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Ematec AG, a special machine manufacturer with their headquarters in Memmingerberg ups the ante and introduces its innovative "bunny" version of the RBT Rotor Blade Lifter with which blades may now be installed on gearless wind turbines in a bunny-ear configuration. The RBT "Bunny" from Ematec can be horizontally tilted up to 35 degrees. The South German engineers present a model of their innovation at the WindEnergy in Hamburg from 23rd to 26th September (Hall 1, Stand 104).
"The new Rotor Blade Lifter we presented last year already was a great success, because our innovation redefined the safety standard in the assembly of power plants. Currently, we have enquiries from Japan, the USA and Korea. Now we up the ante with the new "Bunny" Rotor Blade Lifter, with which we offer an efficient and absolutely safe solution also for the assembly of gearless turbines in a bunny-ear configuration", explains Eberhard, CEO of Ematec corporation. What is special about this beam: When using the Ematec "Bunny", no auxiliary drive is necessary to turn the hub when mounting the second and third rotor blade.
Gearless turbines are becoming ever more popular in wind parks because the reduction in mass inside the tower allows a more economical dimensioning of the turbines. "Now is the right time to offer wind power plant manufacturers a specific tool to enable them to drive this trend and implement this new type of single blade installation in a particularly safe way in their projects", says Eberhard. The biggest advantage over the star assembly, which is still widely used, is the substantially lower area requirement of the Ematec RBT. Significantly less wood needs to be cleared, and if rotor blades need to be replaced at a later stage, it is not necessary to cut trees.
Ematec offers the installation companies a maximum of safety for the installation of rotor blades: The grippers of the rotor blade lifter completely wrap around the rotor blade and hold it gently, but at the same time so securely that it cannot come loose even in windy conditions, thus excluding any accidents from crashing rotor blades. The gripping technology has been further developed banning the risk of damage to the blades. "We made a number of adaptations which led to a more harmonious application of forces", explains Eberhard.
The handling of the Ematec rotor blade lifter has also become even more simple: "Due to the switchover to a hollow body design we achieved a reduction in weight of 30% so that our beams may now be transported on a low-bed trailer requiring only a conventional permanent transport exemption. The logistics expert now does not need to apply for an additional approval, which enormously facilitates the procedure and reduces costs", says Eberhard.
On the construction site, the RBT is ready for operation in a jiffy: Only thirty minutes after its arrival on the construction site, the RBT is already on its way upwards with the first rotor blade. There arent any long change-over times or set-up times required, and no costs for a second crane. During transport and periods of non-usage, the upper beam is simply placed inside the gripper beam thus forming a very compact unit that may easily be loaded and unloaded with one single crane lifting operation. The rotor blade lifter is ready for use at all times.
The Ematec rotor blade lifters on the job
With the Ematec beam, rotor blades may be gripped in any possible orientation. Blades may be lifted with only one crane, directly off the ground or off the trailer. The RBT grips the blade with multi-joint gripper arms and large rubber-coated pressure plates. A wrap-around holding claw provides a safe form-fitting grip.
To keep the wind attack surface as small as possible, the rotor blades may be pitched at angles between -10 and +95 degrees. "For certain rotor blade types, the wind attack surface is thereby reduced by as much as 50 per cent offering the fitters high work and project safety because they can work with the Ematec beam even in wind speeds and gusts in which other systems can no longer be used", explains Eberhard.
The Ematec Rotor Blade Lifters have a unique characteristic that distinguishes them from similar systems: With the new "bunny" design that the Ematec engineers have now developed, the blade may be tilted 35 degrees along its longitudinal axis, which is the prerequisite for an assembly in a bunny-ear configuration. Already the standard version of the RBT provides a tilting angle of 6 degrees, so that a blade that is gripped slightly off centre may be easily balanced and so does not require to be released and re-gripped. In addition, the rotor blade may at all times be transported in a horizontal position.
The user also greatly benefits from the perfect combination of pitching and tilting functions when joining the blade to the hub, because the blade can be joined to the bore holes of the fastening screws accurately to the millimetre.
Due to flexible round slings the RBT may be attached to all types of crane hooks.
The Rotor Blade Lifter optimally protects the rotor blade from damage. The gripper plates are gimballed and automatically adapt to the shape of the blade. The rubber-coated pressure plates safely hold the blades, even in wet weather. They are resistant to UV light and ageing, do not leave any gripping traces and may be replaced without requiring any tools. As an option, an additional special gripper set is available for disassembly work in winter allowing the safe gripping of iced-over blades.
The redundancy of all technical resources including the energy supply guarantees the highest possible work safety and functional safety. If necessary, an additional stand-by engine may be started not only via the remote controller but also by hand. The work lights on the Rotor Blade Lifter illuminating the work area have also proven to be a useful feature.
Specifications:
Gripping range:
Individually adaptable to blade family
Transport dimensions:
11.7 x 3 x 3 m (L x W x H); economic road transport with only one trailer possible. Weight: ca. 18 tons
Energy supply:
Independent redundant energy supply from two Diesel-powered hydraulic units with generator.
Gripper drives:
Redundant
Operation:
Remote control with two transmitters including signover function from ground to nacelle staff. With display of operating modes.
Additional lighting:
2 large floodlights illuminate the work area. Can be activated via remote control.
Accessibility:
Open design for easy access to all components.
Certification:
The Rotor Blade Lifter was type tested by the TÜV-Süd, including a load test with twice the nominal load.
Info:
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Ematec_rbt_bunny_01.jpg and ematec_rbt_bunny_02.jpg
With the innovative "bunny" version of the RBT Rotor Blade Lifter from Ematec, blades may now be installed on gearless wind turbines in a bunny-ear configuration. Photo: Ematec
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