



They gliding over water – on solar power

At the world's biggest solar boat regatta in the Netherlands, everything revolves around sustainable high technology. This year, maxon motor benelux supported two of the leading teams and has thus become part of a completely new technology in the boating industry.

The Netherlands is developing into a hub for solar boat technology. This summer, the world championship for solar boats was hosted there for the fifth time. The DONG Energy Solar Challenge takes place every two years. Starting out as a local initiative, it has developed into a global competition. In 2014, 40 teams from around the world faced the 240 km challenge. The companies and universities that participate are specialists in innovation and sustainability. All are battling from June 28 to July 5 for the first place in several races.

maxon motor benelux supported two of the leading teams in the top class: the CLAFIS Private Energy Solar Boat Team with the boat Furia III and the TU Delft Solar Boat Team of the Delft University of Technology. Both teams have won the race in the past. The CLAFIS team was victorious in 2010. TU Delft won the first race in 2006 and repeated this feat two years later. This year, the TU Delft team built a spectacular boat with a completely new approach that makes use of hydrofoils.

Principles from aircraft engineering

For the TU Delft boat, maxon motor helped to engineer the front hydrofoil. This technology makes use of principles that are common in aircraft engineering. By means of a height sensor combined with a maxon RE 25 spindle drive, the lightweight boat is kept at the optimal elevation above the water as it speeds along. The part of the boat that is underwater is so small that its drag is roughly equal to that of a human hand.

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Image © TU Delft



Team spokesman Lenny Bakker does not really know where to start when he is asked about the biggest challenge during the development of the boat: “Our goal was to develop, build and test a boat that had the potential to win and was as easy to handle as a bicycle – with a team of 29 students from different disciplines, all within just a year.”

A setback and an award

The race was indeed a challenge. On the first day, all hydrofoil boats had problems, as they got caught in the seaweed. After that, all went well for the TU Delft team – up until the last day, when a gust of wind capsized the boat just 1000 m from the finishing line. The skipper was rescued quickly. However, the water damaged some of the electrical systems and it was no longer possible to monitor the battery power. Unfortunately just at this time the battery was almost empty. These complications caused the team to lose second place; instead, they came in fourth. Yet TU Delft's new concept with the special hydrofoils won the Design Award. “It's a radical new and unique concept with innovative technologies and an elegant design,” praised Douwe Huitema, chair of the jury for the Design Award.

The CLAFIS Private Energy Solar Boat Team, on the other hand, had a very successful race: Their boat won by a long stretch, winning them the World Champion 2014 title.

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Work whets the appetite for adventure

Gerwin Geukes, managing director of maxon motor benelux, has a positive view of the experience: “Participating in these high-end projects gives us the opportunity to take a look at new technologies and to learn what's going on in the minds of the next generation of engineers. Things that are commonplace for our engineers might be new for the students, and vice versa. Apart from that, the fun is of course important too. Solving technical challenges in a team and taking part in events like these not only helps us discover our inner inventor, but also our inner adventurer.”

maxon products in this article



maxon RE 25 motor

The TU Delft team uses an RE 25 motor with graphite brushes to control the depth of the front hydrofoil. This DC motor has an ironless winding and excels through its high power density and robust construction.



maxon GP 32 S gearhead

The motor powers a maxon spindle drive: the GP 32 S. The spindle is implemented directly into the gearhead and is equipped with an axial bearing that can handle high axial loads. Trapezoidal, metric and ball screws are available from maxon.



maxon EPOS2 positioning motor controller

The maxon EPOS2 positioning motor controller is suitable both for brushed and for brushless motors. It offers a range of different operating modes that allow flexible use in the diverse systems found in automation and mechatronics.

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