CJR PROPULSION

MOMENTUM

NEWS FROM CJR PROPULSION

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Introduction

Welcome to the latest issue of the CJR newsletter. What a year it has been! Back in 2010 we had just started talking about our own computational fluid dynamics (CFD) department; designed to provide the most performance oriented propellers on the market. Fast-forward twelve months and things have moved on a lot. Today, we're leading the field when it comes to producing propulsion systems which exceed expectations and deliver more performance, lower vibration and better longevity than any other propeller provider. Together with our Australian partner VEEM, we have been working with some of the best superyacht builders in the business and have been delivering fully optimised propeller and sterngear packages to the likes of Princess, Sunseeker, Ferretti , Perry and Gulf Craft, to name just a few.

In this issue, we're talking about projects which have benefitted from CJR and VEEM's advanced design and engineering prowess and how performance and efficiency has been improved through a more scientific approach to propeller and sterngear design and production. We also talk about CJR being recognised for its commitment to safety and compliance and our appointment as UK distributer for CIP Marine.

With that in mind, we invite you to take a look at what we've been up to and, if you attending the show, we hope to see you on the stand for a chat about CJR's comprehensive design and manufacturing solutions or simply to discuss how we can make a positive difference to your next project.

Many thanks

Mark Russell

> "We have been working with some of the best superyacht builders in the business..."

CJR approved by the big six!

Approved by all six of the marine industry's biggest classification societies, CJR can now pitch for the very best projects around the world

CJR is now approved by all six of the marine industry's biggest classification societies and, in addition, is recognised as the only UK manufacturer certified to build P-brackets to RINA standards. The company's recent approval by ABS can now be added to its existing awards from Germanischer Lloyd, DNV, Lloyd's Register, BV and RINA .

CJR's head of design, Marek Skrzynski, commented on the news: "The classification process is an area in which we continue to invest and reflects our continued commitment to safety and compliance. Our objective has always been to exceed the highest industry standards wherever possible, not least as it's in the interest of both CJR and our customers for us to do so. Being recognised in this way means we are also able to quote for projects many of our competitors cannot legally fulfil and that puts us at an obvious commercial advantage.

"Getting to the stage where we are approved by all the major classification societies has actually required very few changes to our existing systems and procedures, which makes it a fairly trouble free and rapid process. We are now one of the only propeller and sterngear manufacturers which is able to boast all six and this enables us to pitch for the very best projects around the world."

Mark Russell added: "It has taken a real team effort to get to this point and meet all the individual requirements for each society. Each department within CJR had its own role to play and I am thrilled that we have achieved this level of recognition in such a short space of time. For our customers, it demonstrates that they are working with an organisation that understands the importance of regulation and compliance and one which is truly committed to quality and exacting standards."

Sensational

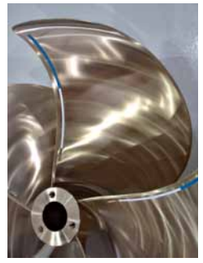
Mega yacht Sensation sees performance improvement with VEEM Interceptors

When the owners of the 50 metre Sensation decided they wanted to improve the mega yacht's performance, Monaco Marine was selected to carry out the work required. High on the superyacht specialist's 'to do' list was finding a propeller manufacturer who could provide new props with the quality and performance the owners were looking for. After a competitive bidding process, Monaco Marine chose VEEM's industry-leading Interceptor Propellers, supplied through CJR's French partner, Tech Helice, to ensure the project ran on time and delivered the required performance improvements.

First launched by Sensation Yachts in 2007, and currently managed by Fraser Yachts Monaco, the New Zealand built semi displacement motor yacht featured exterior styling from Sensation's own design team and interiors by designer Gelko Kaniza. Built for a exclusive and highly private client, Sensation was constructed in aluminium, and was designed to be superbly luxurious, with an opulent interior that includes a full bar complete with grand piano.

With luxury at the vessel's core, the new props needed to deliver optimum performance, with zero vibration and highly efficient running. Tech Helice Owner, Glen Bishop, explains how this was achieved: "On any project of this size, they are a lot of people involved so the selection process was very detailed, especially as this was the first time Monaco Marine had bought props from a third party. This actually worked in our favour, as VEEM's Interceptor props are amongst the most technically advanced propellers on the market – due to the revolutionary Interceptor Strips. The strips allow the pitch of the propeller to be adjusted quickly and accurately, without mechanically compromising the fully CNC contoured blade surface that is standard on all VEEM propellers.

