

## Positive Material Identification Service

TCR Engineering Services  
A Material Testing Laboratory in India

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Lower Parel, Mumbai - 400 011,  
Maharashtra, India  
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D&B® D-U-N-S® Number: 86-216-7249  
Ariba Supplier: ANID: AN01-000-504-648

Plot No. EL – 182,  
MIDC – TTC,  
Electronic Zone, Mhape  
Navi Mumbai – 400 705,  
Maharashtra, India

International Location:  
TCR World, USA  
TCR-KIL, Kuwait

## **Positive Material Identification (PMI) Service**

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.

The range of equipment available for undertaking Positive Material Identification (PMI) at TCR is unparalleled in India. Our facilities include a number of Portable X-Ray Florescence (XRF) Spectrometers.

Using our various X-Ray Florescence (XRF) instruments, engineers at TCR can provide elemental identification and quantitative determination without regard to form, size and shape.

### **TCR Engineering's PMI equipment includes:**

- ArcMet 8000 Portable Optical Emission Spectrometer

Portable X-Ray Florescence (XRF) Based Instruments:

- XMet300 TX
- Metal Master 2000 (2 Nos.) from Metorex, Finland
- Metallurgist Pro 9288 from Thermo MeasureTech, USA
- XMet 3000T from Metorex, Finland
- Alloy Pro 9266 from T N Technology, USA
- Niton Model XLt from Niton Corporation, Finland

## **Onsite Positive Material Identification (PMI) Services**

The TCR Engineering Services PMI division has expert engineering and inspection personnel to undertake incoming material inspection and provide on-site alloy verification for Quality control and Stock control purposes. TCR can analyze Melt and Weld and provide a comprehensive Maintenance assessment. Our expert engineers can provide guidance to clients in selection of test equipment and forming test standards.

Our engineers can travel across India, Middle-East, Hong Kong, China, Singapore, Malaysia, Russia, Dubai and even to places in USA, UK and the rest of Europe. PMI Service engineers travel from our offices in Mumbai, India.

## **PMI Services for Scrap Traders in India and Middle-East**

TCR assists scrap traders in performing the Scrap classification service. Using our XRF analyzers, TCR provides scrap traders in India and the Middle-East with the information necessary to make quick, confident decisions on material purchases, and the speed and throughput necessary to quickly sort volumes of materials and take advantage of sales opportunities.

From titanium alloys to stainless steels to nickel super alloys to red metals to exotics, we can quickly provide the fast, reliable results that the industry demands.

## **Cost of PMI Services**

The PMI services team at TCR undertakes assignments on a Time and Material or fixed-cost basis based upon the customer or project requirement.

**Major PMI service assignments completed by TCR at:**

TCR Engineering has the provided PMI services to a number of Metal producers, Foundries, Metal fabricators, Scrap yards, Scrap traders in the industry, Electric utility companies, Fossil and nuclear power plants, Refining and petrochemical industry, Construction engineering, and the Chemical process industry.

Here is a brief list of our PMI customers in India:

