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Material GAINS

MODERN MATERIALS, THE LATEST ENGINES AND A WILLINGNESS TO FULLY CUSTOMISE IS HELPING ITALY TO COURT THE WORLD'S WEALTHIEST YACHT BUYERS. *IBI* WAS GIVEN ACCESS TO THE LEADING YARDS IN TUSCANY TO SEE THE INNOVATIONS THAT ARE SHAPING THE FUTURE

JAKE KAVANAGH REPORTS

THE SUPERYACHT MARKET is doing well, and those who have money to spend are looking for something very special. Whilst each yacht reflects its owner's particular tastes and desires, some general trends are emerging in the construction process. These include hulls that offer greater volume for a lighter displacement and shallower draft, plenty of glass for a 'dialogue' with the sea, greater range from more efficient engines, quieter running and more versatility. Owners are also flirting with diesel-electric and other green technologies. However, the yacht builders are finding 'greener' solutions by increasing the efficiency of existing systems rather than designing new ones from scratch.

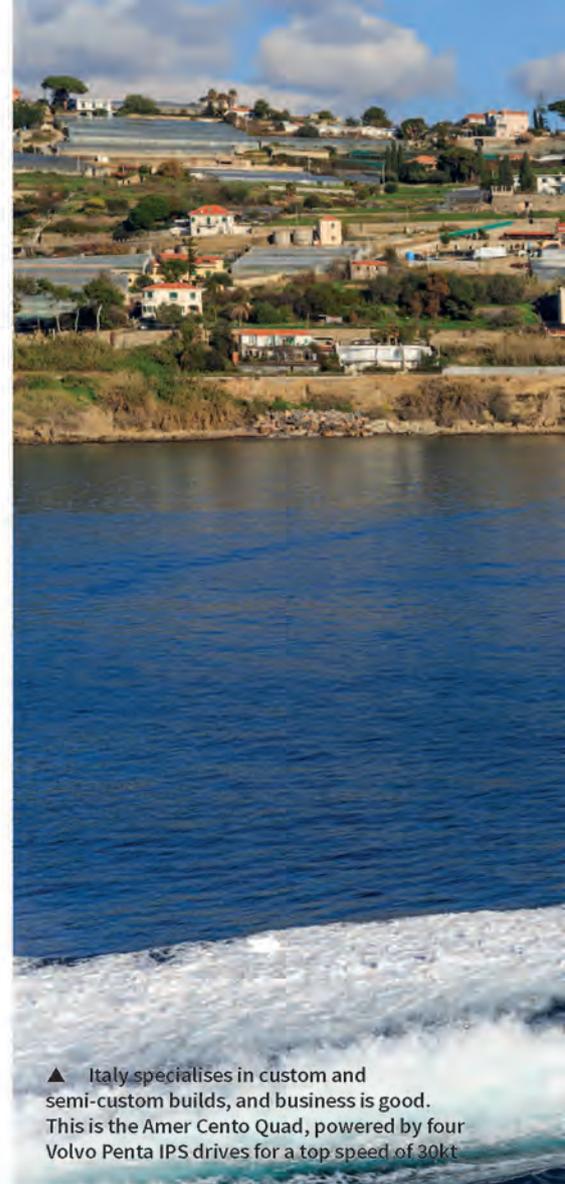
Greater use of carbon reinforced resin technology is allowing for some very complex and lightweight designs, but for the larger yachts steel and aluminium remain the materials of choice. Critically, with such demand for new yachts, OEMs are keen to reduce the delivery time whilst also providing an exceptional product. The recently introduced BNow range from

Benetti, for example, has a USP of short delivery times due to Benetti's 'innovative construction technology'.

A recent tour of the superyacht yards in Tuscany, Italy, showed *IBI* just what is happening at the cutting edge of superyacht construction. The Italians are known for always pushing at the boundaries, and creating that unmistakable 'wow' factor. Our tour didn't disappoint. Our four-day visit, courtesy of the Italian Trade Agency (ITA) and the Ufficio Tecnologia Industriale Energia e Ambiente Confindustria Nautica (UCINA) took in iconic brands such as Benetti, Sanlorenzo, Mangusta, Overmarine, Codecasa and Baglietto, along with some of their support industries. We spotted some interesting innovations.

THE RISE OF THE FORWARD-FACING DRIVE

With Volvo Penta introducing its largest IPS drive to date and Rolls Royce adapting commercial technology for the luxury market, superyacht builders are beginning to see the advantages of fitting forward-facing steerable pods.



