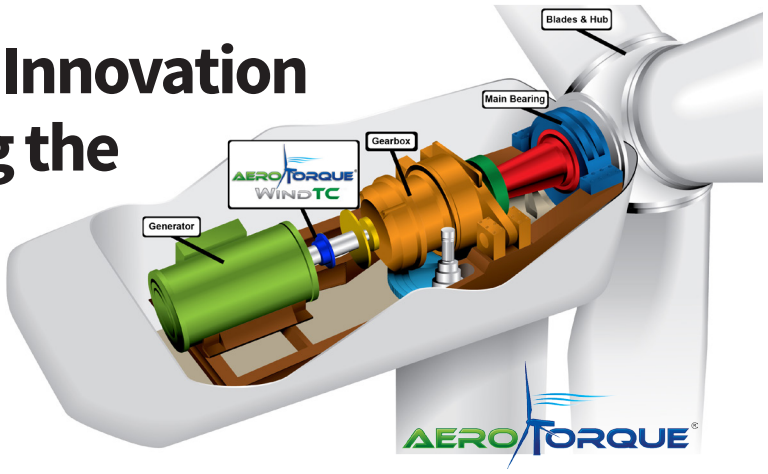
Smart Policy Bolsters the Innovation and Market Forces Driving the Wind Industry

AeroTorque uses ingenuity to extend wind turbine life and achieve company growth.



Wind farm developers and wind turbine OEMs face an ongoing struggle dealing with key forces that inflict damage on their wind turbine components, particularly the excessive mechanical loads that impact turbine drivetrains during occurrences of significant torque reversal impact at the end of a hard start (wind gust) or hard stop.

In an effort to delve deeper into the issues related to these damaging reverse shock loads in wind turbine drivetrains, The Timken Company turned to – and subsequently acquired – Sharon Center, Ohio manufacturer PT Tech and its wind industry subsidiary, AeroTorque. PT Tech engineers torque management solutions for large-scale equipment used in industrial applications such as tunnel boring, underground mining, rock crushing, wood waste grinding and steel mill operations. These "extreme machines" are equipped with costly, high-end drivetrains that require protection from shock-load damage (a force caused by sudden drivetrain acceleration or deceleration) and assurance that the equipment continues to perform in such environments.

Similarly, AeroTorque offers several valuable options for wind farm owners and wind turbine OEMs, including torsional control products that regulate shock loads and extend gearbox life; torque monitoring equipment that keeps real-time data on actual torque in a wind turbine's drivetrain; and custom engineering, partnering with the OEM to improve drivetrain applications.

Innovation Driving the Industry

The goal in wind development has been to drive down the cost per megawatt, and that only happens by producing more power for the same (or less) cost. As such, manufacturers are beginning to build bigger, longer-lasting turbines which reduce overall capital costs and increase power producing margins.

But as today's wind turbines increase in size and output, the load spectrum in gearboxes dramatically changes. And because wind power is produced in such variable and unpredictable conditions around the world, it's very difficult to monitor the load case.

> On the state side, Herr believes that Ohio is putting itself at a distinct disadvantage compared with other states. "Ohio has a great energy infrastructure," he says, "but the state is at risk of losing out in the marketplace."

"Early designers thought their turbines would perform the same in the U.S. as in Europe, but the terrain and turbulence factor changes dramatically depending on where you are in the world, or even where you are in the U.S." says Doug Herr, director of marketing and technical sales for AeroTorque. "The industry has learned that, in wind, one size does not fit all. That's what makes today's turbine design and engineering so important. No developer plans to run their turbines for just 20 years. They want to operate for 40 years. And that involves radically different thinking, planning and strategies."

More Reliance on Market Forces, Less on Policy Support

Like any other burgeoning industry, Herr believes that the domestic renewable energy market has become more proactive in terms of both design-engineering to reduce costs, and reducing its own reliance on government policies to drive industry growth. "There's a better understanding of wind turbines now," he says. "Today's turbines are built to last several decades because of better condition monitoring, improved bearings and other equipment advancements such as what AeroTorque offers, which ultimately extends the life of the turbine."