"The prop uses different height strips to alter the pitch and find the optimum setup. Each propeller blade is specially designed to allow a captive groove to be machined into the trailing edge of the pressure face to receive the special strip, with centrifugal force used to hold the strip in place. The high-density polymer strips are cheap to replace during routine maintenance and are all colour coded to enable easy identification of the size. It is this unique method of effectively adjusting the pitch, even underwater, which allows the maximum performance potential of the vessel to be realised upon launch, and throughout the life of the vessel."



> "The prop uses different height strips to alter the pitch and find the optimum setup."

The commissioned, 5 blade Interceptors were fitted in March this year and trials showed significant improvements over the original propulsion system, as Bishop explains: "Compared to the original propellers, the new Interceptors are more efficient and the boat gained around half a knot at top speed. However, at cruise speeds the difference was even more noticeable, with an additional knot and a half, as well as reduced vibration and excellent fuel economy."

In total, the project took just eight weeks from commissioning to delivery and was delivered on time and in line with the schedule laid out at the project outset.

"Working with Glen and the Tech Helice team on this project was a breeze. They have excellent relationships with Monaco Marine and other similar partners in the area so our role, as the European VEEM distributor, was simply to facilitate the timely delivery of the props. With the technical elements of the brief, as well as the time frames laid out by the client, that was a challenge in itself but one which we easily met." Concluded CJR director, Belinda Russell.

Going green

CJR lays out plan to help builders achieve RINA Green Plus Notation

Back in 2008, RINA, the Italian classification society, announced its latest recommendations for stronger environmental regulations. Named Green Plus, the notation has more recently started to gain traction and several builders, including Princess and Sunseeker, who incidentally are both CJR customers, have now been awarded the Green Plus and Green Plus Yacht Gold awards respectively.

The purpose of the new notation is to keep a check on a yacht's overall effect on the environment. The voluntary scheme allows builders to choose whether they wish to construct their yacht according to the notation. However, the advantages of doing so make it difficult to imagine why any builder wouldn't place a greater emphasis on environmental responsibility with this in mind. Any company opting for Green Plus will not only get global recognition but also help distinguish itself from the competition in what has become a increasingly competitive market.

This industry wide transition to becoming more environmentally aware has led CJR to demonstrate where it's propulsion systems and design services can be of benefit to an organisation looking to achieve this standard. Alternatively, for those which have already achieved a lower level of the notation, CJR has identified where it can assist its clients in reaching the highest level, Green Plus Yacht Platinum.

"Any company opting for Green Plus will not only get global recognition but also help distinguish itself from the competition."

CJR's head of design, Marek Skrzynski, picks up the story: "After researching the criteria RINA uses to assess a builder or vessel, and understanding the products and services we supply, it was clear CJR could make a significant contribution to achieving RINA Green Plus. This is largely accomplished by supplying products and services of the highest quality to and fulfilling RINA requirements expressed in the RINA rules for pleasure and commercial yachts." Skrzynski continued: "Looking at a propulsion system, the fuel consumption and emissions can be minimised in two ways. Firstly, by implementing highly efficient propellers; and secondly, by applying low drag passive parts of propulsion systems and appendages of the hull, such as shaft brackets, shaft fairings, propeller tunnels and rudders."

To achieve these objectives, CJR requires an understanding of the characteristics of the flow around the hull, including the working propeller. In order to obtain that information CJR has developed a procedure of flow analyses, combining CFD with vortex lattice lifting surface methods, which allows analysis of the hull behaviour in either a full planing or displacement conditions.

"Every boat aspiring to achieve the Green Plus notation should be fully analysed to enable optimisation of her appendage and propeller tunnel shape design. At CJR we use our own advanced computational fluid dynamics department but there are other methods which can produce a similar, if less detailed, results. Without a comprehensive knowledge of the propeller wake, you simply can't design the most efficient propeller. In addition, with CFD you are also able to analysis the rudders. With their section aligned with the flow, you can further reduce drag and improve efficiency. This is just a few of the areas where our design services can help and we are obviously more than happy to provide the finished products as well, making it even easier for a builder to choose CJR over the competition." Skrzynski concluded.

CASE STUDY

BOAT: Sunseeker 73 Manhattan with MAN 1550hp

Since the introduction of 70 Manhattan in 2007, CJR has analysed and developed sterngear and propellers across the range of engine options. The result of that development was implemented to new 73 Manhattan, based on slightly modified 70 Manhattan hull. The boat was equipped with low drag P-brackets, highly efficient propellers, and rudders aligned with the flow of propeller race. Significant improvements were recorded over the initial speed estimation, which was 33.5kn. In reality, the boat achieved 36.2kn on a recent trial. Additionally separate trials were carried out to record the impact of new flow aligned rudders. The new rudders added an additional half knot to the top speed and a gain of up to two knots was observed in the cruising speed range.

