

REFURBS & UPGRADES

BUYERS GUIDE





ENGINEERING MOMENTUM



Probe has been a trusted supply chain partner for engineering projects for over four decades. In this time, we have worked closely with our clients, building lasting relationships, to enable them to optimise asset productivity and performance.

Manufacturing oilfield equipment is at the core of the Probe offering. We are acutely aware of the demands and deadlines placed on our clients; so we are reliably responsive to their requests to ensure projects are delivered quickly but without compromising quality and safety. Our capabilities also extend to provide a complete aftermarket service for our clients' assets ranging from full in-house refurbishment, upgrade and recertification, even if equipment wasn't originally purchased from Probe. Refurbishing and recertifying existing equipment is a cost-effective and sustainable option for our clients. Any parts can be re-machined to the customers' specifications and back to their original state before being returned for final testing.

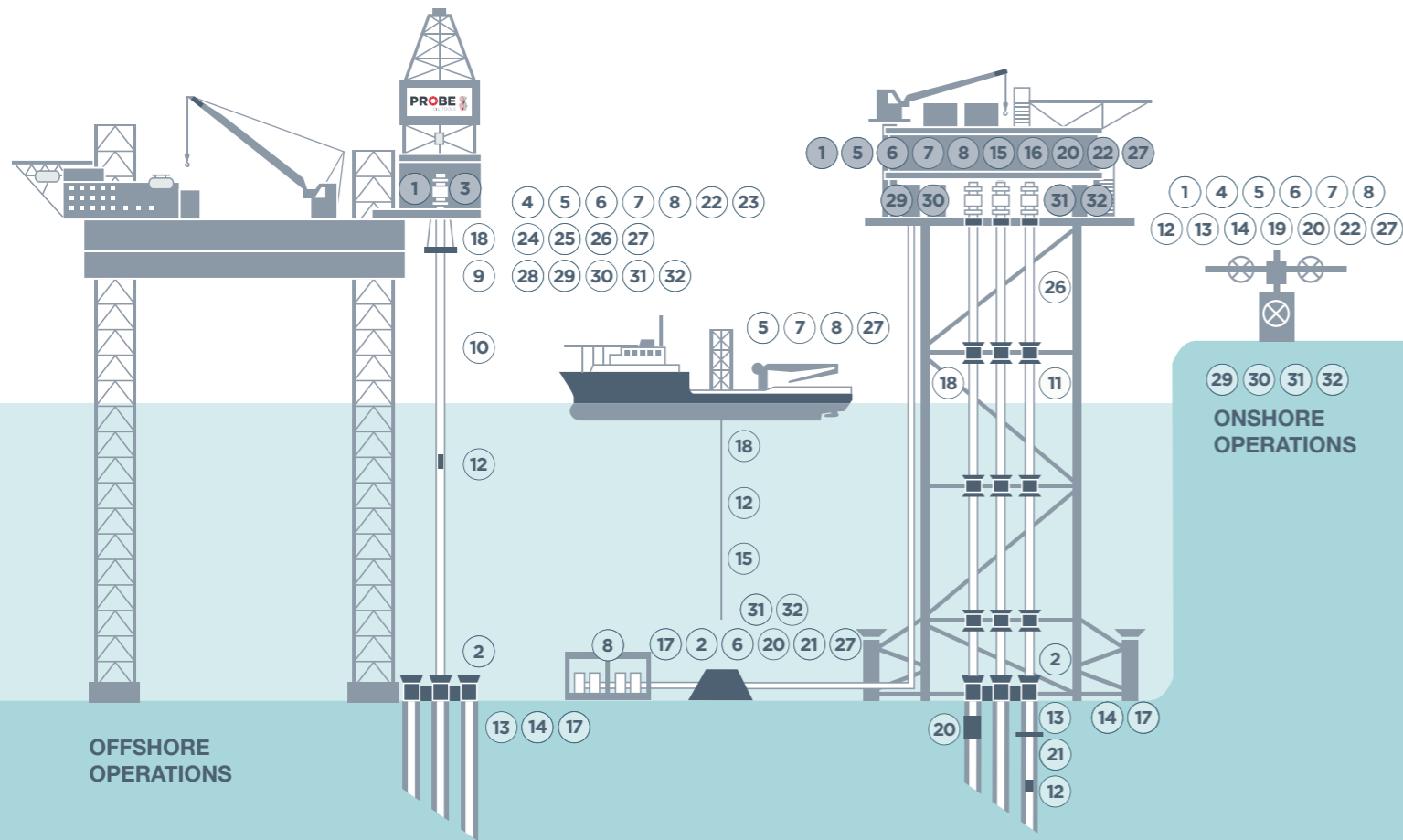
Our promise to you is always to find a solution to your engineering requirements whilst delivering momentum to your project. The content of this buyer's guide explains how we can provide unrivalled results to your design, procurement, manufacture and quality assurance challenges.

