

# STATEMENT OF QUALIFICATIONS

## Wind Turbine Power Performance Testing



BUREAU  
VERITAS

**Founded in 1828, Bureau Veritas is a world-renowned independent testing, inspection, certification, & advisory firm with over a century of power sector expertise and a reputation for excellence built on thousands of projects globally.**

ArcVera Renewables – a leading global technical advisory team in renewable energy – joined the Bureau Veritas team in 2024, bringing deep domain expertise which includes the effective execution of power performance tests (PPT) of wind turbines.

The newly established [Bureau Veritas – Renewables Technical Advisory](#) team leverages its extensive experience – having provided services to over 60% of the installed wind capacity in the United States and supported renewable energy projects across six continents – to establish itself as a global leader in renewables technical advisory, backed by capabilities in 140 countries across five continents.

With testing experience extending to the early 1990s, the global PPT team has personally executed performance tests on nearly every major turbine make and model and is an ISO/IEC 17025 accredited laboratory by A2LA in accordance with IEC 61400-12 for performance testing and an IECRE-approved, MEASNET-accepted laboratory.

### Key accreditations, approvals, and capabilities

- ✓ A2LA accredited ISO17025 test laboratory
- ✓ Approved by IECRE with MEASNET-accepted proficiency
- ✓ Authorized warranty testing by all major turbine manufacturers
- ✓ Onshore and Offshore testing with nacelle-mounted lidar, ground-based lidar, and meteorological mast-based wind measurement systems.



### Industry Leadership

Our global team of experts consistently delivers high-quality results aligned with the rigorous IEC 61400-12 and IEC 61400-50 series of standards – standards to which we actively contribute through committee involvement and ongoing technical guidance – and proudly contributes to the renewable energy industry through community participation globally.



## GLOBAL EXPERTISE, DELIVERED LOCALLY

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The Bureau Veritas PPT service line is comprised of a cooperative and collaborative team of performance testing experts who work directly in support of each project.



**Andy Chang**

**Global Service Line Leader**

Andy leads our global PPT service line, bringing extensive experience in performance measurements and management. Previously, he was Senior Technical Leader at GE, managing global technical risk for performance warranties. He is dedicated to continuous improvement, leveraging innovations such as machine learning, automation, and lean methods for engineering efficiency and effectiveness.



**Lucas Costa**

**Service Line Leader, LATAM**

Specializing in power curve testing, Lucas Costa brings deep expertise in energy performance measurements including data analysis, equipment installation, and meteorological mast verification. He focuses on optimizing wind asset performance, helping clients maximize utilization. With his knowledge of the LATAM market, Lucas delivers tailored, high-quality testing services to meet regional needs.



**Badrinath Dash**

**Service Line Leader, APAC & MEA**

Badrinath Dash is an expert in wind turbine power performance testing, having assessed over 100 turbines across 30+ models. His experience spans instrumentation, data acquisition, and analysis, gained through roles at UL, Envision, and Enercon. Badrinath is known for his commitment to quality, safety, and mentoring, earning a reputation as a respected leader in the renewable energy industry.



**John Bosche**

**President & Principal Engineer**

Co-founder of ArcVera Renewables with over 30 years in the wind energy industry, specializing in turbine design, testing, technology review. John has been on the expert committee representing the US for IEC 61400-12 and -50 series standards for power performance testing since 2001.



**Dan Bernadett**

**Global Director of Engineering**

An expert in power performance testing, turbine technical issues, plant design, and resource assessment, Dan provides a unique ability to solve diverse operational performance and profitability challenges. He has over three decades of experience in the wind energy industry.

**BV's global footprint**

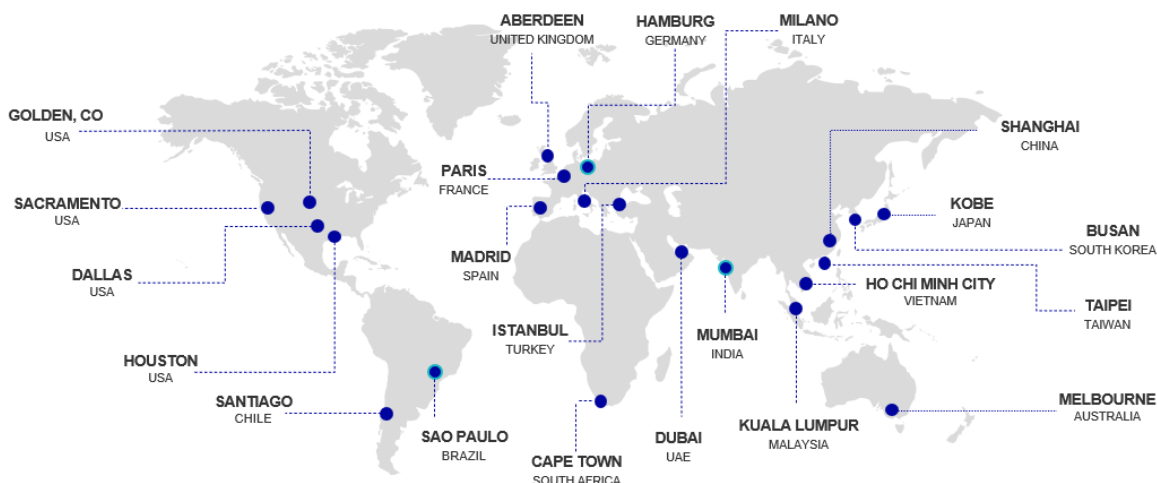
Our teams of atmospheric scientists, engineers and analysts are distributed across BV's local centers of technical and engineering excellence, forming a powerful global network of highly experienced renewable energy professionals leveraging a deep pool of renewable energy project expertise.

**7500+**

**power experts based in 140 countries  
across five continents**

**1000+**

**Renewables and storage experts  
across our local centres of excellence**



## WIND PERFORMANCE TESTING – ONSHORE & OFFSHORE

### Executing power performance tests is a highly complex task requiring significant expertise

With even minor performance issues resulting in substantial financial losses, having experienced PPT professionals and precise methods is essential. Bureau Veritas's PPT team has been at the forefront of power curve testing since the 1990s, with proven methodologies that ensure quality and efficiency.

#### A broad range of capabilities

- Expertise across all measurement technologies:
  - Meteorological mast-based instrumentation.
  - Ground-based vertical-profiling lidars.
  - Nacelle-mounted horizontal-profiling lidars.
- Hands-on experience designing, installing, and operating measurement systems across all major turbine manufacturers.
- Successful commercial application of numerical site calibrations with advanced modeling for complex terrain.
- Data-quality enhancements through advanced analytics and machine learning.

#### We are at the forefront of the industry

- Comprehensive testing services for both onshore and offshore wind projects.
- Specialized performance analyses and tailored testing approaches, including nacelle transfer functions and continuous operational monitoring.
- Strategic industry relationships ensuring best-in-class equipment procurement, installation, and calibration.
- Commitment to quality, customer satisfaction, and proactive on-site support.
- Open communication and collaborative project management to optimize wind asset performance globally.



## GET IN TOUCH WITH OUR EXPERT TEAM

Reach out to [adam.r.smith@bureauveritas.com](mailto:adam.r.smith@bureauveritas.com) for more information