

In this ISSUE

Topic of the Quarter

Certifications

Services Portfolio

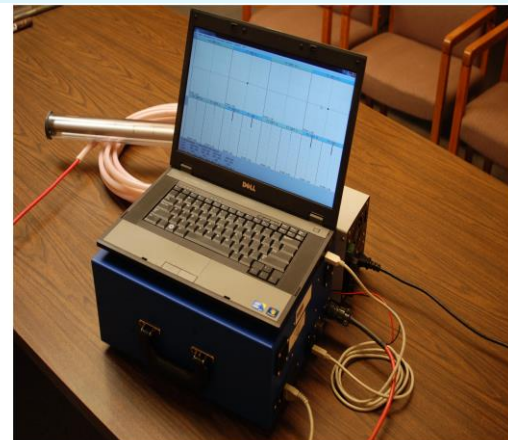
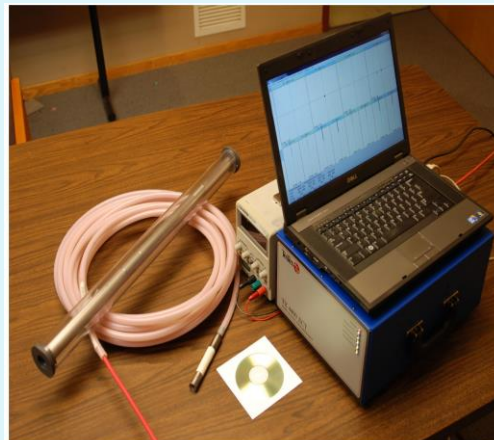
Events

SATURATED EDDY CURRENT TESTING On Ferromagnetic tubing.

The Saturation Eddy Current technique is a combination of applied Direct Current (DC) field lines and Eddy Current field lines. The basis of the technique is reading the distortion of the induced Eddy Current field in the tube wall caused by affected permeability due to compression of the magnetic field lines in the defect area of the tube. This distortion in the magnetic field can be measured as a change of phase and amplitude in the secondary voltage generated by the material and is based on the reflective impedance method. The difference in the Eddy Current field lines and DC field lines allows the differentiation between internal and external defects.

The Benefits of this Inspection Method are:

- Small pitting can be detected
- Large volume flaws can be detected and quantified
- Saturation can be adjusted to eliminate signal noise due to finned tubes
- Differentiates between ID and OD flaws



