

Fastnet yacht runs faster with space technology

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Space has come down to Earth for this week's legendary Fastnet regatta. Competitor Marc Thiercelin's 20-metre Pro-Form yacht boasts lighter batteries, more efficient solar cells and advanced energy management systems - all spin-offs from Europe's space programmes.

On Sunday 7 August 283 boats took off from Cowes in the Rolex Fastnet 2005 race, sailing along the south coast of England before crossing the Irish Sea to round the Fastnet Rock off Ireland's south western tip before returning to finish in Plymouth on Friday. For the majority of the crews the race represents the pinnacle of their offshore racing careers.

For Marc Thiercelin with his Pro-Form yacht, this 608 nautical miles (1126-kilometre) run represents a short sprint by comparison with his previous round-the-world exploits. Even so, he takes the Fastnet Race as seriously as anyone. Excluding the War years, this event has taken place every other year since 1925, and has long been established as one of the major ocean classics.

"It is the first time I have participated in the Fastnet race, which is a good race with with a lot of tradition," explains Thiercelin, 45, who has previously completed three round-the-world sailing races single-handed. "I am happy to take part even if for me it will be easier than normal when I sail alone in longer races. This time I have a crew of five and the race is only five days."

ESA technology helps Pro-Form perform

Electricity is fundamental for modern yachts – powering vital onboard navigation and communication gear – and especially for competitive yachtsmen like Marc Thiercelin, who has been sailing since the age of ten, has sailed more than 470 000 km across the world's oceans, and has dedicated his time to ocean racing the last decade.

So back in 2003 when Thiercelin was planning his fourth around the world race in the Vendée Globe 2004, ESA's Technology Transfer Programme discussed with him how innovative technologies from European space programmes could help him in his venture.

"Weight reduction and an efficient electricity system were soon identified as areas where proven technologies from space could provide interesting solutions," says Pierre Brisson, head of ESA's Technology Transfer and Promotion Office (TTP).

A trio of onboard systems were improved by use of solutions previously developed by European industry for ESA space programmes. French company SAFT produced lighter batteries using a new type developed for satellites in the 1990s. This slashed battery weight down to 110 kilograms from around 250 kilograms for conventional maritime batteries. This provided a big performance boost for the seven-year-old Pro-Form in the Vendée Globe race.

Space technology also helped optimise battery charging. German company Solara designed two panels of polysilicon solar cells with an efficiency rate of 12-13% compared to a typical 8-10% efficiency. Just six metres of these polysilicon cells on the yacht's roof provide enough energy to keep the batteries charged in sunlight.

In addition, a special energy management system was provided by French start-up Accuwat, using technologies developed by EADS for

European spacecraft. This system controls the voltage very carefully avoids damaging battery overcharging.

"The systems from ESA worked very well during the Vendée Globe race," adds Thiercelin. "As the Fastnet race is very short and to further save weight, I decided to use only four batteries instead of the six in the Vendée Globe race. I expect the solar panels to charge the batteries, though as backup I can run my diesel engine."

Thiercelin has previously completed two Vendée Globe races, although in 2004 his entry was interrupted due to an accident with his boat.

TTP's Brisson added: "Our systems worked perfectly in the Vendée Globe 2004 race and Thiercelin has decided to continue to use them on his Pro-Form yacht. We are happy for this because sailing gives us the opportunity to demonstrate once again that advanced technologies originally been developed by European industry for our space missions can provide intelligent solutions for us all here down on Earth."

"I am participating to win of course even if I do not have the fastest boat," Thiercelin said in advance of the race. We wish him luck. On Friday at the Rolex Fastnet 2005 prizegiving we will see how he did.

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