

MAJOR PROJECTS

Each one of the below listed jobs were part of a unique and interesting challenge to our teams at TCR Advanced Engineering. TCR's clients saw a measurable value and hence, companies were able to bring the right products/services to the market, at the right time and at the right cost. TCR's noteworthy projects include:

FAILURE ANALYSIS PROJECTS



Schlumberger Oilfield Services

Failure Investigation (FI) of Mandrel Bypass of Equalizer Sub.



GAIL India

Root Cause Analysis at a Lpg Recovery Plant



Wartsila, Finland

Failure Investigation of Crank Shaft



Man Industries India

FI of Mechanical Expander Pull Rod



Thermax

Failure Analysis of Cupro Nickel Tubing of Chiller Unit



Siemens Ltd.

Failure Investigation of ESV Sleeve DN 200



Weir Mineral India

Root Cause Analysis of Shaft Failures in Vertical Pumps (Cantilever Design)



Hydril Jindal

Failure Investigation of Die Cracking In Swaging Process (Cold Forming Process)



Sterlite Industries India Ltd

Volute Casing, Crane Hook / Pump Failure Investigation



Welspun Gujarat Sthal Rohen Ltd

Failure Investigation of Api 5l Psl 2 X60, (Pipe No: 3612) Line Pipe Failed During Hydro Test at site



Torrent Power Ltd.

Failure Investigation Of Blade of Lp Rotor Stage 4A Of ESM 110MW Unit



Oil India Ltd.

Corrosion Evaluation of Oil Well Tubing through Root Cause Failure Investigation



Caparo Engg P. Ltd

FI of Axel A Rear Suspension Of Car



Munjial Auto Ltd.

FI of Exhaust Muffler KTPA



Godrej Industries Ltd.

Failure Investigation of Reformer Tubes



ALSTOM Projects

Failure Investigation of High Density Balancing Weight



Hindustan Petroleum Corporation

Failure Investigation Of Radiant Heater Outlet Header Cap



Avtec Ltd.

Failure Investigation Of Crank Shaft Of Diesel Car Engine.



Bombardier Transportation India

Failure Investigation Of Notching Spring Of Tap Changer



Ratnamani Metals & Tubes Ltd.

Failure Investigation Duplex R 2205 (50.8 X 2.13 Mm) Tube Failed During Hydro-Forming Expansion

POSITIVE MATERIAL IDENTIFICATION



Kuwait Oil Company

2 crews of PMI using portable XRF and portable Optical Emission spectroscopy



Hyundai Heavy Industries

Portable XRF on Pipe Joints



Cochin Refinery

PMI for Stock sorting purposes



Reliance Industries

Detection of Carbon using portable Optical Emission Spectroscopy



Petronas, Malaysia

PMI crew on assignment on behalf of L&T, India



Indian Oil Corporation

4 PMI crews deployed for a period of 2 years using portable XRF spectrometers



Bharat Petroleum

One PMI crew for identifying incoming materials at site



LARSEN & TOUBRO

Larsen & Toubro, Mumbai | Godrej & Boyce Mfg., Mumbai | Oswal Petro Chemicals | Tyco Sanmar, Tamil Nadu | Virgo valves, Pune | Hawai valves | Endress+Hauser india pvt ltd,

Mumbai

Bombay Fluid / Swagelok

Ongoing on-call PMI services provided using portable XRF spectrometers

METALLOGRAPHY ASSIGNMENTS



Constar, USA

SEM Analysis of Plastic samples taken on 3-4 KX, 20 KV voltage magnification



NDT-CCS

Evaluation of Metallographic Replicas



Reliance

Over 1200 metallographic replicas created and analyzed to evaluate post fire damage



Zamil Group

Micro Hardness Testing



Alsom

SEM and EDAX Analysis



Massod John Brown, Dubai

SEM analysis to characterize the carbide morphology types in cobalt based alloys such as FXS 414



Biosync Scientific Pvt. Ltd.

Measurement of drug Coating layer on Drug coated stent used in Angioplasty



Godrej Industries Ltd.

Remaining life assessment was carried out through Insitu Metallography route



Lupin Ltd.

Remaining life assessment of fermentor vessel was carried out by Evaluating microstructure at critical locations



Gujarat Power Generation Co. Ltd. Bharuch

Microstructure evaluation at critical locations of HRSG Unit



National Thermal Power Corporation

In situ Metallography conducted on critical components of turbine.

