Thanks to the APS from Seasight Solutions, guide ropes are not required for rotor blade installation with the RBC-D from ematec

# Rotor blade assembly streamlined in German wind projects with RBC-D technology

**Words:** Ingo Jensen, ematec

As new wind farms take shape in Saxony and the Black Forest, ematec's rotor blade handling systems are enabling faster, safer assembly, supporting the expansion of Germany's renewable energy infrastructure.



Germany is advancing its energy transition and the innovation hub ematec, based in Memmingerberg in the Allgäu, is playing a pivotal role. With its RBC-D 50 yokes, Leipzig's municipal utility Leipziger Stadtwerke has completed a major project alongside Saxony-based wind specialist in eab New Energy and turbine manufacturer ENERCON, headquartered in Aurich, East Frisia.

In two phases, the team installed a pair of machines from the EP5 generation in Königshain-Wiederau, Mittelsachsen district. The E-160 EP5 E3 units, each rated at 5.6 MW, now power up to 9,000 homes. Two more are currently going up at the Kleinschirma site, about 40 km away.

This same equipment also performed reliably in the Black Forest. Since March, two turbines, an E-138 EP3 E3 and another E-160 EP5 E3, have been operating at Taubenkopf near Freiburg, generating around 18.5 million kilowatt-hours annually. They supply electricity to over 5,500 households. Three more are now being installed 40 km north of Ettenheim at the Schnürbuck site, in a joint venture with Ettenheimer Bürgerenergie and Alterric.

### Indispensable support in the field

For both Saxony and Black Forest builds, the project teams again turned to ematec's technology for dependable blade handling. 'The RBC-D has become an essential part of our workflow. It gives us full reliability and significantly reduces installation time. This was evident in Königshain-Wiederau,' says Matthias Jöde, project manager at ENERCON.

Jöde highlights the practical benefits: 'Our blades can be mounted at various angles using the yoke. With the help of integrated sensors, we maintain full control and can immediately correct any deviation in real time. If set thresholds are exceeded, the system halts automatically.'

### A smart match: yoke and APS

For the Königshain-Wiederau project, the team combined ematec's lifting solution with the Autonomous Positioning System (APS) from Seasight Solutions. Two propellers attach directly to the yoke, eliminating the need for guide ropes.

'That changes everything. We no longer need winches and require far less space,' says Jöde.

This compact footprint was also crucial in the Taubenkopf build, where the same setup was used. 'Given the steep terrain, this was the only realistic approach,' notes Lukas Schuwald, managing partner of Ökostromgruppe Freiburg.

### Faster progress, fewer delays

The pairing of APS with ematec's unit improves the overall workflow. Traditional guide rope setups allow blade lifts only at wind speeds below 8 m/s. With this system, work continues safely up to 10 m/s. 'On average, we save 2.3 working days per site just by reducing weather-related delays,' says Klaas Schumann of ENERCON's site engineering team.


Three new wind turbines from ENERCON are being built at the Schnürbuck wind farm near Ettenheim in Baden-Württemberg with the RBC-D from ematec

He adds that, under the right conditions, all three blades can be installed in a single day. Another benefit: no ballast arm is needed when lifting blades, eliminating at least two crane operations per turbine and further accelerating the process.

### Proven in the field

The equipment also lived up to expectations during use. 'The single-blade installation went off without a hitch, even in heavy fog. There were no interruptions and I want to commend Matthias Jöde and his crew. They finished blade assembly in just one and a half days,' says Lara Forsans, project manager at Leipziger Stadtwerke.

Julian Eberhard, CTO at ematec, is pleased with the outcome. 'As a family-run business in the Allgäu, it's incredibly rewarding to be directly contributing to Germany's energy transition and helping streamline turbine setup.'

Use of ematec's handling system is expanding in Saxony and the Black Forest. At Leipziger Stadtwerke and eab New Energy, the motto is: 'After the project is before the project.' In Oberschöna's Kleinschirma district, another site with two E-160s is underway. The first is already standing. 'Once again, everything went smoothly,' confirms Forsans.

### A southern stronghold for wind

The Black Forest is a wind power leader in southern Germany. Ökostromgruppe Freiburg currently has three more turbines in progress. By 2027, it plans to install 20 additional units with regional partners, targeting clean power for 80,000 homes.

**About RBC-D yoke systems from ematec**

The RBC product line includes the first single-blade yokes globally that automatically adapt to each rotor blade and balance themselves.

They handle blades from 45 to 110 metres and stabilize them at angles up to ±30 degrees, preventing uncontrolled movement.

The system finds the blade's center of gravity. Two counterweights automatically align on the yoke wings, with or without a blade in place.

The 'D' in RBC-D stands for 'double' and means that, in addition to the lower gripper, the upper telescopic gripper is also equipped with fourteen hydraulically moved and cardanically suspended grip pads.

Further highlights: the hydraulic cylinders of the grippers are equipped with integrated safety valves that prevent the rotor blade from slipping out, even if operated incorrectly. With a hang height of just approx. 3.5 metres, the RBC series makes crane management much easier, especially in light of the constantly increasing hub heights of wind turbines.

**Ready for action in record time**

On site, RBC yokes are ready for use faster than any other yokes because they move automatically into position, and attachment to the rotor blade also takes place in record time. The RBC yokes need less than 30 minutes for both steps.

The Green Line versions are powered by high-performance batteries designed for mounting three rotor blades at temperatures as low as -20 degrees Celsius. The battery operation is designed with double redundancy.

Thanks to Green Line technology, turbine manufacturers can circumvent the stricter exhaust emission regulations of the Euro 5 standard and the US EPA Tier 4 Final, which have been in effect for combustion engines since 2019. In addition, ematec has deliberately kept the electric motor below 48 volts, which means that it can also be used in the US without any issues and meets UL requirements.

With their transport dimensions of approx. 14 m x 3 m x 2.95 m (L x W x H) and a dead weight of approx. 27 tonnes (RBC-D 50), the yokes can be transported in Germany with a permanent permit under § 70 StVZO.

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