▲ Italy specialises in custom and semi-custom builds, and business is good. This is the Amer Cento Quad, powered by four Volvo Penta IPS drives for a top speed of 30kt

As we sat in the engine room of Amer Yachts' new 110, a sleek motor vessel powered by no less than four Volvo IPS drives, Volvo Penta's Stefano Pesci explained why IPS is gaining popularity in larger yachts. "We entered the superyacht market in 2011 with the IPS950 model, and it generated a lot of interest," he said. "With IPS, we can install smaller engines without any loss of performance. This also means that you have smaller vibrating masses, which means less vibration going into the hull. The exhaust exits through the pod under the hull, so you also get less noise from the exhaust system. The vibration normally seen in conventional exhausts is also largely eliminated. The result is a much quieter and more efficient installation."

In the Amer 110, the four IPS 1050 units were coupled to Volvo Penta's 800hp D-series diesel engine, replacing the original option of a twin-engine shaft-drive system. "This has created a lot more room," Pesci said. "The engines are much further aft, and this has also freed up some space for a Seakeeper stabilisation system."



“ With such demand for new yachts, OEMs are keen to reduce the delivery time whilst also providing an exceptional product ”



▲ Multiple IPS drives, in threes and fours, are becoming more common due to easier installation and improved performance

The IPS in the Amer 110 was a very clean installation, with room to get round all four of the 800hp engines. We were told the top speed would be about 30kt, with a comfortable cruising speed of 26kt. Probably equally useful would be the high level of manoeuvrability the steerable pods would provide in the increasingly crowded Mediterranean harbours. Volvo Penta claims reductions in noise of up to 50% with IPS,



▲ Volvo Penta's Stefano Pesci in the engine room of the Amer 110. To his right is one of the four IPS 1050 installations

and a fuel reduction of up to 30%, which will make the most of the 10,000 litres the Amer 110 carries.

Also competing in the forward drive market is Rolls-Royce, with its powerful Azipull system. Similar in concept to the IPS, the Azipull features counter-rotating forward-facing propellers on a steerable pod. Rolls-Royce describes the Azipull system as an 'azimuting thruster' that is ideal for

providing a steady performance of up to 24kt.

Pioneering the use of this system is Azimut Benetti (a coincidental name), which has designed its new Benetti Fast 125 range around the new Azipull Carbon 65 (AZP C65). The unit uses carbon fibre for all the load carrying parts, resulting in a significant reduction in weight. Rolls-Royce promotes the underwater unit as 'hydrodynamically optimised' with a wide chord and gearbox skeg that provides rudder effect and improves course stability. Thrust is amplified by recovering swirl energy from the propellers.

The control systems supplied with the thruster offer two operating modes, transit (for voyaging) and manoeuvring. In a presentation at the Benetti Yachtmaster Conference held in February 2018, superyacht skipper Roberto Cuomo explained the advantages of this system to an audience of professionals. His Benetti Fast 125, the 38m MY *Lejos 3*, was the first to be fitted with a pair of Carbon C65 Azipull units, and he describes the experience ➔

Photo: Fabio Taccola



▲ Companies that have traditionally moulded in GRP, such as Overmarine (Mangusta), have moved to aluminium as their craft have become bigger. Here a pair of Mangusta 54m Grand Sport yachts are under construction at its modern facility near Pisa

as 'Bella differenza.' Cuomo undertook a training course in Norway, where Rolls-Royce marine systems is based, and then honed his skills during sea trials.

"Because this system is pulling instead of pushing you have to think differently," he said. "That takes some time to get used to. Initially I used the traditional helm instead of the joystick so I could master one thing at a time. However, once you get the hang of it you realise how well the hull shape works with the Azipulls. It's really a pleasure to get out and run with this system. There is no vibration, and it's really stable and fast."

During our tour, we saw another Benetti Fast being readied for its Azipull drives, which can be harnessed to any power source, including jet turbines.

MOVING BACK TO METAL

Glass fibre and other composites have long been used for hulls within the Italian superyacht sector, but as new-builds get larger with more demand for a fully custom build, some yards have switched back to using steel and aluminium instead. For the explorer ice class series, this is a necessity, and for fully bespoke models and one-offs, using metal makes customisation generally much easier.

