

Opportunities on the UK's south coast

Home of world-class marine and maritime expertise



 **INVESTMENT
IS
GREAT**
BRITAIN

Contents

03 Join a global centre of technology, research and trade	08 Commanding composites: Magma Structures, Portsmouth	14 Robots rule the waves: ASV, Portsmouth	19 AutoNauts take on the world: MOST, Chichester and Plymouth
04 Sails set for success: Land Rover BAR, Portsmouth	10 Tides of change: Sustainable Marine Energy, Isle of Wight	16 Trading with the world: R&M Electrical, Southampton	20 Tools for tomorrow: Centre for Maritime Intelligent Systems, Portsmouth
06 Tradition meets technology: Princess Yachts, Plymouth	11 Full speed ahead: Marine Data Systems, Isle of Wight	17 From Nelson to now: Sea Sure, Warsash	22 Room to grow: development in Tipner, Portsmouth
07 Harvesting motion for energy: Witt Ltd, Plymouth	12 South Coast Marine Cluster: Portsmouth to Cornwall	18 Head South for opportunity: South Yard, Plymouth	

▼ Sustainable Marine Energy



Join a global centre of technology, research and trade

The south coast is the UK's number one location for marine and maritime capability.

▼ HMS Westminster in dry dock, Devonport, Plymouth



The south coast's strong maritime heritage and cutting-edge R&D attract a growing network of scientific, advanced engineering and high-tech manufacturing companies.

This exciting industry cluster, allied to world-leading universities, boasts a highly-skilled workforce, significant business support and attractive relocation sites.

Successful companies such as ASV, Babcock, Burgess Marine, Magma Structures, Princess Yachts International, Rolls Royce Marine Electrical Systems, Southern Maritime Services and Valeport choose the area for their operations. And there is a significant Ministry of Defence presence, which also offers supply chain opportunities.

The universities of **Plymouth**, **Exeter**, **Portsmouth** and **Southampton** host marine and maritime research centres with world-class reputations. **Portsmouth's** Centre for Maritime Intelligent Systems and **Plymouth's** Marine Biological Association and Marine Laboratories are leaders in their fields, while nearby **Bristol** boasts the cutting-edge National Composites Centre.

The south coast is home to Land Rover BAR, Sir Ben Ainslie's sailing team, and proudly hosts many international maritime events, including the America's Cup World Series and Transat racing events in 2015 and 2016, with the momentous Mayflower 400 anniversary events coming in 2020.



▲ Princess V39, luxury yacht made in Plymouth

With convenient freight and passenger ports and airports, trading overseas could not be easier.

The UK's marine sector makes a £19bn GVA contribution to the economy and employs over 360,000 people, many in highly skilled roles. The UK is the fourth largest shipbuilder in Europe, and the third largest boatbuilder.

The south coast continues to build on its competitive strengths and unrivalled reputation for quality. It is thriving, and plans to grow even stronger in the years ahead.

The UK's marine sector makes a £19bn GVA contribution to the economy and employs over 360,000 people, many in highly skilled roles.

Sails set for success

The Land Rover BAR America's Cup team didn't just locate in Portsmouth because of the water. Maritime heritage, hi-tech skills and excellent transport links were all part of the package, says skipper Sir Ben Ainslie.

BAR base, Portsmouth, opened by Duchess of Cambridge (opposite page, top right)



“We expect the World Series races to bring in tens of millions of pounds into the city’s economy”

Sir Ben Ainslie



Sir Ben Ainslie, the most successful Olympic sailor of all time, opened his America's Cup campaign in July 2015 with a triumphant performance off Southsea seafront in **Portsmouth**.

Almost 250,000 spectators saw his Land Rover BAR team sail to victory in the preliminary Louis Vuitton America's Cup World Series.

“I’ve never seen anything like it,” Sir Ben said. “The amount of people that came out on the water, on the shore line, supporting the event and supporting us as a home team...all of us as a team were completely blown away. The crowds were really inspirational and we could hear the cheering on board, which gave us a huge boost.”

Portsmouth hosts another World Series event in 2016. “And then,” said Sir Ben, “we hope it will host the America's Cup race itself. That's because if the team wins the cup in 2017, we'll have the right to host the next race.”

Sir Ben is determined to bring the America's Cup home for the first time since 1851. But his team's decision to locate in **Portsmouth** means a significant prize for the city and the region too.

“We expect the World Series races to bring in tens of millions of pounds into the city's economy,” he said. “If **Portsmouth** goes on to host the actual America's Cup, it would be massive for the city. Suddenly, you're talking about hundreds of millions of pounds of investment.”

