Working on the next revolution

Last year, ematec AG, based in Memmingerberg in Bavaria, caused a sensation by developing the first rotor blade crossbeam with adaptive blade pick-up that can pick up rotor blades from all manufacturers, up to a blade weight of 50 tonnes. As the company celebrates its 25th anniversary, PES heard from CEO Manfred Eberhard and Head of Design, Julian Eberhard.

PES: First of all, congratulations on your anniversary, which is synonymous with 25 years of engineering. How do you see your company positioned in its anniversary year 2022?

Manfred Eberhard: Thank you very much. I am really proud of what we have achieved over the past 25 years. We have established ourselves as a very successful specialist in special machine construction. What hardly anyone knows is that we are celebrating a double anniversary.

Exactly ten years ago, we entered the wind power industry with our first rotor blade traverse, the RBT 11.5, and made a significant contribution to the international acceptance of single blade assembly. Our 'Bunny' version for safe bunny-ear mounting on gearless turbines, which we introduced shortly afterwards, was also a complete success.

We have managed to establish ematec solutions as the technological benchmark in a very short time. I can only congratulate my team for this achievement and thank every employee.

PES: Let's look at the ten years in the wind power industry. What has changed in that time?

ME: Clearly the dimensions. Regardless of the supplier, wind turbines have become more and more powerful, but also larger and heavier. Of course, this has also presented us with significant challenges because, as a lifting equipment supplier, you always have to have the right answer for new rotor blades. But this is precisely why our RBC-D rotor blade lifting beams are in such high demand, because they are future-proof, as they can also accommodate future blade generations.

Julian Eberhard: The main point is that in the last ten years, the single-blade assembly of rotor blades has prevailed over the star assembly. We foresaw this trend back then, and with our different cross beams, we contributed to a certain extent to the fact that single-blade assembly has become established as a safe and, above all, much more efficient assembly solution.

PES: You mention the topics of safety and efficiency. How do your solutions contribute to more occupational safety and efficiency during installation?

ME: We have implemented maximum fail-safety in all yokes with double drive redundancy. We also make a point of manufacturing as many components as possible ourselves. We put several years of engineering work into developing our yokes and see the high level of in-house production as a significant quality factor.

JE: Our RBC always finds the exact centre of gravity individually for safe handling of the rotor blade. Two counterweights on the two crosshead wings automatically adjust to the centre of gravity, with and without the rotor blade. This means that even when the grab is opened after mounting the blade on the hub, there are no uncontrolled movements that could damage the blade or jeopardize the handling process.

Due to the round arch on the crossbar, the RBC and RBC-D always remain perfectly in the centre of gravity even when tilting up to 30 degrees. The same applies when pitching the wing up to a maximum of 8 degrees. This eliminates the uncontrolled movement of the unit when tilting or pitching.

PES: What about efficiency?

JE: This is my favourite topic because the yokes of the RBC generations are the ones with the highest efficiency anywhere in the world. Once they arrive at the construction site, they automatically move into the operating position. The rotor blade is also picked up automatically by selecting the blade type on the display. Almost unbelievable: the RBC yokes need just 15 minutes for these two steps, and then they are ready to go. That is an absolute record in set-up time. The enormous time and cost savings on the construction site alone mean that our RBC yokes pay for themselves in some cases within just one year.

PES: Most recently, the development of the RBC-D50 Greenline has caused quite a stir. Enercon has ordered eight of them. Are they all already in use?

JE: We have an excellent partnership with Enercon. Our ninth RBC-D yoke is currently being delivered. Six RBC-D42 yokes, i.e. for rotor blades with blade weights of up to 42 tonnes, are now in use worldwide. After one year in operation, the first yokes are currently undergoing inspection and maintenance at our factory in Memmingerberg. Of the current eight RBC-D50 yokes you mentioned, the first three have been delivered and are in use at wind farm projects in Canada.

