

Designed to perfection

Awarded Best New Ship of the Year in 2010, **Stirling Design International's** Thibaut Tincelin explains how the meticulous attention to detail in both concept and construction has made *Le Boréal* a cruising yacht that has exceeded all expectations.

Thibaut Tincelin

Thibaut Tincelin is principal designer and managing director of Stirling Design International. His previous experience includes the position of naval architect at the project department of STX Europe in Saint Nazaire, France, and a two-year project development period with the cruise ship owners in Miami.



Central to the design of *Le Boréal* and *L'Austral* was the concept of a cruising yacht. Custom-built at the Fincantieri Shipyard in Ancona, Italy, *Le Boréal* was delivered to Compagnie du Ponant in April 2010 and *L'Austral* in May 2011.

As the fourth ship of Ponant's cruise fleet, *Le Boréal* can accommodate 264 passengers in 132 cabins, with 95% of passenger cabins featuring a private balcony. Her pure, streamlined silhouette was created by Stirling Design International (SDI) in Nantes, France, and the ship was awarded a gold medal by the European Cruiser Association,

when it won the 'Best New Ship of the Year 2010' category, ahead of *Seabourn Sojourn* which received silver. The award was given in recognition of *Le Boréal's* elegance, personality, innovative equipment and the meticulous attention to detail in the design of the ship, which has enabled it to successfully meet the expectations of passengers.

Auspicious beginnings

SDI started working on the conceptual design in 2007. Initial drawings proposed a length of 110m, with a unique streamlined silhouette and large arched windows fore

and aft to further enhance its elegance. Formerly with Pininfarina, SDI principal designer Joël Bretecher, always approaches the design of cruise ships with the creativity and meticulous care of a Ferrari designer, and this was rewarded when, after a year of conceptual design studies, Ponant Cruises awarded SDI the pitch for the exterior design of the vessel.

This success was partially due to the long-term cooperation between Ponant Cruises and SDI. Managed by senior naval architect Thibaut Tincelin, SDI offers innovative new design concepts that combine cruisers and luxury yachts. *Le Levant*, commissioned in 1998, is the perfect example of this approach. An exceptional yacht, she catches the eye with her elegant silhouette and refined interior design. >>

“On both *L'Austral* & *Le Boréal*, the conceptual and exterior design benefited from detailed 3D modelling from preliminary stages.”

The innovative and elegant *Le Boréal*. © Mathieu Gesta

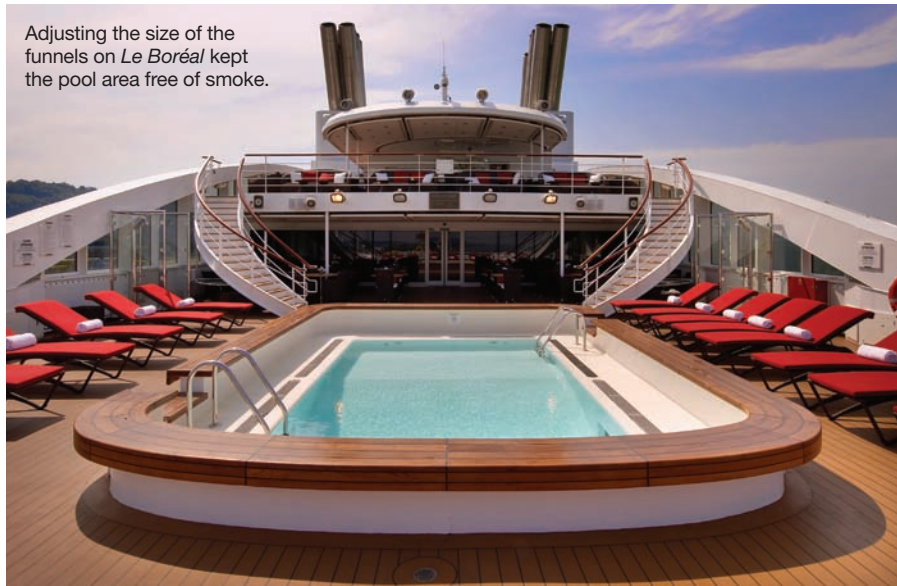


On the *Austral* and *Boréal* projects, the conceptual and exterior design benefited from detailed 3D modelling from the very preliminary stages. This allowed a constant exchange between operational requests from Ponant Cruises, technical and regulatory constraints from the tender shipyards and the aesthetical integration of these elements by SDI.

