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COATINGS & ANTI CORROSION ENGINEERING REVIEW



**Welspun set to be Largest
Pipe Maker in the World**

**Outsource Laboratory
Testing Practices to India**

**Garnet: The 21st Century
Abrasive**

Outsource Laboratory Testing Practices to India

TCR Engineering Services is one such laboratory that has investigated thousands of failures due to corrosion for clients all over the world

"Strong engineering talent, laboratory and quality assurance professionals seasoned with years of experience," are some of the reasons why it pays to outsource laboratory practices to India, notes Mr Virendra K. Bafna, Chairman TCR Engineering Services, Navi Mumbai, one of the largest private testing laboratories in India. "Besides these, there are the factors of trust, competence and reliability."

Offering competitive rates, laboratories in India also have the ability to organize diverse teams comprising chemists, metallurgists and engineers under one roof, said Mr Bafna. "These laboratories have the ability to expand on test reporting to include contract research if necessary. Reporting can



also be tailored to meet global or client specific requirement."

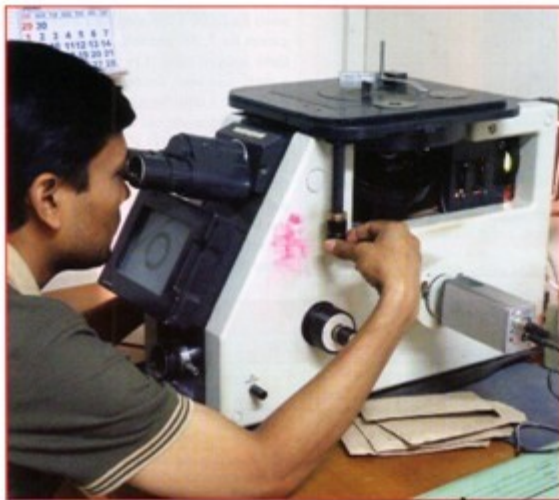
One may argue for in-house labo-

raries. Yes, in-house laboratories provide essential services, but such units are expensive to operate and assets are underutilized, explained Mr Bafna. "One must also keep in mind, there is, by and large a global shortage of good laboratory and quality assurance professionals."

"Not only that," said Mr Bafna, "technologies are constantly changing and independent laboratories are generally better able to keep up with the latest technological advances. In their third-party position, outsourced laboratories can also add to the ultimate product credibility via their independent test results."

Outsourcing the laboratory function reduces overheads and operating costs, while the company continues to benefit from needed laboratory services. New government policies allow Indian laboratories to procure state-of-the-art-equipment enabling them to adapt to new techniques to test or research. Accreditation of laboratories in India by NABL to ISO 17025 standards provide global recognition.

"How does one choose an outsourced laboratory in India?" said Mr Bafna, "is a question often posed. I would say, one should look at the laboratory's experience in the business like how much experience do they have in the specific kinds of testing you require. Or, do they have the right kind of equipment to efficiently perform the tests you need?" Logistics and the mechanics of delivery must be taken into account and one needs to check whether the turnaround time is acceptable. Also, check if a rush service is available and does the laboratory provide pick-up and delivery. Mr Bafna



Company Profile



Caterpillar (USA), L&T (India), etc. In addition the company is also currently studying crevice corrosion on exotic materials using high temperature, high pressure autoclaves for a well known international client. Clients in the fast growing automotive sector in India too count on the salt spray corrosion test facilities at TCR in Navi Mumbai.

TCR has undertaken many failure analysis projects for Fortune 500 companies including Reliance, BP, Schlumberger, KOC, KNPC and IOC. In all, TCR has undertaken over 800 failure analysis projects till date.

The investigation of corrosion failures can be very complex, and usually requires multidisciplinary testing and analysis to determine the root cause of failure. The staff within the failure analysis department at TCR has the practical experience to investigate a full range of corrosion problems across different industries from multiple geographic locations. TCR can determine if a failure is caused by inappropriate material selection, design, and fabrication or operating conditions. TCR often looks at undertaking failure analysis for mechanical equipment; super heater and boiler tubes; wire cables; pipelines; pressure vessels; forgings; castings; welds/braze; tools and dies; gears; FRP/PVC pipe; and rebar.

also noted one must check whether the laboratory has online access to deliver results. The other factors to be noted are, do they have back-up equipment and the kind of reputation and accreditation the laboratory has. In case of an emergency, one must also check out whether the staff has visas and travel permits to visit on-site locations.

TCR is one such laboratory that offers such services from companies around the world. They have the experience of having investigated thousands of failures due to corrosion for clients all over the world. TCR's strengths in elevated-temperature and ambient temperature, aqueous corrosion mechanisms including deep understanding of sour gas applications helps the upstream and downstream oil and gas, petrochemical, refining and power companies all over the world.

Companies from all over the world including corporations such as NPCC (Oman), Enerflex (Canada), Shenzhen Jutal (China), First Fin Corporation (Taiwan), Maharashtra Seamless (India) routinely send samples to the TCR corrosion testing department in Mumbai, India for NACE specified testing such as SSSC and HIC tests for pressure vessel plates, forgings and tubes, bolts and nuts.

TCR has also undertaken custom study projects for weight loss intergranular corrosion as per ASTM E262 practice for prestigious clients such as



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5L pipe manufacturers in the Middle-East regarding setting up of their corrosion test facilities. We can also create a laboratory including equipment supply and staffing for any enterprise on a turnkey based solution

Mr Rohit Bafna
DIRECTOR, GLOBAL SALES



Company Profile

TCR offers comprehensive material testing of corrosion problems, including pitting corrosion test as per ASTM G48 specifications; salt spray test; corrosion test as per ASTM G35 specifications; inter granular corrosion test (IGC) per ASTM A-262 practice A B C D E & F; hydrogen-induced cracking test (HIC) as per NACE TM 0177; sulphide stress corrosion cracking (SSCC) as per NACE TM 0284; chloride stress corrosion test as per ASTM G36 specifications; ammonia vapor test; corrosion test as per ASTM A761 specifications, etc.

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sion of TCR is currently advising a number of API 5L pipe manufacturers in the Middle-East regarding setting up of their corrosion test facilities. We can also create a laboratory including equipment supply and staffing for any enterprise on a turnkey based solution," said Mr Rohit Bafna, Director, Global Sales.

The advanced NDT services team of India is working on creating new methods for detection of step wise

Hydrogen Induced Corrosion (HIC) Cracking using the C-Scan Corrosion mapping solution for in-service inspection of plant items. The Advanced NDT unit of TCR is also working on detection of HTHA (High Temperature Hydrogen Attack) in base metal and Embedded Crack detection by SW (Shear Wave) and CWT (Creeping Wave Technique).

TCR's diverse staff includes professionals who have been recognized by the International American Society of Materials (ASM) and the National Association for Corrosion Engineers (NACE) for outstanding contributions to the field of materials science and corrosion. In 2007, NACE International, India chapter selected TCR Engineering Services (Navi Mumbai) as a recipient for the prestigious NIIS Award for "Excellent Laboratory."

To cater to international clients, TCR has a global laboratory network. TCR World, Inc., is based in Washington DC, USA; TCR Kuwait is based in Kuwait; TCR Malaysia in Penang and TCR Nigeria is based in Port Harcourt. TCR Arabia based in Dammam, Saudi Arabia is their latest NDT, PWHT, material testing, corrosion, PMI, chemical and failure analysis laboratory.

ABRAHAM MATHAI