Land Rover BAR's **Portsmouth** base was set up with a package of support from the government, which believes it has potential to

bring significant economic benefits to the UK, particularly the city and the wider area.

Announcing the package, it pointed to a report on Team New Zealand, suggesting its base in Auckland created 1,000 jobs and brought an \$88 million boost to the local economy.

Prime Minister David Cameron said: “It will not only build on **Portsmouth's** global reputation as a centre of marine and maritime excellence but will also deliver a real sporting and economic boost to the UK.”

The team's presence in **Portsmouth** is expected to lead to significant new innovation and investment in the marine and maritime sector, which contributes more than a fifth of the value of the Solent area economy. It is also expected to boost business growth through engagement with local companies in its supply chain.

Sir Ben said: “The government and the council were both very supportive and encouraging of us being based in **Portsmouth**. We found the local community incredibly supportive. They could see the benefits of the team being based there, not just for the economy, but also for what it means in terms of heritage.

“The city's maritime history was a key reason for choosing to locate in the city. Plus, logistically, the links to London and the airports are very, very good.

“A lot of effort is going into the area to push it forward as a centre for technical excellence and maritime excellence and to boost the marine and maritime industry, and that's very important for us as a team.”



Tradition meets technology

A culture of innovation means Princess yachts are not only some of the most technically advanced in the world but also the most beautifully created.



Luxury boatbuilder Princess Yachts International is one of the leading motor yacht manufacturers in Europe, and Plymouth's second largest private sector employer, with 2,400 workers.

It has more than five manufacturing sites in Plymouth, including a new £35million production facility in South Yard, where it builds its M Class yachts. The company also supports several hundred supply chain jobs.

Chris Gates, Princess Yachts International managing director, said: "We're extremely

proud of our Plymouth roots at Princess. It's a city which has been built upon its maritime heritage and its connections to the industry remain as important today.

"Boatbuilding has been the main source of employment for the area for generations and this has provided a rich supply of skills and expertise to the company over the years.

"This, together with a dedicated network of local marine suppliers, makes Plymouth the ideal location for Princess, which is why it was so important for us that we were able

to expand our operations in Plymouth and our new South Yard site rather than anywhere else."

Princess Yachts celebrated 50 years in business in August 2015. Founded by ex-naval officer David King, it started out as Marine Projects from a small shed beside Stonehouse Creek.

It has gone from strength to strength since the days of its first boat, the 31ft Project 31 motor cruiser, which sold for £3,400. It now produces about 300 vessels a year, ranging

Harvesting motion for energy

Motional energy is all around us. Now Plymouth company Witt has developed a technology that can capture it and convert it into electricity.

It's a form of energy found everywhere – on land, sea and in the air. And now it can be harnessed. Witt Ltd has developed a technology called the WITT which converts motional energy into useable electrical power.

The company is working with two other cutting-edge businesses, Ricardo and Schaeffler, to bring it to production. These global companies have the necessary skills and track records of bringing new technologies to market.

Witt has also received significant support from potential customers, including round-the-world yachtsman Phil Sharp, who has expressed his interest in trialling the WITT at the pinnacle of the Ocean Masters World Championship, the legendary Vendée Globe.

Phil Sharp Racing is leading the Vendée Globe Energy Challenge project, which is developing a yacht reliant on a zero-emissions energy management system. It provides a unique platform to develop and demonstrate cutting-edge green technologies.

Phil Sharp said: "Demonstrating this zero-emissions vehicle in extreme environments,

producing its own energy in total autonomy, represents a powerful statement of today's capabilities, enabling an accelerated transition towards sustainable energy models.

"Witt Ltd's pioneering new technology for harnessing renewable energy, and capturing dynamic wave motion to turn it into useable power, is of great interest."

The company has also won an Innovate UK award to design, build and test a WITT as a marine renewable energy harvesting device, and a consortium team, including DNV GL, ORE Catapult, Gibbs Gears and Mojo Maritime, is well placed to make this happen. The universities of **Bristol**, **Plymouth** and **Southampton** will bring their academic expertise to the project.

WITT is planning to raise funding through Crowdcube very soon.

