BUSINESS IS GREAT BRITAIN
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Foreword

The UK’s marine engineering and services companies have many great strengths that have driven forward key developments in equipment and product design and technical innovation.

The UK is the fourth largest shipbuilder in Europe and the third largest in boatbuilding. This important sector directly employs nearly 90,000 people across the UK. It is a sector that is thriving, with plans to grow even stronger in the years ahead, building on competitive strengths that have been developed over many years.

UK marine equipment manufacturers, operators and service companies offer complex design, manufacturing and service solutions to major energy, shipbuilding, boatbuilding and defence customers in the UK and across the world. Our offer encompasses an extensive marine innovation ecosystem and we lead the world in offshore renewable power development. This is supported by a world leading research and development (R&D) and academic base, including marine R&D centres, excellent technical knowledge and skills, and a very strong international reputation for quality.

This brochure can only provide a brief introduction to all that the UK has to offer across a broad range of marine engineering disciplines, from design and manufacture through to disposal. We have over 5,000 companies offering world class capabilities that meet the highest international standards and incorporate the latest technological advances.

The UK marine industries have a strength and vibrancy built on a global outlook, an expertise in advanced engineering and the ability to adapt and innovate. We aim to maintain a leading technological edge by sustaining and expanding this important business sector.

Rt Hon Michael Fallon
The UK’s marine sector is an important part of the economy with £19 billion gross value added contribution to GDP and employing over 360,000 people*, many of them in highly skilled roles. The industry spans six subsectors that include: ship building and repairs; marine equipment; marine renewable energy servicing; leisure and small commercial; marine science; and marine consultancy.

Many of the world’s leading marine and industry research and training institutions, manufacturers and service providers are located in the UK. The sector features globally recognised and industry leading brands, and UK organisations and innovations are typically found in the winner’s category in international marine industry awards.

With a tradition spanning many centuries and underpinned by the UK’s history as a global trading and naval nation, the nation’s marine sector offers an unrivalled breadth and depth of expertise, products and services.

Research and Development

*The UK’s world-leading marine sector is underpinned by an innovative and comprehensive academic and corporate research and development base.*

The UK’s marine research and development (R&D) base is extensive, made more so by the significant amount of R&D conducted by UK universities, research institutes and businesses. The UK’s marine research landscape is further enriched as a result of the high levels of small to medium sized enterprises (SMEs) at the forefront of R&D and innovation in marine products and services.

Researchers in industry and the public sector are supported by the funding and resources of the UK’s research councils, coordinated by the UK’s innovation Technology Strategy Board (TSB). These include the Engineering and Physical Sciences Research Council (EPSRC) and the Natural Environment Research Council (NERC). Bodies like the Small Business Research Initiative (SBRI) further foster innovation by linking the UK’s SMEs with solving public sector challenges.

UK universities and institutes conduct world-leading R&D, and feature globally recognised organisations with unique facilities and capabilities. Among these are the Southampton Marine and Maritime Institute and Plymouth University’s Marine Institute. UK universities and research institutes offer unrivalled laboratory, test and modelling facilities for pure and applied research and development, alongside the skills base of highly qualified and trained researchers to conduct advanced R&D.

There is also a vibrant and creative public and private sector research environment in the UK, conducting both pure and applied research. This includes TWI (formerly The Welding Institute) and the Defence Science and Technology Laboratory (DSTL). Professional and learned societies also play a role in shaping research goals and providing the skills and expertise to achieve them. These include the Royal Institution of Naval Architects and the Institute of Marine Engineering, Science and Technology, and the Marine Society.

*Southampton Marine and Maritime Institute (SMMI) and Plymouth University’s Marine Institute are two of the world’s leading marine research centres.*
Innovation in unmanned surface marine vehicles

ASV has successfully delivered over 50 different unmanned surface vehicles (USVs) to the global oil and gas, environmental and security and defence sectors.

UK-based ASV researches, designs, constructs and operates unmanned surface vehicles (USVs) for use in a wide range of industries. The company’s products include, long endurance survey catamarans, oil field services vehicles and station keeping buoys, naval target drones and mine countermeasures vehicles. Each vehicle is operated using a unique user interface control system, ASView+.

As a world leader in the research and development of unmanned marine technology, ASV was selected to develop a long endurance marine USV for oceanographic data collection. The UK Government-funded programmes included major research partners and support from funding bodies such as the National Oceanography Centre (NOC) and its parent body the Natural Environment Research Council (NERC). The resulting C-Enduro has a 90-day sea endurance, enabled by its unique three-pillar power structure using mainly renewable energy.

ASV’s C-Worker range of multi-use offshore USVs has been developed to conduct subsea positioning, surveying and environmental monitoring. By applying unique unmanned technology, the C-Worker can be used to reduce cost and risk to manned oil and gas operations at sea. ASV also develops vehicles for the security and defence sectors, including the C-Target. These highly manoeuvrable, ultra realistic, high speed marine target drones are currently in operation all over the world, helping naval personnel train to combat the threat of fast inshore attack craft (FIAC) and evaluate new weapon systems and doctrines.

Images courtesy of ASV
Research and Development

Ground-breaking research into reducing distortion welding for ship structures

TWI is a leading international research and technology consultancy specialising in welding, structural assessment, inspection and training.

TWI is a global centre for materials joining technology. Based in the UK, and with offices in 11 countries, TWI has a long history of supporting the marine sector. In addition to its research into reduced distortion welding, TWI offers risk-based and advanced non-destructive inspection of structural ship designs, and repair of composite marine structures.

TWI’s capabilities also include delivering welding and inspection training services globally. It trains several thousand personnel every year in weld inspection. The Certification Scheme for Weld Inspection Personnel (CSWIP) is internationally recognised as a passport to work in engineering.

