

FULLY CLAD COMPONENTS FOR HP FILTER SYSTEM



The problem

Probe's client is an international energy services provider that manufactures and distributes products which enable the extraction of oil and gas for the world's leading companies. When they were asked to build a high-pressure filter system for an operator in the North Sea, they approached Probe to supply them with a range of filter vessel components. The manufactured items would be used to protect downstream components from contamination levels beyond the recommended cleanliness target.

The project required Inconel 625 corrosion resistant cladding being applied to the internal parts of the components, which would be exposed to a sour environment.

Sour environments are defined as fluids containing water as a liquid and hydrogen sulfide exceeding the limits as defined; these environments may cause sulfide stress cracking (SSC) of susceptible materials. Probe were called to manufacture and supply 7 1/16" 10,000 flanged and butt weld elbows, studded manifold blocks, long filter body sections and bottom subs along with closure plugs and acme collars to support this challenge.

This was the first time our client had been challenged with producing a fully clad filter system. They were aware of Probe's ability, having purchased several sets of components in the past, and long-standing reputation of producing fully clad components, so embarked on a close collaboration with Probe to achieve the desired result for the end client.

The solution

Probe manufactured in-house, all the required parts for the system, with the exception of the valves and skid. All parts were manufactured to meet API 6A (20th Edition), PSL-3 and the client's own specification; with all internal parts of the system requiring additional corrosion resistant alloy (CRA) cladding. Our solution was as specified to apply Inconel 625 to all internal surfaces and over the fabrication welds.

Due to the length of the bodies, Probe developed innovative extra-long arms for the cladding heads, whilst a camera was also required to monitor the weld beads during this process.

Fully cladding many of the components with Inconel 625, as opposed to producing them all in solid alloy, reduced project costs considerably. The long bores of the vessels did not require re-machining after cladding, as the method used produced a good surface finish.

During the project, the end client also decided that the test ports in several of the flanges could not be clad in the small bores. Probe responded to the request by replacing the components with Duplex stainless steel to ensure that the materials used on the whetted parts were completely corrosion resistant.

Throughout the project, quality was assured by Probe. An ultrasonic examination of the raw material, magnetic particle examination of pre-clad surfaces and a dye penetrant examination was carried out. Final examinations and surface hardness surveys ensured that all products produced by Probe were fully compliant with the requirements of the specification.

Dave Good, Technical Sales Manager, Probe, said "We worked very closely with our client on this project, responding to developments throughout the process. We are delighted to have been a main supplier of components for this pioneering piece of work, which by being fully clad, has set a standard for future equipment for operators in the North Sea."

The result

A successful solution to the client's requirements had been created. Probe supplied the equipment in a timely manner, allowing our client to complete the build of the high-pressure filter system which was then delivered to the operator in the North Sea.

As this was our first time producing a fully clad filter system it was key that we used a supply chain partner who had a long-standing reputation in this area. Probe were able to deliver a foolproof solution which was fully compliant to the quality standards we required.