One company where GRP has been the material of choice, but who are now looking to metal again for its flagship, is Otam.

Based in Sestri Ponente, Genoa, Otam

is a family-run shipyard building a limited number of highly customised motoryachts. Traditionally, speed has been the benchmark. The Otam 80, for example, is capable of 54kt, making it one of the fastest yachts of its class. However, when Otam decided to launch the first 35m in the more sedate Customline range, they departed from GRP and fabricated in aluminium instead.

"Using aluminium has allowed us to collaborate fully with the client in creating a yacht unique to his needs and personal lifestyle," explains CEO Gianfranco Zanoni. "The 35m *Gipsy* offers three decks with a 7.8m beam, with superior volume for less than 300 GRT."

ROBERTO CUOMO
CAPTAIN, MY *LEJOS 3*

Once you get the hang of it, you realise how well the hull shape works with the Azipulls



▲ Ice-busting steel is the material of choice for explorer yachts, such as this 500 EXP taking shape in Viareggio

Sanlorenzo is another company with a long history of GRP construction, but the Sanlorenzo Superyacht division is dedicated to building yachts in metal from 40m-70m. During our visit, the yard had two models of the 62m Steel under construction, and had taken orders for two 44 Alloy models from repeat customers. The first of the new 500EXP Explorer yachts was also nearing completion for a Chinese owner.

Rossinavi, a specialist custom builder based in Viareggio, feels that whilst composite has many advantages, it is not so good for suppressing noise, so builds hulls and superstructures in 5083 alloy H321 by Alcoa. The 5083 designation means that the alloy has excellent ductile properties and so retains good formability. The metal is highly suitable for welding and can be hardened by cold work. The H321 is a temper type and refers to the degree of strain hardening.

Mangusta, another brand that began in GRP, has now also moved to steel and aluminium as the sizes have increased and the yard is building displacement as well as planing craft.

BETTER COMPOSITES

The composites industry has been making great strides recently in faster processes and better reinforcements, as we saw at the recent JEC Composites Show in Paris. (See *IBI* May 2018). Quicker infusion times, lighter and less absorbent foams, ➔

Photo: Fabio Taccola



▲ Otam's CEO
Gianfranco Zano



▲ Strong, lightweight carbon composites are finding many uses aboard. Here is Otam's carbon bathing platform on their Otam 80HT

pre-contoured reinforcements – many of these new processes are now being harnessed by the superyacht industry to speed up moulding, improve the strength-to-weight ratio and greatly enhance the finish. The industry has also become more careful to reduce waste.

A major supplier of marine resins and adhesives is Scott Bader, a privately owned company that has successfully diversified into other sectors such as aerospace and construction. Marine, however, remains a major market.

"We provide a full basket of products, from high-performance resins right through to adhesives, and ensure consistent quality to yards and subcontractors throughout the world," says Malcom Forsyth, director of global strategy at Scott Bader. "A lot of the superyacht yards are family-run businesses. They have been around a long time and they value long-term partnerships, so Scott Bader's ownership model resonates with them."

Forsyth knows that the industry is naturally cautious and that it takes a while for new materials and practices to be adopted, but it is also constantly looking for new solutions. "Lighter and stronger are certainly buzzwords," Forsyth says. "Also, builders want faster build times. However, yacht builders like to use what they know, so there haven't been that many great changes in recent years. It is a process of evolution rather than revolution. We have around

67 of our global workforce of 670 people dedicated to R&D, and know it takes several years to bring a proven material to market."

When these products are specified, the Italian designers use them to maximum effect. Otam, for example, has currently taken an order for its all-new 85 GTS, a sleek motoryacht with a gull wing configuration inspired by supercars. Whilst technical details are currently unavailable, Otam has suggested that the vinylester hull will be reinforced with additional layers of aramid with Kevlar in high impact areas, along with unidirectional stiffening backed with carbon fibre. With power likely to come from twin

2,600hp MTU 16V engines working via Arneson transmissions, a top speed of 45kt is expected.

PREDICTING THE LAYUP

Hand in hand with effective lay-up, especially when it comes to infusion, is the ability to deploy resin where it is needed, but also to minimise the totals required for a strong but lightweight structure. A specialist in this field is Polyworks, a company that *IBI* met at JEC. Polyworks produces software that models a proposed infusion, and decides the most efficient way to manage the resin flow. The company has been involved in several high-profile infusion projects, including Sunseeker's 150, but also enhances its programmes by constant feedback. "It was a Polyworks user who suggested that our software could also be used to detect minute leaks in a vacuum bag," says Arjen Koorevaar, owner of Polyworks BV. "A series of strategic sensors compares the air flow against the predicted model, and can detect the slightest difference. This steers operatives to the area where there's a problem."