Project HILDA (High Integrity Low Distortion Assembly) demonstrates TWI’s expertise in marine materials joining. Researchers are making ground-breaking progress in developing friction stir welding (FSW) for steel. This brings technical and economic benefits, such as reduced distortion, enhanced weld strength and fatigue resistance, and making manufacturing safer and more environmentally friendly.

Image courtesy of TWI
Achieving economic growth through groundbreaking collaborations

Southampton Marine and Maritime Institute is the world’s largest interdisciplinary marine and maritime institute, drawing together academia and industry to deliver solutions to marine and maritime challenges.

Based at the University of Southampton, the Southampton Marine and Maritime Institute (SMMI) has over 1,000 academics working in collaboration with industry and government to tackle major global marine and maritime challenges. SMMI’s research expertise spans engineering, the natural and physical sciences, and social disciplines including law and management science.

Underpinned by a 60-year history of industrial research, SMMI has forged strategic partnerships with leading organisations and businesses, including some of the most respected global engineering and research names.

In response to the challenges arising from deep-sea engineering, SMMI has established a joint laboratory with A*STAR’s Institute of High Performance Computing in Singapore. The academic collaboration between the institute and its partner organisation, their research facilities and business brings new knowledge to companies, and creates opportunities for increased growth and sustainability.

SMMI can offer many collaboration opportunities, ranging from student placements to bespoke consultancy and from joint research projects to major strategic initiatives.

In addition to its research and consultancy, SMMI offers a range of high quality training opportunities. These include formal degree programmes at undergraduate, masters and PhD levels, as well as bespoke short courses for specific professions, including maritime lawyers.

Images courtesy of the University of Southampton
Design

Design and development expertise from UK companies is respected and sought after worldwide to help de-risk and deliver marine products, systems and services.

Working offshore and at sea can be one of the most demanding and challenging environments in which to operate, whether for business, defence or leisure. The design capabilities delivered by UK firms are behind some of the world’s most advanced and ambitious global marine projects, and also some of the most modest yet effective. UK naval architects and design engineers create the blueprints for shipyards, boat builders, original equipment manufacturers (OEMs) and service providers servicing the merchant, naval, sporting and leisure sectors.

From offering design, engineering, test, analysis and project management to modelling, fatigue analysis, risk management and human factors insights, UK firms have the experience and skills necessary to test that performance meets design requirements. UK businesses can deliver an unrivalled breadth of expertise, and are able to tackle projects that range from designing wind turbine gripper arms, through radar systems with unique capabilities, to spectacular superyachts.

UK designers regularly feature in the winning categories of international marine design awards
De-risking Maritime Systems

QinetiQ provides fleets around the world with advice, design, integration, test and evaluation services for naval platforms, systems and equipment.

QinetiQ has over 600 specialists in the design, integration and operation of systems and equipment in surface ships and submarines at its UK-based headquarters near Portsmouth. The organisation’s expertise spans naval Command, Control, Communications, Computers, and Intelligence (C4I), naval architecture and marine engineering, stealth materials and naval signature management services.

The complexity of modern surveillance radars, and the stressing nature of targets they must detect and track, brings new challenges for system calibration, performance measurement and fault finding. Existing radar simulation tools do not provide sufficient target fidelity, while air tracking trials are expensive, time consuming and cannot achieve absolute repeatability.

QinetiQ has developed a new radar simulator enabling improved performance measurement, radar system fault finding and calibration. Early use of QinetiQ’s technology to support responsive fault finding in UK Royal Navy warships has demonstrated significant pay-offs. Radar performance issues have been rapidly identified supporting the delivery of operational capability.

QinetiQ’s highly portable synthetic target generator supports detailed radar performance measurement and calibration helping to de-risk complex maritime systems and reducing time and cost to achieve ship deployment.
Design

Advanced Vessel Design, Test and Performance Tools

BMT is a leading global design, engineering, science and risk management consultancy, delivering its services across multiple sectors including maritime, oil and gas, energy and mining.

UK-headquartered BMT produces complete vessel designs, and provides specialist design support services. These include model testing, computer simulation, voyage simulation, material sciences, fatigue analyses, human factors engineering and cold-climate technology.

The business exports its expertise and innovation mainly through strategic yard partnerships in North West Europe and Singapore. BMT offers design support from initial concept, through detailed design to production. The firm’s track record features experience of a wide range of vessel designs, including many specialist types. These range from high-speed passenger ferries, patrol vessels, workboats and offshore wind farm support vessels to yachts and superyachts, landing craft, double hull military support replenishment vessels and submarines.

BMT’s innovative products in support of vessel performance include onboard tools for manoeuvring simulation, such as training and rehearsals, cargo arrangement and voyage simulation and planning. The firm’s investment in market leading fuel and performance monitoring systems has prompted early adoption by a number of the world’s leading owners and charterers of LNG tankers and bulk carrier fleets. In oil and gas, the demand for larger and faster mono-hull crew boats offers opportunities for BMT to broaden the adoption of its new, fuel-efficient designs.
Ingenious Design and Engineering Improve Wind Farm Installation Efficiency

**Houlder** provides design, engineering, test and analysis, and project management expertise to clients in the offshore renewables, oil and gas and maritime industries.

London-headquartered Houlder was contracted to lead the design, fabrication, installation and testing of a pair of gripper arms to be used on a wind farm turbine installation vessel. The resulting ingenious arm design significantly improves the efficiency of wind farm installations and overall productivity.

The innovative 200 tonne hydraulic arms were designed against DNV Classification Rules and fully checked using finite element analysis, before being built into the installation vessel’s stern. Factory testing was impossible due to the size of the arms, so a significant amount of testing and commissioning of the equipment was undertaken on board.