The results of trials such as this clearly demonstrate the potential for significant performance and efficiency improvements, which could easily and cost effectively be implemented other almost any other unique, semi or production vessel.

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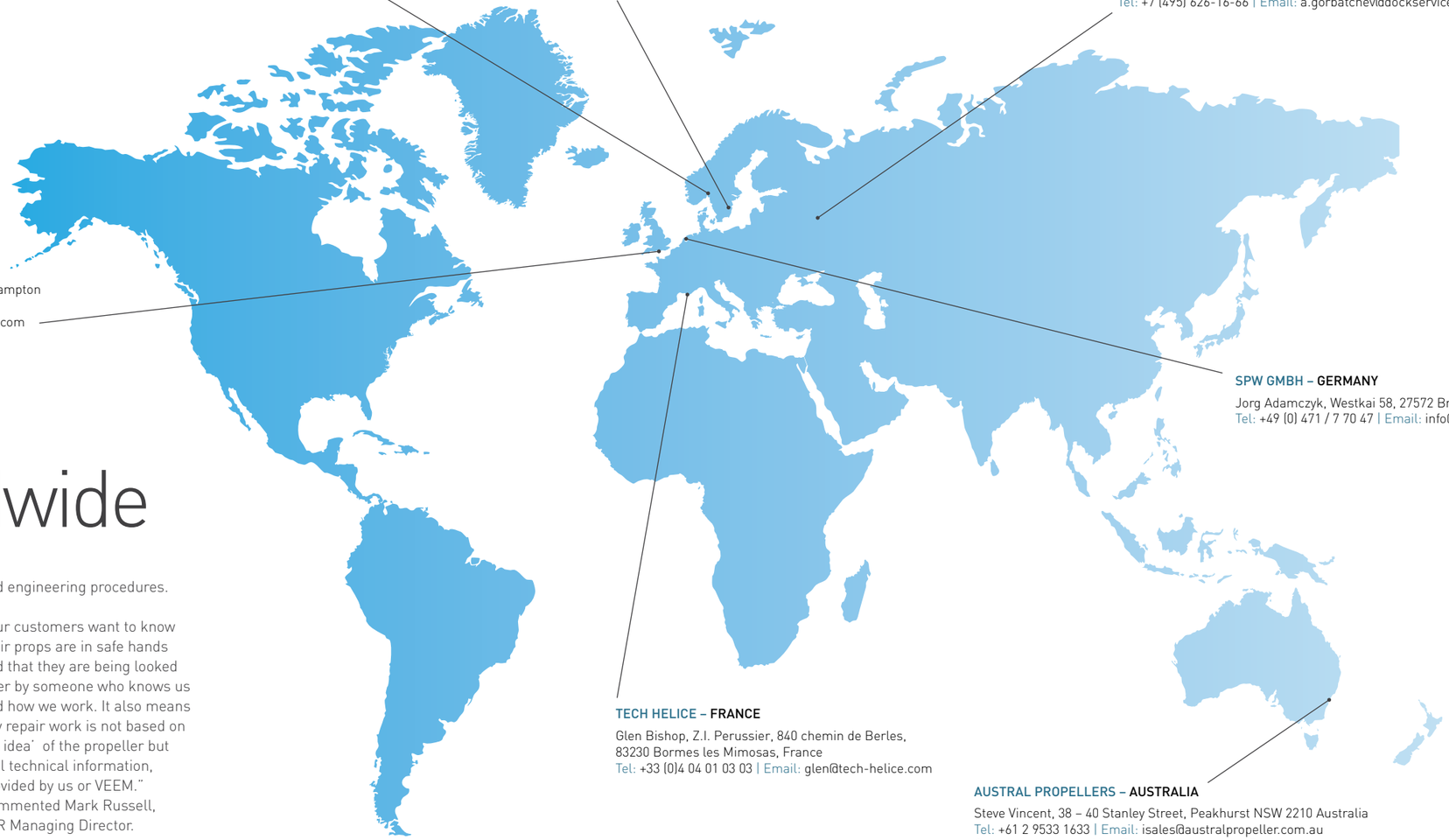

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Supported worldwide

CJR and Veem products are how supported in locations around the globe. Launched last year, the CJR Propulsion dealer and service support network has gone from strength-to-strength and recent months have seen the addition of several new centres – where either VEEM, CJR or products from either manufacturer can be serviced, repaired or replaced.

The global partnerships, established with some of the most professional service organisations in the industry, guarantees any work on existing equipment is completed to the standards set out by CJR and VEEM, regardless of where in the world you are. The network also ensures any new or replacement props are fitted to the correct specification and optimised for efficiency and performance, in-line with design and engineering procedures.

