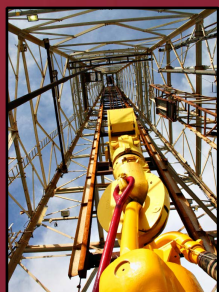


## IMR Test Labs is a high-quality provider of Materials Testing Services for the Oil & Gas Industry

In the Oil & Gas industry, safety and reliability are of critical importance. With the costs of catastrophic failures rising every day, it is imperative to have clear, concise testing results to ensure your facility can run safely and reliably.



IMR Test Labs has the expert staff and knowledge to provide testing for metals, polymers and thermal spray coatings. We have extensive experience working with the high-performance materials used in oil & gas production.

We offer a variety of chemical analysis, metallurgical testing, mechanical testing and corrosion testing services. Also, in the event of failure, we offer root cause determination and solutions to prevent recurrence.

We also offer a wide range of weld testing services, including welder qualification and weld examinations with AWS CWI's at all US locations.

## Not just data, *knowledge*

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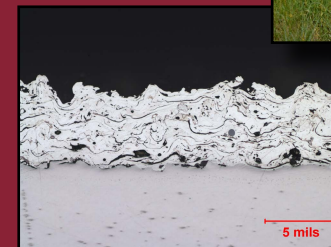
**CURTISS -  
WRIGHT**

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# IMR Test Labs

*A Curtiss-Wright Business*

## Analytical Services for the Oil & Gas Industry



Not just data, *knowledge*

## Failure Analysis

We are a full-service lab, capable of performing a complete failure analysis on your materials. From macroscopic evaluations, fractography and material identification, we have the tools and experience to handle your toughest failures and production problems. We also have extensive experience with corrosion failure analysis from microbial to stress corrosion cracking.

In addition, IMR can analyze metals, polymers, coatings and has extensive experience with the high-performance materials used in gas and oil production

We can provide insight into:

- Failure Mechanism
- Root Cause
- Applied Stresses
- Fracture Origin
- Trace Contaminants/Corrodents
- and more

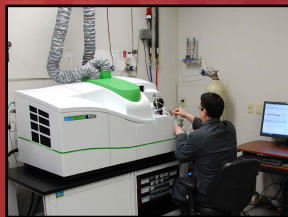


## Metallurgical Analysis

- Failure Analysis
- Fractography
- Grain Size
- Inclusion Rating
- Intergranular Attack
- Microscopy (SEM, Macro, Micro)
- Microstructure
- Plating Thickness
- Porosity

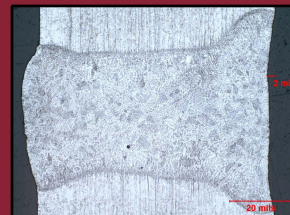
## Mechanical Testing

- 3 & 4 Point Bend Testing (inc. wraparound)
- Charpy Impact (-320°F To 450°F)
- Coating Shear Fatigue
- Creep Testing
- Fracture Mechanics Testing
- Hardness/Microhardness
- High Cycle Fatigue
- Hydrogen Embrittlement
- Low Cycle Fatigue
- Rotating Beam Fatigue (up to 1800°F)
- Stress Rupture Testing
- Tensile/Pull Test (-40°F/C to 2100°F)
- Torsion Testing



## Chemical Analysis

- Alloy Verification via ICP, OES, XRF
- On-Site PMI (positive material identification)
- Trace Element Analysis
- Cleanliness Testing
- Contaminant Analysis
- Plating Analysis

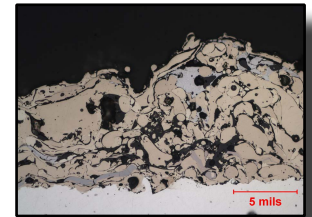


## Weld Testing

- Braze Procedure/Process Analysis
- Chemistry of Weld, HAZ, Base Metal
- Cross Sectional Analysis
- CWI Witness Service
- Macroetch
- Microhardness of Weld, HAZ, Base Metal
- Resistance Weld Peel Testing
- Welder Qualification

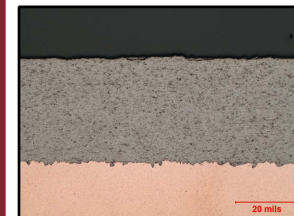
## Coatings Evaluations

Thermal spray coatings offer wear and corrosion resistance in harsh environments, and have become critical to the oil and gas sector.



There are many ways in which coatings can fail. The accurate evaluation of coatings is essential to their performance and durability. IMR offers a variety of testing services to meet your needs.

- Bond Strength/Coating Adhesion
- Chemical Analysis
- Coating Thickness
- Corrosion Testing
- Failure Analysis
- Fatigue Testing/Coating Shear
- Hardness
- Hydrogen Embrittlement
- Metallography
- Rotating Beam Fatigue
- Wear Testing



## Corrosion Testing

- Slow Strain Rate Testing
- Corrosion Simulation
- Electrochemical Corrosion Testing
- Corrosion Failure Analysis
- Salt Spray Testing
- Temperature & Humidity Testing
- SO<sub>2</sub> or SO<sub>2</sub>/CO<sub>2</sub> Exposure