The arms are required to keep 650 tonne, 65m long offshore wind turbine piles in place during installation in up to 40m of water. Controlled from a single console located on deck, both arms provide the horizontal restraint required to keep the piles vertical while they are being driven. When stowed, they are mechanically and manually latched at main deck level, allowing the vessel to safely transit and the hydraulic system to be powered down.

Houlder managed the project from initial concept design through to installation with the support and involvement of its client, MPIC and MPI Vessel Management.

*Images courtesy of Houlder*
Design

Spectacular Yacht Designs for Global Yacht Builders

*Dixon Yacht Design* is an award-winning designer providing design services to the world’s leading shipyards and boat manufacturers.

Dixon Yacht Design was established in 1981 by Bill Dixon and provides award-winning designs for some of the world’s leading production and custom boat manufacturers. Over the years, the UK-headquartered company has designed numerous spectacular custom superyachts and worked with many of the world’s leading custom shipyards.

The Dixon team has received many prestigious international awards for its designs and work, with Bill being named “Yacht Designer of the Year in Asia” in 2011. Born into a boatbuilding family dating back to 1740, his designs are created with a natural respect for the sea, coupled with many years of yachting experience.

In the early years, the company’s design work was dominated by production designs, including the renowned Moody sailing yacht range, of which over 4,000 have been built. The multidisciplinary team has expanded in capability and expertise over the years. This is displayed not only in production yachts, but also with stunning and prestigious superyacht designs.

The firm continues to produce new and innovative designs from the Dixon Yacht Design office on the UK’s south coast.

*Image courtesy of Dixon Yacht Design*
Equipment

The UK’s marine equipment designers and manufacturers deliver world-leading products across the entire marine lifecycle, from classic ship and boat mechanical systems to leading edge electronic, optical and IT equipment.

Underpinned by the highly advanced product research base and innovative designers, UK companies supply the tools, plant and equipment used for boat manufacturing and shipbuilding, alongside the essential equipment used for maintenance and repairs. The deliverables of UK firms span entire surface or submarine fleets, to specific systems and sub assemblies, down to unique components produced using advanced manufacturing processes.

During operation offshore and at sea, the UK products found onboard surface and submersible vessels and offshore installations include instrumentation and sensors, electronic and mechanical equipment, safety and protective aids, navigational systems and power plants.

The UK features original equipment manufacturers (OEMs) with globally renowned brands that are at the top of the specification list for naval architects, designers and engineers worldwide.

UK marine equipment manufacturers have global support networks, so their high quality products are routinely specified in shipyards around the world.
Equipment

Product Development Innovation to Customise Products for the Russian Market

*Seetru developed trace heating for its magnetic liquid level gauges so they can be used for ships using heavy fuel oil.*

The heavy fuel oil often used by Russian ships has too high a viscosity for many widely available magnetic liquid level gauges. Although UK-based Seetru has been exporting its liquid level gauges and safety relief valves worldwide for several decades, the company was a newcomer to the Russian market. After some initial meetings and market research in Russia, it became clear to the business that it would need to develop a range of trace heating options so that its gauges would be suitable for use with heavy fuel oils.

The Seetru Seemag tank contents indicator or level gauge is a high quality yet economical magnetic level indicator. Its unique design offers considerable advantages over conventional magnetic gauges, including accurate step-less reading and a wide angle of reading. However the standard Seemag gauges could not be used with high viscosity fuel oil.

As a result, Seetru’s product development team designed a range of gauges with trace heating so that the oil in the gauge would be heated. This reduces the viscosity, allowing the advantages of the Seemag gauge to be used with heavy fuel oil. Three variations have been designed incorporating different methods of heating - electric, steam or thermal oil - to meet the specific needs of different shipyards. The Seetru Seemag gauge, and other products from Seetru, has the required approvals for use in Russia including Russian Maritime Register of Shipping (RMRS) and Russian River Register (RRR) type approvals.

Images courtesy of Seetru Development
Resonant Wave Technology Provides Unique Solution for Cleaning Biofouling

Waveblade has developed submersible tools using resonant wave technology as a more cost-effective and environmentally friendly solution to cleaning biofouling.

Current biofouling cleaning methods range from labour-intensive hand scraping, through biofouling coatings that can harm marine life, to costly lift-outs of the ship or structure from the water for mechanical or high pressure cleaning.

As a more cost-effective and environmentally friendly solution, Waveblade designs and manufactures unique submersible marine power tools. These clear the biofouling and leave the underlying structure unharmed by using patented ‘resonant wave technology’ to vibrate all types of growth from any surface. The tools can be powered from a variety of sources and operated either by hand or attached to suitable ROVs (remotely operated vehicles).

The UK-based company has developed solutions that can be applied to both underwater and above-water structures, such as boat hulls, rudders, propellers, harbour buoys, marinas, water inlets, and oil and gas and offshore renewable structures.

For small area cleaning and inspection work, the business offers a small submersible 12volt and Lithium-ion battery powered range. More heavy duty machines deliver unique capabilities for removing particularly thick growth, rust and slag above or below water on very large surfaces. Hand-held pneumatic and hydraulically driven versions and deep sea. ROV derivatives offer a solution for cleaning and inspection applications to depths of up to 1000m.
Equipment

Customised Roofs and Awnings for Global Luxury Boatbuilding Sector

Makefast is a leading international manufacturer and supplier of manual and electric sliding roofs, awnings and Bimini hydraulic units to the luxury boatbuilding sector.

Makefast designs and manufactures customised sliding roofs, sunshades and awnings, alongside a range of safety products and solutions, for luxury marine craft.

