

# Team Banque populaire Winning expertise

The keel, hull and rudders of the sixty-foot “Banque Populaire” monohull were scrutinised using NDT analysis with the aim of finding out about the behaviour of composite materials before and after racing.



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## OUR CLIENT

**Corporate Name**  
Team Banque Populaire

**Activity**  
Offshore yacht racing team

**Workforce**  
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**H**ow did the yacht’s composite structures withstand two and a half months of racing around the world? In an attempt to answer this question, the sixty-foot “Banque Populaire” monohull, skippered by Armel Le Cleac’h, which finished second in the 2012/2013 Vendée Globe, underwent NDT (non-destructive testing) before and after the race.

The structures of such racing yachts are so complex that the analysis was carried out jointly by a specialist in architecture, a marine surveyor and the experts from Cetim. The latter were given the keel, which was tested using magnetic particle inspection, as well as the

rudders and hull, both of which underwent ultrasound testing. The first problem encountered related to the size of the part to be tested: 18.28 m long, 5.90 m wide and with a draft of 4.50 m. The teams from Cetim would need four days to inspect the hull in its entirety.

## Geometric elements in abundance

The second difficulty consisted of the abundance of geometric elements (reinforcements, stratification reinforcements, overthickness, etc.) that disrupted the ultrasound response. Every time there was a suspect signal, the teams had to check whether it was due to the geometry or a real default.

## Cetim’s Asset

Cetim boasts all-round expertise in the field of NDT on composite structures: ultrasound, infrared thermography, acoustic emission, X-ray tomography, etc. Our experts are proficient in a wide range of methods, meaning that we are able to choose the most appropriate solution.



Finally, although it may be true that the Nomex honeycomb structure is easily penetrated by ultrasound, the same cannot be said of the foam sandwich structures that make up a quarter of the hull. As the ultrasound did not pass through the foam, the experts from Cetim resorted to the tap test method: this consists of striking the surface using a small hammer with a hemispherical tip in order to study the sound response and identify cavities. At the end of the day Pierre-Emmanuel Herissé, technical director of the Banque Populaire team, agreed that he was pleasantly surprised: “The yacht has been highly competitive and has come back in good condition. These measurement campaigns give us concrete data about the materials and their resilience, which we can then take account of in designing the boat”.