



MOMENTUM

NEWS FROM CJR PROPULSION

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Now boarding

CJR ensures Wight Ryder II is back in service in no time



Investing for growth

CJR invests in the latest technology

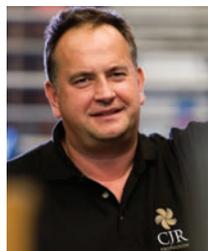
Latest arrivals

CJR welcomes its new
Technical Sales Manager

Born to ride

Unique motorcycle display
case for Princess Yacht

Introduction from Mark Russell



It was 2010 when we first started our journey towards building a future-proof manufacturing operation. Today, that investment is what we are known for.

For CJR propulsion, our growing reputation means appreciation of the cost savings and technical benefits that our technology-led approach can bring to almost every project we are involved with. Yards and owners are demanding quantifiably higher levels of efficiency, better longevity and demonstrable performance improvements from their propulsion systems, and we are only too happy to oblige!

Likewise, when it comes to our fabrication business, the highest quality levels are now expected throughout the process – with computer-aided design and the latest manufacturing tools used to create deck hardware and architectural pieces that are as intrinsically beautiful as they are functional.

There is no denying that the marine market continues to be volatile, meaning our manufacturing methods have to be able to cope with the inevitable peaks and troughs we will face.

Our investments over the past five years have gone a long way to helping us achieve this, enabling us to reduce costs, cut lead-times and deliver better, more repeatable products. With our most recent investments, we are able to handle 99 per cent of projects entirely in-house – allowing us to retain complete control over quality, from initial concepts right through to delivery.

As you will read in this edition of Momentum, we recently built one of the largest commercially operated 3D printers in the country, as well as installing the latest shaft turner technology in the form of a new CNC multi-axis mill/turn machining centre.

We also highlight a number of key projects that we have completed recently and touch on what's next for our business.

Many thanks

Mark Russell

CJR announces its latest arrivals



For CJR, investing in the latest design and production technology is key to expanding the company's offer and staying ahead of the competition. However, the biggest benefits are reserved for CJR's customers – enabling the company to reduce costs,

increase productivity and improve efficiency.

CJR's most recent investment is the latest in shaft-turning technology. The multi-axis mill/turn CNC machining centre gives versatility, high precision and the shortest possible machining cycle times, especially in fine increment programs required for large, complex projects. The machine combines the capabilities of a high-powered turning

centre and full-function machining centre to improve production accuracy and increase repeatability through the elimination of multiple set-ups.

The machine is equipped with a custom-made shaft support to ensure easy loading, accuracy and straightness. In addition, cycle times have been reduced by up to 70% and, at the same time, reducing fitting work due to the higher degree of accuracy.

"This latest addition to our manufacturing arsenal has increased our capacity by 60% in shafts up to 100mm. For our production customers, it's a further demonstration of why CJR is the ideal long-term propulsion partner – able to work on the full range of vessel sizes from small leisure craft to small superyachts," added Mark Russell, CJR Managing Director.



→ Key functions

The multi-axis mill/turn CNC machining centre key functions include:

- › Super high-speed mode helps provide maximum interpolation capabilities
- › High-gain feed-forward control boosts machining speed and accuracy
- › Variable acceleration control calculates optimal acceleration for a combination of axes
- › Intelligent pocket milling engages a high-efficiency toolpath when milling part cavities
- › Smooth corner control makes cutter path adjustments to help shorten cycle times
- › Custom-made shaft support to ensure straightness and accuracy
- › Real-time tuning ensures optimal machining balance as work piece weight changes

An eco-warrior's prototyping dream

CJR recently installed its latest in prototyping tools with the arrival of one of the largest 3D printers in commercial use in the UK. Simon Lewis, CJR's Head of CFD and Propeller Design, explained a little about why it is so exciting and the difference it will make to design and production.

Can you tell us a little about the printer?

The first thing to say is that it's really big. It has a print area larger than one metre so it is a step change in terms of type of products we can use it for and the speed of prototyping. Previously, we had to print in sections and then join those sections together, even on smaller props, and that adds a lot of time and cost. With the new system, we can print most projects in a single set-up and even the largest projects can be produced in fewer sections, much quicker and cheaper than before.

What was the main goal for investing in this new piece of technology?

It is part of our long-term strategy to bring every aspect of our operation entirely in-house. Previously, we were

outsourcing some prototyping of new propeller and stern gear designs. This was creating a delay in the production process and incurring additional costs for creating complex patterns. Having the new 3D printer removes all that. It gives us a huge amount of flexibility in producing exactly what we want, and that greatly reduces costs and the time from design to finished product.

