Case Study

Laser Cleaning of Small-Bore Welds

Project: Laser Cleaning and MPI Inspection of Small-Bore Welds

Requirement: Sonomatic were commissioned to conduct MT Inspection on eight off booster vessels that support the daily operation of the clients Hydrogen Compressor. **The scope was to cover 150 butt welds and fillet welds.**

Background: Prior to MPI Inspection being carried out, a cleaning process must be completed in order to prepare the surface. The standard methods taken to carry out the preparation of these welds would traditionally involve Power Wire Brushing (PWB) and/or Grit Blasting (GB). Due to the various hazards associated with both of the aforementioned techniques, including predominately the limited operating times due to hand-arm vibration syndrome (HAVS), debris, clean-up and additional safety checks, ultimately causing delays and higher end costs to the client, Sonomatic aimed to provide a more effective and modern approach to surface preparation.

Sonomatic G.C. Laser Scanner 100W

Solution: Always looking to provide new and modern approaches for our clients, in an effort to save time, money and utilisation, Sonomatic proposed Laser Cleaning as an alternative for surface preparation prior to the inspection being carried out. Utilising our brand new 100W Laser from G.C. Laser Systems with it's patented laser design allowing indirect contact with the surface and the ability to reach in accessible areas, Sonomatic provided an unrivalled standard of surface preparation. The environmentally friendly laser cleaning process delivered zero damage to the surface and never goes further than the original surface itself, unlike PWB and GB which can cause slight to significant wall loss. Sonomatic was then able to perform MPI Inspection on the small-bore connection welds with great success.

Spot area of bore weld after Laser Cleaning

Benefits: There are a number of benefits of Laser Cleaning versus the more traditional approaches such as grinding or gritting techniques (PWB or GB), with the main attributes being safety to personnel, integrity and time. Laser Cleaning eradicates the potential of grit or other debris in the atmosphere protecting the operator's eyes and stops anything getting into rotating equipment. The G.C. Laser System has various tuneable settings allowing the operator to adapt to the surface area and set specifications prior to the surface preparation. Similar to grit blasting, the laser systems can be configured to intentionally etch surfaces in preparation for new paint or wraps to be applied. The advanced laser cleaning process will not result in wall thickness loss, which is a concern with traditional abrasive cleaning methods.

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