We have built a strong reputation for providing best-in-class solutions for service and supply companies across the oilfield industry. The Probe portfolio is continuously expanding as we also branch out to service other energy markets too. Our team of expert engineers are on hand to answer any questions or bespoke challenges you may have.

This is a very exciting time for Probe and we look forward to offering an innovative solution to your next engineering challenge very soon.

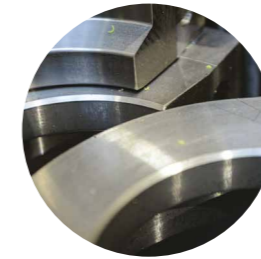
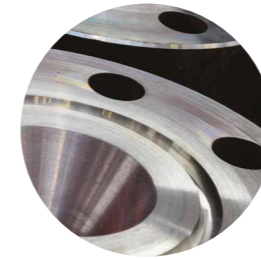
David Brennan Managing Director

REFURBS & UPGRADES



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Oilfield service and supply companies are under increasing pressure to reduce costs whilst finding sustainable solutions to operator's ever-evolving needs. These companies need a manufacturing supply chain partner that they can trust to deliver within short lead-times, to the highest standard, time and time again.



Probe is not just a manufacturer of components; we have the in-house capability to refurbish and recertify client's existing equipment. This buyer's guide gives an overview of these services which can maximise the life of existing equipment and minimise inefficiencies.

Our equipment production for the oilfield sector stretches back over 40 years. An early milestone was the purchase of our first CNC lathe in 1987 to provide us with the capacity to machine API and premium threads. Since then our plant list has expanded extensively, and we have grown into one of the largest manufacturing supply chain partners in the East of England, with clients all over the world.

The range of products which Probe can refurbish and recertify includes choke and kill manifolds, flanges and adaptors, pressure control and large diameter equipment. From the outset of any project our in-house inspectors will assess the equipment and produce a formal report for the client before any work is carried out. Disassembly and cleaning of any system will be performed in accordance to Probe's stringent procedures. We also have the capability to manufacture individual required components which are used when refurbishing equipment, meaning that quality and consistency is guaranteed. If we find that refurbishment is not possible, Probe can be trusted to manufacture, assemble and test a whole new product or system. Further details can be found in our manufacture, assembly and test buyer's guide.

Pressure retaining parts and components such as bodies, stems and bonnets, will receive a non-destructive evaluation (NDE) in compliance with API 6A standards. These records will be retained as part of the quality file for the product. Following visual, dimensional and NDE,

the product will be assembled by our fully trained and certified technicians and function and pressure tested in compliance with the product guidelines. Re-certification is carried out as part of this service by an external authority, who can be chosen by the client if required. Our refurbished equipment packages come complete with the specific certifications which can all be accessed via our online portal.

Our stock held is generally more than 1,000 tonnes and we can therefore meet urgent delivery times from this holding. Our stocks are also all subject to receiving full inspections and we have state of the art in-house facilities to perform a variety of non-destructive testing including ultrasonic examination, magnetic particle inspection, liquid penetrant inspection and Brinell hardness testing.

Supporting our machining capabilities, we also have automated welding stations which allow us to provide a range of corrosion resistant claddings to our products. Applying cladding to components during refurbishment, as opposed to producing them in solid alloy, is a popular cost-saving choice for our clients, which allows them to maximise the life of their assets. Our computer controlled furnace ensures that post weld heat treatment of our products is compliant to our third party approved weld procedures.

Probe is licensed by the American Petroleum Institute (API) to manufacture and monogram products conforming to API specification 6A. The quality system is also audited and registered with API in accordance with API Q1. We are routinely audited both by external clients and internally to ensure we remain compliant with all relevant codes, specifications and regulations.

WHAT IS YOUR CHALLENGE?

Whatever your challenge may be, we are confident that we can offer an unrivalled solution.

Our respected team is founded on engineering excellence and expertise in problem solving, devising innovative solutions and reducing complexity for design, procurement, manufacturing, and quality assurance (QA) challenges.



What is your design challenge?

Our in-house design capability

Probe have a dedicated in-house design team with many years of combined experience. Using the latest industry design software, we can work closely with our clients and manufacturing partners to ensure client owned intellectual property (IP) or our own designs meet with both needs, while delivering the work to industry standards.

No challenge too difficult

A big challenge in design is making something which is manufacturable, and at the same time fits our customers' requirements. Along with 40+ years of experience, our in-house design team can draw from a library of drawings which also go back four decades to reference back to and help drive a qualified solution. If a requirement is outside our area of understanding, we can also draw on the expertise of our sister companies within the Acteon Group where required from across the globe to extend capability.