Saturated Eddy Current Testing

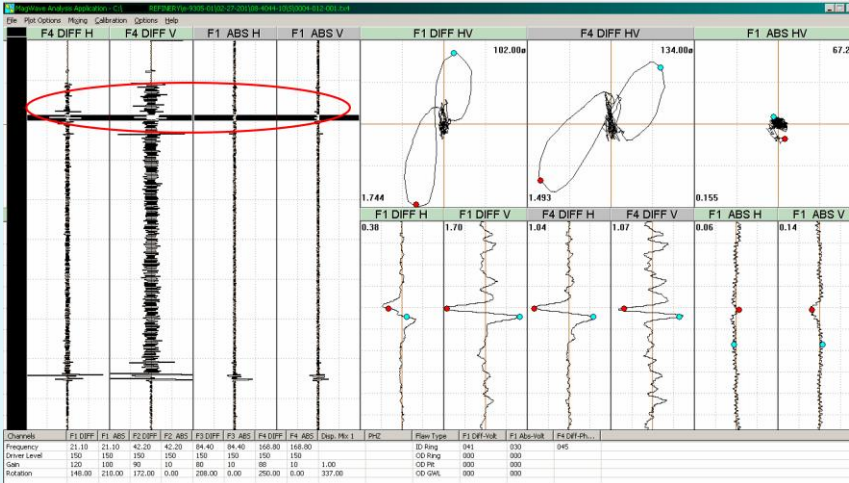
Advantages

- Suitable for fin-fan (air cooler) tubing.
- Suitable for internal / external corrosion detection (can differentiate ID & OD defects).
- Defects near and / or under support plates can be detected (for Carbon Steel tubing only).
- General Wall Loss can be detected.
- Hand pull average speed (30 – 50 tubes per hour)
- Multiple frequencies allow mixing capability to suppress unwanted signals and / or noise
- If defect type is known in advance, defect sizing is more accurate; the defect areas can be detected regardless
- Cleanliness requirements are less stringent than for IRIS (providing that 75 – 85% Fill Factor Probe can propagate through the tubes)
- Data analysis is performed on site.
- Preliminary report is issued immediately after testing is completed
- Report with color-coded tubesheet maps, key problem areas can be immediately identified

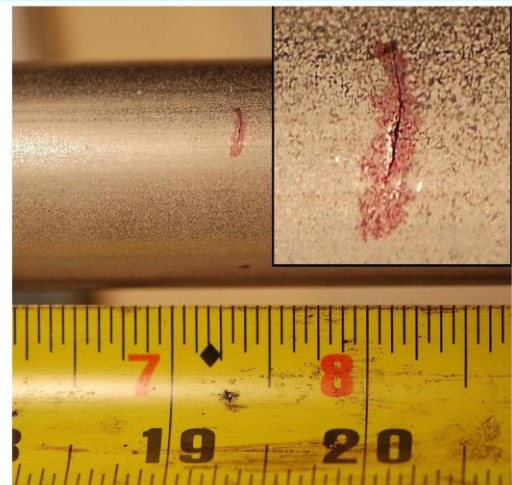
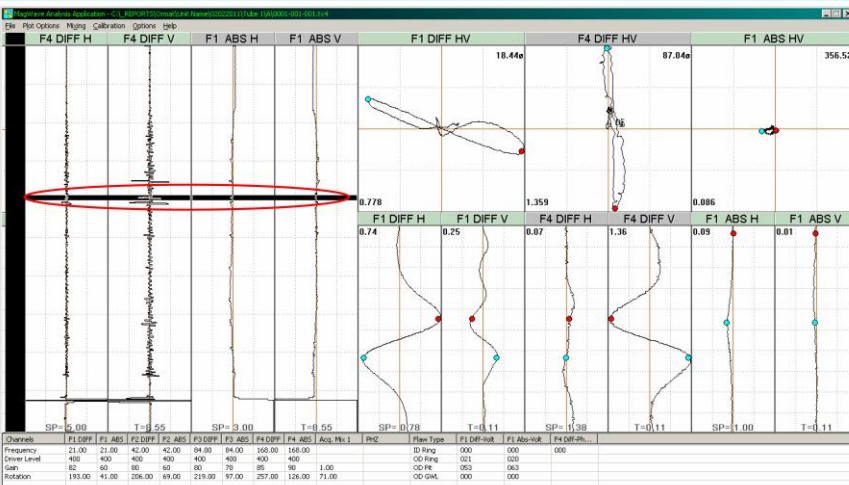
Limitation

- wall thickness (depending on OD and magnetic permeability of inspected tube); Currently, for carbon steel tubing:
 - 0.625" OD – up to 0.049" Wall;
 - 0.750" OD – up to 0.083" Wall;
 - 1.000" OD – up to 0.120" Wall (0.134" for fin-fan tubing);
 - 1.750" OD – up to 0.210" Wall.
- areas of inadequate saturation (up to 1.250" from the ends of a tube)
- areas of inadequate saturation or false indication near and under support plates or tube sheets (up to 0.500" from support plates or tube sheet for Sea-Cure, SS400 series, Duplex.
- areas of inadequate saturation near and under the tubesheet (up to 0.500" from tube sheet for Carbon Steel tubing).
- Difficulty of interpretation if different defect types are present (OD pitting & baffle cutting)
- Defect depth is estimated only by signal amplitude (signal amplitude and phase values if defect is ID in nature).
- Irregular pulling speed leads to misinterpretation and/or false indication.
- Accuracy: $\pm 10\%$ to $\pm 15\%$ (depending on probe fill factor and tube cleanliness).