A typical solution involves UK-based Makefast’s design team working with a boat builder to design a customised system that is integral to the design of the boat. Ninety-five per cent of components are manufactured to order at the firm’s production facility in Wales, taking advantage of the firm’s extensive array of specialised manufacturing capabilities. Each solution is fully assembled and tested before shipment.

Since developing its first canvas and panelled sunroof system, Makefast has constantly innovated and invested in new technologies and materials to design and develop new products. With a background in the safety market, Makefast has always put quality first. It has fully integrated this approach as it continues to deliver further marine equipment solutions.

Makefast supplies all the leading UK luxury boat builders, and its rapidly expanding global market means it is now supplying many of the world’s biggest boat yards.
Tank Gauging System Delivers Improved Accuracy and Lower Costs

*PSM specialises in delivering advanced marine instrumentation, including tank gauging, operational monitoring and remote supervision.*

UK-based PSM provides comprehensive marine instrumentation and monitoring solutions. It designs and manufactures marine control instrumentation and protection systems for ship designers, builders and operators in the global maritime industry.

The UK-based firm was commissioned by a Middle Eastern shipyard to devise a tank gauging solution that could be used across a range of ship and tank types. To meet demanding regulations, the solution had to meet 20 level measurement applications that required correction for vessel trim and list.

PSM specified installing its smart hydrostatic level transmitters alongside solid-state inclinometers. The monitoring technology incorporated PSM’s Remote Function Module (RFM), providing connections and Windows-based software using standard Modbus data communication. Shipboard operation was via PSM’s TankView software, which was configured to meet the exact requirements of the shipbuilder’s operating procedures and with an accessible, user-friendly operator interface.

The low-cost PSM Modbus communications solution and use of Windows allowed for multiple monitoring stations across several PCs. Tanks could be displayed and controlled from multiple points around the vessel, and this also allowed for redundancy in case of PC failure. The result was a system with greater functionality and performance, achieved at a lower cost than the shipyard had previously been able to achieve.
Manufacturing

From complex merchant and naval shipbuilding to ship’s chandlery and nanotechnology, the UK’s marine manufacturing sector produces high quality products used in the global marine industry at every stage of the supply chain.

The UK remains a major global shipbuilder producing surface and submarine vessels ranging in size from aircraft carriers through superyachts and hovercrafts to racing dinghies and submersibles, as well as producing many of the subassemblies and components that go into them.

UK shipyards and boat builders have the capabilities to build ships that can be up to 30 times more complex than relatively simple commercial ship designs manufactured elsewhere in the world. The UK marine manufacturing sector exports to most of the world’s major markets for marine products.

The UK is ranked fifth highest builder by units in the world in superyacht manufacture, with 71 projects over 80ft on order in 2014.*

*British Marine Federation
Luxury Boats Designed and Built Using the Latest Technologies, Materials and Processes

Princess Yachts International designs and builds luxury boats using the latest technologies, materials and advanced manufacturing techniques.

Using cutting edge computational fluid dynamics (CFD) and computer aided design (CAD) for design, alongside innovative resin infusion technology for construction, Princess builds world-leading luxury yachts for the international market. In its quest to “always build the best boat we can”, the company has seen massive investment in the latest production techniques and equipment. Most of the design work, fabrication and general build is achieved internally by the company’s 2500-strong highly skilled workforce.

UK-based Princess has been pioneering resin infusion technology for over a decade. This precise glass reinforced plastic (GRP) construction process is time-consuming, but it allows Princess to build to more exacting standards. It also drastically saves on waste materials and reduces the weight of the vessel, all of which deliver important and very positive environmental and operational gains.

The firm’s work with computational fluid dynamics (CFD) and computer aided design (CAD) saw it invest heavily in new technology some years ago, a decision that is paying dividends today. CFD delivers a complete simulation of a hull design, allowing the designers to study and improve performance and ride elements well before the hull design gets to tank testing. The CAD five-axis cutting machine delivers precise build processes to go with Princess’s progressive design work.

Princess exports around 90 per cent of its production, via a 50 strong distributor network stretching across 60 countries.
Manufacturing

Supplying the Global Maritime Sector with Charts, Navigational Data, Radar and Surveillance Systems

Kelvin Hughes designs and supplies radar navigation and surveillance systems to the global commercial shipping fleet and 30 of the world’s navies and is a distributor of navigational paper charts, electronic chart information, publications and data delivery services.

Kelvin Hughes provides everything required to operate safely at sea.

The UK-based company is a world-leading provider of advanced navigational and surveillance capabilities and International Maritime Organisation compliance. It delivers state of the art radar systems for navigation and situational awareness, electronic chart display and information systems (ECDIS), integrated bridge systems, as well as voyage data recorders. It is also the largest global distributor of navigational charts, publications and data delivery services.

The 250-year-old company has a history of firsts in the maritime market. It was the first to develop a navigation radar that omitted a magnetron and have the detection capabilities of a military grade system bringing affordable and low cost of ownership solid state navigation and situational awareness radar to the maritime market.

SharpEye™ radar provides enhanced capabilities to the bridge officer, ensuring a safer ship and safer seas. The technology has allowed many specialist maritime applications to evolve, from improving the productivity of fishing boats to providing a vessel traffic service (VTS) capability on-board a floating production, storage and offloading (FPSO) vessel.

PassageManager from ChartCo, is an intuitive software and graphical interface that allows product catalogues and vessel outfits to be displayed together with any correction status. Using this information, a comprehensive passage plan can be created, saved and printed.
Innovative New Propeller Design Delivers Significant Improvements in Thrust and Efficiency

Teignbridge Propellers International is a propulsion equipment designer and manufacturer, producing propellers, stern gear and rudders.

