

## Technical Meeting — 6 June 2018

Bernie O'Shea, Design Manager at SilverYachts, gave a presentation on *Design and Construction of SilverYachts* to a joint meeting with the IMarEST attended by 27 on 6 June in the Harricks Auditorium at Engineers Australia, Chatswood.

### Introduction

Bernie began his presentation with a short history of SilverYachts, which began life in 2002 as Hanseatic Marine, the brainchild of owner Guido Krass, a green-tech entrepreneur. He brought together the unique combination of a world-renowned yacht designer, Espen Øeino, and a production facility located in Perth, WA, which has a reputation for producing the world's finest lightweight aluminium vessels.

Guido and Espen had a shared vision to build custom superyachts that were the most efficient and of the highest distinction. The global search for a suitable shipyard quickly progressed to Australia where they could build a workforce which could meet all their exacting criteria. Many of the ex-Oceanfast employees were brought on as Oceanfast closed its operations, which added to the depth, capability and superyacht experience within the team.

In 2014, having successfully built the award-winning *Silver* series, Hanseatic Marine rebranded to SilverYachts in order to capture and reflect the successes of the company. The four world-touring yachts which have been launched to date are a testament to the professional talents of the company, boasting the highest level of performance, fuel efficiency, and Northern European luxury craftsmanship and outfitting.

SilverYachts revealed international expansion plans in 2017, with the second-largest global aluminium extrusion company, Zhongwang Holdings, joining the Australian boatbuilder as a majority share-holder. The deal will lead to the expansion of the superyacht range and build capacity in Perth as well as the opening of a new yard in China for building commercial and luxury vessels.

The superyachts are built for global cruising, ranging from the first, 73 m *Silver*, to the current 85 m, with the eventual aim of building a 100 m yacht at the Perth site.

The company employs about 150+ highly-qualified professionals on site and complete one vessel about every two-and-a-half years.



The SilverYachts team in Perth  
(Photo courtesy SilverYachts)

### The Yachts

Hull 1 at 73 m in length was the first vessel constructed by Hanseatic Marine and was named *Silver*, starting a line of vessels which commenced their names with “Silver. This vessel was launched in May 2007, and was owned for two years by Mr Krass, who used her for global cruising. When the next Silver vessel was launched, he sold *Silver* to the Abu Dhabi royal family, who changed her name to *Rabdan*.



*Silver*  
(Photo from SilverYachts website)

Hull 2 was also 73 m in length, named *Silver Zwei* and again used by Mr Krass until he sold her to a high-profile US technology billionaire, who changed her name to *Dragonfly* and uses her for extensive world-wide cruising.



*Silver Zwei*  
(Photo courtesy SilverYachts)

Hull 3 was 77 m in length, launched in March 2012 and named *Smeralda*. She was an evolution of the first two, and was sold to the Dubai royal family.



*Smeralda*  
(Photo courtesy SilverYachts)

Hull 4 was also 77 m in length, launched in March 2015 and named *Silver Fast*. The owner uses her for charter work in the Mediterranean summer, and world cruising at other times.



*Silver Fast*  
(Photo courtesy SilverYachts)

Hull 5 is 85 m in length, is currently under construction with launching expected in early 2019, and will be named *Silver Loft*.



*Silver Loft*  
(Photo courtesy SilverYachts)

A sistership to Hull 5 will begin construction shortly and plans for a larger vessel are on the drawing boards. [Images of these planned vessels are available on the SilverYachts website — Ed.] Here Bernie showed a video of the interiors of the vessels, highlighting the high quality of the fitout.

### **Covers and Awards**

SilverYachts does no advertising in Australia, but their vessels feature regularly on the covers of international yachting and boating journals, such as *Ocean*, *Boat International*, *Yachting and Style*, *Yachts*, *Luxury Toys*, *Boat*, *Yacht Design*, *ShowBoats*, *Exclusiv*, *Navis*, and *The Superyacht Report*.

In addition, their yachts have won many awards, including *Australian Superyacht Award 2008*, *ShowBoats Design Award*, *The World Superyacht Design Award 2013*, *International Yacht and Aviation Award 2013 and 2016*, *NYS Best New Yacht Award 2015*, and *ABIA Best Worldwide Custom built Yacht 2015*.

The vessels also hold some of the world's high-speed long-range records, including the 5000 n mile passage from Dubai to Singapore.

### **Naval Architecture**

SilverYachts use both computational fluid dynamics and tank testing to optimise their hull forms. The hulls typically have a low draft to enable entry into some of the world's shallower ports and areas of the Caribbean, and are also optimised for high speed and efficiency. Tank-testing facilities which they use include the Maritime Research Institute Netherlands (MARIN) in the Netherlands, Statens Skeppsprovvningsanstalt (SSPA) in Sweden, and the Krylov Shipbuilding Research Institute (KSRI) in Russia. The efficiency of the hulls is shown, for example, by comparison of the top speed of *Silver Fast* of 27 kn with that of a competitor of the same length and power at 18 kn!