"Our customers want to know their props are in safe hands and that they are being looked after by someone who knows us and how we work. It also means any repair work is not based on 'an idea' of the propeller but real technical information, provided by us or VEEM." Commented Mark Russell, CJR Managing Director.

Introducing the new compact TrialDAS

CJR launches its latest innovation with the TrialDAS trials data acquisition system.

Gathering accurate and detailed trial information is key to establishing the performance of the vessel and the propulsion system. In order to obtain required performance data during sea trials, a portable data acquisition system is required, one which allows data to be collected even in rough sea conditions, when reading on board instruments proved to be difficult task. To solve the problem, CJR has taken a novel approach. Instead of using an existing system with limited functionality, CJR has adapted the same technology used to gather flight data from unmanned air vehicles (UAVs). The control of UAVs requires real-time accurate information about the aircraft attitude and GPS position and is , in many ways, similar to the information required during sea trials.

Over the past six months, CJR has been working in collaboration with a major autopilot system manufacturer to develop the CJR TAS – a data acquisition system specifically tailored to gathering useful and accurate statistics during sea trials. The new TrialDAS features a comprehensive onboard sensor suite (3-axis accelerometers, 3-axis gyroscopes, 3-axis magnetometers) and uses complex algorithms to combine the collated information to provide accurate trim, roll and heading information. It has a GPS receiver with an active antenna to provide ship position, ground speed and heading, and data is collected 10 times per second. The acquisition system also allows on-board vibration levels to be measured at a frequency of 1kHz, with data acquired 50 times a second. The system is expandable, and adaptable, with plans for a shaft RPM sensor, rudder angle and shaft torque sensors well underway.

"The TrialDAS is another example of CJR doing more to add value for our business partners and global customer base. We are committed to ongoing R&D and this is a great example of what is possible when you collaborate with specialists in other industries." Commented Mark Russell, CJR's managing director.

The TrialDAS includes a real time monitoring program, and automated reporting so that reports can be generated at the touch of a button and before the yacht is even moored up back in the harbour. Trials relating to specific RPM ranges or particular conditions are also possible with the TrialDAS' easy to use start-stop functionality, meaning multiple reports can be generated from a single trial.

The TrialDAS will be available to view on the stand at the show.

"The TrialDAS is another example of CJR doing more to add value for our business partners and global customer base."

CIP finds trusted partner in CJR

CJR Propulsion appointed distributor for Columbia Industrial Products (CIP)

CJR Propulsion has been appointed distributer by Columbia Industrial Products (CIP), for its extensive range of composite marine bearings. The agreement covers the distribution of CIP MarineTM, all self-lubricating rudder and stern tube bearings, within the UK and Ireland.

CIP MarineTM is range of advanced laminated composite products which are environmentally sustainable and manufactured by impregnating textiles with thermo setting resins and solid lubricants. This highly specialised, extremely reliable, self-lubricated composite material is designed to eliminate complex lubrication systems; which can lead to undesired maintenance and increased dry docking time.

Mark Russell, CJR's managing director, commented on the appointment: "CIP has a reputation for producing products which utilise the very latest technological developments and are of the highest quality – reflecting CJR's own brand values and ethos and making the partnership a perfect fit. We have been working with CIP on many of our superyacht projects over the past twelve months and have found them to be unrivalled in terms of customer service, durability, functionality and design. We now look forward to collaborating to further develop the UK market for these exciting products."

As 'self-lubricated' rudder, stern tube and thruster bearings, CIP MarineTM offers the lowest friction coefficients, as well as minimal coefficient of thermal expansion, with negligible moisture absorption. The whole range is naturally corrosion resistant and lightweight, whilst having high load and high impact capabilities. The company's products also provide excellent dimensional stability in all environments, are easy to machine and can be press or freeze fitted, with the ability to machine in place, while still optimising the friction, wear and bearing functions.

Working with CJR, CIP's custom range will be designed to the customer's individual specifications for both below and above the water line, and are suitable for all applications from commercial vessels to superyachts. CJR will offer an extensive range of ID sizes up to 60" (1524mm) inner diameter and provide the options for raw tubes / sheets or finished parts.

"We found CJR to be the upmost reputable company to partner with in the UK for the marine industry. CJR has the expertise and quality standards that we are proud to have representing CIP products and specifically CIP MarineTM. We believe that combining the CIP and CJR brand names is going to give both companies the long term competitive edge necessary to dominate the industry. We are excited to about this new relationship and the further development of CIP MarineTM to the UK," Stephen Phillips, President of CIP, concluded.