The sky's the limit

Words: Joel Cox, Global Sales Director at Dellner Wind Solutions

The wind changes speed and direction, and just like the wind, the energy industry must remain adaptable and responsive to fully unlock its potential. As global demand for clean, sustainable energy grows, the wind sector faces unprecedented opportunities and challenges. Technological advancements, evolving market dynamics and shifting policy landscapes are all driving forces behind this transformation.

The wind energy industry is continuing to expand. Sometimes, as a component provider, we rejoice in that change, while at other times we lament the strategies of Original Equipment Manufacturers (OEMs) and fellow stakeholders. It's all part and parcel of serving such a dynamic and fast-paced sector. It's only right, therefore, that we should embrace these weather patterns and try to influence proceedings where we can, rather than fight against them.

As we've explored in these pages before, two recent trends endure: one is the transition to build-to-print from build-to-spec, and the other is the slowing race to higher megawatt (MW) turbine capacities. Both demonstrate the industry's tendency to change direction. The first is not so good, but the second certainly has positive consequences.

Remember, wind energy was once a build-to-spec only sector. Today, the direction of travel is very much to build-to-print, and it will have long-term implications, as the industry is cultivating a supplier base that can only produce at low cost.

Meanwhile, the race to higher capacities is slowing to the point where the industry has realized the wider benefits of consolidating rather than constantly upsizing. It was a trend that started onshore and then offshore. Most understood the theory, but the industry didn't scale it correctly.

It was also true that there were geographical nuances in play in that Europe generally has less space for multiple turbines, whereas in the US, in places like Ohio, there is a much greater landmass where multiple turbine farms can be built with little impact on public life or other infrastructure.

The point is, you win some, you lose some.

Rotors serving rotors

As Arnold Schwarzenegger said in the movie, Predator in 1987, 'Get to the chopper!'

This famous line has become more relevant than ever in recent years, as helicopters are being more widely utilized by the wind sector. If any readers attend as many trade events as me, they'd have seen the growing presence of chopper brands, like Airbus, Bell, and Sikorsky, at these shows.

It makes perfect sense, with modern day turbines reaching to over 850 feet, or 260 meters, and being located as many as 50 nautical miles offshore. Helicopters are built to fly up and out, after all. It's rotors serving rotors.

I have no skin in the game here, but I do like to see an industry adopting all possible ways to make itself more efficient. While the installed base of wind farms in the US tends to be onshore, we are starting to see more offshore farms approved and built. This only adds to the pressure on component suppliers, so I can see the merits of taking to the skies.

It is a testament to high-end powertrain and braking components that we are very seldom required to perform unscheduled maintenance. It means that work can be planned, and emergencies prevented. While manual checks on brake pad thickness, wear, and tear, are necessary, modern brakes have wear indicators that can alert maintenance teams of any issues ahead of time. That said, the further up and out we go, the greater the challenges related to proximity will become.

Imagine needing to complete a maintenance task on any item of offshore equipment in a hurry. The standard water pilot or ship access can be cumbersome and slow at the best of times. Helicopters, by contrast, can take crucial loads offshore, and lower parts, equipment, and personnel safely.

It doesn't mean it's the end of Crew Transfer Vessels (CTVs), but it'll be interesting to see how our supply of rotor, yaw, and pitch brakes for wind energy applications will be impacted in the future. With chopper travel comes all kinds of size, weight, and cost considerations, all of which will divide opinions about wholesale uptake. But that doesn't mean we should stand in its way.

Diagnostics are another example of progress, as it pertains to the components utilized by wind farms. One might not realize that there are up to 20 brakes installed in a single wind turbine. They are typically rotor brakes and yaw brakes, while, on the electric pitch systems, there are pitch brakes on each drive motor. Think about the advantages therefore of using state-of-the-art remote diagnostics to keep maintenance teams up to speed with the status of hydraulics and braking systems.

Once again, where change blows in, skepticism darkens the skies. One problem with wind power has been its approach to paying for these technological options. OEMs typically do not budget for them, which means a lot of long-term safety, efficiency, and economic gains are not integrated into the maintenance and user interface. There is huge potential for the industry to progress further; it only has to look at other sectors and the widespread gains being made.

