various locations, the VMM saves clients significant time and costs, while offering a reliable data source that meets project developers and investors requirements. It provides high-resolution wind data at a low cost, making it ideal for early-stage project planning and financial forecasting.

Meso- and Micro-Scale Wind Mapping

ProfEC Ventus's wind maps use sophisticated GIS and meso-scale modeling to help developers select the best project sites. These wind maps are valuable for regional planning, site assessments, and infrastructure layout, helping developers minimize environmental impacts and infrastructure costs. Our maps are fully compatible with GIS platforms, allowing for easy integration into project management systems and government spatial planning tools.

RSD-devices (LiDAR & SoDAR) Measurements and Verification

ProfEC Ventus offers a wide range of Remote Sensing Devices (RSD), including proven LiDAR and SODAR models available for leasing, renting and buying. Additionally, the company at a global scale provides accredited surveying of measurement locations, LiDAR and SoDAR calibration (verification) using any bankable in-situ reference mast, to ensure accuracy and validity of data in compliance with ISO/IEC 17025 and ISO/IEC 61400-50-2.

For large-scale site surveys, RSDs can be repositioned multiple times within a year, reducing the need for additional measurement masts. Each short-term measurement time series can be correlated with a stationary fixed 1-year measurement device (Met Mast or RSD) and thus extended to yield a 1-year database at bankable level of confidence. This approach ensures bank-compliant validation in accordance with IEC 61400-50-1, MEASNET, and FGW TR6 and especially saves investment in ample terrains or those, difficult to access.

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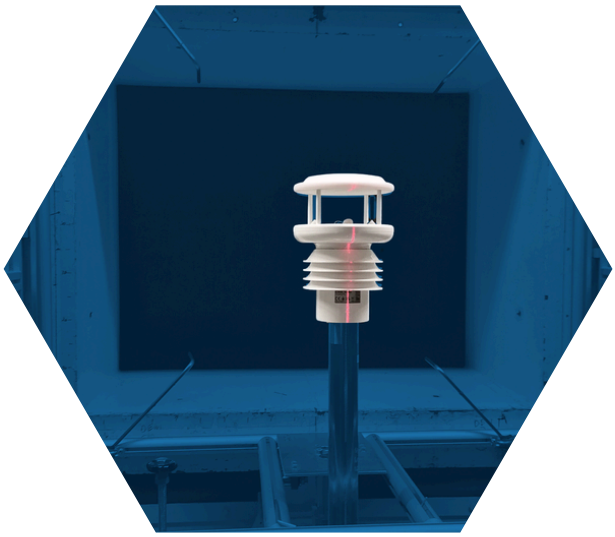
Sensor Calibration and Data Retrieval



Accredited Calibration and Sensor Testing

As one of the few labs globally accredited to calibrate wind sensors (ISO/IEC 17025), we provide calibration services for cup and ultrasonic anemometers, as well as wind vanes. Our accurate calibration process reduces data uncertainty, providing a foundation for reliable energy yield predictions. Regular calibration minimises operational uncertainties, helping clients meet financial risk assessments and attract favourable financing.

C-C-C Custom Code Creator

The Custom Code Creator (C-C-C) is a specialized software tool for configuring and generating measurement code for Campbell Scientific data loggers. Designed for wind resource measurement systems, it provides an intuitive interface for compiling reliable, project-specific code for the CR1000Xe data logger.
Available as C-C-C.onboard and C-C-C.online, the software simplifies data logger configuration and reduces programming complexity in the field. By automating the code generation process, C-C-C ensures consistent and standards-aligned measurement setups while minimizing the risk of configuration errors.
The tool enhances the CR1000Xe to match the functionality required for ProfEC Ventus Resource Measurement Systems, supporting seamless integration into accredited measurement chains and the delivery of reliable, traceable wind data.

