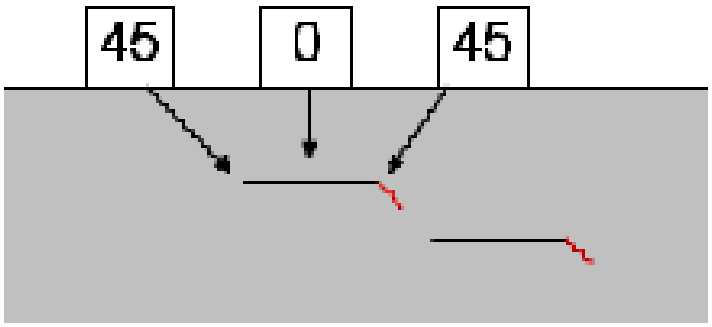
MISTRAS
A World of NDT Solutions
Services Division

Application Brief

Automated Ultrasonic Examination for Hydrogen-Induced Cracking HIC/SOHIC & C-Scan Corrosion Mapping

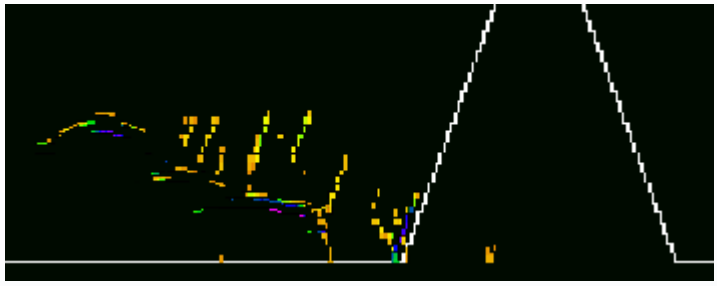
Introduction

MISTRAS Group's Service Division offers a complete range of inspection, training and QA/QC services. We integrate innovative, new technologies with conventional testing methods to assure the integrity of industrial materials and components as cost effectively as possible.



Current Condition

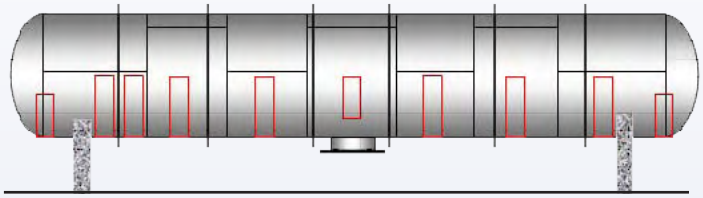
Hydrogen induced cracking (HIC), Hydrogen Blistering, and Stress-Oriented Hydrogen-induced Cracking (SOHIC) are failure mechanisms which are commonly found in oil and gas production, refining industry. This condition occurs where steel equipment is exposed to H2S-containing service environments.



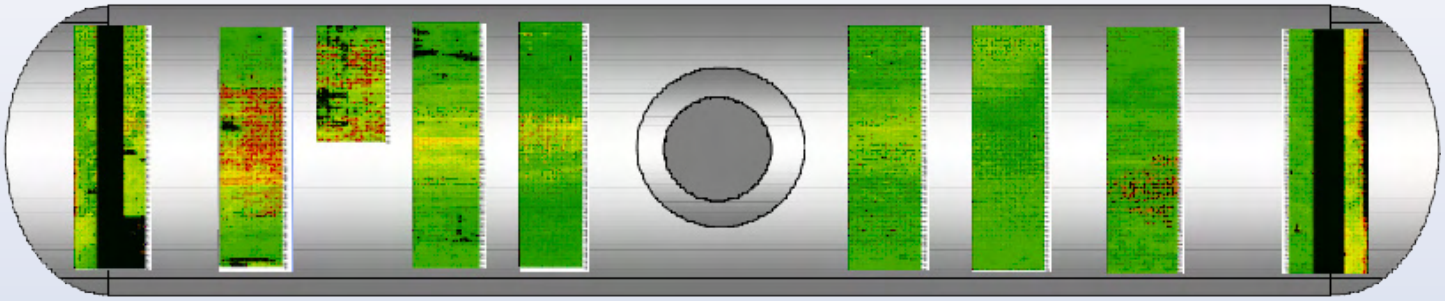
Zero degree probe and shear-wave over laid in the same image confirms blisters at different depths in the HAZ of the weld and step-wise cracking connecting to the I.D. surface.