Also, with better cross-industry learning in mind, wind energy could do a better job of sharing information for continued improvement of best practices. For a long time, the brake and component industry has tried to impart its knowledge to wind energy engineers, but the required expertise largely remains within the product sector itself. That means the brake world remains a mystery to too many people.

Stand, crouch, crawl and climb

The more we change, the faster we need to learn. And that means we must improve our peripheral vision. When was the last time that you spared a thought for those who climb towers to keep components in working order?

A wind turbine nacelle is not always a comfortable environment to perform such labor. Certain places, such as the hub or lower yawing area, present particular challenges. Where, in the industrial sector, detailed work plans, including specific access and egress protocols, would be in place anytime a worker had to complete a job in a confined space, in wind energy, these surroundings are the norm.


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I continue to have the utmost respect for tower technicians who stand, crouch, crawl, and climb to get jobs done. Some scoff, but they are deserving of the higher pay scales that the industry affords them.

In the fast-paced, wind power world, when up-tower, it is important to minimize downtime and take up exactly what you need, first time. It always reminds me of when I used to work around nuclear installations and there were detailed tool lists and extensive pre-planning meetings to avoid delays and reduce radiation exposure. In wind, the stakes are just as high.

It means brake engineering teams are among the most skilled and valuable in our industry. A truly worldwide operation, Dellner Wind Solutions adopts a 'think globally, act locally' mentality, which enables the company to operate almost seamlessly, as wind turbines turn across the world. Technical teams from China, India, Denmark, Germany, Spain, and here in the US make sure that, if required, we can be onsite at a moment's notice, while routine work keeps us busy for more hours of the day than we have available.

Each brake is a feat of engineering in its own right, and being able to examine one on a workbench takes years of training and practice. The fact that none of the tasks alluded to above ever takes place in the comfort of a workshop, means we have to plan accordingly from the point of design through manufacturing and application.

Once competent on brakes, a technician in our niche must also be a pioneer in height safety. Safe work at height and climbing to get there involves extensive training and a thorough understanding of the requirements for ascent, descent, and everything in between. It's not an environment where one can only think about themselves either; support, rescue, and emergency plans must also be rehearsed and constantly retrained.

I have been throwing on harnesses all my career to work on Electric Overhead Traveling (EOT) cranes, but until going to a wind power-related training class some years ago, I had no real understanding of the evolution that has taken place in climbing, rigging, and height safety. It was eye-opening and concerning in equal measure.

As we continue to evolve, are your eyes as wide open as they should be?

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Trump card

PES Wind readers won't need reminding that we've just had a significant election result here in the US.

On my travels since, I've been asked a lot how I think the Trump presidency and the political landscape will continue to influence wind energy. As I reply, I think we will see little change on the onshore front, but I think some four-eye principles are being put in place in offshore wind.

Expect to see the offshore sector proceed with caution, since many of the strongest organizations have struggled to be profitable versus the success they've enjoyed onshore.

At the same time, the me-too race for space posture in this industry has set it back.

Just like our brake team says, 'brake smarter, not harder.'

About the author

Joel Cox is Global Sales Director - Wind, at Dellner Bubenzer Group. He was formerly Managing Director of Sales for Dellner Bubenzer USA and Global Sales Director for the Americas.

He has spent nearly 30 years in the Electric Overhead Traveling (EOT) crane business and has been extensively involved in OSHA inspections in addition to the design, build, fabrication, installation, modification, and load testing of lifting equipment.

He dedicated a decade of his career to the high-level modernization of some of the largest, heaviest-duty cranes in North America. He has been around Dellner Bubenzer products for 20 years but has worked for the manufacturer since 2012.

Joel was educated at East Gaston (two years ICT, Industrial Co-operative); Central Piedmont Community College (Associate of Applied Science in Electrical Engineering); Clemson University (Occupational Safety & Health Administration); Marshall School of Business (Strategic Marketing); and University of Miami (International Communications, D.C.I.E). He holds a plethora of other qualifications.