

Project L3

85m ModCat Yacht



Advanced Catamaran Yacht Design

At BMT Nigel Gee, we like to take a fresh perspective on yacht design. We're constantly undertaking research and development projects for commercial and military applications and are proud to say that the results of our hard work and dedication in bringing new ideas to life has put us at the forefront of the marine design industry. But when we've had success with a new design, we don't stop there. We look at how we can apply our innovation to other sectors.

With over 25 years of catamaran design expertise we've developed and refined hull form technologies for commercial and military applications which we're bringing to life in the yacht industry in partnership with some of the industry's leading designers.

With the majority of our day-to-day activities focused on yacht design and engineering, we realise the importance of developing novel and exciting yacht designs. Our portfolio extends to designs developed on our 'Conventional' catamaran hull form, our semi-SWATH 'ModCat' hull form and more recently our extreme semi-SWATH 'XSS' hull form.

This brochure explores the various twin hull options available to yacht-owners looking to take advantage of the benefits offered by a catamaran and presents our latest ModCat design in collaboration with Rob McPherson, Project L3.



1 | Conventional Catamaran

What is Conventional?

Our conventional catamaran hull has been optimised to give exceptional performance in calm-water and has been extensively proven at full scale in a wide range of commercial and workboat applications. However, whilst conventional catamarans have a large waterplane area and beam giving a very stable platform this can result in a short roll period often causing uncomfortable motions. For this reason the conventional catamaran hull not gained widespread use in large yacht applications.



2 | SWATH

What is SWATH?

A SWATH is a 'Small Waterplane Area Twin Hull' vessel. As a direct result of its very low waterplane area a SWATH achieves a far lower level of stability than a conventional catamaran, yet maintains the same beam overall thereby giving a more pleasant motion in roll and heave. A SWATH vessel offers unrivalled seakeeping performance in rough waters, however the compromise is a very high resistance penalty and high draught. High powering requirements, a complex hull form geometry and a lack of useable volume within each demi-hull are primary reasons why SWATH technology is often only chosen for very specific applications and is disregarded not only in the development of new yacht concepts, but also the greater majority of projects in the commercial and military sectors.



3 | ModCat

What is ModCat?

Following our work at the forefront of multihull design we were commissioned by the US Navy to undertake a far reaching research and development project to develop a catamaran hull form with significantly improved seakeeping performance, but with minimal resistance penalty; the semi-SWATH ModCat hull was born. With narrower sections at the waterline, a lower centre of buoyancy and a slender bulb at the bow model tests demonstrated that the vertical accelerations of the ModCat were up to 50% lower than those of a comparable conventional catamaran with only a 5% increase in power required to achieve the same speed. The ModCat hull has subsequently been adopted for the 79m, 55 knot US Navy 'Sea Fighter' and 59m fast passenger ferry 'Betico II' for operation on very exposed routes in the Pacific Ocean. More recently major oil companies have commissioned designs for ModCat vessels to replace helicopter operations for crew transfer to offshore oil platforms. The advances made in developing ModCat open up the possibility of developing catamaran yachts offering high-speed performance with significantly improved seakeeping ability.



4 | XSS

What is Extreme Semi-SWATH (XSS)?

XSS technology effectively closes the gap between ModCat and SWATH technology, enabling further improvement in comfort in high seas not only during transit, but also at zero speed. This has been made possible by taking the ModCat's semi-SWATH form and making it more extreme, such that the waterplane area is further reduced and the centre of buoyancy is shifted further below the waterline. However, the hullform has been developed to ensure that the volume within each demihull is useable, unlike a true SWATH. The powering requirements of the XSS remain significantly lower than those of a true SWATH. The resulting hullform evolution of ModCat to XSS presents an even more attractive option for yacht-owners looking to take advantage of the catamaran platform for new designs. XSS designs are currently proving themselves in the demanding offshore energy industry and further designs are in build and under development.

A Comparison of Catamaran Hull Technologies

To illustrate the differences in hull shape between the various catamaran technologies, indicative midship section shapes for each variant are presented in Figure 1, together with a diagram illustrating the power requirements of each hull vs the seakeeping performance. Good resistance and fuel consumption characteristics are measured by low power requirements for a given speed. Good seakeeping performance is measured by low Motion Sickness Incidence (MSI) and Motion Induced Interruptions (MII). The conventional catamaran is shown to have very low power requirement but very high MSI & MII. Conversely the SWATH has a very high power requirement but very low MSI & MII. The semi-SWATH (ModCat) has improved seakeeping in comparison to the conventional catamaran but a small increase in power. The XSS has further improvement in seakeeping with a small resistance penalty, but powering requirement is still very low in comparison to a SWATH.

