Press release

A premiere at Husum Wind 2023: Precision milling of 10-meter wind turbine flanges

Precise bolted ring-flange connections in offshore tower bases, monopiles and transition pieces from "Goliath", a new flange-facing tool from Danish "CNC Onsite"– maintenance costs, reliability and service life improved. Launched in autumn 2022, offshore customers in Denmark and Spain are currently employing the CNC Onsite precision machine - further contracts expected by year end - presentations at stand 3C34, Husum Wind, Husum, Germany, 12-15 September, 2023

VEJLE, Denmark, 1 September 2023 – At Husum Wind 2023, stand 3C34, CNC Onsite, a Danish machining tool expert, will be presenting "Goliath", a machine that can mill flanges of offshore tower bases, monopiles and transition pieces of up to 10 meters in diameter with two-millimeter accuracy. At Husum Wind, the new machine will be presented for the first time at this venue while also celebrating one year on the market.

Flange connections are critical mechanical joints within the wind turbine structure. The increasing dimensions of wind turbines operating in harsher offshore environments create engineering challenges for large flange connections that join wind turbine towers to their foundations. To prevent bolts loosening – an issue often associated with significant repair costs and downtime – the connecting flanges must be flat to within millimeters.

When flanges are welded to the structure during manufacturing, the heat input often causes twisting and bending in the flange – causing out of tolerance flatness. With Goliath, fine tolerances can be achieved post welding as part of the production process by milling, grinding and grooving the flanges to create faces with the required structural fit.

Bladt Industries to incorporate precision flange milling

"We constantly develop our manufacturing to ensure we can deliver the right products with the right tolerances that the industry requests. With larger flanges, integrating Goliath into our manufacturing process will allow us to continue to do just that," says Klaus Munck Ramussen, Senior Vice President, Bladt Industries.

"Obtaining a global flatness of a couple of millimeters on a four to five meter diameter flange can be challenging enough, but obtaining the same result on today's eight-plus meter flanges is simply not possible with previous methods," explains Søren Kellenberger, Sales Director, CNC Onsite.

Flatness and fatigue can affect bolts

Achieving the best possible fit between the wind turbine tower flange and its base during the manufacturing process reduces the requirement for routine retightening and associated downtime, potentially leading to longer wind turbine service life.

Because incorrect bolt tension is so problematic, the industry has long aspired to maintenance-free bolted connections that require two criteria: sufficiently flat flanges and correctly tightened bolts.

With Goliath, a solution that delivers precise flange flatness is now on the market, which together with precise bolt tensioning, will help to secure the integrity of the structures and therefore reduce maintenance costs.

Goliath, which can work both horizontally and vertically, can cope with features on large flanges such as double-tilted flanges and requirements for parallelism of the flange surfaces.

Flange-milling solutions for all turbine towers

In addition to presenting Goliath using graphics, live commentary and one-to-one interviews at Husum Wind, CNC Onsite will also present its range of in-house flange-facing machining tools that cover diameters from 1.8 to 10 meters.

The flange tool was launched in autumn 2022. Offshore customers in Denmark and Spain are currently employing the CNC Onsite machine with further expected by the end of this years.

About CNC Onsite

Headquartered in Vejle, Denmark, CNC Onsite operates in the onshore and offshore wind sector, designing and delivering high-precision mobile machining solutions for large diameter steel flanges and blade roots. CNC Onsite also offers specialized repairs of yaw ring, blade root inserts, rotor lock, generator shaft, bearing housing and fixings.

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