This integrated design approach was especially beneficial at the contract stage. Indeed, at the point the design was finalised, apart from some later adjustments (for example, extending the funnel's exhaust pipe), the basic design was not significantly modified throughout the course of the contract. This close cooperation between the parties was possible as a result of 3D format exchange, which allowed the shipyard to use the 3D model built by SDI. Based on the hull form and GA of the yard, the model was imported into the steel hull modeller of the Fincantieri shipyard; a process which meant the model conceived at the design office in Nantes was faithfully replicated in the final vessel, designed in Trieste, Italy, and delivered by Ancona shipyard.

The following technical solutions were developed to meet the design challenges:

- The glass arches have grey tinted glass and closed, custom-built rounded steel profiles. It should be noted that these arches were not portions of a circle, but were designed and built with varying radii and had a section along the arches for optimum aesthetic balance.
- The honeycomb passenger balconies bulkwards ensure a perfect finish, with no steel deformation.
- The stainless steel exhaust pipes allow for a proper integration of the funnel. Due to the location/geometry of the pool deck, increasing the funnel size avoided smoke annoyance at the stern.
- The design of the aft platform was studied with a duct tail effect for improved hydrodynamic ship performance, offering an increased waterline length. At the same time, this aft platform, a typical feature of private yachts, offers comfortable embarkation capabilities.



Adjusting the size of the funnels on *Le Boréal* kept the pool area free of smoke.

© Mathieu Gastia

- LED strips have been put in place to enhance the ship's profile, and exterior architectural lighting illuminates the arches at night.

Design without compromise

One of the most challenging contractual commitments of the project was represented by the achievement of the Bureau Veritas (BV) comfort class certificate. From the outset, this award represented a goal SDI hoped to achieve without compromise. In terms of noise and vibration limits, comfort begins with the appropriate designation of passenger space on board. The typical small passenger vessel arrangement – with cabins located forward, far away from engine room and propeller noise and vibrations – is a good example of such an approach. With regard to performance, the ship is designed to withstand reduced stability due to ice accretion, as is required by BV's ice class notation.

Power generation is based on four Wartsila engines 8L20 for a total 6,400 kW at 100% MCR and 1,000rpm. The Marine Environment Protection Committee of the International Maritime Organization implemented a new regulation in July 2011, which bans the use and carriage of heavy and intermediate fuel oils in Antarctic waters. However, Ponant's new yachts are equipped with diesel engines using low-sulphur marine diesel oil, permissible for navigation in the Antarctic. The electric propulsion is based on two asynchronous electric motors 2,300 kW MCR each, supplied by ABB.

The dynamic positioning system installed on board – controlled by a joystick and interfaced with GPS – will help a vessel maintain its position in restricted areas such

Specifications of Le Boréal:

- gauge 10.900 UMS
- LOA 142.1m
- breadth 18m
- draft 4.70m
- speed 16.8 kn
- propulsion 2 x 2,2 MW
- capacity 264 passengers (132 cabins)
- crew 140 (74 cabins).

as fjords or protected bays, avoiding the need for anchoring. In addition, the Farsounder 3D sonar system allows a 3D view of the seabed, as well as a simultaneous view of different depths. Farsounder enables the ship operator to detect icebergs and ice packs, and, in circumnavigating them, avoid damaging either the vessel or the ecosystems.

Building a customised cruise yacht is a challenging design and construction process. Limitations in dimension, budget and time – compared to the largest cruise ships which benefit from inherent economies of scale – mean the luxury end of the cruise ship market requires mid-size vessels with sophisticated levels of comfort and performance, as well as aesthetic solutions to technical challenges. Specific innovative solutions have been developed for *L'Austral* and *Le Boréal*, with a constant effort to meet market requirements.

Current projects for Stirling Design International include developing a floating complex for Paris (next to the Eiffel Tower), a private trawler yacht, an inland passenger ship for The Netherlands and a coastal ferry for the islands of the south of Brittany. Meanwhile, SDI is pitching for a project to convert a cruise ship into a luxury private yacht. ■