

Press Release – **For Immediate Release**

Ramping Up Wind Turbine Production with Torque Systems – Broetje-Automation delivers automated equipment to Siemens Gamesa

The production of wind turbines is expected to increase drastically in the coming years. To prepare for a fast and reliable production ramp-up, Broetje-Automation supports Siemens Gamesa with automated equipment. With the delivery of an automated bolt fastening machine to the factory in Cuxhaven, the partners have reached an important milestone in the establishment of the Torque Systems product family.

The wind energy industry plays an important role in the transition to a more sustainable energy system. Scaling up wind turbine production, both onshore and offshore, is critical to meeting global sustainability goals. However, many processes are still manual and the extremely large parts that need to be assembled present another challenge to further industrializing production.

With the delivery of several Torque Systems to the offshore nacelle plant in Cuxhaven, Broetje-Automation supports its customer Siemens Gamesa on its way to a more industrialized wind turbine production. Fastening is one of the most crucial processes to be automated in the factory of the future. Based on more than 45 years of experience in high-precision assembly of large parts, Broetje-Automation has now delivered the largest fastening machine to date.

Process Integration for higher levels of automation

The process integrates the automatic fastening of large bolts in the stator section of the turbine. The tightening of the bolted connections in various stages, in this case up to 2200 Nm, is carried out fully automated. Broetje-Automation's proprietary SCALE sensor system ensures a smooth and highly accurate fastening that dramatically increases the speed and accuracy.

But faster process times are only one benefit of the automated system. The integrated sensors and fully digital control system can also improve process stability and provides a complete digital documentation of the work performed including all process and quality parameters. Furthermore, the ergonomics and safety could be improved eliminating repetitive work with high torques over a long distance between manual equipment, operator and bolts.

Future adaptations to the system can be implemented thanks to its modular design, allowing flexible adjustment of production for new system variants or higher quantities. Movements over five axes enable very good accessibility to the component for this application and expandability for the future.

More applications to come

For the future, more applications are already on their way to being automated. "Especially the bolting processes are well suited for more automation, but we see more opportunities in almost all parts of the value chain," says Kerstin Fennen, project manager for wind power projects at Broetje-Automation. "We are working closely with our customers to increase the level of automation and industrialization." Each machine is highly tailored to the individual assembly process of each customer. Therefore, a trustful and close cooperation is essential for successful automation in this sector. "A big thank you to the entire Siemens Gamesa team!" Fennen adds. "The cooperation with the customer's technical and commercial team has been just great."

"It was a pleasure to work with the entire Broetje-Automation project team, from the design of the overall concept by Siemens Gamesa to manufacturing and final commissioning of this state-of-the-art automation system." Boy Dario Kraemer adds, project manager at Siemens Gamesa.

Further projects are already planned to fulfill the commitment to a more sustainable and productive wind energy industry in Europe.

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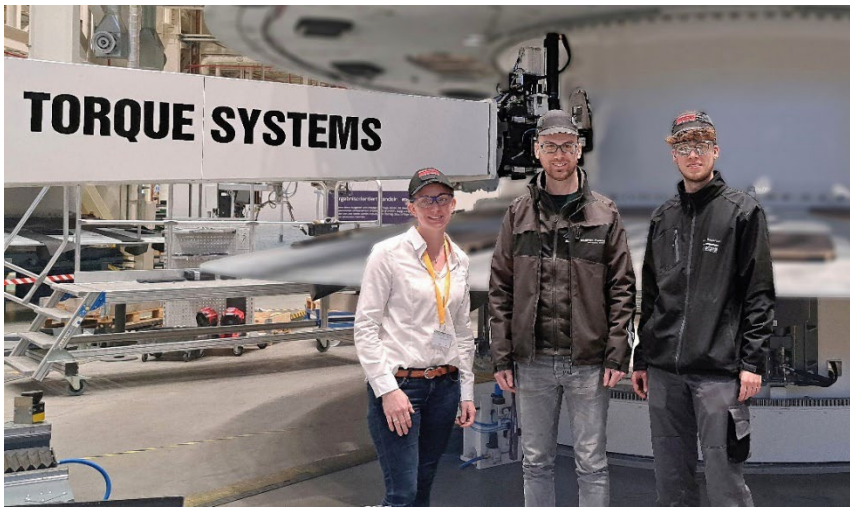
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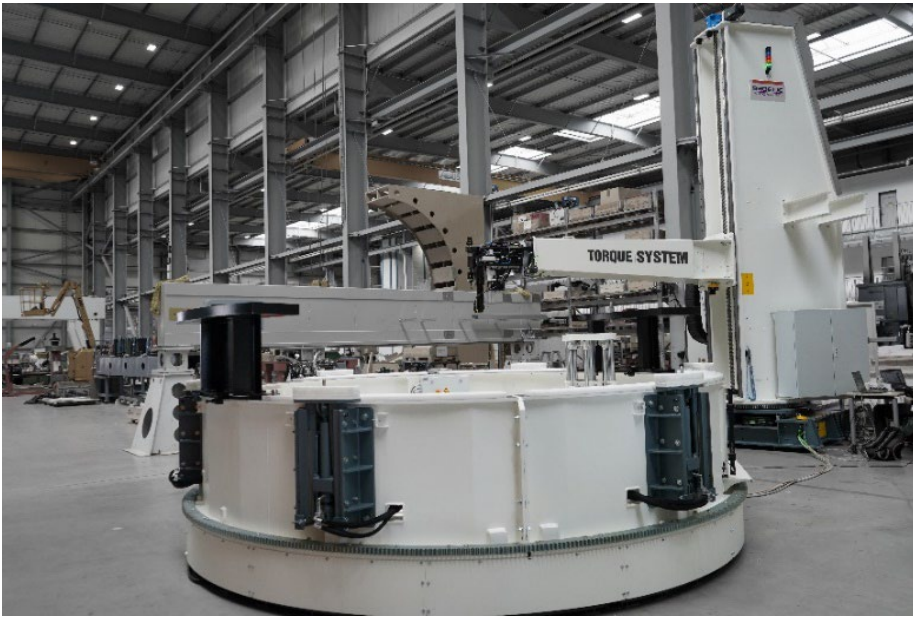
Picture 1 – Handover of the Bolt Fastening System to Siemens Gamesa



Picture 2 – Torque System



Picture 3 – Machine overview



Picture 4 – Closeup of the machine end-effector