Saturated Eddy current signals



This picture (waveform on the left) shows tagged area of the signal response from internal corrosion indicating 35-40% ID LWL detected in A-179 fin-fan (air cooler) tube, that corresponds with boroscope picture on the right



This picture (waveform on the left) shows tagged area of the signal response from the crack in alloy 2205 tube that corresponds with Dye Penetrant (visual) indication (on the right):

Certifications:

ISO 9001-2015 Certificate



CERTIFICATE OF REGISTRATION

This is to certify that the management system of:

TCR Arabia Company Ltd.

Main Site: King Abdul Aziz Seaport Facility, P.O. Box 8143, Dammam
32211, Kingdom of Saudi Arabia

has been registered by Intertek as conforming to the requirements of:

ISO 9001:2015

The management system is applicable to:

Conventional Non-Destructive Testing Services (NDT), Advanced Non-Destructive Testing Services (ANDT), Metallurgical Services, Mechanical Laboratory Testing Services, Welding Inspection Service, Post Weld Heat Treatment (PWHT).

Certificate Number:

21111010003

Initial Certification Date:

25 March 2014

Date of Certification Decision:

02 March 2023

Issuing Date:

02 March 2023

Valid Until:

24 March 2026



intertek



014



Calin Moldovean

President, Business Assurance

Intertek Certification Limited, 10A Victory Park,
Victory Road, Derby DE24 8ZF, United Kingdom

Intertek Certification Limited is a UKAS
accredited body under schedule of
accreditation no. 014.



Certifications:

Mechanical Testing Lab of TCR Arabia is now ISO-17025 Accredited



Approvals:

TCR Arabia is now an approved contractor in SABIC for providing high-end inspection services like HTHA/FFS, Metallurgy Solutions and Root Cause Analysis.

Classification: Internal Use



Tuesday, August 20, 2019

Subject: APPROVED CONTRACTOR CONFIRMATION

Dear Mr. Darwin,

This is to confirm that "TCR Arabia Ltd. KSA" is an approved third party and part of "Approved Contractor List" (ACL) of SAUDI BASIC INDUSTRIES CORPORATION (SABIC) to conduct business as a third party inspection & testing contractor for onshore/ offshore services for SABIC site & Mega projects. The onshore/offshore services are:

- Conventional NDT techniques (RT,UT, PT, MPT, VT & PMI)
- Advanced NDT techniques (ToFD, PAUT, MFL & tube inspection).
- Material testing (destructive)
- Welder qualification
- HTHA/FFS services
- Metallurgy solutions
- Root Cause Analysis

However, this certificate has been issued upon the request of above named contractor for whatever purpose it may serve him without any liability on the part of SABIC.

Best Regards,



Gehad Al-Otaibi
Senior Manager
Global Suppliers relationship Management



SABIC
Shared Services
Global Procurement Services
P.O. Box 11115
Jubail Freezone - Il City 31961
Kingdom of Saudi Arabia
T: 966 13 350 6600
F: +966 13 350 6333
www.sabic.com

Saudi Basic Industries Corporation
Saudi Joint Stock Corporation
Authorized capital: SAR 30 billion
CR: 1010010813

الشركة السعودية للصناعات الأساسية
شركة مساهمة سعودية
رأس المال المصرح به 30 بليون ريال
رقم التسجيل 1010010813

سابق
الخدمات المشتركة
خدمات المشتريات العالمية
مستوى جيب 11115
ص. ب. 11115 المنطقة الصناعية
جبل جيب - المملكة العربية السعودية
هاتف: +966 13 350 6600
فاكس: +966 13 350 6333
www.sabic.com



ASNT Partner



ISO 9001-2015 Certified



ISO 17025 Accredited

ARAMCO Appreciation Letters:



SINOPEC Appreciation Letters:



فرع شركة سينوبك انترناشيونال بترولسيوم سيرفيس كورپوريشن Branch of Sinopec International Petroleum Service Corporation

S.No. A 25183

TCR Arabia Company Limited,
Dammam,
KSA

20th March, 2022

Letter of Appreciation

SINOPEC would like to appreciate the efforts of TCR Arabia in supporting our emergency welder qualifications requirement by meeting our stringent deadlines with utmost care and professional ability. We would like to express our appreciation to the strong technical team of TCR Arabia for the services rendered to SINOPEC.