Established in 1974, Teignbridge Propellers is one of the largest manufacturers of quality marine propellers and sterngear in Europe. The company designs, engineers and manufactures high quality performance propellers, stern gear and marine engineering products from its UK based facility.

With an onsite foundry and 85 employees based at the largest purpose built sterngear facility in the UK, Teignbridge has the capability to manufacture propellers up to 2.55m in diameter and complete shaft lines up to 400mm in diameter. The firm supplies many of the world’s leading boat builders in the leisure, commercial and super yacht sectors. Worldwide customer support is provided from Teignbridge UK, Teignbridge Dubai and a global network of agents.

The company is constantly innovating, and has developed its high performance C-FOIL propeller design. Independent computer modelling and comparative sea trials have shown that this ground breaking design generates approximately 10% more thrust and a 12% increase in efficiency over standard propeller designs, providing the operator with an improvement in performance and fuel economy.

Image courtesy of Teignbridge Propellers International
Manufacturing

Expansion of Full Service Shipyard Designing and Building Custom Workboats

Alicat Workboats designs and builds custom workboats, and delivers a complete range of design, precision engineering, electrical and fabrication works and repairs from its recently upgraded shipyard.

Alicat Workboats builds up to eight high speed aluminium crew transfer vessels each year at its full service shipyard in Norfolk. The UK-based firm also provides a comprehensive range of services to the armada of vessels owned by wind farm and oil and gas operators servicing installations in the North Sea. Its sister company, workboat builders South Boats IOW, is based on the Isle of Wight off the UK’s south coast, and offers additional services in the English Channel and beyond.

Alicat’s facilities include an internal dry dock, allowing small craft to be maintained undercover within the main construction shed. During 2013, a state of the art wet dock was added, enabling 24 hour fast lift out facilities for boats up to 40m long, 11m wide and up to 200 tonnes. Since its expansion, the yard has averaged a vessel lift out every two-and-a-half days, including fishing boats, survey vessels, wind farm support vessels and leisure craft.

The company has several divisions. These include Alicat Marine Electrical, providing turnkey electrical design and installations, and Alicat Fabrication, which manufactures equipment such as A-Frames, decompression chambers and dive platforms. Alicat Precision Engineering has the capabilities to turn out bespoke components onsite. Alicat Marine Design, a Southampton-based naval design office, offers vessel design, modification and stability testing.

Images courtesy of Alicat Workboats
Award-Winning Sailboats with Leading-Edge Construction and Rig Technology

RS Sailing designs and manufactures nearly 2,000 recreational and performance sailing dinghies each year for the sports and leisure markets.

RS Sailing started out to build racing sailing dinghies that set new standards for performance, alongside user-friendly handling. It now builds sailboats for both the high performance sporting and leisure markets, all still underpinned by leading-edge technology, performance and ease of use.

The UK-headquartered firm’s range now includes all-purpose boats, single-handed dinghies, double-handed dinghies, catamarans and keelboats.

RS Sailing uses the latest technology to design and build innovative sailboats, which have received multiple awards from the industry and trade media. The firm uses innovative glass reinforced plastic (GRP) manufacturing processes and lightweight aluminium components during construction at its facility on the south coast of the UK, where it builds nearly 2,000 sailboats each year.

Images courtesy of RS Sailing
Manufacturing

Uniquely Versatile High-Performance Hovercraft with Leading Edge Technology

Griffon Hoverwork designs and manufactures hovercraft for commercial, government, rescue service and military customers in over 40 countries.

Griffon Hoverwork is a leading global hovercraft designer and manufacturer, producing a uniquely broad range of hovercraft for a wide variety of applications. Part of the family-owned Bland Group, Griffon Hoverwork was formed in 2009 from the UK’s two leading hovercraft manufacturers – Griffon Hovercraft and Hoverwork – bringing together 45 years of hovercraft design, manufacture and operational experience.

Its state-of-the-art manufacturing facility employs nearly 200 operators and works to lean-manufacturing principles. The firm is constantly researching and developing new technologies to incorporate into its hovercraft. Innovations include identifying new materials, advanced electronic systems, the use of advanced composite materials in construction, and faster-build marine structures.

UK-based Griffon Hovercraft is the world leader in launching new hovercraft designs into practical service, retaining close ties with the work of Sir Christopher Cockerell, the inventor of the hovercraft. The company has more than 170 craft in operation with 64 military, commercial,
Delivering Advanced and Innovative Marine Coatings

*International Paint develops and produces innovative marine coatings that deliver fouling control solutions for surface and submarine vessels.*

For over 130 years, International Paint has successfully delivered marine coatings technologies to address the global marine industry’s constantly evolving needs. Working closely with its global customer base, International® incorporates the latest sustainable advances and innovations into practical product development.

International Paint focuses on a range of fouling control technologies. The firm offers ship owners and operators a wide choice of fouling control technologies that include metal acrylate, silyl acrylate and silicone foul release. The newly developed Intercept®8000 LPP Lubyon technology and Intersleek®1100SR are designed to meet performance expectations on all trading routes.

The business is the leading brand of AkzoNobel’s Marine and Protective Coatings business, with a history stretching back to 1881. It currently has operations in 60 countries worldwide and more than 5,500 employees.

International Paint employs over 800 qualified technical staff around the world, with many qualified to NACE (formerly the National Association of Corrosion Engineers) Coating Inspector Level II and FROSIO (Faglig Råd Opplæring Sertifisering Inspector Overflatebehandling) Inspector Level II or equivalent and is backed up by 16 manufacturing plants, operations in 60 countries, 8 specialist marine laboratories and over 500 delivery points worldwide.
Systems Integration

UK companies deliver the expertise required to manage the systems integration of the increasingly complex vessels developed to take full advantage of the latest technologies and to meet the needs of today’s demanding marine users.