The software ANSYS is used for structural analysis and the vessels are designed for a Lloyd's Register service notation of G6 (unrestricted). All vessels are modelled in 3D using Pro-Engineer/Creo, and the software ANSYS is used for structural analysis. A high importance is placed on noise and vibration detailing throughout the design process. The first vessel, *Rabdan* (ex *Silver*) is 11 years old and hasn't experienced structural fatigue, noise or vibration issues.

Design and production have been optimised through the extensive use of aluminium extrusions. They concentrate on design for construction which helps to minimise the amount of fairing compound required to achieve the perfect surface finish that clients have come to expect.

Classification is achieved through rigorous design to the highest international standards, of SOLAS, LY3 (the UK's Large Commercial Yacht code) and PYC (the Passenger Yacht Code, developed by industry to enable larger vessels to carry up to 36 passengers without having to build to SOLAS), and to Lloyd's Register.

Their designs and builds have been independently surveyed by Patton Martine, internationally-renowned surveyors who work with other leading builders, e.g. Lürssen, Feadship, Blohm+Voss, Royal Huisman, Abeking & Rasmussen, and Perini Navi, among others. Comments have been exceptionally complimentary.

### **Engineering**

SilverYachts uses internationally-renowned suppliers for equipment, so that reliability and availability of spare parts from international service networks is high. They are into product development, innovation, and advanced technology, but place a premium on minimal down-time, improved safety and maximum availability.

Here Bernie showed a fly-through of an engine room, and how the 3D model compared to the actual, finished engine-room layout, as well as some drawings of the various services on board one of the vessels.

Heating, ventilation and air conditioning is essential on a luxury yacht for the guests, the crew, and for the operation of all the equipment, especially in the equatorial areas frequented by these vessels. They look for continuous improvements by testing in extreme climates, upgrading capacity, system refinements, plant refinements, and building to the highest standard.

Software used includes Pro-Engineer/Creo and AutoCAD for drawing, MathCAD, etc. The data from the design is then fed directly into their purchasing, manufacturing, and planned maintenance, of the vessels.

### **Electrical**

Design and construction of electrical generation and distribution equipment aims for reliability, ease of operation and being globally serviceable. They provide extensive documentation, drawings, test reports and manuals.

Electronic ship systems include a full navigation and communication suite, which is remotely accessible at sea, closed-circuit TV and security, lighting control, and Apple audio-visual and information technology.

Electronic guest systems include a 10 kW external sound system, actuated and hidden TVs, lighting control, and Apple audio-visual and information technology. All these are fitted as late as possible during construction to obtain the latest technology.

### **Outfitting Design**

Outfitting design is concentrated in three key areas, luxury outfitting, technical outfitting, and exterior outfitting. Exterior design goes from concept to reality. The designer comes up with a sketch of an idea of what the exterior will look like. This is worked up into a 3D model for the client to discuss with the yard and modify as required, and progresses from there to working drawings for construction, on the basis of “luxurious simplicity”. Interior design also uses 3D modelling to optimise guest areas. All systems (electrical, HVAC, etc.) are run outside the space boundaries. Similar to the exterior design, the designer comes up with a sketch of an idea of what the interior will look like. This is worked up into a 3D model for the client to discuss with the yard and modify as required, and progresses from there to working drawings for construction. Exterior styling is also done on the basis of 3D visualisation and rendering. The amount of design information required is very client specific.

### **Production**

SilverYachts uses world-class fabrication techniques. Their workers need to understand aluminium and the effects of heat distortion, fatigue, etc., and great reliance is placed on the expertise of the production team. Materials are all CNC cut, and class approved. They use a system of module construction.

Production engineering software allows pipe bending and manufacture in-house, without having to send out to sub-contractors. The modelling side is all done using a 3D model, and able to turn layers on or off, so that the production team can see the layout on computers located around the production facility without having to go to the drawing office.

SilverYachts prides themselves on their fine furniture craftsmanship, and working through solutions together.



Bow module under construction  
(Photo courtesy SilverYachts)



Fine furniture craftsmen at work  
(Photo courtesy SilverYachts)



## Conclusion

SilverYachts began life as Hanseatic Marine and has, so far, completed four luxury yachts, with a fifth due to be launched in early 2019. Three more vessels are in the design stage or about to start the construction phase. All are to the highest standards of design, construction and fitout. In aiming to meet the exacting standards set by Mr Krass, their vessels tend to advertise themselves as seen on the covers of international journals and the numerous awards they have won.

The vote of thanks was proposed, and the certificate and “thank you” bottle of wine presented, by Rob Tulk, who complimented Bernie that all this world-class design and construction was being done in Australia. The vote was carried with acclamation.



Rob Tulk (R) presenting the certificate and “thank you” bottle of wine to Bernie O'Shea  
(Photo John Jeremy)