We are delighted to find a technically sound, professionally able and a reliable partner to support in our inspection and testing needs.

Wishing TCR Arabia great success in the years ahead.

Best Wishes,



Zhao Gangchen

Project Director
Branch of SINOPEC International
Petroleum Services Corporation

* مسج جيوفيزيالي • حفر • انشاءات • تاجير معدات ثقيلة
س.ت. ٢٠٥١٠٢٩٨٩٢، رأس مال ١٠٢٠٠٠٠٠٠٠٠٠٠٠ ريال سعودي - ص.ب ٣٣١٥٩ الخير ٣١٩٥٢ - المملكة العربية السعودية - تلفون: +٩٦٦ ١٣ ٨٥٧٥٨٠١ - فاكس: +٩٦٦ ١٣ ٨٥٧٥٨٠٢
C.R. 2051029892, Capital SR. 102,000,000 - P.O.Box 32159, Al-Khobar 31952, Kingdom of Saudi Arabia - Tel.: +966 13 8575801 - Fax: +966 13 8575803

CORROSION TESTING LABORATORY

SAUDI ARAMCO APPROVED

ISO 17025 Accredited



Approved by Saudi Aramco for:

- ✓ Mechanical Tests
(Tensile, Bending, Hardness, V-Charpy Impact)
- ✓ Macrographic and Metallographic
- ✓ Chemical Analysis (PMI and OES)
- ✓ Corrosion Tests (ASTM A923, A262, G28 and G48)
- ✓ Failure Analysis
- ✓ Replica

Services Portfolio



TESTING

Material Testing

Mechanical

Tensile, Impact, Hardness, Bend, Elongation, Yield

Corrosion

ASTM A923, A262, G28, G48

Welder Qualification

WPS, PQR, WQT, Welder Certification

Civil Laboratory

Construction Material Testing, Concrete, Soil, Aggregates & Field Tests

Metallurgy Testing

In-situ Metallography,

Failure Investigation

Remaining Life Assessment

Fitness for Service



INSPECTION

Non-Destructive Testing (NDT)

Conventional NDT

RT, MT, PT, UT, UTT, FM, PMI, HT

Advanced NDT

ToFD, PAUT, Corrosion Mapping
Helium Leak, Thermography, MFL
ECT, RFT, IRIS, HTHA, High Temp UT

Robotic Inspection Services

Submersible Inspections

Inspection of buried & above ground assets

Non-Metallic Testing Lab.

FRP/GRP/Composite Lab Testing



CONSULTING

Inspection Manpower

NDT Technicians, Plant Inspectors, Inspection Engineers, Corrosion Engineers

- Stress Analysis
- Risk Based Inspections (RBI)
- Damage Mechanism Study
- Third Party Inspection
- Coker Drum Inspection
- Trainings (NDT, Metallurgy, Welding)
- Plant Asset Integrity Management
- Corrosion Study



TCR Arabia Company Limited

Inspection, Testing & Advisory

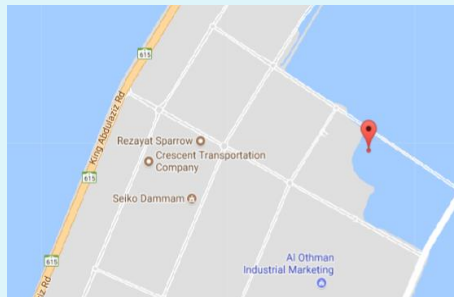
Redefining Reliability

Location

TCR Arabia Head Office & Labs are located in Dammam
Branch Offices in Jubail & Yanbu