As ship and boat designs become more complex to meet the challenges faced by their operators and owners, there is an increasing emphasis on integrating complex IT, electronic, electrical, hydraulic and mechanical systems. UK companies have developed the complex project management, systems, software, engineering and technical capabilities required to ensure marine users gain the maximum benefit from their ship and boat designs.

To support the shipyards, boatyards and manufacturers responsible for physically integrating complex systems, the UK has developed a world-leading software development and hardware integration sector. Vessel owners and operators gain a huge range of benefits from the products and services developed by UK systems integrators, and these include reliability, reduced costs, and fuel and emissions savings.

UK systems integrators routinely complete some of the most complex shipbuilding projects in the world.
Safer, Greener, Simpler and More Cost Effective Vessel Operations Through System Integration

SCISYS specialises in integrating hardware solutions through software across the marine, space, media broadcast, environmental and defence fields.

MACSYS has evolved from a UK maritime rescue organisation project to integrate the systems of its new Shannon class lifeboat allowing crew members to monitor and operate the lifeboat’s navigation, communication, machinery and systems from the safety of their seats. The original challenge faced by SCISYS was to create a software solution that reduced weight and clutter on board a vessel by integrating a wide range of instruments, sensors and controls.

The solution developed reduces the weight of the vessel as the system replaces a lot of hardware. It is also designed to be rugged and reliable enough to allow a boat to operate in the harshest conditions. As a result, it is used for a wide variety of applications, including for workboats, military and search and rescue vessels. To guarantee the durability required, the solution was based on work by SCISYS on electronic architectures that were tested and proven on military land vehicles, where resilience is a key factor.

The wider benefits of MACSYS include fuel efficiency, as a result of the weight reduction, space savings through removing the clutter of numerous separate instruments, and ease of use by integrating information from multiple systems onto single screens. MACSYS is also hardware agnostic, so users can choose their preferred equipment, and it improves safety by enabling crew members to stay seated. In addition, running a vessel equipped with MACSYS enables the operator to reduce through-life costs.
Systems Integration

Optimising Global Fleet Management with Innovative Engine Monitoring

Royston, a diesel power generation specialist, has developed a retrofit engine monitoring system that helps ship operators and owners optimise their fleet management.

Royston delivers diesel engine and power generation solutions across the marine, energy, offshore and defence sectors, with headquarters in the UK and Australia. Working closely with a customer experiencing poor fuel management-related operational issues, the firm has developed an innovative real-time fuel consumption monitoring and management solution, enginei, which improves fuel efficiency and optimises the management of marine fleets. A financially attractive feature of enginei is that it can be cost-effectively retrofitted into existing marine fleets.

The enginei system enables operators to review and optimise operating behaviours that in turn can lead to substantial savings and improvements in emissions. It does so by offering a Google-mapped GPS positional system showing fuel used by vessel type and by journey, with a wide variety of online user friendly overview reports, from pictorial maps to trend data. Numerous enginei systems have been installed and are operating on vessels ranging from tugs to tankers throughout the world, and are supported by a strategic network of knowledgeable and experienced distributors across all continents.

Royston is now taking this innovative, cost-effective and proven solution into new areas of fuel management, with the development of a new fuel management module. Designed to help tackle the difficult issues of fuel safety and security facing operators in sectors such as oil and gas, the module also delivers both cost savings and environmental benefits to operators in all industry sectors.
UK shipyards are globally recognised as providing comprehensive and sophisticated repair and refit facilities for virtually every kind of seagoing vessel and offshore structure. UK firms are also expert at supplying short-notice repair gangs able to respond to urgent repair requirements in almost every corner of the world.

In response to rapidly evolving market demands, owners and operators are under pressure to maximise the performance and return on investment of their fleets. This can mean ongoing maintenance and repairs over increasingly lengthy timescales or major refits in response to market shifts. The UK’s shipyards and boatyards have the capacity to repair and refit vessels ranging in size and complexity from aircraft carriers, through floating production, storage and offloading (FPSO) vessels and superyachts, to historic sailboats and skiffs.

UK shipyards can offer a very broad range of repair, maintenance, refit and fabrication facilities that support the global marine, oil and gas, offshore, defence, energy and leisure sectors. Alongside yards servicing industrial and commercial customers, the UK also numbers some of the world’s leading boatyards for the repair and refit of superyachts, elite marine sports and pleasure and leisure boats. The UK also features London’s Lloyds’ Register, which oversee the marine repair and refit work that must be completed under the supervision of the Classification Society.
Repair and Refit

Uniquely Flexible Marine and Engineering Services Provider Delivering Marine Repair, Conversion and Fabrication from Facilities Across the UK

A&P Group is a major UK marine and engineering services provider, and is one of the leading and largest group of shipyards in Europe serving the global marine, oil and gas, offshore, defence and energy industries.

A&P Group’s yards across the UK have unique facilities that provide ship owners and operators with world-class ship repair, conversion and fabrication services. These are based on the company’s expertise, market strength and dedication to delivering complex projects. With facilities on the Tyne, Tees and in Falmouth operating seven dry-docks and fabrication sheds, A&P Group provides some of the most comprehensive shiprepair and conversion facilities in Europe. Its customers include organisations within the oil and gas, offshore renewables, commercial shipping and defence sectors. The latter includes the UK Government’s Ministry of Defence (MoD).