▼ Phil Sharp

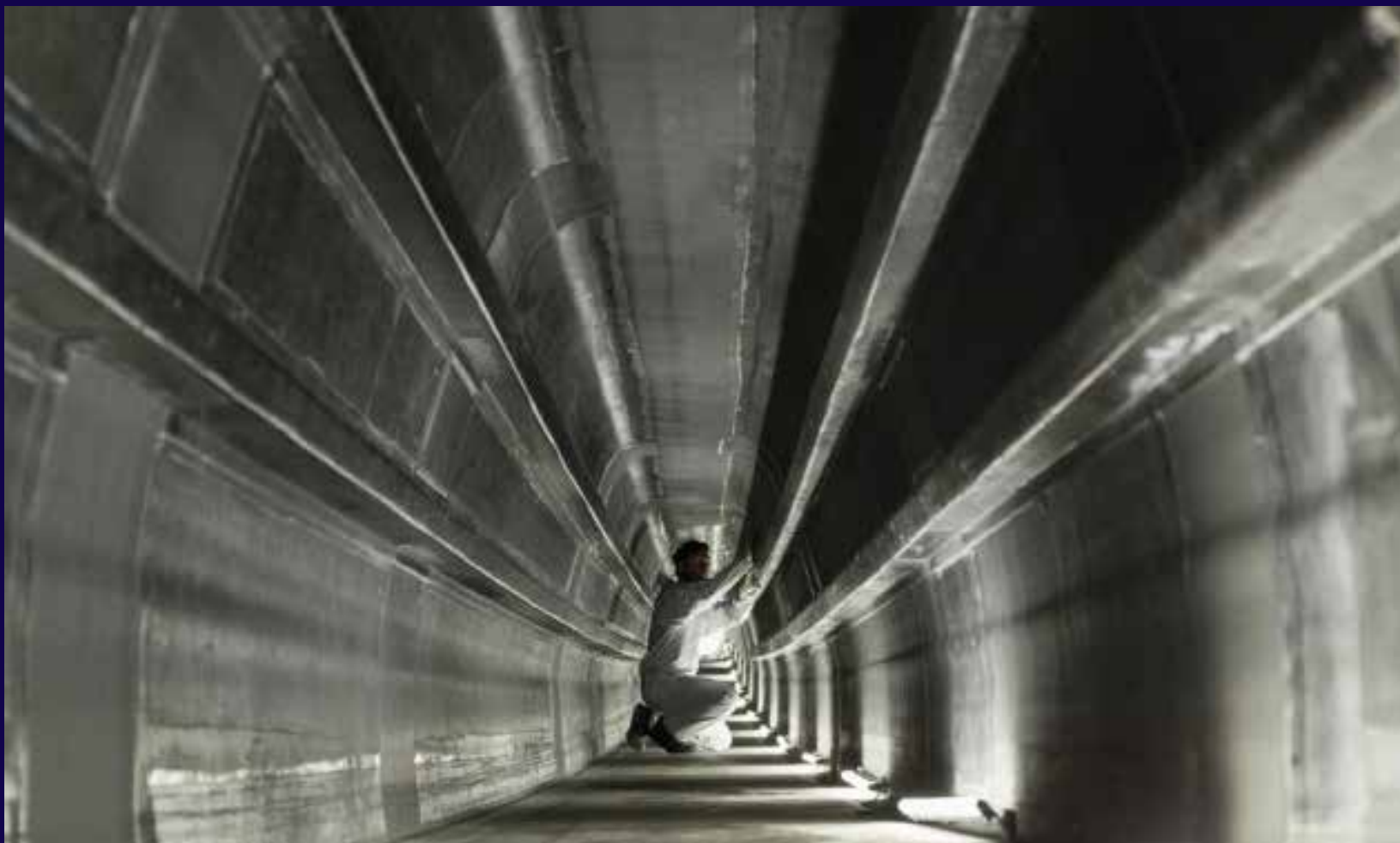
from 39ft powerboats to the flagship 40M yachts.

Princess is now at the forefront of marine engineering, merging cutting-edge technology with traditional craftsmanship. About 90% of production is exported, with 80% of every Princess constructed in-house. And the business was the first European company to be awarded ISO 14001 for its quality control.

With thanks to Plymouth Britain's Ocean City Investment Guide



Commanding composites



▲ Inside a giant mast

Portsmouth company Magma Structures has unique capabilities in the production of composite structures, and hit the headlines with a record-breaking project for a very special client.

In 2015 Magma Structures delivered the world's tallest free-standing carbon yacht masts, for a privately-owned luxury superyacht.

The masts were designed to withstand bending loads of more than 40Mn - more than twice the load on a Boeing Dreamliner wing - and to support a sail area greater than a standard sized football pitch, with full automation in terms of sail deployment, setting and reefing.

Now installed on the world's largest superyacht, Sailing Yacht A, the masts showcased the capabilities of this cutting-edge south coast company.





▲ Layering carbon material



▲ Transporting the huge masts

“The skills developed and experience gained from building these rigs are already having a direct impact on projects we are developing in other sectors, including bridges, stadiums and other buildings, where the benefits of manufacturing in composites can be significant.”

Clive Johnson, Magma Structures

Magma Structures are experts in the design, engineering and manufacture of complex composite structures, using a systematic design and engineering-led approach to manufacture carbon structures that meet unique requirements.