GPS Location: 26.450525, 50.193787



ASNT Partner



ISO 9001-2015 Certified



ISO 17025 Accredited

Events

TCR Arabia is featured on The Gulf Time newspaper page 8 under Energy dated 14 June 2023

TCR Arabia, an Indian JV company, completes 15 successful years in Kingdom of Saudi Arabia

One of the key reasons for TCR Arabia's success is the expertise of its founding companies

SAUDI ARABIA / GULF TIME

TCR Arabia is a company that specializes in engineering services specifically in the field of Material Testing, Advanced Non-Destructive Testing and Metallurgical investigation. Founded in 2007 as a joint venture between TCR Engineering Services (India) and GAS Arabian Service (Saudi Arabia). The company is based in Saudi Arabia and has rapidly established a reputation for reliability and quality in all sectors it services namely oil & gas, petrochemical, mining, desalination, power, fertilizer and other such process and manufacturing industries.

One of the key reasons for TCR Arabia's success is the expertise of its founding companies. TCR Engineering Services (India) has over 50 years of experience in providing engineering solutions for a wide range of industries, including oil and gas, power, and infrastructure. On the other hand, GAS Arabian Service is a leading provider of engineering services in the Middle East, with a strong reputation for delivering high-quality projects on time and within budget.

Together, TCR Arabia combines the best of both worlds: The experience and knowledge of TCR Engineering Services (India) with the local expertise and understanding of GAS Arabian Services. This unique combination of expertise enables TCR Arabia to provide a comprehensive range of engineering services to its clients in the region.

TCR Arabia offers a wide range of services, including Advanced Non-Destructive Testing Services, Material Testing Services (Mechanical, Metallurgical and Non-Metallic Products), Engineering & Consulting on all process related assets, Welding Inspections, Welder Qualifications, Heat Treatment etc. TCR Arabia has partnered with global specialized companies in providing solutions to clients on Robotic Inspections, Coke Drum Inspections, Boiler Inspection & Life Assessment etc.

As an ISO-9001-2015 Certified and ISO-17025 Accredited Organization, TCR Arabia ensures all its services are delivered to its clients as per global standards and prescribed procedures. Trained and qualified staff ensure that quality is not compromised at any level of testing and inspection works.

As an employee oriented organization, we value the contributions of every single employee in the growth of our organization. Our employees play a key role in planned expansion, strategic



development and technical expertise which results in winning the trust of our valued clients and to serve them to higher standards everytime. Today we are a strong team of qualified API Engineers, NDT Engineers, Corrosion Engineers, Metallurgists, Skilled Technicians.

One of the key factors that sets TCR Arabia apart from its competitors is its commitment to safety. The company places a strong emphasis on safety in all of its projects, and it has implemented strict safety procedures to ensure the safety of its employees, as well as its clients. TCR Arabia also carries out regular safety audits to ensure that all of its projects are being carried out in compliance with the highest safety standards.

TCR Arabia is committed to develop the local manpower (Saudi Nationals) by providing 'on the job' trainings, class-room trainings in the field of NDT & Material Testing. Consistent growth in the percentage of IKTVA (In-Kingdom Total Value Addition) has yielded positive results in the success of TCR Arabia.

In conclusion, TCR Arabia is a leading engineering services company in Saudi Arabia and the Middle East. Backed by the trust of its valued clients and the ability of its staff to deliver quality services, the organization is motivated to serve and deliver best results year after year.



Syed Ameen Hassan, Country Manager, TCR Arabia, Saudi Arabia

Syed Ameen heads the TCR Arabia operations in Saudi Arabia. MBA in Marketing and Finance, from Chifley University, Australia, Syed Ameen has been instrumental in developing the business of TCR Arabia from its inception stage. Experience of over 25 years in the Saudi Arabian and Middle East market, specifically in the down-stream industry business, helps Syed Ameen to reach out to the decision makers and also run the operations in a professional manner. Business plans, budgeting, decisions on CAPEX / OPEX and Resources Management are his key roles and reports to the EXCOM & Board Members on the performance of the Organization.