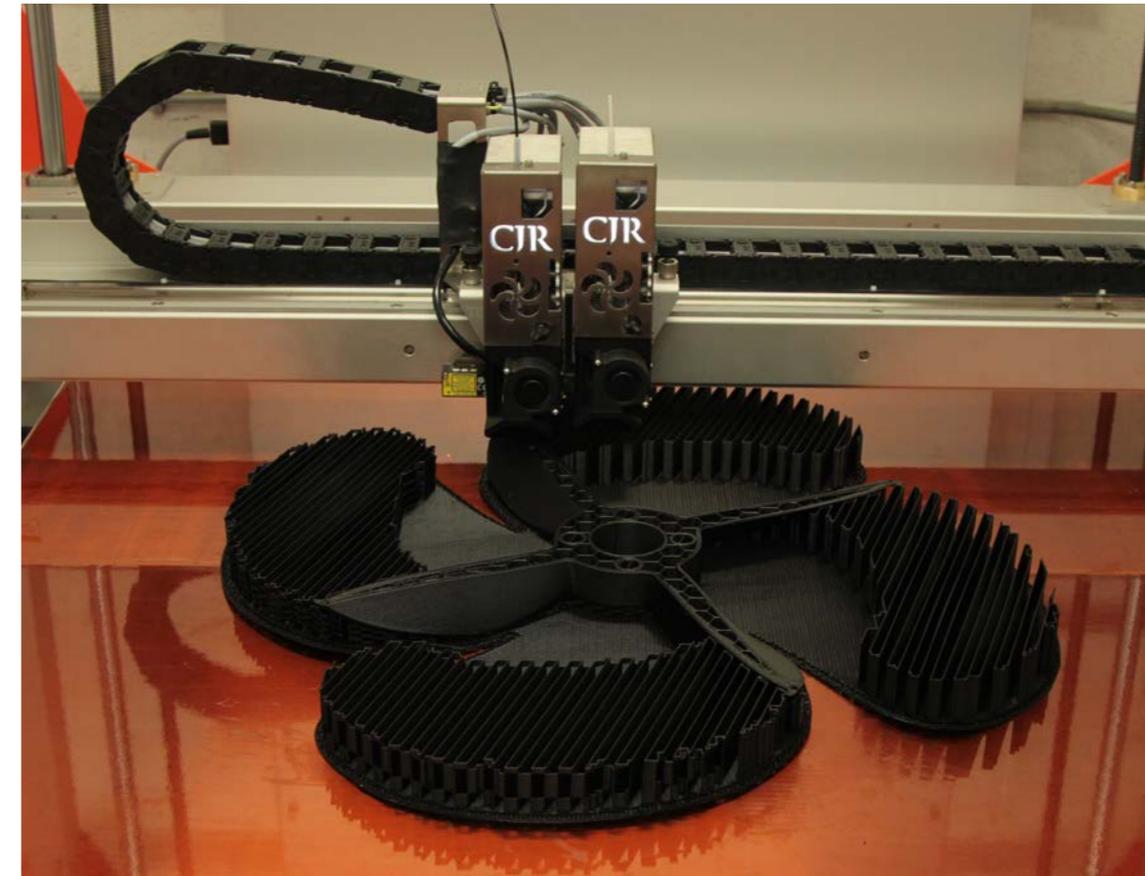
Were there any particular reasons for choosing this particular model?

We have done a fair amount of engineering work since it arrived to match its functionality to our requirements, but initially we chose this model because it had one of the largest build areas and good build quality. Perhaps more importantly though are its eco credentials. Instead

of using petro-based plastics, this 3D printer uses polylactic acid or PLA, which is non-toxic and made using entirely renewable materials such as sugarcane, wheat, or potatoes – whichever is the most abundant locally. As a result, we are not consuming fossil fuels and have zero impact on the environment. We are even able to compost all the support and waste materials!

Where do you think 3D printing will go in the future?

Looking at what is realistically on the horizon, I think the possibility of printing in metal is really exciting. It is already possible, but it's prohibitively expensive at the moment. It will get cheaper, speeds will increase and flexibility in terms of materials will also



improve but knowing when it will be commercially viable is hard to predict. It's a fast-moving industry because it's so young and is still identifying where it can have the biggest impact, but if we can get to the stage where products

can be perfectly and cost-effectively produced in multiple materials – that's when things will really heat up.

CJR PROPULSION APPOINTS: Alex Stevens as new global Technical Sales Manager

CJR is pleased to announce the appointment of Alex Stevens as the group's new Technical Sales Manager. Alex will be responsible for global sales growth for both the CJR Propulsion and CJR Fabrication brands, working across the superyacht, recreational and commercial marine markets.

With well over a decade of technical and engineering experience, Alex will be required to utilise his extensive knowledge to bridge the gap between internal/external engineering teams and the end customer, ensuring the design and manufacturing process is as seamless as possible. As CJR Managing Director, Mark Russell, explains:

"In today's highly competitive environment, simply having well designed, accurately manufactured products isn't enough. You also need top quality people who have an in-depth understanding of what