The UK-based business’s global capabilities range from delivering contracts for subsea structures into the North Sea’s oil and gas sector to projects off the coast of Africa. It also has a successful track record of achieving complex conversions of ships and offshore structures. In addition, A&P undertakes specific conversions, including operations and maintenance roles required for the deployment of offshore wind and marine renewable vessel applications.

A major strength of the business is its personnel. A&P’s workforce and subcontractors are able to meet customers’ demands seven days a week. The Tyne yard has the largest commercial dry-dock, at 259m by 44m, on the east coast of England, alongside two deep water berths of 200m by 100m. It also features a significant modern fabrication facility of 20,000 square metres complemented by a highly skilled and flexible workforce. There is extensive storage and load-out capability with fully equipped workshops covering all of the trades required to carry out marine projects – from relatively simple ship repair to major complex ship conversions.
Superyacht Specialist Expands Overseas and UK Facilities to Handle Increasing Demand and Ever-Longer Vessels

Pendennis Shipyard is a leading global superyacht new-build and refit specialist, with facilities in the UK and the Mediterranean, with support in the Pacific Ocean.

Pendennis Shipyard is a world-leading superyacht custom build and refit company. Established over 25 years ago in Falmouth, UK and with over 200 refits and 30 new builds in its project portfolio, the business has invested in additional facilities and infrastructure at its UK base, in Palma de Mallorca, Spain and in Auckland, New Zealand.

The UK shipyard has recently built two new 90m construction halls, with a third 45m hall just completed, alongside a four-story workshop and office building to house its project teams. A 640 tonne travel hoist has also been added to the yard’s capabilities and an adjustable depth wet basin in front of the yard will be complete by Spring 2015. These expanded capabilities follow the changes and demands of the superyacht industry, which is seeing more refits demand as well as the average length of yachts increase year on year.

A recent successful refit by Pendennis Shipyard was the extensive rebuild of a 1966-built Feadship, the ‘A2’. The project won several industry awards for the shipyard’s innovative approach to creating a virtually new yacht from an existing vessel. After being stripped back to her bare hull, the yacht was completely rebuilt with the addition of a 5m stern extension with the same treatment to each deck level above, dramatically increasing the exterior and interior social areas. The interiors were fully redesigned by Peter Marino Architects to create a stunning modern interior.

The technical upgrades on the project were also significant. All technical and communication systems onboard were replaced, and modern bridge equipment installed. A full overhaul of all engine room equipment, specified by Pendennis engineers, provided enhanced performance and power management. Since its departure from Falmouth, the yacht has been supported by the Pendennis team in Palma.
Repair and Refit

Management and Delivery of Through-Life Support to Ships and Submarines

Babcock International provides deep maintenance and fleet-time support for all of the UK’s submarines and the majority of its surface warships.

UK-headquartered Babcock International has the capabilities to deliver deep maintenance and fleet-time support throughout the world. In 2013, the firm was awarded a through-life support contract for the UK Royal Navy’s ocean survey vessel HMS Scott. The key challenge for this contract is to ensure effective targeting of funding to increase value for money to the Royal Navy. This contract builds on Babcock’s extensive experience and expertise in carrying out the majority of through-life support to the UK’s warships and submarines, and its background in providing support to HMS Scott over many years.

The contract covers everything from the management of maintenance work and operational defects during fleet time to the planning and execution of a refit period. It also includes design services for the implementation of updates and upgrades, plus the management of spares. The contract is underpinned by a strong emphasis on collaborative working, building on the strong working relationship Babcock has developed with Ministry of Defence’s Commercially Supported Shipping (CSS) team.

A shared electronic working environment is used for the exchange of technical, spares supply and logistics information with the MoD. The key features of the contract include effective through-life management planning, informed maintenance optimisation and agility in responding to contingent tasking and operational priorities. Babcock’s operation delivers integrated supply chain management, in-house design and safety management and a global reach through existing support arrangements.

Babcock is one of the UK’s leading engineering support services organisations, with annual revenues of nearly £3bn in 2012, and an order book of £13bn. Its Marine and Technology Division employs over 9,000 highly skilled people, supporting the UK Royal Navy and naval and commercial fleets throughout the world.
Conversion and Disposal

Financial and environmental pressures demand that the useful life of marine fleets is extended, and end-of-life is planned for. UK shipyards take a sustainable approach to marine asset lifecycle management, with the capabilities to upgrade, convert, decommission and recycle all types of vessels and offshore structures.

As asset management becomes ever more sophisticated, ship owners and operators are looking for creative solutions to sustainably extend the useful lives of their fleets. Financial and environmental pressures require that a vessel's eventual decommissioning and recycling is considered at its design stage. UK shipyards have the knowledge and expertise to complete refits, new equipment installation and conversions for all types of vessels.

UK shipyards are world-leaders at the decommissioning and recycling of vessels and offshore structures. Up to ninety per cent of the 470 offshore installations in the North Sea will be decommissioned, and the UK has unique experience and capabilities for the re-use, recycling or disposal of offshore structures. With a relentless focus on sustainability, UK shipyards can recycle up to 98% of a decommissioned ship.

UK firms are at the forefront of decommissioning North Sea oil and gas installations
Conversion and Disposal

Delivering Solutions to Navy Fleets to Extend the Lives of Assets

*Leaffield Logistics supports 17 international navies with a menu of guaranteed, certified parts, repairs, service, technical support and obsolescence management services.*

Leaffield Logistics and Technical Services provides a range of support services ensuring that the fleets of the UK and European navies remain operational. The UK-headquartered firm specialises in the support of UK and other European-built ships, including frigates, mine countermeasures vessels and offshore patrol vessels.