Commitment to Transparency and Excellence

ProfEC Ventus combines cutting-edge technology with international standards and a customer-oriented approach. We are ever committed to delivering top-quality, bank-compliant results that fully support our clients and align with the latest industry standards, ensuring that projects are competitive, compliant, and optimised for long-term success. Providing full transparency and accredited traceability, our reported results can be transferred to any other accredited testing Laboratory, whilst permanently maintaining an uninterrupted chain of accredited services.

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Energy Yield Assessment

From Wind Data to Bankable Project Value

Reliable energy yield assessments are the foundation of every successful wind project. They translate wind measurements and modeling results into realistic production expectations, forming the basis for financing, investment decisions, and long-term project planning.
At ProfEC Ventus, energy yield assessments go beyond annual energy numbers. We combine accredited measurement data, advanced modeling techniques, and rigorous uncertainty analysis to deliver transparent, bank-compliant results that stakeholders can trust.

Optimising Wind Farm Energy Yield through On-Site Micro-Scale Wind Mapping

Effective energy yield optimisation begins with precise turbine placement based on long-term wind resource characteristics, local topography, and detailed turbine performance parameters. High-resolution micro-scale wind maps provide a robust foundation for identifying the most promising turbine locations within a defined planning area and maximising long-term energy production.
ProfEC Ventus offers site-specific wind mapping using linear and CFD models, selected according to site complexity. These maps enable the precise positioning of each turbine within a wind farm, supporting optimal layout design and reduced energy losses.
Through validation of modelling results, uncertainty analysis, and determination of probability quantiles for each turbine, we deliver bankable energy yield prognoses in full compliance with our ISO/IEC 17025 accreditation for wind resource and energy yield assessments, including loss assessments in accordance with FGW TR6.

Why It Matters

A well-founded energy yield assessment directly influences:

- Project financing conditions
- Investment risk premiums
- Turbine selection and layout decisions
- Long-term revenue forecasts

By clearly identifying risks and performance drivers, our assessments help clients secure financing on favourable terms and avoid costly surprises during operation.

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Bankability
Grid Integration

Accredited Energy Yield, Uncertainty Assessments and Site Suitability Assessment

ProfEC Ventus's energy yield assessments include uncertainty quantification, a critical metric for financial evaluation. Our bankable reports present energy yields at confidence levels (P50, P75, P90) essential for securing financing. Each assessment follows ISO/IEC 61400-12-1 and provides stakeholders with a comprehensive risk analysis, enabling favorable loan terms and lower risk premiums.
For complex terrains, ProfEC Ventus uses the site suitability assessment according to IEC 61400-1 to determine whether a planned wind turbine is best suited for the proposed location. By calculating design-relevant site parameters, we are able to ensure optimal turbine selection based on the wind and site conditions.

Electrical Modeling and Grid Compliance

As renewable energy adoption grows, grid integration becomes increasingly important. ProfEC Ventus models electrical characteristics for both interconnected and stand-alone systems, optimising generator performance to meet grid codes. This includes static and dynamic studies for high renewable penetration areas, meeting FGW TR4 and TR8 standards, and reducing the risk of grid instability.

Comprehensive Modeling for Project Reliability

Our experienced team conducts in-depth modeling to meet both national and international standards, ensuring projects meet local grid codes and performance standards. We simulate various operating scenarios to identify optimal configurations for hybrid and fully renewable systems, offering clients reliable models that enhance grid compatibility and efficiency.

Project Due Diligence and Portfolio Analyses

ProfEC Ventus provides independent technical reviews of wind energy projects, covering measurement campaign architecture, data integrity and QA/QC methodology, EYA modelling defensibility, uncertainty treatment evaluation, and compliance with IEC and applicable regulatory standards. Our due diligence reports deliver structured, technically grounded risk transparency for investors, lenders, and asset owners, supporting informed investment and financing decisions. For project portfolios, we perform comparative assessments across multiple sites to identify methodological risks, data quality issues and uncertainty drivers.

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