The company launched in 2011 and employs more than 100 people at its waterside manufacturing facility in Portsmouth. The team includes highly qualified designers, engineers, manufacturers and project managers with extensive experience of manufacturing challenging carbon composites in high-performance sectors including marine, oil and gas, wind energy, aerospace and public art.

The masts took more than three years to develop, test and build using advanced composite manufacturing processes. More than 70 people worked on the build, including an in-house team of specialist composite design engineers. High-performance carbon fibre was used in the manufacturing process of the masts – a similar grade to that used in motorsports and high-end aerospace products.

The very high specific strength to weight ratio of carbon composite and its exceptional fatigue and corrosion resistance

make it the ideal material for large free-standing structures which need to withstand high bending loads. Despite its height, each cantilevered freestanding mast weighs around 50 tonnes.

Magma Structures has the unique ability to use a range of advanced manufacturing processes to ensure the optimum build method for each project. The company undertakes all the structural engineering design, prototyping, test, and build of the highly technical structures as well as commissioning the rigs, controls, sails, automation and monitoring systems.

Clive Johnson, managing director of Magma Structures, said: “The masts delivered in 2015 are amongst the most technically challenging free-standing carbon composite structures to have been manufactured, due to their size, design load requirements and the marine environment in which they will be used.

“The skills developed and experience gained from building these rigs are already having a direct impact on projects we are developing in other sectors, including bridges, stadiums and other buildings, where the benefits of manufacturing in composites can be significant.”

Tides of change



Sustainable Marine Energy, based on the Isle of Wight, is aiming to deliver next-generation technology that will challenge the tidal energy industry on price and performance.

Sustainable Marine Energy's PLAT-O technology is the first of its kind.

Set to revolutionise the tidal energy industry, which has traditionally struggled with high costs for installation and maintenance, PLAT-O provides a step-change reduction in the price of delivering tidal power and increasing the yield of harvested energy.

Tidal energy has advantages over other forms of renewable energy. It is reliable and predictable – making it suitable for providing a consistent source for homes and businesses.

The most popular approach to harvesting it has been to build devices similar to wind turbines and plant them in the seabed. The problem with this approach is that the costs associated with installing them are huge. And crucially, the turbines are not actually placed in the optimum position in the water column to harvest the maximum tidal power.

PLAT-O is the result of a totally different approach, which can save up to 50% in costs. It is a buoyant platform that is taut-moored to the seabed using a bespoke anchoring solution. It sits under the surface of the water and offers a number of other benefits, including enhanced yield and survivability, due to its position in the water column.

Jason Hayman, managing director of SME, said: "It has been a very busy and very exciting time at SME recently.

We have completed our testing programme in the Solent – a major milestone and the culmination of three years of hard work.

"It's a huge achievement for the team. PLAT-O has been generating power consistently, reliably and, most importantly has behaved as we predicted it would.

"We are looking forward to the future, where we will be focusing on the deployment of the technology at the European Marine Energy Centre and the build of the second PLAT-O."

The practically extractable tidal stream resource available in UK waters (including the Channel Islands) is between 20 and 30TWh per year. This is roughly the equivalent of the energy used annually by approximately 7m households, equating to between 6% and 8% of the UK's electricity demand.



The practically extractable tidal stream resource available in UK waters is between 20 and 30TWh per year.



Full speed ahead



Isle of Wight company Marine Data Systems leads the world in the development and manufacture of marine navigation equipment and associated control systems.



▲ Canadian naval vessel HMCS Summerside

With equipment fitted in military naval vessels in Nato, the Gulf States and the Far East, Marine Data Systems works with defence agencies and prime contractors to achieve seamless product integration in new builds and retrofit projects.

A recently-won contract saw the company using 3D printing techniques to speed up the supply of navigation equipment for the Canadian Navy, fulfilling the order within a tight timeframe. The firm supplied a full suite of compass repeater instruments, alarm units and uninterruptible power supplies to be installed on board 12 Kingston Class coastal defence vessels.

MDS tested, manufactured and delivered the equipment to Nova Scotia within

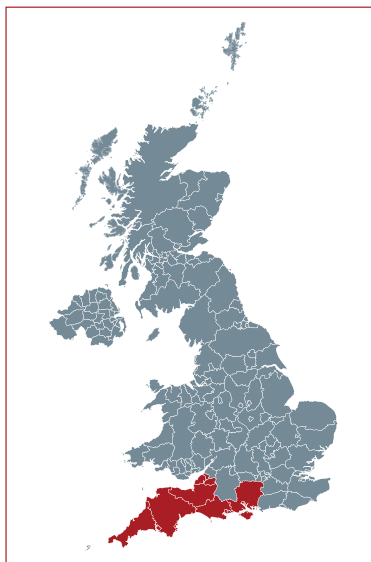
six weeks of the order date. Using a 3D printer, some of the first prototypes were built in-house, enabling the firm to be sure all the electronics and wiring would fit correctly first time.

