Getting a grip

With the ever-increasing performances and size of wind turbines, together with a call for a reduction in set-up times, the demands on the load handling device during assembly are increasing. For safe gripping and lifting, additional technical development is required, something that SpanSet Axzion GmbH, in cooperation with relevant testing institutes, is able to match.

As a global manufacturer of load lifting devices, the wind energy sector, particularly offshore, has benefited from the solutions offered by SpanSet Axzion for years. Developing individual solutions, over 80% of all its lifting devices are unique, but they all have the highest quality as standard, from testing through to service.

The latest tools in the company's offering are designed with the safer installation of wind turbines in mind, from super-heavy to ultra-lightweight.

Upending Tool: Giant gripper for offshore projects

One of the most frequently used products in this environment is the Upending Tool, for lifting and erecting monopiles. The three-armed gripper, with its six tongs, carries flangeless monopiles of up to 1,800 tons. The basic design of the tool is always the same. Project-specific modifications are carried out by Axzion according to the customer's specification. The maximum configuration enables the lifting of flanged monopiles weighing up to 2,100 tons. The site in Neustrelitz, Mecklenburg-Vorpommern has been certified by DNV Norway for offshore operations.

The Upending Tool has a net weight of approximately 95 to 105 tons, depending on the configuration and a load capacity of 2,100 tons and has been developed for lifting and erecting piles. It is serviced by Axzion Rental Services GmbH, Neustrelitz. It has three giant grippers and thus avoids deformation of the pile during the gripping and erecting process. The tool grips the monopiles with a maximum weight per unit of 1,000 tons and a gripping force of more than 3,000 tons. The 'star' can be swiveled hydraulically, so that the piles are gripped front-face and then erected.

Axzion has enlarged its Upending Tool UET 1500t so that it can erect monopiles with a diameter of 8.00 meters. Since 2016, Axzion has been renting out the Upending Tool to the erectors of offshore wind farms and quite successfully at that. In the Hornsea II project off Yorkshire in the North Sea alone, it has erected 165 monopiles for wind turbines. But what happens when the dimensions of the tool are no longer sufficient? In concrete terms, the Upending Tool has so far been able to lift and erect monopiles with a maximum diameter of 7.5 meters. Now it is to be up to 8 meters in diameter for the Dogger Bank, a wind farm off the north coast of England following a request from DEME Offshore.

SBI-Light Traverse 2.0 for high wind speeds

More flexible, robust and lighter than its predecessor, the new SBI-Light Traverse 2.0 offers a single rotor blade assembly for wind turbines. Despite its low net weight of 13 tons, the SBI-Light can be used for controlled lifting even in wind speeds of up to 12 m/sec.

'The SBI Light 2.0 is our reaction to the present challenges our customers are subjected to with demands for ever bigger wind turbines and continuously reduced set-up times', said Managing Director Andreas Höltkemeier. 'The new SBI Light 2.0 is easy and quick to assemble and will still function at high wind speeds of up to 12 m/sec, a considerable advantage when assembling rotor blades, as this increases their operation times.'

The flexible hold-down device and the supports adjusted to the respective rotor blade grip the rotor blade in the best possible way and protect the sensitive structure of the rotor blade against damage. To make adaptation to different rotor blade types simple, Axzion offers this traverse in a telescopic design.

As well as application lengths of 20m, there are adjustable lengths of 14, 16 and 18m. Both the supports will follow the adjustment, which means the points of contact are moved further to the outside when using the telescopic function, the pressure on the rotor blade is better distributed and a deformation of the blades thus avoided. This increases the safety of the safety, avoiding the deformation and sagging of the blade point area. A not to be neglected reduction of costs when setting up wind parks with a high number of repetitions.

With an optional self-adapting support system, the SBI-Light 2.0 adapts more easily to the different shapes of the rotor blades to be assembled. The new traverse can thus safely take on and handle diverse blade shapes with a blade weight of up to 30 tons. A high flexibility and short set-up time when changing rotor blades makes this equipment particularly attractive for use during servicing different wind park sites.

The closed C-frame guarantees best possible stability. It avoids dropping the gripped rotor blade down the side and protects it against damage caused by robust handling in everyday site operation. Axzion has shortened the hook height of the traverse by 5 to 6m. This provides the user with more flexibility with regard to crane classification.

Axzion has also looked at logistics again. 'We have a large number of international customers. With its 12m transportation length, the SBI-Light can easily be transported in a 40-foot-container – an efficient solution for land as well as sea transportation,' Höltkemeier continued.

Environmentally-friendly and maintenance-free

For a particularly environmentally-friendly assembly the SBI-Light 2.0 has been equipped with battery-driven electro motors. Compared to traditional systems it is maintenance-free. Even in temperatures of minus 10°C the battery can work for up to 16 hours. A diesel generator is not required, and the traverse is independent of external power supply. For 24-hour operation, a charging station with an exchange battery can be connected within a few minutes.

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