

Calibration Labs Take on Critical Role in Emerging Wind Energy Business

By Hershaw Brewer, Senior Accreditation Officer, IAS

Power players invested \$17 billion in the wind energy business last year, leading to industry growth of 50% and delivery of 8,358 megawatts (MW) of new generating capacity (enough to serve over two million homes) to the U.S. market, according to recent American Wind Energy Association reports. Capacity is expected to grow exponentially with support from the U.S. Department of Energy, which has set a goal of achieving 20% of the nation's energy needs from wind power by 2030.

Some might be surprised to realize the critical role that IAS and its accredited calibration laboratories, such as OTech Engineering and Wind Tech Tools, play in the development of wind farms across the country.

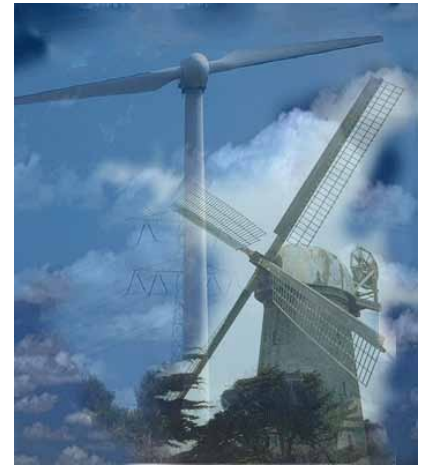
Every wind turbine requires optimal positioning and precise construction to operate efficiently. Wind farm developers and contractors depend on calibration laboratories to ensure that everything from the anemometers that measure wind speeds to the torque wrenches that help construct and maintain the turbines, operate with the precision promised.

As the Wind Blows

Perhaps the most critical piece of information in the planning of any wind farm is wind speed. Wind farm designers look to highly precise anemometers to record wind speeds in proposed development sites, so that blades may be properly positioned.

An anemometer that records wind speeds with a 10% error could create costly and unnecessary design changes or significantly lower energy production.

Rachael V. Coquilla, Chief Engineer for OTech Engineering Inc., in Davis, California—one of the leading providers of calibration service for anemometers used in wind energy applications—says, “Along with the development of wind farms, we see a growing demand for accredited calibration laboratories to ensure necessary accuracy.”



As an IAS-accredited calibration laboratory, OTech Engineering has undergone assessment to demonstrate that the firm complies with appropriate ANSI/ISO/IEC standards, has appropriate test protocols, and has certified technicians and a training plan for its staff.

Coquilla adds, “Wind energy is an international endeavor. It's critical that we keep our operations at the highest standard so that our customers can continue to develop cost-effective renewable power sources around the world.”

To date, OTech has worked with several major players in the wind industry, including NRG Systems, a global leader in wind measurement technology, and Vestas, the industry leader in supplying wind energy solutions.

Inside the Turbine

Industry estimates suggest that roughly 80% of the cost of a wind turbine is the machinery – the blades, gearboxes, generators and other support equipment that come together to convert wind energy to electricity. It's imperative that these components go together precisely or costly inefficiencies will result.

Wind Turbine Tools, in Lincoln, Montana, is one of the only calibration companies dedicated to the wind energy business. The firm uses its ISO 6789/2003-compliant DKD calibration center, the only factory-authorized calibration and repair station for Stahlwille torque tools in North America, to support the needs of the wind energy market. Wind Turbine Tools earned IAS accreditation in December 2008.

Wind Turbine Tools provides in-house calibration and repair services for all major brands of torque wrenches, hand and power tools, hydraulic torque tools and fasteners, including digital multi-meters, clamp-on amp meters, mega ohmmeters and pressure gauges up to 1500 psi.

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Tim Welker, Director of Calibration for Wind Turbine Tools, says, “Torque wrenches and other tools used to construct wind turbines must operate within a defined accuracy. The more those tools are used, the more chance that the calibration will be out of tolerance. Most contractors want their tools recalibrated regularly to minimize the chance of rework.”

Thus far, Wind Turbine Tools has supported the calibration needs of leading wind turbine manufacturers such as Liberty Wind Turbine, PPM Energy, and the National Renewable Energy Laboratory.

Emerging Importance

Calibration plays a surprisingly critical role in the built environment and public safety. For certain, a code enforcement official needs to know that the many parts of a structure actually meet code requirements, whether for the construction of a mall, hospital, school or new home. Does the concrete foundation meet the specified requirement? If the fire doors say “20 minutes,” is the code official confident in that value? Will the windows truly take wind for the specified wind zone?

The answer to these and other questions rests in the performance of testing laboratories and measuring instruments employed in the field. Calibration is the critical underpinning that allows the test laboratory to state results that meet the needs of the code enforcement official.

Consumers also encounter calibration directly when pumping gas or buying a pound of meat. Are the pumps and scales right? The calibration for these uses relies on the higher level calibration for organizations like NASA and the military.

The same is true for the renewable green energy wind power sector. The instruments used to site, build, maintain, and monitor output for the windmills must be calibrated in order to assure safety, lower cost and optimized efficiencies. The two laboratories highlighted in this article have taken the industry-leading step of earning accreditation from IAS and thereby providing code officials, owners, and the community confidence in the safety and possibilities inherent in the powerful renewable resource of wind.