Manfred Eberhard

Julian Eberhard

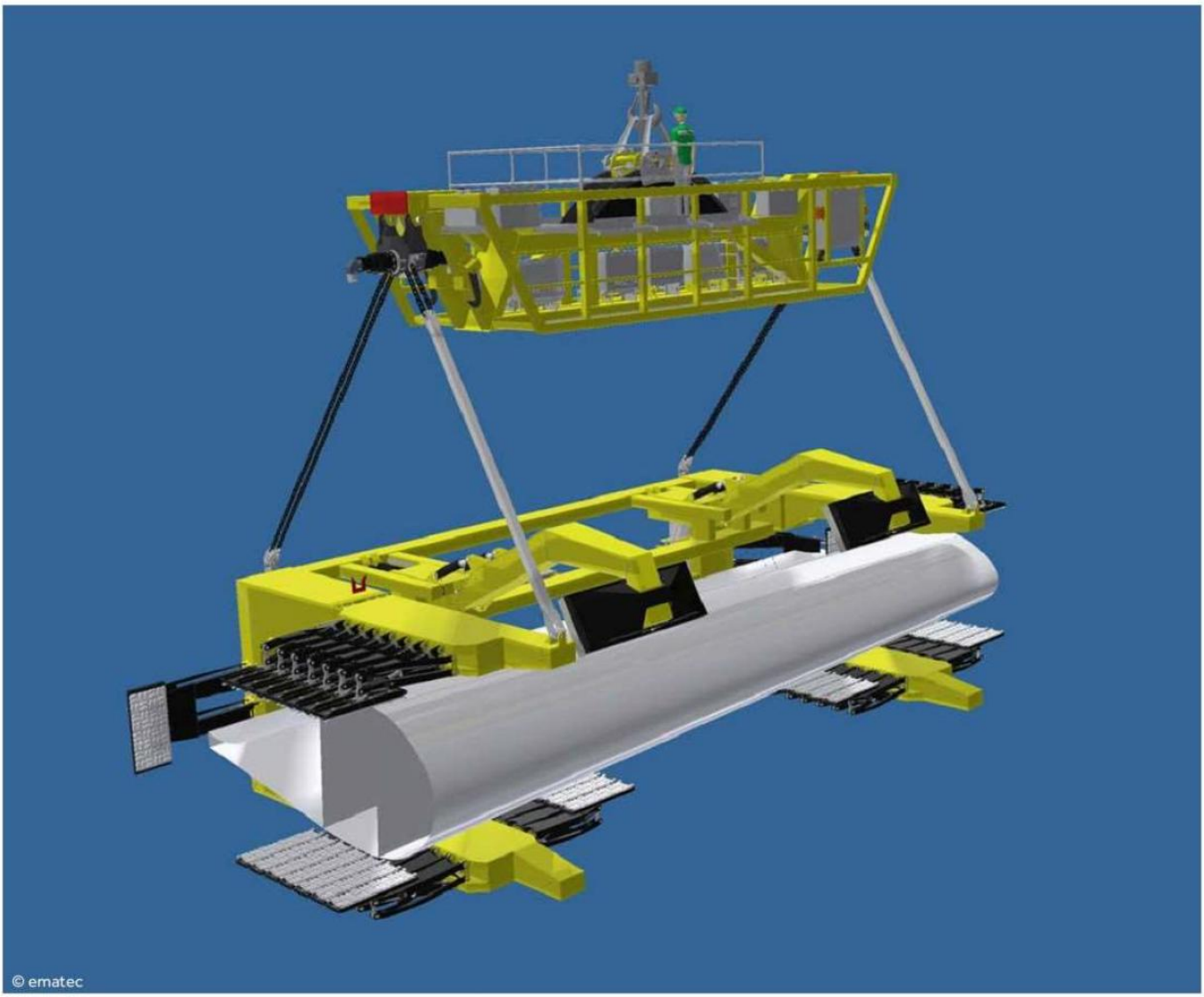
PES: What is the feedback from Enercon?

ME: Well, we have just received an additional order from Enercon for another six RBC-D50 yokes. I think that speaks for itself.

PES: Can you explain what makes the RBC generation so unique?

JE: With pleasure. We have combined a whole range of important features in one yoke. The highlight is that the crossheads can accommodate all blade shapes on the market, including future ones, without any

Patent-pending technology: the automatic adaptive blade support of the RBC series yokes



For assembly, the rotor blades are pitched 90 degrees with the RBT-C50 from ematec

conversion work. This is made possible by automatic adaptive blade support, with which the crosshead automatically adapts to each rotor blade shape individually and precisely. We have applied for a patent for this technology.

The current lifting beams can take and handle blade weights of up to 50 tonnes, also in the double version RBC-D. In addition, the RBC-D series scores with a tilt angle of 30 degrees. All in all, the new yokes can be used universally in the wind power industry, both onshore and offshore. With a slope height of just approx. 3.5 metres, the RBC series considerably facilitates crane management. This is a great advantage, especially in view of wind turbines' constantly increasing hub heights. We all know about the price increase when you have to change to another crane class for the installation.

PES: Let's talk about WindEnergy in September in Hamburg. The RBC-D will be a big topic there, won't it?

ME: Of course. We will present a model of the RBC-D50 at our stand and provide detailed information about our innovation. I cordially invite all visitors to drop by because we have even bigger plans.

PES: We are curious about that now. What can you tell us?

ME: Well, we simply love to break new ground and develop ways to make the assembly of wind turbines as efficient and safe as possible. In the onshore sector, we are indeed the number one lifting equipment supplier. Now, however, we are also focusing on the offshore industry.

In Hamburg, we are therefore not only presenting an RBC-D40 'offshore', but also a hoist of an entirely new generation, the RBT-C series. In our eyes, this innovation can potentially revolutionise the assembly of offshore wind turbines.

PES: In what way?

JE: Because of the high wind speeds on the open sea, it is advisable to lift the rotor blades horizontally when installing single blades to have the smallest possible wind attack surface. This reduces the risk of failure and increases installation safety. Considering that a transport vessel can cost a high six-figure sum per day, you see how important it is to have no wind failure days.

However, the following applies when it comes to vessel transportation: the rotor blades are usually transported standing up in their racks because this minimises vibrations and is, therefore, better and safer for transport at sea.

To combine the optimal delivery with the optimal assembly option in the offshore wind farm, the rotor blades must be pitched 90 degrees before assembly. And this is exactly the kind of solution we are currently developing.

In the new RBT-C, we are combining the technological advantages from our RBT and RBC worlds. We will be able to present more about this at WindEnergy Hamburg. So as you can see, a visit to ematec is worthwhile.

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