From a policy aspect, the rise and eventual wind-down of the PTC (production tax credit) has spurred and now leveled out new installation work within the industry. "The roller coaster impact caused by the lack of political support for the PTC wasn't good for anyone," Herr commented. "But the conversation has now shifted beyond the PTC and the renewable market has been impelled to move past the impacts of federal

policy to sustain growth. We planned for the possibility that the PTC would eventually expire, and worked towards a successful business model that wouldn't rely as much on unstable federal policy." By developing an international book of business, AeroTorque has successfully mitigated against U.S. policy shifts that have created boom-bust cycles.

And from a wind farm development standpoint, Herr cites the potential development in the northwest corner of the state. "There's a huge opportunity there that developers can't actively go after because of siting and set-back issues. And while all this is going on, the marketplace continues to grow and wind farms will still be built. They'll just be built outside of the state."

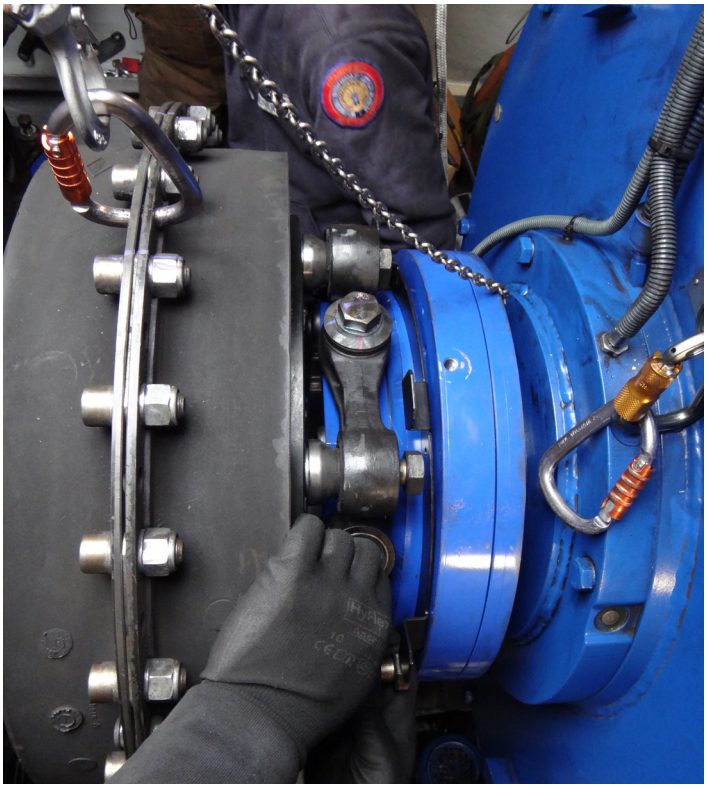
But in the long run, Herr believes demand will continue to drive the industry. AeroTorque's global customer base operates in places with much more stable policies, some of which have been in place (i.e., Germany) for several decades. "For some manufacturers, policy changes now could be potentially disastrous," he says. "But from a global perspective, which is how we look at it, the industry demand for our products is purely market driven."

The Forecast is Positive

As for the long-term, Herr predicts gradual growth for the two key markets AeroTorque serves: new turbine OEMs and the aftermarket wind farm owners. "The new turbine market is very stable, and annual global installation of wind turbines is growing, with thousands being built or planned," he notes. "We see this side of the industry growing over the next three years before settling down and leveling out.

"The aftermarket business is completely different, as we predict a solid growth trend over the next ten years or so. From our perspective, there are approximately 60,000 existing turbines around the world that could utilize our products and services right now."

Overall, Herr is very bullish on the wind industry markets, which bodes very well for AeroTorque. "Between developers trying to squeeze more years from their out-of-warranty turbines to markets expanding domestically and in the Middle East and Africa -- along with the growth of offshore wind farms -- we're very optimistic with the industry's growth," he says. "And as it grows, we'll be right here to service it."



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