



## SICOMIN SUPPORTS DÉCISION SA WITH BIO RESINS AND COMPOSITE MATERIALS FOR SEABUBBLES FLYING WATER TAXIS

The SeaBubbles project is the brainchild of hydrofoiling yachtsman Alain Thébault and champion windsurfer Anders Bringdal. Their vision of creating an eco-conscious transport solution for the world's urban waterways has come to fruition with the support of Décision SA (Switzerland) a specialist in the development and prototyping of complex composite structures, and Sicomin (France) a leading formulator and supplier of high performance epoxy systems.

The SeaBubbles are based on a futuristic hydrofoil design that glides silently above the water when the craft reaches 12 km/h (7.5 mph). A clean charging electric drive system converts solar, wind and water power so the vessel does not generate any CO2 emissions.



Décision has a long history of delivering exceptional quality and performance in their composite creations and with this project it was particularly important to focus on the future and not just the initial prototypes. To match the ambitious growth plans of the SeaBubbles team it was vital to consider a robust and cost-effective serial production route from the outset.

Décision SA, part of the Carboman group, working both with SeaBubbles and Sicomin, has so far completed the first of 5 SeaBubbles water taxi prototypes and these were launched in June 2017 on the River Seine in Paris. The boats were delivered in record time with material specification, design analysis and production achieved in less than 4 months. Décision is now on track to produce the remaining 4 prototypes that will also be in service in Paris from September 2017.



Working alongside the SeaBubbles team, Décision analyzed the initial design and delivered a production ready tooling and composite manufacturing process.

In addition to satisfying the composite engineering targets for weight and stiffness, Décision's manufacturing process was also required to include a significant percentage of bio-based materials. For material development, Sicomin made the perfect partner as the leading formulator and supplier of a wide range of bio-based epoxy resins, natural fibres and core materials.



All of the SeaBubbles composite parts are produced using a vacuum infusion process where the sandwich structure comprising of reinforcement fibres and a natural cork core are infused with Sicomin's GreenPoxy® InfuGreen810 advanced resin system.

InfuGreen 810 contains 30% carbon content that is derived from plant based origins. It is also extremely low viscosity at room temperature. Sicomin has formulated the advanced bio product to support manufacturers producing parts for mass production using injection or infusion techniques and the system is available with a variety of hardeners making it suitable for small to very large components. InfuGreen 810 also holds DNV GL certification providing extra assurance of the products quality, efficiency and safety standards.

Décision explains it was vital to consider a robust and reliable product from the beginning of the project. "Sicomin's InfuGreen 810's DNV GL certification was a significant factor during the product selection process. This marine industry standard provides undisputed quality assurance and allowed us to make rapid progress during the initial stages of the build", comments Grégoire Metz, CEO, Décision SA.

Sicomin also supplied a range of complimentary materials to provide a package of infusion specific products including glass fibre multiaxial fabrics, PVC foams with bespoke perforation patterns for infusion, release agents and epoxy spray adhesives to securely position dry fabrics in the moulds. "SeaBubbles has unified a group of companies with eco-friendly ambitions to create a truly innovative concept in transportation. Décision has been the perfect development customer with their experience of creating exceptional quality and performance parts whilst using a wide range of bio-based epoxy resins, natural fibres and core materials. The SeaBubbles team provided us all with a vision to follow," comments Philippe Marcovich, President of Sicomin.



SeaBubbles is committed to providing their water taxi service at the cost of regular taxi journey and plans to operate in 50 cities within the next 5 years. Following on from the success of this first phase of the project, a larger 15-seater vessel is also planned for construction later this year.