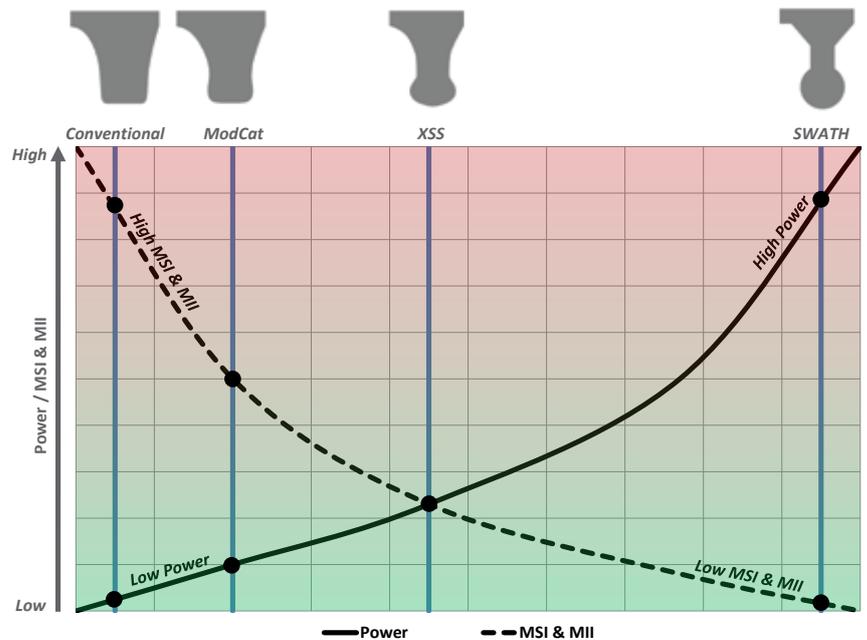


Figure 1

Project L3

Project L3 is a bold catamaran yacht concept delivering an extreme of high speed and high volume, for which BMT's MocCat hull form is ideal.

With an overall length of 85m the catamaran design offers volume more akin to a 100-110m monohull. Such space allows for entertainment and living areas similar to land based architecture and includes some unique features. The sundeck sports an open-air fire pit surrounded by generous loungers which give perfect viewing for the giant drop-down cinema screen, a feature that is sure to be the main focus of evening entertainment. The wide beam allows for storage of an offshore racing cat and a two-man seaplane. Once deployed, these can be moored against a number of fold-down/extendable beach decks giving easy access to the water.

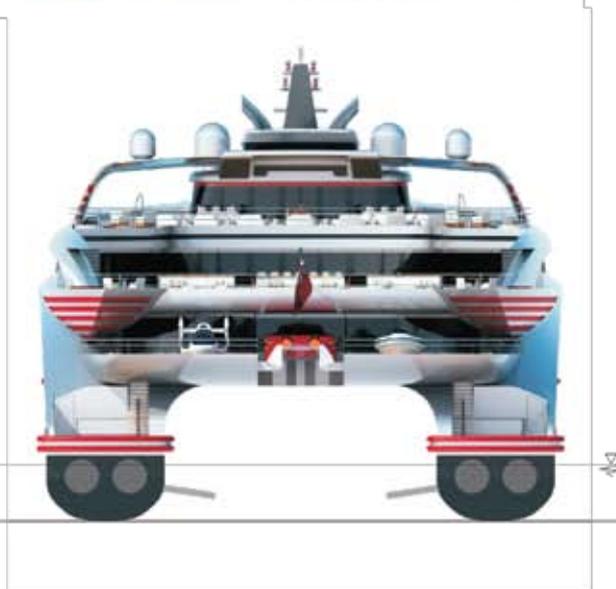
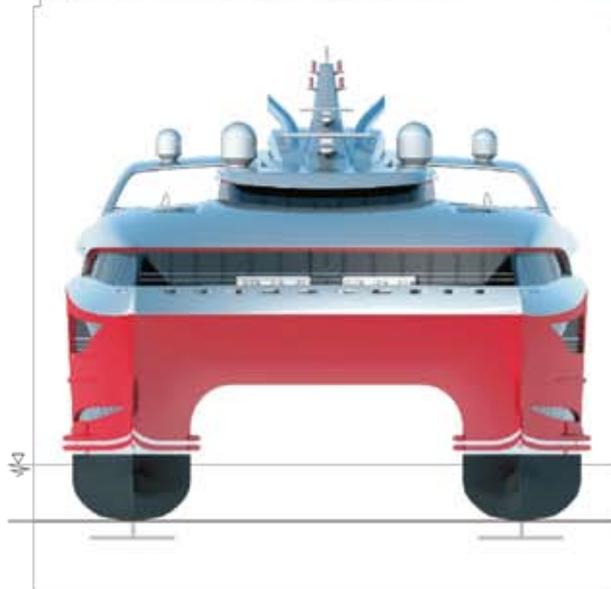
A number of propulsion options have been investigated from a conventional system for 20 knot performance to a hybrid CODAG system delivering 40+ knots. The ModCat hull form provides a careful balance of advanced catamaran performance with the outstanding seakeeping ability of a traditional SWATH.

James Roy, Design Director at BMT comments, "This was both a very exciting and challenging proposal to work on as the styling needed to reflect the speed of the vessel while maintaining a high volume for the interior. Gentle flowing lines which have a sense of urgency about them have been combined with a bold colour choice to ensure that this 85m, high performance catamaran makes a statement in the harbour!"

James Roy, continues, "It is always refreshing to work on a design which challenges convention and to integrate technology developed in other markets, it will take a visionary client to realise the project."



Project L3 - 85m ModCat Yacht



Principal Particulars

Length Overall	85.0 metres
Length Waterline	77.8 metres
Beam Overall	24.8 metres
Hull Draught	3.0 metres
Gross Tonnage (approx.)	4200 GT

Deadweight

Fuel	170,000 litres
Fresh Water	80,000 litres
Tenders	Offshore racing cat + high-speed RIB + 2-man sea-plane

Special Features

- Multiple drop-down / extendable beach decks
- Sundeck with open-air fire pit and giant drop-down cinema screen

Machinery Options & Speed Performance

Option 1:	Quad diesel engines + controllable pitch propellers	20+ knots
Option 2:	CODAG + waterjets	40+ knots

For more information please contact BMT Nigel Gee:
 Tel: +44 2380 226655
 Email: enquiries@bmt-yachts.com
 Website: www.bmt-yachts.com