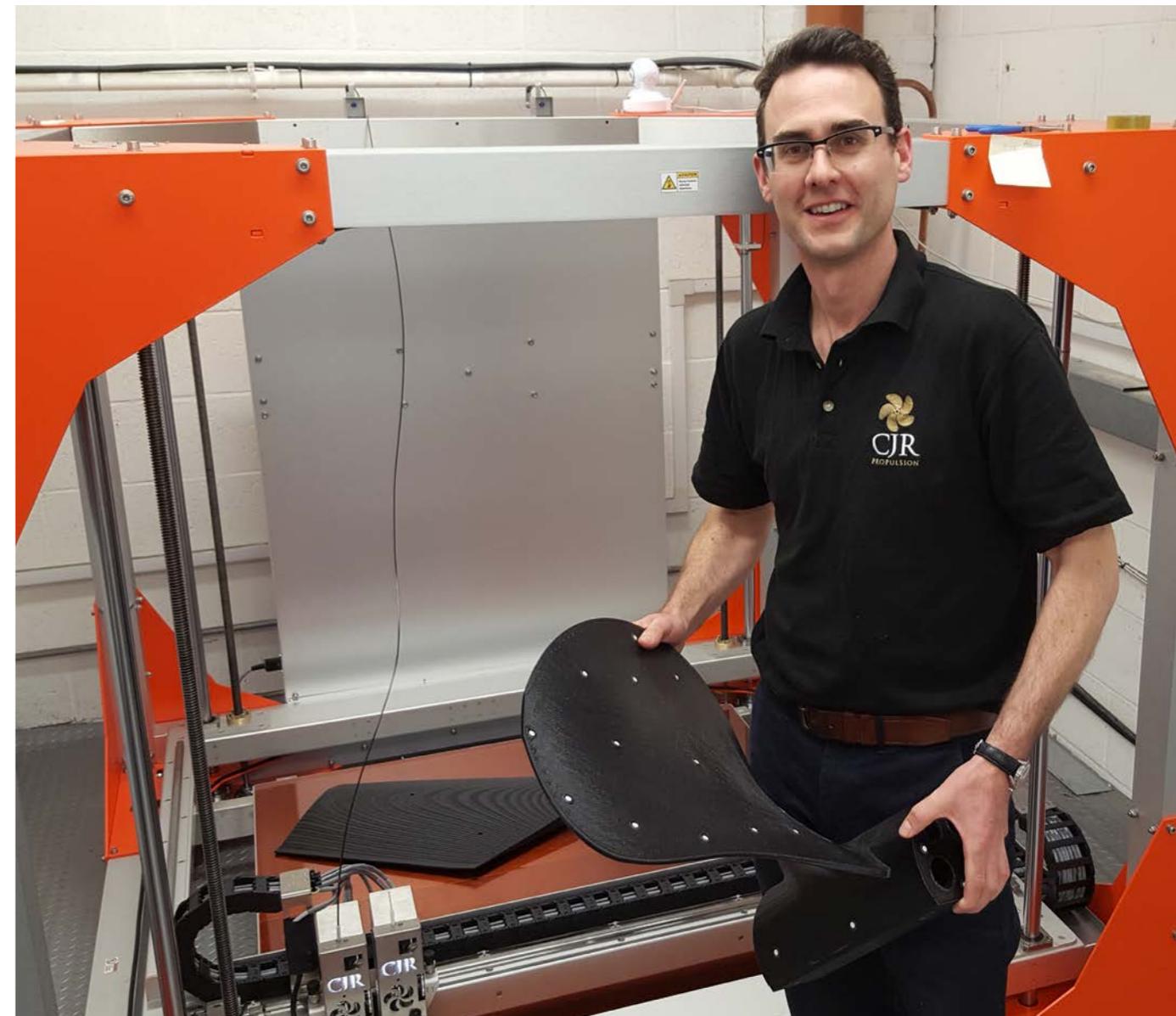
the customer needs, and the ability to provide the appropriate level of customer service. Only by investing in the right people will CJR continue to be the preferred choice for customers and boatbuilders throughout the world.

Effectively, it's about making sure the customer is fully informed at all times and has exactly what they need, when they need it. Alex, with an impressive 15-year career in the marine industry, is perfectly suited to helping us deliver on these objectives. His technical understanding will enable us to get closer to our customers and will help us solidify our reputation as the industry's knowledge leaders."

Prior to joining CJR, Alex held a number of notable roles around the globe, gaining experience within defence, commercial and recreational marine markets. He started his professional career with BMT, where he spent three years as a naval

architect working on defence and commercial craft in both the UK and UAE. He then spent two years working with a propulsion company before joining Princess Yachts in 2005, where he reached the position of Head of Engineering and Quality for the luxury marque.

"Throughout my career I sought to work with businesses and brands that recognised the importance of improving quality standards by utilising the latest available approaches to vessel design and engineering. CJR is the personification of that philosophy, investing in every area where better technical understanding can deliver a better product. I now look forward to working closely with CJR's internal departments, using my qualifications and knowledge to assist effective communication and be a conduit between boatbuilders, customers and design teams, each with different levels of understanding."



Back in action

In January this year, following minor issues with one of her rudders, Wightlink made the decision to remove Wight Ryder II from service in order to perform essential maintenance and replace the aging appendage.



The 520t high-speed vessel, which was built in 2009, transports vehicles and foot passengers on a daily basis, meaning improvements and repairs must be completed rapidly to ensure Wightlink's careful resource and capacity planning is not affected, and impact on travellers is minimised.