It offers from stock over six million guaranteed original equipment manufacturer (OEM) parts, with many out of production or hard to find. All are preserved, protected and certified for use. In addition to its own stocks, Leaffield has access to over 250,000 line items of naval spares. The company’s ‘just-in-time’ service can deliver a ‘quote this day’ response, resulting in parts shipment to an international airport within 48 hours from order, including all export and licensing documentation.

Leaffield also offers a state-of-the-art repair and recalibration service for electronic components, and is able to restore or recover obsolete components, or replace with modern items whilst maintaining fit, form and function.

As more and more OEMs abandon their older equipment in favour of new and updated offerings, Leaffield is developing solutions to maintain critical machinery and equipment, using stocks of parts and by retaining critical know-how and expertise for conversions.

The firm’s capabilities and expertise span gas turbines, diesel generators, steam raising plant, pumps, clutches, propulsion and steering systems. The combination of technical services and parts solutions, alongside expertise in conversion of ageing naval assets, makes Leaffield a global leader in prolonging naval asset life.

*Images courtesy of Leaffield Logistics and Technical Services*
Education and Training

*UK organisations deliver world-class education and training, helping to shape the global marine sector through successive years of professionally trained mariners graduating to work on vessels and offshore installations throughout the world.*

The UK’s marine training and education infrastructure is both extensive and internationally recognised as world-leading. UK establishments provide training for the world’s navies and merchant marine fleets, alongside offering professional education and certification for virtually every rank and skill set required by the global marine sector. The qualifications gained by graduates from UK educational institutions and businesses are recognised, respected and sought-after by employers worldwide.

In addition to professional qualifications, UK universities and academic institutes provide a vast array of short courses, bachelor’s and master’s degrees and the opportunities for doctoral and post-doctoral studies at some of the world’s best marine research centres. Students and professionals can benefit from access to training facilities and equipment, such as advanced simulators and navigational, test and laboratory installations, practical on-board training and ongoing continued professional development.

*UK universities and businesses feature unique, world-leading simulator and training facilities*
Education and Training

Supporting Sea Changes with Plymouth University Marine Institute

Plymouth University Marine Institute provides a portal to an extensive pool of world-leading marine and maritime experts and state-of-the-art research facilities.

The focus of the activities carried out by experts associated with Plymouth University Marine Institute is to understand the relationship between society and the seas and to provide sustainable policy solutions.

Helping deliver these pragmatic solutions for governments, non-governmental organisations (NGOs) and businesses, the Marine Institute provides an interdisciplinary interface with research centres located across the university in science, business and the arts. It offers an exceptional breadth of expertise in marine areas including monitoring the marine environment, impact of the sea on society, marine engineering, marine policy and maritime business.

To provide the infrastructure to meet practical research needs, Plymouth University has ongoing, significant investment in new buildings, laboratories, research vessels and equipment. The Marine Building, opened in 2012 on the main campus, is home to a specialised Ocean Wave Basin, Coastal Basin and state-of-the-art Marine Navigation Centre.

The Ocean Wave Basin is extensively used by commercial partners in the development of marine renewable energy devices. A new Marine Station will open in late 2014, built on the shores of Plymouth Sound, which will include lecture facilities, wet laboratories and a seawater aquarium. It will be the base for marine expeditionary work, including developing the Institute’s remotely operated vehicle capacity. It will also provide the largest diving facility in the UK university sector, with a further opportunity to work with external partners from around the world on research and training.

Image courtesy of Plymouth University
Leading UK Maritime Training Provider Provides Highly Trained Professional Merchant Mariners

*Clyde Marine Training meets the demand for highly trained merchant navy officers through sponsored training programmes.*

Clyde Marine Training was created to meet the demand for professional merchant mariners, due to a lack of qualified officers within the industry. The UK-based business believed that the only way to meet this shortfall was to embrace the industry’s future merchant officer needs itself via sponsored training programmes. As a result, the company launched an industry-changing advertising campaign that included the idea of a TV programme entitled ‘the merchant navy’ and regular careers events attendance, building a global client base in the process.

Clyde Marine Training offers its services to major international shipping companies, managing the recruitment of their future officers for their worldwide fleets. The sponsored programmes allow trainee officers from around the world to successfully qualify as Deck, Engineering and Electrical-Technical Officers, through academic stages in colleges and universities throughout the UK and practical on-board training on their client’s vessels.

Clyde Marine Training has dedicated teams based in Glasgow and Southampton who manage the entire training process for about 1,000 trainees at any one time.

This process includes the selection of candidates from application stage and managing them right through until the day they receive their Certificate of Competency from the Maritime and Coastguard Agency (MCA).

Images courtesy of Clyde Marine Training
Education and Training

Setting New Standards for Superyacht Crews’ Education and Training

**Warsash Superyacht Academy trains elite professional crews and shore-based staff for superyacht service.**

To meet the growing international demand for professionally trained captains and crew for superyachts, Warsash Maritime Academy, together with its parent organisation Southampton Solent University, designed and developed the Warsash Superyacht Academy. It brings together the expertise of some of the most dynamic and innovative maritime companies and organisations in their respective fields. Working in partnership, the aim is to improve standards in education and training to meet the exceptional requirements of the international superyacht sector.

The academy provides clear career progression and guidance for crew. It also offers advanced training up to and beyond 3000 gross tonnage for experienced superyacht professionals looking to progress their careers either at sea or ashore. It is also the first superyacht training provider to develop an iPad-based learning app for its students, allowing them anytime access to updated course materials, news, career progression information and answers to a wide range of frequently asked questions.

In collaboration with its training and business service partners, the academy has over 100 highly qualified and experienced maritime lecturers. They offer over 138 accredited deck, engineering and interior courses, as well as numerous bespoke services to the yacht industry.

*Images courtesy of Warsash Superyacht Academy*
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