Superyachts
Bespoke Solutions

TRANSVERSE POOL

Photos: Chanchai Howharn | Words: Emma Hersh

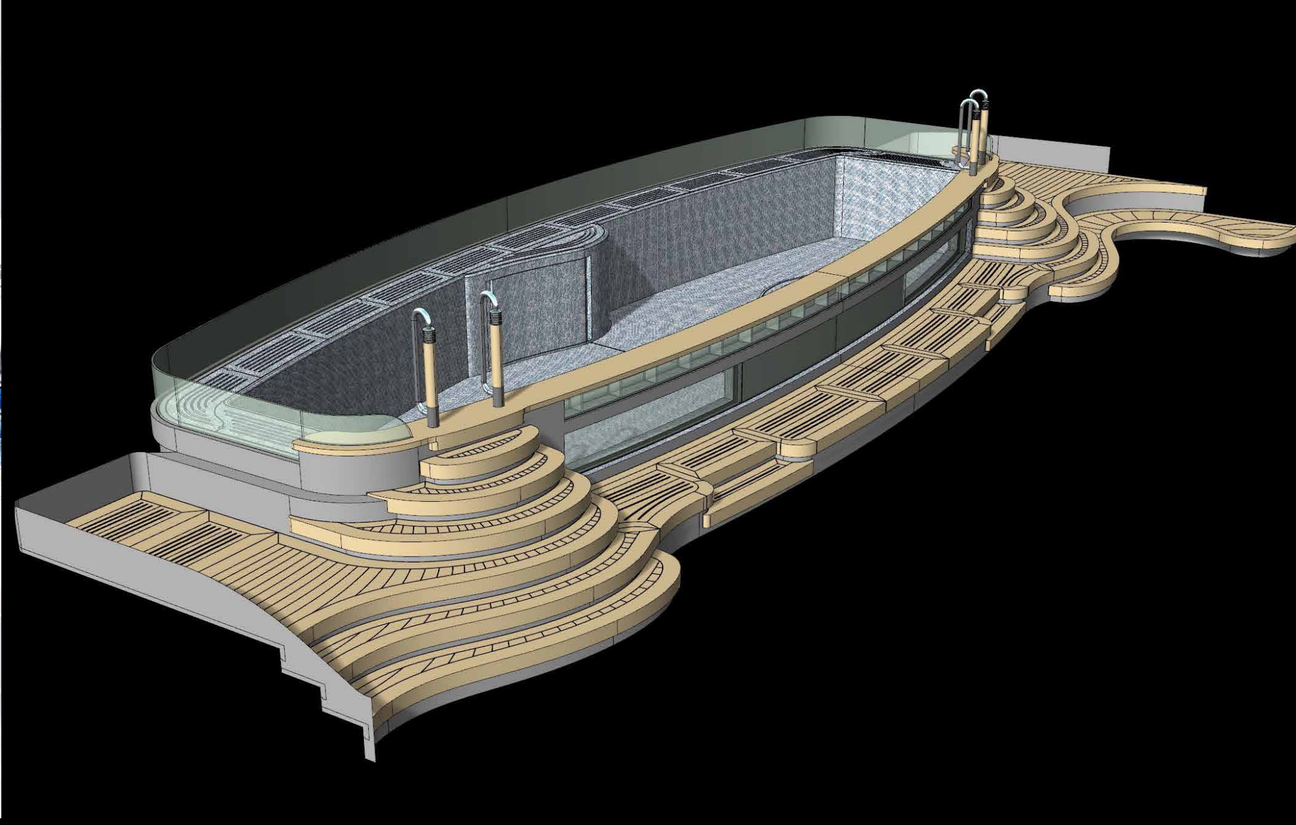
Finely balancing ultra-modern technology with meticulous design aspects to meet client expectations led to a convergence of gracious living and exclusivity aboard Lurssen's extraordinary and luxurious Flying Fox.

With an impressive array of sophisticated features spanning the 6 decked vessel, those aboard can revel in making use of two helipads, a professional dive center, a wellness spa, and a cryotherapy area. But even with all the amenities designed to enhance luxury living, the crowning glory of this 446-foot, dove gray behemoth is the 12-meter transverse swimming pool which is the largest transverse pool on any yacht. As the transversal pool was crucial for the overall design of the yacht, the shipyard was committed to finding the right solution to transform this vision into a reality.

In a unified collaboration between the owner's representative of Imperial Yachts, Lürssen's engineers and the designers were tested to their full capabilities.

While at sea, the water and wave movement that creates the yacht's pitch and roll motion can have negative effects on a transverse pool, rendering it unusable. Loss of water and an inadvertent wave pool effect can be caused by the pronounced rotation along the longitudinal axis of the vessel as it moves across the ocean; something that would need to be addressed if the pool was to be used for its intended purpose.

Computational Fluid Dynamics (CFD) were used to understand the movement of the yacht across the water and the subsequent effects of the vessel's motion on the transverse pool. The results quickly revealed that transferred motion from the yacht would cause the pool to suffer an almost 50% water loss within 10 minutes while sailing in anything less than favorable conditions.



Advanced research and analysis was made possible by the use of Hexapod simulation at Duisburg-Essen University in Germany, who's advanced modeling capabilities accurately predict reactions to different sea-states. The Hexapod, also known as the Stewart-Platform, combines a number of sensor types, cameras, and measurement detection to observe and record the movement of water and capture intricate positioning data. Automated tests can be run over a specified period spanning days or weeks to monitor conditions and effects, and the results are transferred to full-scale readings using modeling laws.

After running a series of detailed tests, and with the results of the motion simulation in hand, it was evident to all members of the Lurssen team that the transverse pool would require a bold and innovative solution if it was to be functional enough to use while at sea and at anchor.

After an in-depth and detailed analysis, the team employed their combined engineering experience with advanced ingenuity to devise a solution, determining that the best way forward would be to divide the pool and create two smaller independent sections.

This innovative solution was achieved by utilizing a powered hydraulic retractable bulkhead that effectively separates the pool at the midway point and forges 2 smaller sections - a significant feat considering the pool holds 50 tonnes of water. Once locked into position, the reduced amount of water in each individual compartment is less susceptible to the movement of the yacht, especially in rougher sea conditions. As the powered bulkhead has the capability of being raised and lowered at will, it can be retracted in calmer waters or when anchored. Flying Fox's high-performance stabilization systems provide more than adequate support during these times, successfully preventing water loss from the pool during reduced vessel motion.

The additional challenge for Lürssen was the need to make the pool coordinate aesthetically with the rest of the yacht's design, other technical functions had to be considered.

A hydraulic floor rises to convert the pool into a stage area, and water features such as massage jets and a counter-current system also needed to be factored into the intricate construction design.

From a superyacht design perspective, the joint collaboration between Imperial Yachts and Lurssen yielded an unparalleled achievement in superyacht construction and maritime design that places Flying Fox in a class all of its own. As one of the few yachts that contains a transverse pool, and the biggest in size at 12 square meters, this pool is one of the most distinctive and recognizable features of Flying Fox. On a vessel that has every conceivable luxury imaginable spread over its 6 decks, the complexity and expertise of the design foundation is belied by the sleek integration of the pool across the superyacht's main deck.