METALLOGRAPHY ASSIGNMENTS (CONT.)



IFFCO

Insitu Metallography for evaluation degradation of microstructure of ammonia plant for remaining life assessment.



IPCL

Insitu metallography at critical locations of naphtha plant



L & T

Insitu Metallography for microstructure evaluation after various manufacturing stages of critical components



Bharat Petroleum Corporation Ltd.

Damage assessment of Scrubber column and condenser tubes.



Zuari Industries Ltd.

Metallography Work Conducted On Various Critical Locations Of Process Steam Supply. Heater Outlet Piping



Hindustan Petroleum Corporation Ltd.

Insitu Metallography of reformer tubes



Suzlon Windfarm Services Ltd.

Damage assessment of windmill caught in accidental fire through insitu Metallography route



Tata Power Company

Insitu Metallography work conducted on critical locations of Gas Turbine Unit -7 during outage.



Elecon Engineering Ltd.

Insitu Metallography at various locations of large size Gear



Gulbrandsen Limited

Damage assessment through Insitu Metallography route on ammonium chloride anhydrous vessel



Nagarjuna Fertilisers & Chemical Ltd.

Insitu Metallography of ammonia plant



United Phosphorous Ltd.

Insitu Metallography of evaporator support to assess the stress corrosion cracking



Indian Oil Corporation Ltd.

Insitu Metallography of FCC plant



Gujarat State Fertilizer Company

Insitu-metallography work on Reducer of Outlet Bottom Header of Reformer at Ammonia – IV Plant



Tata Chemicals Ltd.

Various critical locations of Urea Plant



Essar Steel Ltd.

Insitu Metallography on cooling coil of furnace.

FATIGUE & FRACTURE TOUGHNESS



Naval Materials Research Laboratory, India

Crack tip opening displacement testing as per client Requirement



Jindal Steel & Power Ltd., India

Fatigue crack growth rate test as per ISO 12108



Amsafe Bridport, Sri Lanka

Fatigue testing of Bulk-hold baggage nuts (Belts) as per client Requirement

REMAINING LIFE ASSESSMENTS



Torrent Power

Remaining Life Assessment and Investigation of Blade failed from root for LP Rotor stage 4A of E-Station 110MW Unit



Zuari Industries

Remaining life assessment of steam pipe line and surface cracks.



Alstom Power

RLA study through Insitu-metallography work of critical components of 120MW Turbine at MSEB-KTPS; Koradi



Asha Cellulose

Health assessment work on R-1 Reactor at Mech Engineering; Valsad



Vanakbori Thermal Power station

RLA Study of various components of Boiler No.- 2



Unilever Bangladesh

RLA (Visual, MPI, DP, Metallography, Hardness & Thickness Survey) on critical locations of Package Boiler at Unilever Bangladesh Ltd; Chittagong, Bangladesh



Atul Industries Vapi, Gujarat

- RLA of Chlorine storage tank
- RLA Study (Insitu-metallography, MPI & Hardness) on Old Autoclave – G 2101



Alembic Limited, Vadodara

RLA of fermentor



Godrej, Valia, Gujarat

- Remaining Life Assessment of Used N9 Pipe for Alcohol Synthesis Plant
- Remaining Life Assessment Of Alcohol Synthesis Plant



Hindustan Unilever

- RLA study of critical components of MP Boiler No.- 1 (G-122) at Kundain Ind., Goa
- RLA study of critical components of Boiler No.- 1 at V.D.L. at Khed, Chiplun Location
- Insitu-metallography work on various components of Boiler No.- 1 (UP – 4702) at Orai Location
- RLA study of various pressure components of Stein Mullar Boiler No.- MR 6495 at Sewri



Gujarat Fluoro-Chemicals Ltd.

- Metallurgical Assessment of CFC Reactor R-501 and Column C-513 at Formosa Plastics company Taiwan Roc
- Condition Assessment work (V.E, Metallography, U.T, MPI, Hardness & Thickness Survey) on AHF Bullet: V-31B
- Health assessment work on R-201 Main Reactor CFC plant [Metallography & hardness] at Alfa-laval; Pune



IOCL

Health Assessment Study of C-0.5Mo Piping in Hydrogen Unit-I Plant.