There was a very short lead time between finally receiving the order and required delivery, but our technical and production teams did a great job and we managed to meet a very tight deadline and budget."

John Poyner, Managing director



South Coast Marine Cluster



Just some of the key capabilities that make the UK's south coast, from Portsmouth to Cornwall, a world-class concentration of marine and maritime excellence.

2 Devonport Naval Base

The largest naval base in western Europe, directly employing more than 5,000. It has 14 dry docks and over 25 tidal berths supporting the British service and nuclear-powered submarine fleets.



3 South Yard

Already home to Babcock and Princess Yachts International, who between them employ over 7,000 people. A new Marine Industries Production Campus is being developed which will catalyse high-value growth across the south coast.



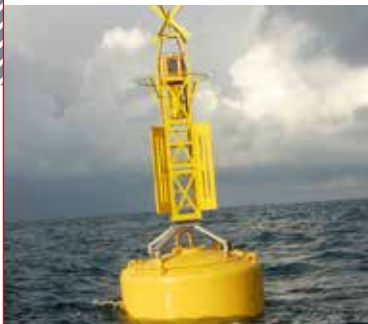
5 North Devon

The marine division of Babcock International has a major shipyard at Appledore, employing around 400 people including design engineers, fabricators and specialist trades.



1 Cornwall

Home to Wave Hub, the largest and most advanced grid-connected site for testing and developing marine energy devices, and the FaBTest wave energy test site. Falmouth has the deepest natural harbour in Western Europe and the UK's largest ship-repair complex.



PLYMOUTH

4 Marine research centres

Plymouth University's state-of-the-art Marine Building has facilities for up to 150 researchers. More world-class research is delivered by Plymouth Marine Laboratories, the Marine Biological Association and the Sir Alister Hardy Foundation for Ocean Science.



TORBAY

6 Torbay

The range of marine-related industries in Torbay is complemented by high-tech businesses such as Spirent and Oclaro. There are waterside investment opportunities at Oxen Cove and Noss.



Photo credits:
2, 5 and 13: ©MOD/Crown Copyright
11: Sustainable Marine Energy

● BRISTOL

7 National Composites Centre

An independent, open-access national centre that delivers world-class innovation in the design and rapid manufacture of composites and facilitates their widespread industrial exploitation.



12 Centre for Maritime Intelligent Systems

The CMIS brings together all UK capabilities in maritime intelligent systems to enable the development of future mission and platform systems based on common standards.



14 Land Rover BAR

The base for Sir Ben Ainslie's America's Cup team, Land Rover BAR, is the focal point for the design, construction and development of its boats, and a major stimulus for the region's marine and maritime sector.



13 Portsmouth Naval Base

The historic base is home to almost two-thirds of the Royal Navy's surface ships, and will soon welcome two new aircraft carriers – the biggest ships ever built for the navy.



8 National Oceanography Centre

Home to the new Marine Robotics Innovation Centre, which allows companies to co-locate and exploit research facilities and strengths in developing marine autonomous systems.



● SOUTHAMPTON

15 Haslar Marine Technology Park

This site combines QinetiQ's naval architecture expertise, ship design software and world-class testing facilities to provide a complete maritime consultancy service.



9 Port of Southampton

The UK's principal automotive port and premier cruise port is also home to its second largest container terminal, handling up to 45% of deep-sea trade with the Far East and China.



● ISLE OF WIGHT

11 Perpetuus Tidal Energy Centre

PTEC will be the world's leading multi-technology tidal array demonstration facility. This ground breaking facility will produce up to 30MW of clean, safe marine renewable energy.



10 Southampton Marine and Maritime Institute

The SMMI, a partnership between The University of Southampton and Lloyd's Register, is a unique, internationally recognised centre of excellence for research, innovation and education.





Picture: courtesy of Innovate UK

▲ Dan Hook with the C-Enduro

Robots rule the waves

Portsmouth has sent men out in ships for centuries. But local company ASV is at the forefront of a new field – making unmanned robot craft. Managing director Dan Hook explains.

“We always knew that robot systems were going to be big. When the company registered in 1998, we were ahead of our time, but by 2010 we were really growing. We have grown really well ever since.

Our products are used in applications that are too dull, dirty or dangerous for humans. There are lots of jobs for the military, in science or in the oil and gas industry that could be better served by an unmanned system.