Meeting industry safety codes and standards

Good Probe design and manufacturing processes are essential to ensure we meet technical and legal requirements. By definition, good design will also lead to safe design and this is something we pride ourselves on. While meeting our legal obligations is the minimum required, Probe always go that bit further and take best practice on board throughout the design process.

Whether it's using our clients IP or developing our own design work, this will also be sent to third party accreditors and verification organisations to seek approval against standards. If customers' requests and IP do not meet the standards required, we will advise on the most suitable course of action.



What is your procurement and manufacturing challenge?

Reducing costs and achieving savings for your project

Our key priority in achieving strategic cost reductions, is targeting resources where they can earn the best return. We find the correct approach to each job, to guarantee the most productive route through our machine shop. In a nutshell, it's finding ways to reduce costs through any means possible which in turn, importantly, saves money for our clients.

Providing a holistic approach to a project

At Probe we focus on the 'entire' manufacturing process, bringing together both technology and human systems to identify and reduce production variability. Throughout any given project, it's increasingly important that our staff are trained to have a complete view of the processes, from the beginning to the end. This holistic philosophy has provided results that means guaranteed process improvements for our organisation that yields substantial cost savings for our clients.

A supplier that can consistently deliver a quality product

Competitive quality, cost, service, and delivery have always been key requirements for our clients. It is a fundamental premise of Probe's manufacturing strategy that high-quality end products cannot be built cost effectively from low-quality components.

Probe have invested in a considerable stock of quality raw material. We stock AISI 4130 alloy steel, heat treated and tested to exceed the requirements of API 6A. Our stock of round bar ranges from 70mm to 1,200mm diameter, and square bar from 9" to 18" square. The stock held is generally more than 1,000 tonnes and therefore can meet urgent delivery times from this holding. All materials are also subject to receiving full inspections and we have state of the art in-house facilities to perform a variety of non-destructive testing.

Determining the risk mitigation of projects

For senior responsible owners and buyers, it is important to engage with the marketplace in terms of identifying the desired outcomes, risks and issues of any project requirement. As part of project scope, Probe will provide feedback on how the outcomes to a requirement might be achieved, the risks and issues as we see them, along with feedback on timescales, feasibility and affordability. Effective management of risk helps Probe manage innovation and improve performance by contributing to increased certainty and fewer surprises for our clients along the way.



What is your QA challenge?

Health and safety procedures

Probe are utterly committed to undertaking our business in such a way as to minimise the risks of injury or ill-health to our people and damage to property. As part of our commitment to safety excellence, we have attained OHSAS 18001 certification.

Quality assurance management systems

Ultimately, quality is about attention to detail and good communication - two things our clients regularly tell us we excel at.

Our philosophy of a responsive, practical service is at the heart of our approach to quality management. This is evident in the form of fast response and clear communication of clients' objectives and requirements and complemented by products of appropriate high quality, reliability, safety and cost effectiveness.

We have also implemented a formal Integrated Management System (IMS), and have gained certification to ISO 9001 - 2015.

The manufacturing cycle

Controlling quality by utilising product inspections throughout the production cycle reduces risks and cost. At Probe, we carry out 'First Off' inspection procedures and 'In Process' quality control. We also schedule third party witness testing and verification checks if our clients request it and provide 100% dimensional inspection reports.

Our commitment to the environment

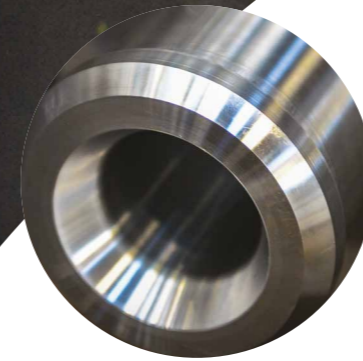
Here at Probe, we are committed to protecting the environment from avoidable harm. Within the Probe management system, we have incorporated the requirements of ISO 14001 and gained full certification. We believe our current business activities, and status of business development, constitute a limited environmental impact.

Materials tested to meet specified requirements and standards

Probe's product testing has multiple applications, from determining if the specifications are being met to troubleshooting various issues that may arise. Using applicable industry related standards to measure the product's properties and performance, provides assurance of quality throughout the production process. For Probe, this provides a proactive strategy, that can avoid costly delays and rework down the line.

We are also licensed by the American Petroleum Institute (API) to manufacture and monogram products conforming to API Specification 6A. We also hold the prestigious API Q1 Certificate of Registration to verify that our quality system has been audited by the API.

Our Quality Management System is registered with DNV GL and we are registered with Bureau Veritas with a Certificate of Quality System Approval for the European Pressure Equipment Directive.