Siemens Ltd

Remaining Life assessment of turbine.



Jaghadia Copper

Condition assessment of landle furnac



Aarti Industries

RLA of turbine

CORROSION DETECTION



Caterpillar, USA

Weight loss corrosion test for over 35 sampl.



KPIOS, Kuwait

Hydrogen Induced Cracking Test as per NACE standard for over 15 plate samples



Enerflex Canada

HIC and SSC corrosion tests as per NACE TM 0177 and TM 0284 for over 20 samples



Ecolab Canada

Salt Spray test at a Coca Cola plant



GMMOS, UAE

HIC and SSC testing on over 15 samples



Larsen and Toubro (L&T)

– HIC testing as per NACE TM 0284 on an ongoing basis and Intergranular Corrosion of Aluminium Alloys by Mass Loss After Exposure to Nitric Acid As per ASTM G67



Jutal, China

SSC test based on Sinopec approved standard(closely adopted to NACE guidelines)



Xalloy, Thailand

Chloride Stress Corrosion Cracking, Intergranular Corrosion as per ASTM A262



Johnson Screens, Australia

Weigh Loss Corrosion Tests



Walchandnagar Industries

HIC and SSC Testing



Godrej , Mumbai

Stress Oriented Hydrogen Induced Corrosion as per NACE 0177 method D



Bay-Forge Pvt. Ltd. , India

Visual Assessment of Exfoliation Corrosion Susceptibility of Aluminum Alloys as per ASTM G66

NON-DESTRUCTIVE TESTING (NDT)



ONGC, Iran

40 team member crew deployed for shutdown activity including conventional NDT, scaffolding, and shutdown project management



NPCIL, Kota

Shutdown Crew deployed for NDT including 20 NDT Level II and a NDT Level III person



Unilever Bangladesh

Ferrite Survey, UT Thickness Measurement and Hardness Checking



Indian Naval Shipping

NDT and RLA Study of LPG Tanker



Several projects for EIL and L&T

Ongoing daily callouts for UT, DP, MP, PT, Ferrite Measurement, Portable Hardness



KOC, Kuwait

Automated UT using ToFD for Storage Tanks based on API 650 Appendix U. Project undertaken with HHI as EPC contractor



Tekfen, KSA

Automated UT using ToFD based on Code Case 181 undertaken at Aramco's PetroRabigh site



Mass Construction, India

Conventional Radiography by using X-ray source based on ASME SEC VIII Div. 1
Conventional Radiography by using Gamma ray source by API 1104



NMRL, Mumbai

NDT for WPS as per ASME SEC IX

THIRD PARTY INSPECTION SERVICES



Saudi Chemanol

Third party inspection at various locations (Kolkatta, Tarapur & Pune) as per Client provided ITP/QAP



Komline Sanderson, USA

AWS Welding Inspector as well as QA/QC Personnel deployed at a vendor site in India



EMC Sp. Z.o.o., Poland

QA/QC inspection and Pre-shipment loading audit of electric light bulbs at a vendor site in Mysore, India



Permapipe, UAE

6-Month duration project for QA/QC inspection including dimensional verification and specification compliance of insulation material used in refinery piping



Aventech, Canada

Factory Audit and Sourcing Assistance of Casting Suppliers



Flowserve, UK

QA/QC inspection at Audco in Chennai on an ongoing basis



Elliott Company, USA

Factory Audit and QA/QC inspection on behalf of the USA based company at their supplier site in western India for a 3-year duration project



Uniflex Cables, Kuwait

Inspection and Witness of Goods at a supplier site in India



Bloxwich, UK

QA/QC inspection with daily photographs and status reports advising client of vendor's progress and quality status



Metpost, UK

Inspection of fabrication and Factory Audit of casting and forging companies in India



American Industrial Supply, USA

Third party Inspection, Stamp Transfer and Shipment Audit

RoHS COMPLIANCE SERVICES



Sys Concept, Canada

Detection of RoHS restricted elements using the screening and verification methods



Birla Copper

Test of Lead content in samples



Emerson Climate Technologies

RoHS testing on an ongoing basis for over 500 samples



Parveen Industries

RoHS compliance for 28 plastic samples



Godrej Lawkim Group

RoHS testing on an ongoing basis for over 600 samples