I. O. C. L. - BARODA AND GUWAHATI	GOA INSTRUMENTS IND.P.LTD.
I. O. C. L. - BARAUNI	NITON VALVES PVT LTD.
I. O. C. L. - HALDIA	EBY FASTNERES
I. O. C. L. - MUMBAI	EBY INDUSTRIES
RELIANCE INDUSTRIES LTD. HAZIRA	TECH. SHARP ENGG.PVT.LTD.
I. O. C. L. - MATHURA	FLOW TECH INDUSTRIES
H. P. C. L. - MUMBAI	TEMA INDIA LTD
H. P. C. L. - HAZIRA	TEEKAY TUBES PVT LTD
COCHIN REFINERIES LTD., COCHIN	MONIBA ANAND ELECT. PVT.LTD
V V F LTD - MUMBAI	PES ENGG. SERVICES
L & T LTD., MUMBAI	ALLIANCE FITTINGS & FORGING WORKS
L & T LTD. - COCHIN AND HAZIRA	BURGMANN INDIA LTD
J J INDUSTIRES	ALSTOM POWER INDIA LTD
GODREJ & BOYCE MFG.CO.LTD.	VIJAY TANKS & VESSELS LTD
KIRLOSKAR BROTHERS LTD.	GMM PFAUDLER LTD
KISRLOSKAR EBARA PUMP LTD	BRIGHT BAR MFG. CO. LTD.
INSTRUMENTATION LTD.	FIBRO FORGING PVT. LTD.
TECHNIP ITALY, GUWAHATI	M J PATEL & CO. LTD.
LG ENGG. & CONSTRUCTION CO.	DETRIVE INSTRU.& ELECT. LTD.
SAMSUNG ENGG.CO. LTD.	TUBE WELD INDIA LTD.
KOTCH GLITSCH INDIA - BARODA	FOURESS ENGG. (I) LTD.
REYNOLDS CHEMEQUIP P. LTD.	NITON CASTINGS
OSWAL CHEM. & FERT. LTD.	HARIYANA INTL.PVT. LTD.
MICROFINISH VALVES P. LTD.	LACHLOR INDIA PVT. LTD.
FLOWSERVE SANMAR LTD.	CROMPTON ENGG.
TYCO SANMAR LTD,	THERMAX LTD. - PUNE
ORNATE VALVE LTD-NASHIK	ABB LTD
KSB PUMPS LTD - COIMBATORE	THERMAX BABCOCK & WILLCOX
TRINITY VALVES PVT LTD.	G. R. ENGG. - BANGALORE
HARDWIN FASTNERS LTD	TYCO VALVE & CONTROL PVT LTD
TECHNO FORGE LTD - BARODA	UNIVERSAL HEAT EXCHANGERS
INSURVEY INSPECTION SERVICES	PETROCHEMICAL ENGG ENTERP.
JAYSONS FOUNDRIES	ENPRO INDIA PVT.LTD
BDK ENGG.INDUSTRIES LTD.	CAMY PLANTS
PRESIDENT ENGG.CO.	ERGOBOGEN FITINGS PVT. LTD. - SANGLI
I S G E C - YAMUNANAGAR	SUPRIM STEEL
NECO SCHUBERT & SALZER LTD.	UB ENGG - PUNE
KSB PUMPS LTD - PUNE	SHREE GANESH FORGING
VIRGO ENGG. LTD - PUNE	SHANTI INTL. - MUMBAI
SULZER PUMPS LTD - MUMBAI	JORD ENGG (I) PVT. LTD., BARODA
SULZER INDIA LTD - PUNE	FLASH FORGE PVT. LTD., VIZAG
GEA ENERGY SYSTEMS - CHENNAI	P. K. FORGE - MUMBAI

## About TCR Engineering Services

Founded in 1973, TCR Engineering Services (TCR) is India's most reputed and established, NABL and ISO 17025 accredited independent material testing laboratory. The core services TCR provides include Mechanical Testing, Chemical Analysis, Positive Material identification (PMI), Non Destructive Testing, Metallography, Corrosion Testing, Failure Analysis, Raw Material Inspection, Metallurgical Product evaluation, Engineering Research and Consultancy.

TCR has pioneered in introducing latest analytical facilities and has upgraded the same every decade. TCR has state-of-the art testing facilities for testing of Engineering Goods, Ferrous and Non-Ferrous Metals, Non-Metallic Materials such as Polymers, Ceramics, Glass, etc.

More than 1000 Quality driven clients (in India and a select few globally) in Aerospace, Automotive, Oil Refineries, Petrochemical plants, Chemical Processing, Defense, Nuclear Power and Capital Goods manufacturing trust TCR to handle their Material Testing and Research & Development requirements.

Engineers, Chemists, Metallurgists & Technicians, at TCR, have the qualifications, the education and the experience to meet rigorous standards in the testing field, whether serving the Private and Public Sector, Government or the Military.

Customer Service Representatives, at TCR, provide clients with up-to-the-minute information on the status of your sample through our in-house laboratory automation software. The need for responsiveness is something understood by everyone in the company. We have improved turnaround time without sacrificing quality by operating 12 hours a day in the lab, 16 hours a day in the machine shop.