INVESTING IN INFRASTRUCTURE

With new-builds getting bigger and demand for refit also on the increase, several of the yards we visited are working hard to upgrade their infrastructure and expand their footprint. Perhaps most impressive were the facilities of Sanlorenzo, which has invested heavily in its yard at Ameglia, one of three in the group. Here the company now has the largest shed in



Photo: Fabio Taccola

▲ Baglietto has invested €22m to upgrade its yard with new construction halls and vast areas of hard standing

the Mediterranean, which can house up to five 85m yachts at the same time. Outside, there is also a floating dock.

As first impressions count, work was underway to improve the visitor's entrance, providing ample parking for clients to drive straight off the road.

Other yards have also been greatly improving their infrastructure, such as Baglietto's yard at La Spezia. Around €22m has been invested to upgrade the 35,000m² facility, with a 10,000m² construction hall featuring a mezzanine floor and high capacity lifts. Out on the yard's vast area of reinforced hard standing a new 700-tonne travel hoist can handle yachts of up to 60m. In the deepwater dock there are two new 85m-pontoon fingers.

"The market is very positive," says Baglietto's CEO Michele Gavino. "We have unique products, so we are doing well, but you need to invest in your facilities, and not just for new builds. A good yard will also attract original clients back for refit."

CUSTOM PARTS FOR CUSTOM BUILDS

The Italian industry is heavily networked with a global reputation for the quality of its stainless steel, so if a part isn't available off the shelf, you can be sure it can be made locally. Specialists in this are custom yacht builders Rossinavi based in Viareggio. During our visit we were shown how the company designs and commissions unique parts to go with a particular project. One example was a bollard design, where a considerable amount of material had been removed from the underside of the cleat to greatly reduce the weight. ➔

▼ Baglietto's CEO Michele Gavino (left)



“ You need to invest in your facilities, and not just for new builds. A good yard will also attract original clients back for refit **”**

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▲ Custom specialists Rossinavi design and manufacture many of their components for their unique builds, such as this bollard. Note the sculpting of the underside to reduce weight

Often, it is the special touches that help make it totally unique, and another presentation came from hardware manufacturers Razeto e Casareto.

Winners of the 2018 Marine and Aviation Awards, this small 100-year-old company creates bespoke door handles and light switches from designs and materials suggested by owners and artists. One of their most intriguing ranges are door handles that light up in case of a power failure. Internal batteries are charged by the yacht's power system, and should that fail the handles are lit by embedded LEDs. They can also be switched manually for ambiance. "We make our fittings to match any interior décor, and out of any materials the owner requires," says Razeto e Casareto's MD Andrea Razeto.

ON-SITE BOUTIQUE

A new addition to the refit specialists, Lusben is an on-site boutique. Customers who are having their yachts refurbished can now browse a two-storey shop that carries samples of high-class fixtures and fittings, along with wall coverings, tiles, fabrics, glassware and sculptures. Brands such as Gucci and Armani vie with other



▲ Dwarfed by its construction hall is the Sanlorenzo 52Steel. The 62 version is offered with a diesel-electric configuration



▲ An on-site boutique at the Lusben yard allows customers to add a special touch to their refit, or Azimut Benetti new-build, with the main Italian fashion houses represented

designer labels to inspire the visiting customers. "The real beauty of this shop is that it is very tactile," explains Lusben's managing director Mario Neuvo. "Visitors can get hands on with the pieces, and that makes a big difference to just seeing them in brochures or online."

DIESEL-ELECTRIC GAINING POPULARITY

Several of the yards we visited, especially those building long-range displacement or explorer class yachts, reported fitting diesel-electric installations.

The coupling of a series of variable speed generators to electric drives is gaining in popularity as the advantages are more widely appreciated.

Rossinavi, for example, is building a 50m aluminium yacht designed for global navigation. The owner wants to explore the routes originally taken by Cooke and Magellan, and has specified a diesel electric installation. "This will make it very quiet," Rossinavi's head of marketing Filippo Ceragioli explained.