With this in mind, CJR Propulsion was selected to design and manufacture the new rudder, with a window of just two weeks to perform all the necessary work. CJR was chosen due to the company's experience with large commercial vessels, its extensive knowledge of class approvals, and a reputation for being able to turnaround projects quickly, without impacting quality.

Once the brief and technical drawings had been received, instead of simply replicating the previous design, CJR set about using its internal design teams to conceive an entirely new rudder – one that would be fully optimised to Wight Ryder II's

specific hull profile. Furthermore, as a commercial vessel carrying passengers daily, obtaining Lloyds' approval was also essential – adding another dimension to the project.

"This project is the perfect example of our in-house capabilities," commented Belinda Russell, CJR Director. "We have invested heavily in systems and tools, which many boatbuilders can't even offer and for our customers that is a huge confidence booster. Likewise, our design approach, processes and advanced manufacturing tools make obtaining class approvals from the likes of Lloyds a far easier process – with everything documented inline with their requirements," Belinda added.

Following the design and analysis, CJR set about manufacturing the rudder using bespoke 3D printing tools to create an accurate replica of the new design in three sections. Once assembled, the plastic rudder was then used to create a female mould,

using a mix of fine sand and resin, into which molten aluminium-bronze was poured to form the rudder. Lastly, a programmable robotic finishing tool was used to guarantee that the final product matched the original design specification to within a one-millimetre tolerance.

Commenting on CJR's performance, Route Superintendent for Wightlink, Ben Phillips, concluded: "I would like to say many thanks to everyone at CJR for fabricating the rudder in a short time, knowing how urgent it was for us with the vessel out of action. The service we received was second to none and the rudder fitted perfectly when installed. This was not a straight forward project and there were a number of challenges to overcome but CJR managed to take all this in its stride and deliver in just two weeks. Overall, a job well done and I will not hesitate to use CJR's services again in the future."



"This project is the perfect example of our in-house capabilities."

Born to ride

CJR Fabrication, a leading manufacturer of bespoke metal products for the marine and architectural market, today announced the completion of a unique motorcycle display unit (MDU), designed exclusively for Princess Yacht's latest 30m superyacht.

The MDU was designed and manufactured in Poole, Dorset, by CJR's team of in-house specialists. It has been constructed from the highest quality 316 stainless steel and toughened glass – answering a brief that called for a secure and aesthetically pleasing solution for the transportation and display of the new 'Lauge Jensen Viking' custom motorcycle while on-board the vessel.

"Since taking over CJR Fabrication three years ago, we have invested heavily in all areas of the business, so it is fantastic to see products made possible by that investment being so warmly received. As is the case with a significant amount of the work we do, it is as much an engineering challenge as it is a design or manufacturing one. We worked closely with the owner and Princess to ensure we created a solution that met and hopefully exceeds the expectations of all those involved," commented Mark Russell,

Managing Director of CJR Propulsion and CJR Fabrication.

Newly constructed MDU, which consists of a landing base affixed to the deck and an upper section, can be crane lifted by using two stiffener bars and four lifting eyes to transfer the case on and off the vessel with ease. Additionally, the upper element can be vertically lifted as a separate entity, enabling ease of movement when lifting the motorcycle in and out of the container. Wheel slots in the landing base also allow the MDU to be compact by reducing the motorcycle's height when in the container.

To ensure the container is safe and secure, support is offered through the addition of two locking pins positioned on the starboard and port which, when fastened, fix the container firmly onto the landing pad. For further security when the vehicle is aboard, the handlebar straps in the base maintain

the motorcycle's balance, an element that is especially important during transit. For safety of passengers on the vessel, a fan has been integrated into the ceiling that ventilates the case with the addition of a petrol detector to alert in the event of fumes being released in or around the container.

CJR Fabrication selected '316 stainless steel' to form the majority of the metalwork for the motorcycle container, due to its corrosion-resistant properties that make it ideal for marine applications. The strong and durable material also ensures the structural integrity of the container, particularly during lifting. Additionally, to suit the style of the Princess 30M, the metalwork was mirror polished and painted in areas, with the forward face coated with a white gel finish to match the paintwork of the boat.

As maximum visibility of the motorcycle was an important requirement for



the client when aboard the yacht, CJR Fabrication positioned the container prominently on the upper deck, with the aft face made up of three toughened glass panels, which have double curvature – making the motorbike easily viewable from outside the boat. In addition, an integrated strip light illuminates the case to maximise its visibility at night.

CJR Fabrication specialises in producing high quality aluminium and stainless steel products for a wide range of applications within the commercial and domestic arena, including oval and round tube, bespoke deck gear and stern gear, propellers, tanks and architectural equipment. Furthermore, CJR Fabrication is now a preferred supplier to a number of leading OEMs, boatbuilders and specialist refit yards looking for the highest levels of precision design and manufacture.

CJR PROPULSION SIGNS: Exclusive distributor agreement with Sea-Tek



CJR Propulsion has announced the signing of an exclusive distributor agreement with Sea-Tek of Norway, establishing CJR as the sole distributor of Doen Waterjets in the United Kingdom and Republic of Ireland.