Choke and kill manifolds

Choke and kill manifold is a necessary device for managing well pressure fluctuations encountered during drilling by diverting flow through a series of chokes and valves. When parts become worn and the equipment is no longer efficient, Probe can be trusted to manufacture and replace components to extend the life of the system. This is a cost-effective option as opposed to manufacturing a completely new one. Even if the system was not purchased from Probe originally, we can refurbish and recertify it to the client's exact specifications.

Flanges and adaptors

Probe are highly experienced in refurbishing and re-certifying either API or non-standard flanges and adaptors. Our ability to custom manufacture our products through means of size and pressure ratings means that we can respond to the client's exact requirements when carrying out refurbishment work. We also offer claddings and inlays with corrosive resistant properties to help protect against future damage.

Large diameter manufacturing

Probe has the capability to offer large diameter refurbishment on riser sections, spools and adaptors. We can accommodate riser sections up to 50ft in length, which are currently the largest in industry use. Using our state-of-the-art CNC large machining centre and welding plant, we can re-face gasket ring grooves and sealing areas as well as apply corrosive resistant overlay to repair damaged areas. The refurbishment work carried out by Probe is a cost-effective way to extend the life of this equipment which can be expensive to replace.

Pressure control equipment

Throughout its life, pressure control equipment will require parts maintenance, repair or replacement. Probe can provide refurbishment and recertification of the following products: flanged crossovers, quick union crossovers, adaptors, standard and integral lubricators.

CASE STUDY

Efficiency of streamlined hub increased

The problem

An oilfield service company approached Probe to complete a full visual and dimensional inspection on a 6" GR-52 streamlined hub c/w 90-degree cushion elbow. The component was badly corroded on all sealing areas and internals.

This was a task for which Probe are ideally qualified, as Dave Good, Technical Sales Manager, Probe, explained: "Probe is not just a manufacturer of components; we have the in-house capability to refurbish and recertify existing equipment. This is a cost-effective and sustainable option for our clients as they look to maximise the life of existing equipment and minimise inefficiencies."

The solution

After Probe's in-house inspectors performed a full assessment of the cushion elbow, the team completed a full inspection report which was submitted to the client for review. The report provided a full evaluation of the condition of the component which included tolerance tests and visual findings.

Probe also recommended a procedure and refurbishment process to reinstate the equipment into an operational condition. This review was well received by the client and subsequently it was decided to refurbish and streamline the cushion elbow, rather than manufacture a replacement item, as this provided a more cost-effective solution. The approach also enabled a solution to be delivered to the client's short operational deadlines.

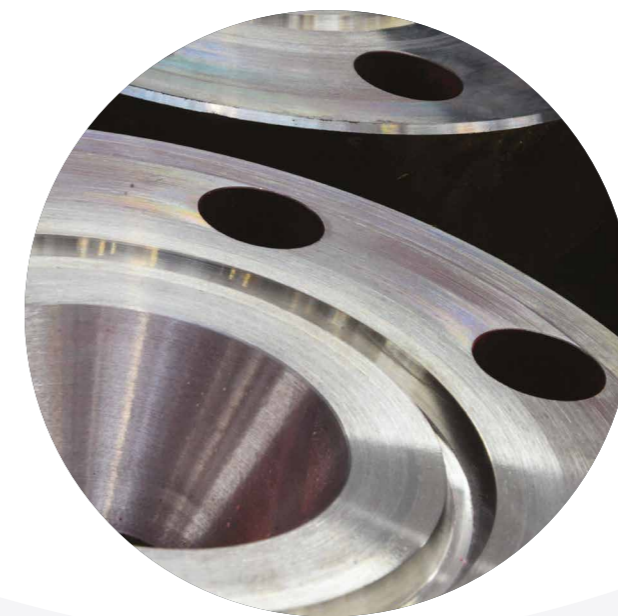
"As part of the refurbishment, all the sealing surfaces were rough machined to oversize allowing an Inconel weld inlay to be installed over the sealing area," said Dave Good. "Once this operation was completed the Inconel inlay was machined back to the specification required for the sealing face which ensured that the component still met with the required manufacturing tolerances. The internal areas were then inlaid with Inconel to help prevent further corrosion for when the component will be used in extreme environments."

Once the refurbishment had been completed the item was revalidated with third party certification and pressure tested to the required test pressure. This specification was in accordance with API 6A (20th Edition, NACE MR-01-75) and the client's requirements.

The result

Probe provided a full in-house inspection, recommendations, refurbishment, machining and testing service. All components were fully recertified to the specified requirements and the final product was supplied painted to the client's design expectations and requirements.

"The ability of Probe's multi-skilled team to provide a full cost-effective solution in the required time frame was particularly valued. We are now looking at other systems that could benefit from Probe's refurb and upgrade service to further increase operational efficiency of our components."



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