

Information Requested for Failure Analysis

TCR Engineering Services
A Material Testing Laboratory in India

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TCR World, USA
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E-Mail: usa@tcreng.com

Failure Investigation Data Sheet

Following details may be submitted for the failure investigation study: -

1. Name of the component with identification number
2. Name of the section of the plant / section / sub - section
3. Description of the failure with photograph of failed component & system, photograph of the system where failure has occurred. Close up view of the failure.
4. Materials of consecution with standard
5. Original dimension of the component
6. Schematic representation of the process & position of the failed component
7. Mechanical drawing of the component
8. Detailed process description with importance on critical parameters
9. History of failure in chronological order in case of repetitive failure
10. For boilers / furnace / reformers / fad / waste incinerators / heat exchanger failures
 - Details of furnace atmosphere with process parameters fuel used with air to fuels ratio or other parameter stack gas analysis of fluid with pressure and temperature and flow rate.
 - For boiler failures, analysis of bfw, blow down, sequence of dozing chemicals and its quantity, furnace soot analysis, dissolved oxygen in the system.
11. MOC of the adjacent component and it's experience
12. Service life of the component before failure and designed life.
13. Process parameters, like flow rate, heat exchanged, pressure, temperature with operational and designed
14. Scale analysis report or scale samples, fluid samples and it's analysis
15. Inspection report of the component taken during shutdowns of all previous years, like visual observation, thickness hardness data or any other ndt data
16. In case of mechanical failures provide all loading parameters with operational details like rpm and expected variation of loads
17. Test certificate of the component

18. Details of the repairs attended to component before the failure.
19. Evidence of upsets in the process parameters before the failure.
20. Alarm trips kept in the system to avoid such failures.
21. Modification alteration done to the system.
22. Whether the component is imported / indigenous

Plus any other relevant details.

Material Testing Laboratory Services

TCR Engineering Services' ability to provide value to our metal testing customers is based on organizing our talents into a focused set of technological capabilities. This gives us the unique ability to apply appropriate combinations of capabilities and expertise to provide multi-disciplinary solutions for our clients.

We have several testing services, but, no matter which discipline we use, one thing is certain. When you send a sample to TCR, you can have confidence in the results, because you are working with a company that has a reputation for being meticulous.

The list of services offered by TCR includes:

Mechanical and Physical Testing

Comprehensive range of Mechanical Testing with a dedicated machine shop to assist in sample preparation. Capabilities include: Tensile, Impact, Weldability, Bend, Compression, Flaring/Flattening, Hardness, Dynamic Loading, Drop Weight, Proof Load, Fasteners, Hydraulic/Pneumatic, Component Testing, and more.

Chemical Analysis

State of the art Chemical Analysis laboratory allows our expert chemists to analyze ferrous and non-ferrous metals, ceramics, glass, refractories, mineral and ferro alloys in PPB or PPM level or in percentage. Our capabilities include: Wet Chemistry, Optical Emission Spectroscopy (OES), Inductively Coupled Plasma (ICP) Spectrometer, Automatic Combustion based Carbon and Sulfur determination, Glow Discharge spectrometer for (GDS) chemical depth profiling, and more.

Positive Material Identification (PMI)

TCR Engineering's Positive Material Identification service is fast becoming an integral part of process safety management in the petroleum refining, petrochemical and electric power generation industries in India, Middle-East and Asia-Pacific. Our capabilities include: Portable Optical Emission Spectrometer and a number of Portable X-Ray Florescence (XRF) Spectrometers.

Failure Analysis and Metallography Testing

Our facilities include Optical Microscope with Image Analysis system, Micro Hardness Tester, In-situ Metallography Kits, Stress Analyzer, Dilatometer, and Electronic Polishing and Etching system. TCR can procure on-hire basis, a scanning electron microscope and an elemental analysis by EDAX.

Corrosion Testing

TCR performs a wide range of Corrosion and Stress Corrosion Tests as part of the AST, NACE or client supplied specifications. Senior staff members are available to help and advise on corrosion problems or materials selection in laboratory or on-site inspection. Routine tests undertaken to evaluate the corrosion resistance of materials to environmental corrosion, pitting corrosion, resistance of materials to stress corrosion and inter-granular attack, including HIC, and SSCC tests.

Specialized Non Destructive Testing (NDT) Services

Radiography Testing, Ultrasonic Flaw detection, Magnetic Particle and Liquid Dye Penetrant Testing, Portable Hardness detection, Ultrasonic Thickness Gauging survey and Raw Material Inspection. Residual Life Assessment (RLA) of Boilers and pressure vessels.

Locations

We welcome service and technical inquiry, from simple questions to more involved interpretations of codes and specifications. We are located at:

Headquarters:

TCR Engineering Services Pvt. Ltd.
35 Pragati Industrial Estate,
N. M Joshi Marg, Lower Parel,
Mumbai - 400 011, India
Tel : 23073390, 23092347, 23097921
Tel : 23097923, 23091938, 23053930
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E-Mail: sales@tcreng.com
Website: www.tcreng.com

International (including Middle-East, China, Asia-Pacific, USA and Europe):

TCR World, USA
14625 Baltimore Ave, Box 109
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Franchise Locations:

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TCR Advanced Engineering, Baroda
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Sample collection centers in India:

Mumbai Metal Market
TCR Engineering Services
2/10, Kikabhai Mansion, 7 Kika Street,
Mumbai - 400 004, Maharashtra, India
Tel : (+91)-(022)-23428642, 56363267

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Konkanbhavan,
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