Sea-Tek supplies high-quality mechanical, electronic, and hydraulic systems for controlling propulsion systems to the marine industry across Europe and holds the global



distribution rights to Doen Water Jets. Doen Pacific, a leading designer and manufacturer of waterjet propulsion systems for the past 48 years, is one of only a handful of marine waterjet manufacturers capable of building waterjets to match engines from 100 to 4,000kW, with some 4,000 applications already on the water in more than 30 countries.

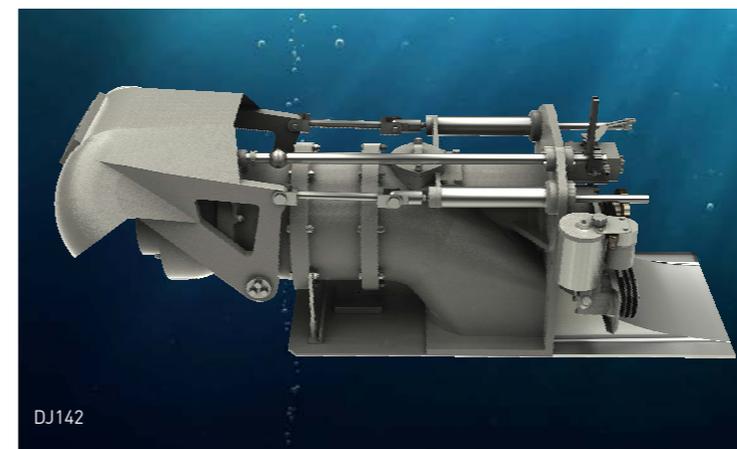
Waterjet propulsion offers advantages for high-speed vessels and specialist applications, such as wind farm vessels where lower engine load factors and the ability to push against the turbine are critical.

Waterjets are also well-suited where extra safety, as well as the ability to operate in shallow waters without risk of damage,

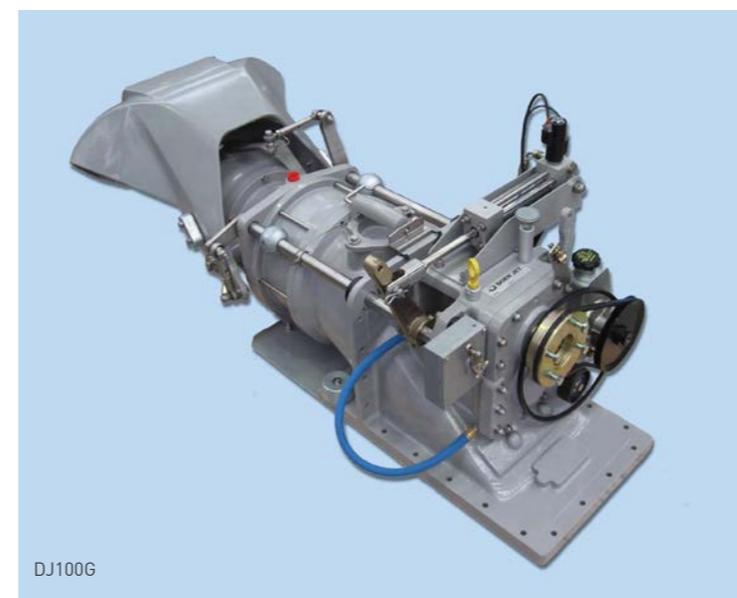
is required. This is combined with excellent manoeuvrability including an emergency stop system, together with station keeping and dynamic positioning features.

CJR Propulsion will supply the full range of Doen waterjets from its factory in Southampton, enabling it to provide complete propulsion solutions to an even greater range of vessels.

"We have long admired the opportunities that waterjets can bring to projects where specific requirements need to be met. For example, 80 per cent of the wind farm service industry currently uses waterjets, so we felt it was important that we filled this gap in our product offering to ensure that, no matter what the project is, CJR can be relied upon to provide the most appropriate and effective solution available," said Belinda Russell, CJR Director.



DJ142



DJ100G

→ Another satisfied customer

Customer feedback is key to highlighting the genuine difference that CJR is able to make to a vessel's performance. One recent project with Genoa Pilots required CJR to use its extensive CFD knowledge to design the optimal propulsion package for the Nelson 40, as Stephen Thomas, MD of the Boat Development Co Ltd explains:

"The latest Nelson 40 delivered to Genoa Pilots this May is the most efficient that we have ever built. We optimised the angle of the drive-line and the position of the engines which, combined with the excellent design and execution of the CJR propellers, contributes to fulfilling our aim of constantly improving the breed."

'Top-of-the-segment' with CJR

Estonia's Baltic Workboats has announced that construction and sea trials have now been completed for the first of its new 15-metre aluminium wave-piercing pilot boat, with excellent results being reported by those involved.



Named AHTO-14 and already in the hands of her new owner, the latest in Baltic's wave-piercing series has an overall length of 14.95 metres, with maximum beam of 4.50 metres and claims to deliver 'top-of-the-segment' seakeeping capability and ride comfort'.

AHTO-14 features a complete propulsion system from CJR Propulsion, who analysed the projected performance using lifting surface methods and quasi-steady state analysis of the propeller blades. During the design process, CJR investigated over 20 possible propeller iterations using existing CFD analysis of similar hull forms before the final fully optimised set-up was chosen.