For the Royal Navy, maritime robots can be used for mine-sweeping or as training targets. For the oil and gas industry, they're useful when positioning underwater structures. In the research field, they can be used for measuring ocean temperature, salinity and acidification.

A manned ship can be very expensive, and difficult to make available. It's limited to being in one place at a time. If it's a matter of collecting data, a robot can just sit there and do its job. It doesn't complain and you don't have to feed it. Unmanned systems are often cheaper and more environmentally-friendly.

There are still people in the loop, but they're more likely to be in a remote control centre, operating the vehicle over radio or satellite links.

We design the vehicles, cut metal and weld it, work with fibreglass, write the software, make the electronics and operate the boats, offering a complete system solution.

We work with the Ministry of Defence, the government's Defence Science and



▲ C-Worker Solent trials



▲ C-Target Solent trials



▲ C-Sweep

From a skills point of view we don't think there's anywhere in the UK that's better for us.

Dan Hook, Managing Director, ASV

Technology Laboratory, the National Oceanography Centre and international oil and gas companies. We're exporting to countries including France, the US, Japan, China, Singapore and South Korea. We have 45 staff in the UK and also have a company in Houston, Texas, to be close to the oil and gas industry there. We'll be involved in the new Centre for Maritime Intelligent Systems too.

We've got a plan for 2020 that will see us four times the size we are now. There's no real reason that won't happen. All the sectors we're involved in are growing at the same time. The technology has become more affordable, and improvements in satellite and radio communications and in sensors have come together and made it more realistic to do.

We employ naval architects, mechanical engineers, electrical and electronics engineers, software developers, welders, boat builders and qualified seafarers. This area is perfect because you have the universities training those people, and there are lots of marine and maritime businesses around. From a skills point of view we don't think there's anywhere in the UK that's better for us.

Being by the water is good for us for testing, and we're near **Southampton** Airport. And **Portsmouth** is where the navy is, of course.

It's very easy to get our products anywhere, either across to the Continent or further up the country. It's easy to get people here from London too.”

Trading with the world

The south coast is the UK's gateway to Europe, benefiting from superb port facilities and convenient road, rail and air connections. R&M Electrical are one company using these links to supply customers worldwide.

"The south coast is the perfect base for us to export to Europe from."

William Crook, Director R&M Electrical





The south coast is the perfect base from which to export, providing access to the \$17 trillion European Union market and to customers all over the world.

With several major operations elsewhere on the south coast, R&M Electrical have significantly increased their export activity over the past three years, distributing cable and electrical items globally to over 90 locations.

R&M's headquarters and dedicated marine division are ideally located in **Southampton**, with their main distributing branch 1.5 miles from **Southampton Docks** – Europe's busiest cruise ship port, the UK's number one port for vehicle imports and exports, and the country's second-largest container terminal.

R&M Electrical are well placed to offer a unique and personalised service, tailored to the specific requirements of the marine industry.

They aren't limited to Europe, but work closely with several international joint venture

partners based in the USA and Australia, enabling them to successfully develop overseas locations, strategically positioned to service their chosen market sectors.

These include distribution facilities in the UAE (including Dubai and Abu Dhabi), Iraq and Mallorca, and R&M-owned divisions in Azerbaijan and Kazakhstan.

Director William Crook said: "The south coast is the perfect base for us to export to Europe from. Not only are we really well connected by air, road and sea, but we are also in the heart of a thriving marine cluster.

"We are always actively looking to extend our reach further and to develop international markets. We have recently opened a joint venture undertaking in Singapore with a view to expanding operations into south-east Asia, with other similar exciting plans in the pipe line."

From Nelson to now

Sea Sure is another south coast success story, producing a range of fine equipment for the worldwide maritime market.

Sea Sure designs, manufactures and distributes some of the world's finest equipment for yachts and dinghies.

From racers or blue water cruisers crossing oceans, to those who just simply want to relax in comfort out on the water, the company prides itself on providing the right kit, designed to help people sail safely and enjoyably.



It supplies equipment to virtually all major yacht builders around the globe and its products have featured at most America's Cup and Olympic events in the last 40 years.

The firm took over Blakes, who produce traditional paraffin cookers and heaters, and Taylors, who produce classic marine toilets and seacocks, more than 10 years ago, and has continued their tradition of building fine pieces, at its factory in Warsash.

Blakes can trace its history back to 1792, supplying Nelson's navy from Gosport.

Along with its own manufactured equipment, Sea Sure distributes many other world-leading brands, including Schaefer Marine and Magma.

Head South for opportunity

Plymouth's South Yard provides an exceptional investment opportunity in a prime marine location, part of an area that leads the world in the marine and maritime sector.