Under the leadership of Syed Ameen, the organization has grown from its incubation stage to one of the top Inspection & Testing Companies in Saudi Arabia. Ensuring routine business with all major clients is the key to sustenance of the Organization and Syed Ameen has been instrumental in gaining long term contracts with major clients like Saudi Aramco, SABIC, TASNEE, MAADEN, SWCC etc.

Expansion of the organization by setting up new service areas like Robotic Inspection Services, Welder Qualification Department, Mechanical Testing Lab, Metallurgical Testing Lab, Corrosion Testing Lab are some of key achievements.

Operational alliance with major international service providers like CANAP Engineering of India for Stress Analysis Studies, CIA of Canada for Coker Drum Inspections, Planys of India for Submersible Robotic Inspection and so on were formed under the leadership of Syed Ameen to provide advance inspection and technical support to all of TCR's valued clients in KSA. Adapting to the fast evolving Inspection Field with new and advanced techniques to help the client save loss of production time and improve profitability, TCR team is consistently working in offering safer, faster and reliable inspection and testing techniques to clients under the leadership of Syed Ameen.

An Active team player and a firm believer in Team Work, Syed Ameen has been able to develop a team of professional engineers, technicians, admin staff, and support staff to work towards a common goal of developing the organization.

TCR Arabia serves majority of its clients in the 'downstream industry' which includes Saudi Aramco, SABIC, TASNEE, CHEVRON, ADVANCED, SWCC, Saudi Electricity Company, Petrorabigh, SADARA, SATORF, MAADEN and so on. It also serves all major contracting companies in infrastructure development and maintenance projects

Events

Celebrating 50 years of TCR




REDEFINING ON-TIME QUALITY
Material Testing | NDT | Consulting & Inspection

*Winner of "Best Laboratory" Award by NACE
NABL, ISO 17025, ISO 17020, ISO 46001, IIR, BIS Accredited*

Materials Testing Solutions and Inspection Asset Integrity & Plant Reliability Consultants

Since 1973, TCR Engineering Services is well known for its work ethics, precision, transparency, & reliability and has been trusted by over 3500 customers across India. TCR's expertise guarantees superior quality, safety, and reliability, empowering business to reach new heights while fueling the national economy through enhanced product performance, reduced downtime, and accelerated innovation. Together, we are the key drivers of the "Make in India" movement to build a vibrant and prosperous economy.

TCR has completed NDT works on over 3000 kms. of Cross-Country Pipeline for EPC companies on IOCL and GAIL sites. TCR offers specialized fatigue testing for Reinforcement Couplers and Grouter for Mechanical Splices of Bars in Concrete used in Infrastructure and Road construction projects. Defence industry vertical is served by undertaking Fracture Toughness and Fatigue Crack Growth Rate analysis. TCR has worked on over 5000 failure investigation cases, over 75 Fitness For Service assignments and over 300 boiler RLA projects.

TCR is approved by IOCL, GAIL, RIL, L&T, JSW, HAL, NMRL, DMRL, PDIL, DRDO, COAE, RITES, BMC, Mecon, EIL, BSE, NSE, Mazagon Dock, NPCIL, Customs Authority India and Saudi Aramco, SABIC, PDO, QCHEM, QAFCO, KOC, KNPC, Iraq Ministry of Oil, SHELL, National Oilwell Varco, Sakhalin Energy and many others internationally. TCR is the preferred laboratory for members of the Bombay Metal Exchange and the Mumbai Steel Traders Association.

TCR prides itself in being a Pan-India based material testing and inspection services company with global operations in Saudi Arabia, Qatar, Kuwait, Malaysia and Nigeria.