"As with all pilot boat projects, ensuring the propeller and stern gear is designed to withstand the harshest operating conditions is vital. With Baltic, we were asked to ensure maximum propeller efficiency, minimum noise, vibration and cavitation, whilst also meeting the vessel's design speed. The finished result met or exceeded all our expectations, so we are delighted to have another satisfied customer," commented Simon Lewis, Head of CFD and Propeller Design.

AHTO-14 also has a number of additional bespoke features, developed specifically for her owner, including a hydraulic rescue platform at the aft of the vessel. In light of this and other special requirements, particular attention was paid to keeping her draft to a minimum, with the finished vessel coming in at only 0.85 metres.

Another focus for the owner was pilot safety due to the dangerous working environments that the pilots are subjected to. In response, the wheelhouse windshield was completely redesigned to maximise visibility and safety.

AHTO-14 is powered by twin Volvo Penta D13MH marine diesel engines, each producing 368 kW @ 1800 rpm, using ZF marine transmissions through CJR's fixed pitch MRK Pilot propellers to propel her to above 27 knots.



Second gulf craft 'Majesty' 155

CJR Propulsion has recently completed work on a full propeller and stern gear package for a second Majesty 155 from Gulf Craft, which is due to be launched in 2017 at Umm Al Quwain.



The latest project follows the success of the first Majesty 155 - now named M/Y Escape, which was also equipped with a complete propeller and stern gear package from CJR, and received impressive reviews when she was delivered back in 2014.

"Being chosen to work on the second 155 is a testament to the relationship CJR has developed with Gulf Craft. We have worked together very successfully for a number of years, so it's great to see the company continue to expand its superyacht business and choosing CJR to help it deliver vessels with class-leading propulsion systems," said Mark Russell.



CJR adds the latest in portable 3D scanning to its design and manufacturing arsenal

CJR Propulsion is always on the look out for new technology to improve the performance of its products or to make the design and manufacturing process easier and more efficient for its customers. The arrival of CJR's latest investment, an advanced portable 3D scanner, is already making an impact on both these fronts.



3D scanners are still relatively new and it is only recently that falling costs and increasing accuracy have converged to make the latest generation of products highly attractive to the propulsion industry. 3D scanners, and more specifically portable scanners, now promise to reduce prototyping costs, increase product repeatability, and enable analysis of even the most complex propeller and hull forms in situ.

For CJR, which works on a high percentage of bespoke refit and repair projects, the portability of the new scanner was of particular interest, as Simon Lewis, Head of CFD and Propeller Design comments:

"Our reputation for maximising efficiency means we get a lot of enquiries related to existing vessels that might need just one prop replaced

or where they are looking to increase efficiency through a new stern gear or propulsion system. Whereas historically, replacing an existing propeller meant removing it from the vessel and sending it to our facility to be scanned, the new portable scanner means propellers can be scanned on the dockside – often without removing them from the vessel. Likewise, gaining a true understanding of a hull form is the only way to ensure you are maximising propulsion efficiency. For an older vessel, with no technical drawings available, being able to scan the entire hull, including appendages, in just minutes has noticeable benefits for us and the customer."

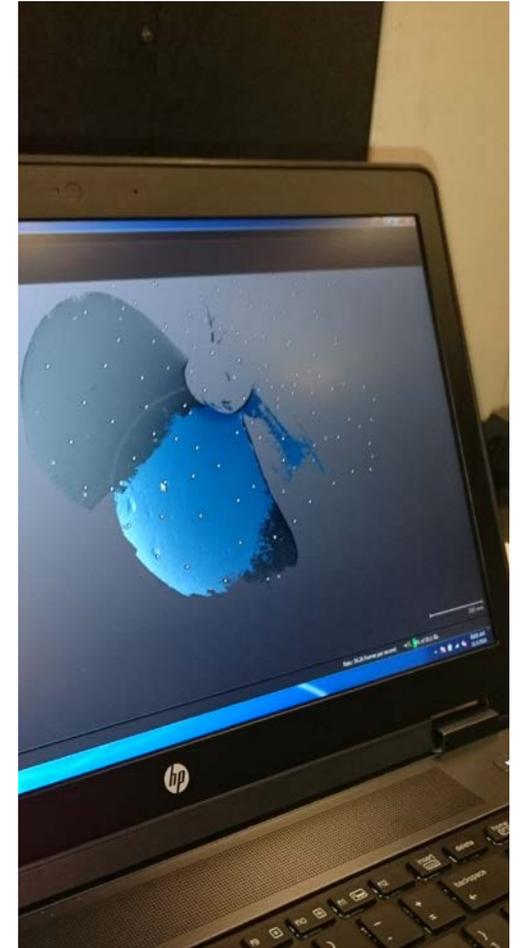
Using the new scanner, replacement propellers can be rapidly designed by importing the 3D scan directly into CJR's bespoke design programme before a 3D printer is used to create

a full-size mould. The propeller can then be cast from the reverse mould before being tested against the original scan to ensure the replacement propeller perfectly matches the old one.