Plymouth has the research and development, advanced engineering skills and cutting-edge businesses to make it a global centre of excellence for the marine industry.

With unique deep water docks with dry dock potential, South Yard in **Plymouth's** Devonport dockyard will become a new enterprise zone and hub for marine companies. It will provide engineering and composites workshops for manufacturing and offer lab space for research, while creating 1,200 highly skilled jobs.

Through collaboration with partners, **Plymouth** is creating an effective supply chain and a network of skills, research and development facilities and expertise that will bring greater collective benefits right across the peninsula.

Key areas of South Yard are being transferred from the Ministry of Defence to **Plymouth** City Council, bringing a unique complex of industrial buildings and docks into commercial use and offering an exceptional investment opportunity in a prime marine location.

With the first phase of construction starting in 2016, the site will offer 270,000 sq ft (25,000 sq m) of flexible employment space and deep



water testing facilities suitable for the marine and advanced manufacturing sectors.

The redevelopment of South Yard will create flexible facilities suitable for research and development, design and testing as well as supply and manufacture. Small businesses and large companies alike will be able to find the right space in which to develop and grow. South Yard has recently been awarded enterprise zone status and will benefit from incentives such as reduced business rates, simplified planning rules and super-fast broadband.

With **Plymouth's** city centre only one and half miles away, South Yard occupies an unrivalled marine location.

Archie Bethel is marine divisional chief executive at Babcock, the UK's leading engineering support services organisation, which employs more than 5,000 people in the **Plymouth** area. He said: "Our continued involvement in the development of the South Yard facilities, and our increased capabilities and expertise, speak volumes about our ambitions within the marine industry and the role we see **Plymouth** having in that future."



South Yard has been awarded enterprise zone status, meaning new investors will benefit from relocation incentives including reduced business rates.



AutoNauts take on the world

The UK government says autonomous systems are one of the 'eight great technologies', opening up new possibilities in ocean exploration, defence, transport and healthcare. A small south coast company is in the vanguard of innovation.

AutoNaut, developed by micro start-up MOST (Autonomous Vessels) Ltd, is a revolutionary data-gathering platform designed for a wide range of tasks in the commercial, military and science sectors, Wave-propelled using a unique patented system, AutoNaut is silent, persistent and cost-efficient.

Trading since late 2012, the company has a waterside office in Chichester, near **Portsmouth**, which is responsible for R&D, project management and the build of the product; and a base in **Plymouth** for sea trials, deployments and customer demonstrations.

Director Mike Poole said: "The AutoNauts in our range are currently designed for three months' endurance. We'll extend this to a year, making possible very long-range voyages, such as across the Atlantic, and long endurance missions such as acting as an unmoored buoy by station-keeping in one place. This can cut costs dramatically.

"At 2m, 3m, 5m and 7m long, and moving at two to five knots, AutoNauts may be small and slow. But they're very persistent and provide game-changing new and cheaper ways of gathering data.

"The next stage could see them with sophisticated sensors, potentially hunting for mines, listening for submarines and marine mammals, and doing survey work. These little vessels make superb surveillance platforms."



Tools for tomorrow

It's the latest frontier in Portsmouth's exploration of advanced technology. David Bradley, head of the Centre for Maritime Intelligent Systems, outlines the exciting new world of unmanned vehicles.

“The Centre for Maritime Intelligent Systems is at the cutting edge of research into unmanned autonomous boats, submarines and other vessels – a market estimated to be worth £9 billion each year over the next eight years.

It taps into the unique expertise we have in **Portsmouth**, and is a test bed for new systems and technology that can be sold to defence, commercial and scientific customers around the world.

It's been set up by the government, industry and the Solent Local Enterprise Partnership, bringing together academics, scientists, engineers and naval specialists. I've been seconded here by BAE Systems.

We're working on autonomous vehicles – marine or possibly airborne – that would be operated remotely or could carry out complex tasks with supervision only.

Autonomous systems can operate 24 hours a day where people can't. They also enable you to generate capacity, because there's no need to train lots of people. Once one system has been set up, you can set up another thousand. And the machines can easily be configured for lots of different operations, simply by changing the way their sensors work.

On our site we can create a synthetic environment where customers can see these systems in action. It's like a giant computer game, and clients can play in that environment, driving and testing the vehicles. For the Royal Navy, we can simulate the bridge on one of their warships, and they can see how autonomous vehicles would operate in a particular scenario – for example, dealing with a terrorist attack on a ship, or rescuing civilians from a war zone.

We can simulate a control room and look at how many people are there and how they work together – even down to what their computer screens are like and whether the arms of their chairs are obstructed by the edges of their desks.

