

Case Study

Thermal coating repair of pressure control valve maintains integrity and extends equipment service life for major subsea equipment manufacturer

The application of a thermal spray process by Surface Technology saved significant cost without compromising fatigue strength for a global product and service provider to the upstream oil and gas industry.

THE CHALLENGE

During the manufacturing process a blowout preventer (BOP) surface was scored and with a tight schedule to meet, the manufacturer required a quick, reliable solution that would meet their robust specification.

As a large high pressure valve that is used to prevent the uncontrolled flow of liquids and gases during subsea drilling operations, BOPs are a safety critical component where there can be no compromise on quality; due to the restrictions around traditional repair methods damaged BOPs are often discarded, costing manufacturers significant time, money and resource to replace.

A common method of repair is to weld clad with Inconel. However, this process involves pre and post heat treatment which affects the structural integrity of the component and can therefore only be carried out a maximum of three times to prevent stress related structural failure.

THE SOLUTION

Surface Technology Aberdeen proposed a HVOF thermal coating as the repair method, due to the moderate transfer of heat from the powder particles to the work piece, which remains relatively cool; this meant there would be no metallurgical change to the surface of the internal sealing diameter. Additionally, this process would not require any pre or post heat treatments, thus speeding up the repair process and ensuring the BOP would be ready within the manufacturer's time frame.

In order to apply the proprietary AC3035 thermal coating, an Inconel 625 equivalent, Surface Technology needed the surface to be machined to ensure it was free from damage, porosity and contaminants. Following machining, the depth of the repair required was 0.35" and the material solution applied has a minimum thickness requirement of 0.008". The part was then stripped down and taken to Surface Technology's Aberdeen facility for repair. The complete process, including the removal of damage took 15 days.

THE RESULTS

- A robust repair solution was developed for the BOP that would not affect the base metal
- Automated HVOF spray technology applied the coating to ensure a consistent, high quality finish
- The damaged BOP was repaired to a standard that exceeds spec, meaning the component will have a longer operational life
- 15 day turnaround; from damaged part to operationally ready BOP

Contact us now to discuss your repair and refurbishment challenges

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