The new 3D scanner, from one of the world's leading manufacturers, is able to capture 480,000 measurements every second from its eight lasers and is 25 times faster and 40% more accurate than previous models, with an error tolerance of just 0.030 mm. With this level of accuracy, the new scanner will also play an important role in ensuring every product that leaves CJR's factory meets both the original design and CJR's own quality standards, as Simon concludes:

"We have invested in every stage of the design and manufacturing process. From our CFD (Computational Fluid

"Being able to scan the entire hull, including appendages, in just minutes has noticeable benefits for us and the customer."



Dynamics) and advanced modelling software, to robotic finishing tools, human experience has consistently made way for automated, technical precision. The new scanner could be considered the final tick in that process – capable of checking every new prop design we produce against the original specification to ensure the whole process is working as it should."

CJR is also now able to offer 3D scanning on a consultancy basis so if you require detailed and highly accurate insight into an existing hull or any other area, get in touch.

21st Century Propulsion: Partnering with the best for world-class results

When REINTJES, the German gearbox specialist, set about designing their reliable pod-drive propulsion system FORTJES® for the latest Dominator Ilumen yacht, the interested parties were introduced to CJR Propulsion and a successful collaboration was born.

Dominator had worked with REINTJES on its most recent D800 and both businesses were aware of CJR's extensive experience in advanced fluid dynamics modelling. Following successful discussions at the METS Trade Exhibition, CJR was brought in to assist REINTJES in maximising performance efficiency and reducing vibration and cavitation even more. Therefore, REINTJES later selected CJR's propellers to be combined with its pod-drive system FORTJES® for the D800 project.

The FORTJES® propulsion system was developed by REINTJES to cope with almost any operating requirement and to exceed the latest industry standards, with increased efficiency, lower emissions and maximum comfort in a compact and space-

saving design. At the centre of this concept was the use of counter-rotating propellers (CRP). The developed CRP push/pull system can be used for any semi-displacement or planing yacht design (from 300 to 2,000 kW per pod) and results in significantly reduced propeller load, as well as less cavitation and noise, and more thrust at high speed.

During the project phase for the D800, careful attention was paid to ensure every possible operating condition and any potential issue got resolved before production commenced. It was at this stage that REINTJES began working with CJR, as Simon Lewis, Head of CFD and Propeller Design, explains:

"This was a challenging project and one that required the full breadth

of our CFD (computational fluid dynamics) capabilities. As mentioned, FORTJES® utilises contra-rotating propellers that are separated by a 'gondola', so the propellers do not follow standard propeller models for either single propellers or contra-rotating propellers.

"To ensure we would get the most out of the system, we created a large number of unsteady CFD simulations in order to understand the optimal position – effectively ensuring that both the forward and aft propellers are designed to deliver optimised efficiency, while minimising noise and vibration. This really was a complex objective, as the inflow into the aft propeller is highly turbulent and unsteady due to already having passed through the forward propeller.

"From the outset we used a rational design approach typical of big ship or military vessel design"

Andrea Agrusta, Head of Engineering and Hydrodynamics for Dominator and Ilumen

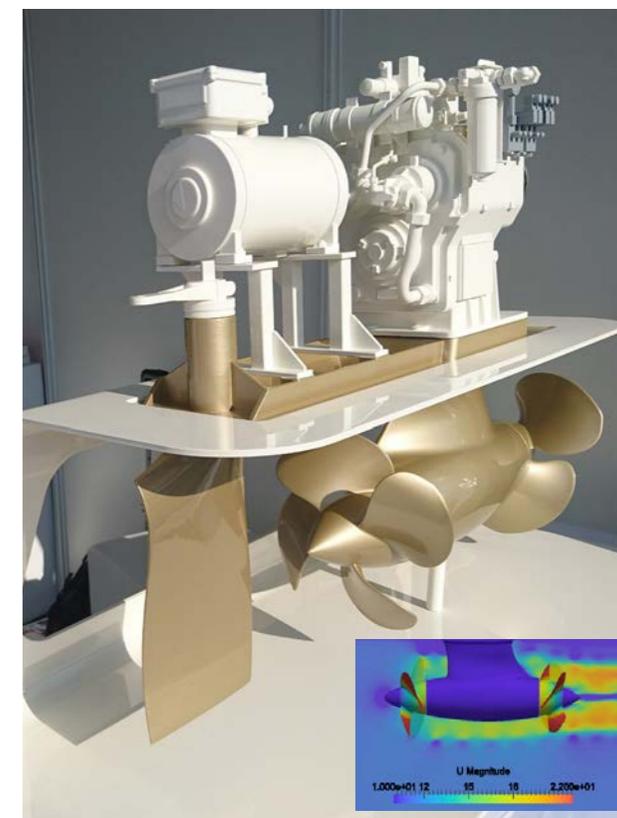
Through our simulations and analysis, we managed to overcome each of our issues and, working closely with the FORTJES® and Dominator teams, designed the highly efficient propellers and twisted rudders that are now in production."

