

# Success Story: Commercializing Innovative Wind Turbine

Intertek

*Ogin collaborates with Intertek to certify to IEC and ISO standards and commercialize its innovative wind turbine platform*



## OGIN AND INTERTEK: PARTNERS IN INNOVATION

As worldwide energy markets transition to increasingly distributed energy resources, Ogin Inc. has developed an innovative turbine technology platform aimed at accelerating the adoption of distributed wind. Since first partnering with Ogin in 2012, Intertek has witnessed the evolution of Ogin's innovative design and helped guide its course to commercialization. Playing a leading role in field measurements, Intertek independently validated Ogin's power performance and confirmed the realization of Ogin's long-held vision: that an innovative start-up could exceed the best aerodynamic coefficient of performance in the industry.

Leveraging its expertise in testing and certification, Intertek partnered with Ogin to develop its ISO 9001 quality system, complete a comprehensive assessment of the company's turbine design, determine turbine field testing requirements, and to complete milestones toward IEC certification of Ogin's prototype and first commercial OE20 wind turbines.

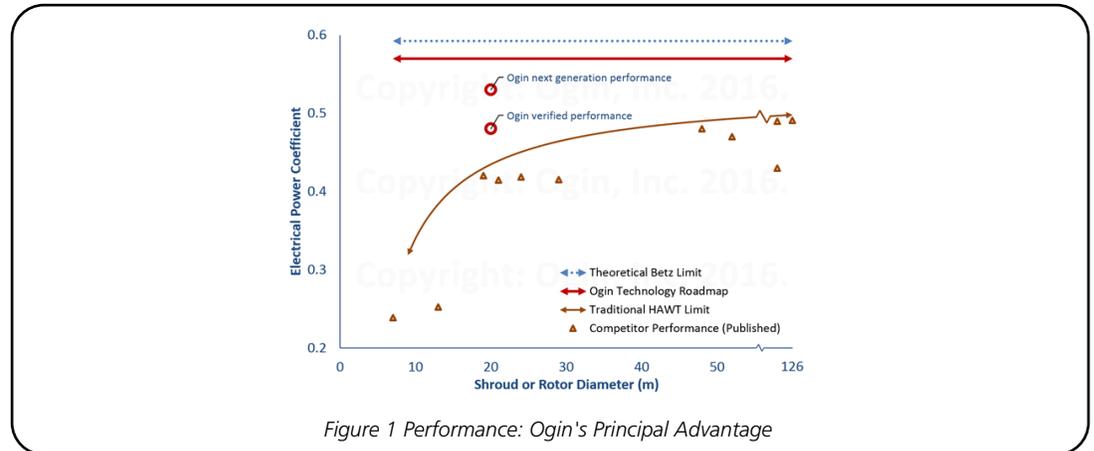
Over the course of a multi-year partnership, Intertek has supported Ogin through the rigorous process of designing, manufacturing, and testing its new technology to the IEC and ISO standards demanded by its global customers. Beginning in 2012, Intertek worked with Ogin to develop the quality systems and practices required to earn ISO 9001 certification at four Ogin facilities in the U.S. and Denmark, which subsequently served as the foundation for the company's quality, design, and sourcing approaches for its 150 kW product.

Beginning in 2013, Intertek helped guide Ogin through two design iterations, ensuring that IEC requirements were adhered to at each step, while also completing audits of key third-party suppliers and reviews of the entire turbine manufacturing process. Intertek worked with Ogin to qualify the safety and performance testing processes for both its prototype and commercial product, ultimately provisionally certifying the company's design, as well as structurally testing the rotor blade and quantifying power performance according to IEC 61400 wind turbine standards in 2016.

## INDUSTRY-LEADING PERFORMANCE VALIDATION

Ogin now promotes that, with a verified maximum coefficient of performance of 0.48, its product platform is ideal for commercial and industrial (C&I) applications where competitors of similar size have a coefficient of performance of 0.42 or less. In addition to turbine performance, Intertek has also validated practical elements of commercial deployment, including design basis, component testing, and field safety to internationally recognized design standards.

*“Intertek served as a critical lifecycle partner, helping Ogin validate its technology and preparing the company for commercialization.”*



Ogin's principal technology is an optimized diffuser that encompasses a conventional direct-drive wind turbine. The core concept was derived from decades of development on aircraft propulsion augmentation, and in recent years, proprietary multidisciplinary methods and rigorous optimization practices using computational fluid dynamics, wind tunnel testing, and full-scale field validation. Currently, Ogin is developing aerodynamic geometries that they believe will lead to even higher performance. These refinements are the central enabler of a high-performing kW-scale wind turbine that aims to be a complement to diesel and solar PV generation, supporting village electrification, telecommunications, and remote area power needs that are foundational to economic growth and improving quality of life across the globe.

## INTERTEK PARTNERSHIP AS VALUE DRIVER IN COMMERCIALIZATION

Through a sustained innovation partnership with Intertek, Ogin's performance advantage and proven commercial readiness now offer enhanced value to customers, enabling growth where never possible before in rural electrification, distributed, and onsite generation.

By collaborating with Intertek, Ogin has built the systems and processes required to differentiate itself in the competitive wind marketplace. Overall, Intertek served as a critical lifecycle partner, helping Ogin validate its technology and preparing the company for commercialization. Moreover, the design methodology, quality systems, and certification tools developed to date are enabling Ogin to more rapidly develop its next products, including a high-performing micro-turbine aimed at the telecom cell tower market, and to further enhance the depth and flexibility of Ogin's disruptive technology platform.

Intertek is a leading Total Quality Assurance provider to industries worldwide. Our network of more than 1,000 laboratories and offices and over 40,000 people in more than 100 countries, delivers innovative and bespoke Assurance, Testing, Inspection and Certification solutions for our customers' operations and supply chains.

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