



## **ematec revolutionizes the assembly of rotor blades: New rotor blade lifter makes the installation of wind turbines safer and more efficient**

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ematec AG, a manufacturer of special-purpose machines in Memmingerberg, in the South German Allgäu, revolutionizes the assembly and disassembly of rotor blades for wind turbines. The ematec engineers have developed and built a rotor blade lifter with which rotor blades may be assembled faster and, above all, safer than with conventional methods. Nordex AG, an internationally leading supplier of wind power systems, already uses the innovative ematec technology in its wind turbine installations. Currently, the ematec RBT Rotor Blade Lifter is used for the assembly of Bavaria's biggest wind farm in Zöschingen in the district of Dillingen. By the spring of 2013, eight wind turbines of the type Nordex N117/2400 will be installed, producing 40 million kWh of electricity and supplying a total of 12000 households. "We generate a win-win situation in several aspects. Our Rotor Blade Lifter enormously increases work safety on the construction site, while at the same time allowing a particularly effective assembly of individual blades. Throughout the entire assembly, only one crane is needed. This considerably reduces costs and offers new opportunities and perspectives to developers and operating companies realizing wind farm projects, explains Manfred Eberhard, chairman of the ematec Aktiengesellschaft. The biggest advantage of an individual blade assembly over the conventional star assembly, which is still widely used, is that it requires much less surface area. "Much less woodland has to be cleared, and if rotor blades have to be disassembled and replaced at a later stage, it is not necessary to again clear woodland. So, here, too, we contribute decisively to the preservation of resources and the environment. This clearly shows that the individual rotor blade assembly will in future be the method of choice for wind farm installations because star assemblies are no longer profitable and will in the long run no longer be politically viable, says Eberhard. The assembly and installation companies will profit the most from the benefits of the innovative ematec RBT Rotor Blade Lifter, because handling on site will be much easier and, above all, much safer. "Our system holds the blade in such a way that it does not get damaged. It completely grips around the rotor blade and fixes it firmly, thus ensuring that it cannot come loose even in strong winds. This will effectively prevent accidents caused by crashing rotor blades, says Eberhard. The handling of the ematec Rotor Blade Lifter is simple and very efficient. The innovation from the engineers in Memmingerberg can be comfortably transported on a flatbed truck. "After the truck has arrived on site, it takes not more than 30 minutes until the first rotor blade is on its way up to the nacelle. There is no lengthy changeover work or set-up time for self-assembly involved, and costs for a second crane are also obsolete now, explains Eberhard. During transport and when the Rotor Blade Lifter is not in use, its upper beam is placed inside the gripper unit. This makes for a very compact unit which can be loaded and unloaded with one single crane lifting operation. The RBT remains in a ready-to-operate condition at all times. The Rotor Blade Lifter in operation  
The ematec Rotor Blade Lifter grips the rotor blade in every possible turning position. Blades may be taken up directly from the trailer or even from the ground. Multi-joint gripper arms and large rubber-coated pressure plates enclose the rotor blade; retaining claws secure the blade in a form-fitting grip. To keep the wind attack surface as small as possible, the rotor blade can be tilted at an angle of -10 to +95 degrees. "With certain rotor blades, we achieve a reduction of the wind attack surface of up to 50 per cent. This gives the installer a high degree of project and work safety, because it enables him to work safely with our Rotor Blade Lifter even during wind speeds and wind gusts, in which other systems can no longer be used, explains Eberhard. Compared to similar systems, the ematec Rotor Blade Lifter is distinguished by a unique feature: The design by the German engineers allows tilting around its longitudinal axis by +/- 6 degrees, thus allowing the operator to compensate for an out-of-center attachment without requiring several attaching attempts or balancing out of the rotor blade. Further, the rotor blade can be transported in a horizontal position at all times. The perfect combination of pitching and tilting functions is also highly beneficial to the user when the blade is bolted to the hub, because it allows joining the blade to the holes accurately to the millimeter. Hydraulically powered suspension lugs make attaching the Rotor Blade Lifter to the crane comfortable, easy and time-saving. The slinger controls the operation on the remote control unit, it is not necessary to intervene manually. The rotor blades are optimally protected when they are held in the Rotor Blade Lifter. The gripper plates are gimbal-mounted and adapt automatically to the shape of the rotor blade. The rubber pressure plates ensure a safe grip at all times, even in wet weather. They are photostable and age-resistant and do not leave any gripping marks. They can be replaced without tools. For disassembly work during winter, there is a gripper set available which allows the safe gripping of iced-over blades. All technical resources of the Rotor Blade Lifter, including its energy supply, are redundant, thus offering the highest possible degree of work safety and functional safety. In an emergency, the stand-by engine may be started either via the remote control unit or manually. The two headlights on the upper beam, which illuminate the work area, have also proven useful: "A number of projects could be finished which would otherwise have had to be aborted because there was no more daylight, explains Manfred Eberhard. The Vensol Neue Energien GmbH located in Babenhausen, who are currently realizing Bavaria's biggest wind farm in Zöschingen, already make use of the neighborhood knowhow: "Thanks to the ematec Rotor Blade Lifter, the assembly of the rotor blades is absolutely safe and trouble-free, and much faster than originally calculated, says a delighted Jürgen Glanz, managing director of Vensol Neue Energien GmbH. Specifications:  
Gripping range: Individually adaptable to the blade family  
Transport dimensions: 11.2 x 3 x 3.2 m (L x W x H); economical road transport with only one flatbed truck  
Energy supply: Self-sustaining, redundant energy supply with two Diesel hydraulic units with generator  
Gripper drives: Redundant  
Control system: Remote control unit with two transmitters including signover function for ground and nacelle crew; with display of operating modes  
Additional lighting: Two large headlights illuminate the work area; they can be switched off via the remote control  
Accessibility: Open design for easy access to all components  
Certificate: The RBT Rotor Blade Lifter was type-tested by the TÜV Süd, including a load test with twice the nominal load  
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