

## Sourcing Engineering Goods, Steel and other Metals from India

TCR Engineering Services (India)

TCR World Inc. (USA)

TCR-Arabia(KSA)

Most companies around the globe are now evaluating their upstream supply chains and seeking suppliers with competitive price quotes from India. If your company has not looked at this option before, it may now be the time to look strongly at India. When compared to China, India excels at sourcing industrial materials, engineering goods and metals.

For companies seeking India a one-time procurement, cost advantage is India's primary draw, but companies seeking more permanent stakes may find immense benefit derived from the product quality and manufacturing flexibility offered by an Indian supplier. India's proximity to China helps in lowering the shipping costs and helps companies balance trade risks.

While the cost advantages of sourcing and procuring from India is obvious, most companies often delay their entry due to the initial capital and management outlay required, and the complex operational and regulatory environment in India. One solution to such problems is to retain the services of a product and material sourcing company.

### **Sourcing by TCR**

TCR Engineering Services (TCR), founded in 1973, is India's leading ISO 17025 and NABL accredited independent material testing laboratory servicing 1500 customers globally. Leveraging the relationships with customers at our laboratory, TCR started providing sourcing services in 2004.

TCR covers the entire sourcing process from finding the right suppliers to transferring the design specifications. TCR will setup the right supply chain and logistics control, ensuring that the shipment meet all export guidelines. Finally our strength and deep domain expertise in material testing and inspection services helps maintain quality control on all shipments.

TCR continuously harvests her relationships with manufacturers and traders in India by taking the time to meet with these companies including touring their facilities and "first hand" confirming their capabilities.

TCR has a team of over 120 employees including Engineers, Chemists, Metallurgists & Technicians that are able to participate in the material and goods sourcing. Our Engineers are well versed in interpreting drawings and do assist in creation of "test" samples.

TCR can source, inspect and test ferrous and non-ferrous metals, casting & forging, sheet metal, bar, pipe, stainless steel, nuts, bolts, engineering goods, non-metallic materials such as polymer, ceramic, glass, machined parts, and machine tool components from India.

### **TCR World Inc. (USA)**

TCR World Inc. is a subsidiary of our parent corporation in India - TCR Engineering Services, and was incorporated in USA in 2004 to work in all facets of international trade and product sourcing. TCR World Inc. is a Delaware corporation, based in Washington D.C., USA.

TCR World Inc. requires a letter of credit from all new customers and large orders. After a relationship has been developed TCR may review the terms to offer additional payment terms. TCR World can be reached at +1-240-505-0739 during US East Coast working hours and can be contacted via e-mail at [usa@tcreng.com](mailto:usa@tcreng.com)

## **The Sourcing Process from India by TCR**

Our 5-step sourcing process is tailored around the following process:

- TCR initially seeks details on product type, drawing, material specifications, required amount and quality with target delivery date from the client.
- TCR goes into the marketplace, contacting Manufacturers, traders and Steel producers, to establish production capability, availability, quality and unit price.
- TCR provides a product price quote in a FOB price format. We directly negotiate with the supplier and provide a competitive bid.
- If price and quality parameters are acceptable by the client, TCR instructs the manufacturer to produce an appropriate sample prototype for approval. The Prototype is shipped to the client.
- Once samples are approved, product order is placed with all manufacturing suppliers. Payment and shipping logistics are verified by TCR.

## **Raw Material Inspection Services**

As part of all product sourcing projects, TCR undertakes Raw Material Inspection Services. Material Inspection Services are essential to ensure that all material supplied meets client / project defined specifications. TCR can perform quality analysis (QA) on all engineering goods sourced from India and validate them as per ASTM, BS, GS, JS, IS and other international standards.

## **Product Inspection and Quality Assurance**

Our independent, third-party quality assurance services result in improved product quality, with a reduction in customer complaints, noncompliance and product recalls.

The on-site inspection team covers all the states across India. The pricing structure for the on-site inspection services is set competitively and is based on man-day charges. Our inspection service includes:

## **Factory Audit**

TCR Engineering Services Factory Audit service verifies the capability of a manufacturer to meet contract conditions for quality, quantity and delivery terms. Such assessments are often tailor-made as per a client's needs and requirements. By availing of this service, we eliminate the need for a client to be present on-site at the manufacturer's plant or factory.

## **OEM Development**

TCR Engineering Services with 31 years of experience has a team possessing a strong engineering background. This team stands ready to offer consultation based on the latest technological advances, incorporating current national and international norms and standards. TCR can help assist in creating a first production prototype, technical documentation, standards evaluation, establishing production and quality criteria, and technical transfer to the supplier.

**Picking of Samples and Testing Coordination**

Our inspectors can select a pre-determined number of samples from production at a factory and seal them, label & send them to our material testing laboratory for testing according to customer requirements. At the TCR Engineering Services material testing laboratory, we provide 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 Consulting.

**Initial Production Check**

The inspection team from TCR Engineering Services can perform a visual inspection of products as available at the beginning of the production cycle against a client's instructions and Purchase Order specifications. The "Initial Production Check" when combined with a "Final Random Inspection" and any other on-line production checks, helps in taking corrective actions at an early stage of production cycle. The inspection team will send out intermediary reports to the client and keep them informed about the production progress relative to the delivery terms.

**In-Production Check**

The inspection team performs a visual inspection of products as available during production. The inspection team may subject some products for random material testing. The in-production check service helps in reducing the final random inspection failure risk.

**Random Inspection**

The TCR Engineering Services inspection services team performs a final random inspection comprising of a detailed visual inspection of goods before shipment. It is generally conducted on the premises of the manufacturer, on samples selected according to defined sampling procedures. The inspection criteria covering quality, quantity, marking and packing are based on the client's specifications and reference samples, as provided. Upon completion of the final random inspection a detailed inspection report is sent to the client and the inspection certificate issued to the supplier if all findings are positive.

Random Inspection can be chosen as an independent service or for a tighter check on the production, the Random Inspection service can be performed in conjunction with the "Initial Production Check" and "In-Production Checks." Upon completion of this inspection we will issue a TCR Engineering Services Inspection Certificate certifying the product quality.

**Loading Supervision**

To further manage the product delivery, the TCR Engineering Services inspection team offers Loading Supervision which involves, "as appropriate," the checking of the container condition, identification of the loaded packing units with the previously inspected consignment, tallying of the total number of shipping packing units and sealing of the container. Loading Supervision service is offered in combination with the Final Random Inspection.

**Quality Assurance and Material Testing**

The TCR Engineering Consulting and Sourcing staff is supported by TCR's full-service material testing laboratory which provides chemical, mechanical, non destructive testing, metallographic, positive material identification, corrosion testing and component testing services, including portable spectrometers, and digital photography. TCR also has access to scanning electron microscope and EDAX attachments.

**Logistics Management**

Once the product is manufactured and ready for shipment, TCR performs and verifies all export logistics, including local documentation, customs, licensing and tariff requirements, in the most efficient and economical way possible to insure timely delivery.

**Sourcing and Supply Chain Management Cost**

The Product Sourcing service is a fixed-price effort from TCR Engineering. The price for our Raw Material Inspection Services is based on the amount of material inspected. TCR's material testing price list is available online at [www.tcreng.com](http://www.tcreng.com)

## 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 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:

 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.tcreng.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  
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P.O.Box 3422, King Saud Street  
Opp. Juffali Showroom,  
Dammam 31471, Saudi Arabia  
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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),  
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Navi Mumbai 400 614, Maharashtra, India  
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