

Mammoet heralds new era for wind turbine assembly and maintenance

Innovations eliminate current physical boundaries of turbines and make wind turbine construction and maintenance safer and more efficient.

Heavy lifting and transport company Mammoet introduces the WTM 100 and the WTA 250 – two cranes designed to conduct wind turbine construction and maintenance projects safer and more efficiently. Both cranes use the turbine’s tower as a point of support, allowing them to lift and lower components to greater heights than the equipment that is currently used. This enables wind turbine manufacturers to further increase the capacity of their turbines with greater height and scale.

The wind energy industry is continuously increasing economies of scale to make wind a more cost-effective alternative to other energy sources. For that purpose, wind turbines are getting bigger and higher – reaching physical limits as they become higher than conventional cranes can reach. This also affects the efficiency of wind turbine maintenance activities. Mammoet recognized these developments and the limits that current cranes pose on the height and scale of wind turbines. Therefore, the company set out to develop two new cranes: one for wind turbine assembly and one for wind turbine maintenance.

The Wind Turbine Assembly Crane WTA 250

The Wind Turbine Assembly Crane 250 - or WTA 250 in short - has a capacity of 250 metric tons. The WTA 250 crane will be developed in close cooperation with the engineering firm MECAL; MECAL will provide the wind turbine tower design. It is installed on a guiderail that runs along the bottom turbine section and can lift the next section using the turbine’s tower as support. Once the next section is installed and equipped with a guiderail as well, the crane can push itself up along the rail and repeat the process for all of the subsequent turbine sections. Once construction has been completed, the guiderail can either be removed, or remain in place to facilitate easy access for future maintenance operations. Because the crane uses the turbine’s tower for support, the maximum lifting height of the crane is virtually limitless.

The Wind Turbine Maintenance Crane WTM 100

The Wind Turbine Maintenance Crane 100 – or WTM 100 in short - works according to a similar principle. The crane has a capacity of 100 metric tons. It is attached to two pre-installed hoisting eyes and can pull itself and the load up along the turbine using the tower for support. The WTM 100 has been equipped with claws that wrap around the tower to keep itself steady. The use of this crane requires minimal modification. It can be used on turbines that have been equipped with pre-fitted hoisting eyes and, in some cases, it can also be used on existing turbines.

Limitless, safer and more efficient

“Both cranes are compact – the WTM can easily fit into two standard-sized containers - and the WTA only needs two transport trailers to be moved on site. This makes them easy to mobilize and relocate, and much more efficient than conventional alternatives.” explains Wessel Helmens, Mammoet’s Innovations Director. “More

importantly, both cranes eliminate the height restrictions for turbines and render both the assembly and replacement process faster and more cost-effective.”

In addition, the cranes offer safety benefits, says Helmens, “Because the cranes are attached to the tower, they have no footprint, making the need for additional ground reinforcements virtually redundant. The tower-based design also puts the crane and the operator closer to the work area, rendering assembly and maintenance both safer and easier.”

Further additions

Mammoet is currently discussing the first applications of this new technology with their customers. They are also exploring other versions. “Depending on the input from our customers, we may introduce more additions to the WT-series,” says Helmens.

Mammoet

Mammoet helps clients improve construction efficiency and optimize the uptime of plants and installations. For that purpose, Mammoet offers solutions for lifting, transporting, installing and decommissioning large and heavy structures in the petrochemical, offshore, power, and civil industries. We believe our business is about time: uptime, turnaround time and time to market. To our customers, time is the currency that matters most. That’s why we strive to bring their deadlines forward. It’s an integrated daily effort, shared by everyone at Mammoet, in every aspect of our services: creative engineering, careful planning and safe delivery. For more information, visit www.mammoet.com.

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The WTA 250 ready to lift the 2nd tower section.



Installing the nacelle with the WTA 250.



Installation of a turbine blade using the WTA 250.



The WTM 100 ascends to elevation just below the turbine



WTM 100 at elevation, ready to start turbine service.



Replacing a generator with the WTM 100.