TCR laboratories are located in Lower Parel, Mumbai and Electronic Zone, Navi Mumbai with a sample collection office in the Mumbai Metal market. TCR Advanced Services, a TCR Engineering affiliate company, has its laboratory in Baroda. Engineering professionals travel across India to conduct on-site material testing. International clients are served by a sales office in Washington DC, USA.

## ISO 17025 Accredited Laboratory in India

TCR Engineering Services is a Bureau of Indian Standards and NABL accredited laboratory. NABL approval is from Department of Science and Technology, Government of India. NABL provides laboratory accreditation services to laboratories that are performing tests / calibrations in accordance with ISO 17025.

TCR is one of the select few test houses, in India, to be on the approved list of such organization as Bharat Heavy Electrical Ltd., Nuclear Power Corporation of India Ltd. (NPCIL), Larsen & Toubro Ltd. (L&T), Engineers India Ltd. (EIL), Toyo Engineering India Ltd., Oil & Natural Gas Commission (ONGC), Bhabha Atomic Research Centre (BARC), Vikram Sarabhai Space Centre (VSSC), Dept. of Defense, DGS&D, Indian Railways, Mumbai Municipal Corporation, Dept. of Telecommunications, Electronic Corporation of India Ltd and others.

TCR is also approved by international recognition bodies such as American Bureau of Shipping (USA), Bureau Veritas (France), Lloyds Register of Shipping (UK), Det-Norske Veritas (Norway), SGS (India) Ltd. and others.

## **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 SCC 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:

 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  
Fax : + 91-22-23080197  
E-Mail: sales@tcrceng.com  
Website: www.tcrceng.com

 TCR Engineering Services  
Plot No. EL-182, MIDC-TTC, Electronic  
Zone, Behind Nelco, Mhape, Navi Mumbai-400  
710  
Maharashtra, India  
Tel: 27610921/22/23, 27612324, 27631508  
Tel: 32936355, 65160805, 65168100/8200  
Fax: +91-22-27612044  
24 hours Cellular Phone: +91-9323397295  
E-Mail: navimumbai@tcrceng.com

(USA, China, Asia-Pacific, and Europe)  
 TCR World Inc., USA  
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E-Mail: usa@tcrceng.com

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Tel: +91-(0265)- 2657233, 2643024  
Fax: +91-(0265)- 2634375  
E-Mail: baroda@tcrceng.com  
Website: www.tcradvanced.com

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 C/o GAS Arabian Services  
P.O.Box 3422, King Saud Street  
Opp. Juffali Showroom,  
Dammam 31471, Saudi Arabia  
Tel: +966-5049-97683  
E-Mail: saudi@tcrceng.com  
Website: [www.tcr-arabia.com](http://www.tcr-arabia.com)

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Ahmadi, Kuwait  
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 TCR ENGINEERING  
MALAYSIA  
2D-03-06 Mutiara Idaman,  
Solok Tengku Jelutong,  
George Town Pulau Pinang  
11600 Malaysia.  
Tel/Fax : +604 - 2817477  
Mobile : +6016 - 445 8283  
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 Mumbai Metal Market  
TCR Engineering Services  
2/10, Kikabhai Mansion,  
7 Kika Street,  
Mumbai - 400 004  
Maharashtra, India  
Tel : +91-22-23428642, 56363267

## Sample collection centers in India:

KHB Engineering Services  
C/o. K. K. Engg. Works  
Shed No. 10 of M. P. L. U. N.,  
Behind Allahabad Bank, 'A' Sector,  
Industrial Area,  
Govindpura, Bhopal, Madhya Pradesh, India  
Tel : +91-(0755)-2586531, 5261264  
Fax : (+91)-(0755)-5261297

Navi Mumbai Metal Market  
Shop No. 44, Mahesh Shopping,  
Sector 15 CBD Belapur (East),  
Konkanbhavan,  
Navi Mumbai 400 614, Maharashtra, India  
Tel : +91-(022)-27577650, 27576185,  
Cell: +91-9223235114