As well as our links with the navy, we have relationships with lots of companies based in **Portsmouth** and the Solent area, big and small, who are important in this field – like ASV (see page 14) for example.

For years, **Portsmouth** has been at the forefront of naval technology, and it's the natural place for us to be. There's a great heritage of technology businesses here, and companies leading the world in their fields.

There has been a lot of investment in the area by the government and by UK and overseas

Picture: Crown Copyright, courtesy of the Defence Science and Technology Laboratory





▲ Graphic showing maritime autonomous systems engaged in mine counter-measures

“There’s a great heritage of technology businesses here, and companies leading the world in their fields”

David Bradley, head of the Centre for Maritime Intelligent Systems

tech companies. All the facilities are here and there is a good high-tech community, with good education and skilled people across the whole range.

Our vision is to be a world leader, a global centre of excellence. The market is quite unstructured at the moment, so the opportunity is there for us to define the

framework and establish industry standards, much like IBM (who are based in **Portsmouth**) did in the early days of the PC market.

What happens in this centre will stimulate activity in the local economy. For innovative businesses, this will be a good place to come. The opportunities for businesses to grow in the **Portsmouth** area are enormous.”

Room to grow

Portsmouth, a city on an island, has found space to expand – a space ripe for investment. It means huge opportunities for the marine and maritime sector, says city development manager Claire Upton-Brown.

“We have an amazing opportunity. An opportunity to create 2,370 new homes and 3,600 new jobs. An opportunity to shape and create a place, to extend the city and make a new area for business and residential development.

It's the biggest single development project we've seen in Portsmouth. And our aim is that it will include a marine and maritime hub, making use of key waterfront sites, some of which have deep water access. This will build on current local expertise and the arrival of the Land Rover BAR America's Cup team. We hope to replicate what is happening around the Silverstone motor-racing circuit and grow a world-leading reputation for technical excellence and innovation.

The area is at Tipner, at the entrance to the city as you come in on the M275. Developing it into a vibrant gateway has been an aspiration since the 1950s. But until now it has suffered from major constraints. It needs quite significant infrastructure to be in place to enable development. There have also been issues with multiple land ownership and contamination.



An opportunity to create 2,370 new homes and 3,600 new jobs



The whole picture has now changed. First, with the help of the government, we at Portsmouth City Council invested £24m in building a new motorway junction to provide access to the area, along with a park and ride. Then came our City Deal, negotiated with the government along with Southampton. The City Deal gives us money – around £48.7m – to provide more vital infrastructure, and enables the transfer of crucial sites from the Ministry of Defence to the council.

As well as funding more key pieces of infrastructure, such as a bridge and a rapid transit bus corridor, the City Deal will enable us to start on flood defences and cleaning up land contaminated by historic military and industrial uses. The new development will connect with the new motorway junction and the park and ride, which will expand from its current 663 spaces to around 1,600. The new transport facilities will benefit everyone coming into Portsmouth from the motorway.

Eventually, development of the City Deal sites will attract an estimated £831m of investment in housing and new workplaces, £647m of it from the private sector. House-building is due to start this year on the east side of the motorway and we're now starting work on a masterplan for the land on the west side. We hope to submit a planning application soon for putting the infrastructure in place. Work on the new sites should start in about 2017.

We're advising developers and investors to keep an eye on what's going on and keep talking to us. They can move to Portsmouth now, set up in one of our existing employment spaces and then extend into Tipner.

We have this wonderful opportunity for the city to expand into the harbour, creating a brand-new part of Portsmouth, fully integrated with the rest. As you enter the city in years to come, you'll see something truly phenomenal.”

Opportunities on the UK's south coast: find out more

The UK is one of the leading business locations in the world and the number one European destination for inward investment.

It has the largest marine and maritime sector in Europe.

The south coast of the UK offers world-class research facilities, a highly skilled workforce and an outstanding quality of life.

For opportunities in Hampshire, including Portsmouth:

Amanda Beable
Marine Sector Growth Manager
Hampshire County Council
+44 (0)1962 667940
Amanda.beable@hants.gov.uk

www.investinhampshire.co.uk
www.investinportsmouth.co.uk

For opportunities in Plymouth, Somerset, Devon, and Torbay:

Julia Stuckey
Inward Investment Manager
Heart of the South West
Local Enterprise Partnership
+44 (0)7920 530880
julia.stuckey@heartofswlep.co.uk

www.investheartsw.com
www.investinplymouth.co.uk

Why invest in the UK?

- A major domestic market and the perfect base to access markets worldwide
- An unrivalled business environment
- An internationally competitive tax environment
- A world-class skills base
- Europe's strongest research and development environment
- A GREAT quality of life
- A return on investment for the long term