The FORTJES® propulsion system comes with a rigid design that allows for peak manoeuvrability at low speeds and high stability at high speeds, as well as removing the need for an inclined shaft, so 100% of the engine's thrust is pushing the vessel forward. The pod-drive system is also available with CJR designed twister rudders, which minimise the premature cavitation and related vibration through a twisted profile that is perfectly aligned with the propeller flow angles along the entire span, reducing the suction pressure peak that can form on or near the leading edge of the rudder.

Following Dominator's collaborative involvement in the FORTJES® project, the Austrian-Italian shipyard will

take full advantage of this unique propulsion system, using this dynamic pod-drive on the latest 28m Ilumen brand yacht. Angela Pernsteiner, Dominator Ilumen Managing Partner, spoke recently to Superyacht Business magazine about REINTJES and the collaboration taking place with a number of leading equipment manufacturers:

"REINTJES contributed to develop the perfect propulsion system for the Dominator Ilumen High Performance Hull. Our engineers met several times and were in close contact with the REINTJES engineers. Furthermore, the English company, CJR Propulsion, was another important part of the team. They joined forces with Ilumen and REINTJES to develop the perfectly matching twisted rudders and counter-rotating propellers."



Breaking records with Team Britannia and CJR Fabrication

Team Britannia is a multi-million pound British bid to design and build the world's fastest and most fuel-efficient wave-slicing powerboat, in order to compete for the much-coveted UIM around-the-globe record.



To complete the journey in the shortest time possible, every element of the vessel had to be carefully considered by Team Britannia's skipper, Alan Priddy, and all those involved with the vessel's design and development. Ensuring the highest levels of efficiency, the lowest possible weight and the ability to withstand the most hostile weather conditions nature can muster, were all key considerations for the project. As part of that process, Team Britannia contacted CJR Fabrication to collaborate on the design and manufacture of the complex fuel tank system which will power the boat around the world.

CJR is the marine industry's leading authority on fuel tank production, offering 20 years and 40,000 tanks worth of experience and the ability to

CE mark tanks for additional peace of mind.

Michelle Davies, General Manager for CJR, picks up the story: "For this type of endeavour, the fuel tanks are one of the most critical elements, consuming the majority of space below deck and adding the largest proportion of the weight. For CJR, our biggest challenge was to design the required tanks around Team Britannia's other on-board equipment and the structure of the vessel itself. In total, there are six CJR engineered tanks on board, some of which are almost four metres in length, and collectively they hold 35,000-40,000 litres of fuel so the boat can travel 3,600-4,000 nautical miles on a single fill up.

"The structural integrity of the tanks was an obviously important

consideration due to the extreme forces the vessel will be under during the most challenging sections of the journey. To deliver this increased level of safety and security, we had to understand how to 'flatten' the totally bespoke tanks with the smallest number of welds, whilst also thinking about maximising material utilisation to maintain a tight control of the budget.

Our ability to manage every stage of the process, from CAD design through precision 5-axis waterjet cutting to coded welders and CE mark approval, means we can relieve the client's stress by taking ownership and retaining control over every step of the whole process, end-to-end. As a result, we are able to offer important assurances related to material traceability and quality control, and



that is a big part of why we are so trusted in this marketplace."

The UIM world record requires participants follow a recognised circumnavigation route, with the craft passing through a number of defined locations. The journey must also start and finish in the same place, although that can be anywhere in the world.

Team Britannia's route will start in Gibraltar, travel to Puerto Rico, then through the Panama Canal to Mexico and on to Hawaii, Guam, Singapore and Oman, before crossing the Suez Canal to reach Malta and then finishing the journey back in Gibraltar.



New advanced tube 'ovaliser' sets a new standard for handrails and much more

CJR Fabrication has now commissioned the latest addition to its manufacturing offering with the 'Hydra-Ovaliser', a bespoke tube manipulation and bending tool.

The Hydra-Ovaliser has been developed in-house and will be used to create mirror-finish oval tubes up to 5.8 metres in a single length, replacing the commonly used but less precise 'chain-driven system'. The new equipment is designed to extrude oval or round tubes for all manner of architectural and design-focused applications but primarily will be used for bespoke handrails.

The Hydra-Ovaliser promises to produce exceptional results through the use of a powerful, six-meter-long hydraulic ram, which pulls the tube at a constant speed and resistance to deliver a perfect, ripple-free finish, every time. The new apparatus also benefits from a precision carriage system, based on Igus Track systems, which ensures a perfectly aligned delivery into the equipment. Multiple sections of tube can also be easily joined with CJR Fabrications' 'high-shine' cast joiners.

"We are lucky enough to work with some of the world's most prestigious yacht brands, as well as several leading architects and luxury building groups, all of which rightly expect the very highest levels of quality but still demand a competitive price and rapid turnaround. The new Hydra-Ovaliser fits all of these requirements and

positions CJR Fabrication above the competition and uniquely equipped to deliver an even broader range of products of the highest quality," commented Michelle Davies, General Manager for CJR Fabrication.

CJR Fabrication is already a leading player in this market, producing over 3.5 kilometres of oval tubes last year alone. The new equipment is suitable for 316L stainless steel and aluminium tubes from 23-168mm in diameter, and can draw around six metres of tube every minute.





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