Meanwhile, Sanlorenzo has also developed a green version of its 62Steel model, the 62Steel e motion. This 62m yacht features a full diesel electric power



▲ Hand-crafted doorknobs, such as these from the 100-year-old company Razeto e Casareto, are custom-designed to match the décor (Top picture) Giangiaco (left) and Andrea Razeto

Photo: Fabio Taccolla

source combining variable speed generators with lithium batteries and cutting-edge power management software. This allows the yacht to function in greater silence, freeing up valuable space and enabling it to visit areas previously inaccessible due to environmental regulations."

SPEED OR RANGE - OR BOTH?

Whilst a lot of builders are looking to maximise range and provide quiet fuel-efficient running, others want to tap in to the adrenalin rush of high speed. The ideal yacht, however, is one that can do both.

Builders usually offer a mix of model lines, even if some of the designs are simply concept drawings. Others offer to build a custom yacht from the keel up, and as radical as you like. One of these is Rossinavi, which launched the 63m Vector in April 2018. Powered by four 2,600hp MTU M96L engines coupled to Rolls-Royce water jets, the Vector provides her owner with the best of both worlds. At 28kt, she can hurl him from his villa in Miami to the Bahamas in just two hours, or at a more sedate 15kt has a trans-Atlantic range of 3,300 miles.

"These radical demands provide us with technical challenges," said Rossinavi's

Filippo Ceragioli. “On the Vector, it was the sea chest design, as she had to have a shallow draft for the Bahamas. But we always find a solution.”

THE 500 GRT THRESHOLD

As soon as a yacht crosses the 500 GRT threshold, a whole raft of new regulations come into force, so the Italians have become particularly adept at creating big volume yachts that magically fall just below the 500 GRT tonne limit.

One of these is Codecasa, a small, family-run business based in Viareggio that only builds two yachts at a time, and for very discerning clients. “By keeping below the 500 GRT mark, you have a yacht that is very easy to maintain,” says CEO Ennio Buonomo. “However, we are not seeing many owners downsizing at the moment. Yachts are getting bigger.”

MORE GLASS, BEACH CLUBS AND WELLNESS

“A major feature of Overmarine’s Mangusta Ocean 43m yacht is the concept of light,” explained marketing manager Isabella Pico, as we viewed the yacht in build. “Clients are always looking for a dialogue between the interiors and the exteriors, and this is provided by windows that let in lots of

“By keeping below the 500 GRT mark, you have a yacht that is very easy to maintain. However, yachts are getting bigger”

light. Our designers work on ideas that deliver plenty of space outside, and lots inside, and all connected by glass. When people are at sea, they want to see the water, and not feel they are in an enclosed environment.”

The connection with the sea is also promoted by the role of the beach club, and the addition of ‘wellness’ centres near the water. Rather than dedicate the rear of the yacht solely to a garage for tenders, Italian designs often like to set the transom aside for social and watersports areas. Instead, tenders are carried forward, and stowed beneath the decks.

Similarly, there is now a greater use of fold-out balconies and full-width owner’s cabins, so the owner has privacy from a lack of a side deck past his windows, and uninterrupted sea views on both sides.

MORE REFIT

With a long build-time for yachts, many owners are opting to refit the yachts they already have with updated systems, engines and décor. This means that refit has become a stable part of many of the new-build yards’ repertoire, with other yards such as Lusben focussed entirely on this part of the business.

Viareggio-based Lusben was bought in 2004 out of bankruptcy, and now has a staff of 30 with a yard of 120,000m² and a 2,500-tonne synchrolift. It works with a large army of trusted subcontractors, and completes 70 refit projects a year. These range from simple maintenance schedules to major transformations.

“There is a different dynamic nowadays,” says Mario Neuvo, Lusben’s managing director. “More owners want to be involved in the refit, rather than just leaving it to the yard. We specialise in the Azimut Benetti range, but we can turn our hand to anything.”

For Sanlorenzo, refit is also a significant part of the business, with clients returning to have their yachts refitted by the yard that made it.

“Refit is not core to our business, but it is certainly expanding,” says Sanlorenzo’s Stefania Delmiglio. **IBI**



▲ Codecasa’s CEO Ennio Buonomo



▲ The traditional garage at the stern is now being largely replaced by beach clubs and watersports areas, as seen on this Azimut



▼ With greatly improved infrastructure, many Italian yards also have the capacity for refit, which encourages back original clients. Lusben has three yards dedicated purely to refit