Application Solutions

Automated Ultrasonic Scanning technique is used to detect the presence of HIC Blisters and evaluate the area for the SOHIC condition. Analysis software is capable of measuring and reporting critical features necessary for Fitness for Service determination.

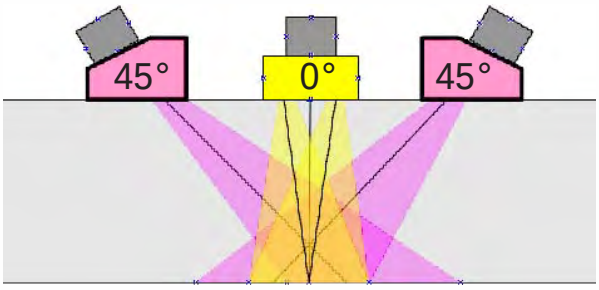


23 Vessel



A Multi-Channel Technique

- This technique combines the scan results of two to five ultrasonic probes in both longitude and shear-wave detection modes
- Records HIC Blisters and Step-Wise Cracking in a single scan
- Synchronizing all probes together allows the software to accurately overlay the different scanned images. This feature creates a very powerful analysis tool



Zero degree probe and shear-wave probe configuration and sound path

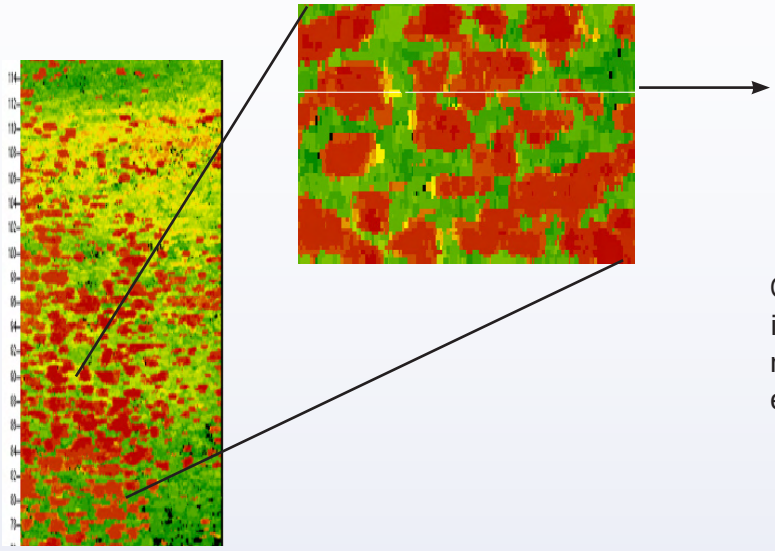
Analysis of Hydrogen-Induced Cracking HIC/ SOHIC

- Powerful software features which enable our inspectors to improve the scanned images and pinpoint any connection between blisters or blisters to ID surface
- Records and identifies stepwise cracking and stress oriented hydrogen induced cracking
- Able to overlay several channels of data to enhance analysis
- Bi-directional B-Scan slicing gives us the ability to see scanned data line by line

Reporting of Hydrogen-Induced Cracking HIC/ SOHIC

- Reports are customized, detailed and supplied in an easy to understand format
- Permanently recorded results for review and archiving
- Condition monitoring allows for repeat inspections of the same areas
- Defect dimensions accurrately measured and reported
- Reports frequently used for Fitness for Service evaluations

High Resolution C-Scan Image shows HIC blisters and the yellow around the edges indicate step-wise cracking.



B-Scan slicing of the C-Scan image clearly verifies the step-wise cracking.

Contact us today for an immediate assessment of your inspection needs, a quotation of services, or to learn more on how MISTRAS Services Division can help you to expedite your next Inspection project.

Corporate Hqts:
195 Clarksville Road • Princeton Junction, NJ 08550 USA
Phone: (609) 716-4150 • Fax: (609) 716-4155
MISTRAS Offshore Division
93 Albe Drive, Unit E • Newark, DE 19702
Phone: (302) 437-6024 • Fax: (302) 286-7272
Email: randall.harpold@mistrasgroup.com • www.mistrasgroup.com

Worldwide Group Offices
Paris, France • Cambridge, UK • Tokyo, Japan • Rotterdam, Netherlands • Bahia, Brazil
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