MATERIAL TESTING LAB

- Mechanical Testing
- Chemical Analysis Spectro
- NACE Sour Gas Corrosion
- CTOD & Fracture Toughness
- Coupler & Rebar Fatigue Test
- Railtrack butt joint Fatigue
- Microstructure Studies
- SEM & EDAX Analysis
- Welder Qualification
- Hot Tensile
- RoHS Compliance
- Construction/Civil Lab
- Composite Testing
- Wet Chemical

NDT & INSPECTION

- Cross Country Pipeline RT
- ToFD and PaUT
- Robotic Reformer Tube Inspect
- Robotic Tank Inspection
- Eddy Current Test for Tubes
- IRIS, RFET and MFL
- Metallographic Replica
- Helium Leak Detection
- PMI-Positive Material Id
- Gamma Radiography
- PWHT and Heat Treatment
- Civil NDT for Concrete
- Inspection of Bridges
- Third Party Inspection

ENGINEERING CONSULTING

- Asset Integrity Management
- Pipeline Integrity
- Fitness for Service
- Remaining Life Assessment
- Boiler Audit
- Failure Analysis Investigation
- Insurance & Litigation Referee
- Digitalization of RT Films
- Plant Relocation Advisory
- Manpower Supply for Turn Around
- CAD/CAM and Piping Stress Analysis
- Custom Research
- Welding Consulting
- Plant Reliability Training



TCR Arabia Company Limited

Inspection, Testing & Advisory

Redefining Reliability

Events

Celebrating 50 years of TCR



Mumbai Corporate Office
35, Pragati Industrial Estate,
N. M. Joshi Marg, Lower Parel,
Mumbai, Maharashtra - 400 011
Tel: +91-22-23097921, 67492324

Laboratory and Research Center
VKB House, EL-182 MIDC-TTC,
Mahape, Navi Mumbai,
Maharashtra - 400 710
Tel: +91-22-67380900

TCR Advanced Engineering
250-252/9, GIDC Estate,
Makarapura, Vadodara,
Gujarat - 390010
Tel: +91-7574805594 - 96

TCR-BME Metal Market
BME House, 88/90 Kika Street,
2nd Floor, Room #18,
Gulawadi, Mumbai - 400 004
Tel: +91-9699210864 / 9920011298
+91-9820008656 / 8779216510

TCR Engineering (Eastern)
Plot No.114/1955, Vishnu Vihar,
Jayapur Pahala, Bhubaneswar,
Odisha - 752101
Tel: +91 - 9776704680

TCR Nashik
Shubham Park, Building No. 7 # 30,
'C' Wing, Near Bhole Mangal Karyalay,
Cidco, New Nashik - 422010
Tel.: +91 - 8421922315

TCR Assam
H. No. 28, Saiz Lane,
Bethal Path, Bagharbori,
Guwahati, Assam - 781037
Tel.: +91 - 9932034791

TCR Southern
52, A4, 3rd Main Rd,
Mogappair West, Chennai,
Tamil Nadu - 600037
Tel: +91 - 9566615842

TCR Advanced (Bharuch Division)
711, 7X-The Business Hub,
Opp. K. J. Polytechnic College,
Above Sales India Showroom,
Bholav, Bharuch - 392001, Gujarat
Tel: +91- 9898084235

Pune – Sample Collection Center
Shop No A53, Plot No T 204,
Next to D Y Patil Hospital ,
Pavana Complex , Bhosari,
Pune, Maharashtra, India
Tel: +91 - 9762801034

Evolve by TCR
215, Pancham Icon, Vasna Road,
near D-Mart, Vadodara,
Gujarat - 390007
Tel: +91 - 7574801050



www.tcreng.com | sales@tcreng.com



ISO/IEC 17025 : 2017
Accredited Testing Laboratory by

NABL

Vide Certificate No. TC - 6905

Events

Participated and Sponsored SABIC's Asset Integrity and Process Safety Conference & Exhibition at Jubail, KSA





TCR Arabia Company Limited

Inspection, Testing & Advisory

Redefining Reliability

Events

Participated and Sponsored SABIC's Asset Integrity and Process Safety Conference & Exhibition at Jubail, KSA



Events

ARTIS Demo for ARAMCO & SABIC



Events

Trainings



Events

Client Visit



Client Visits



Events

2023 Loyalty Award Program, 10-15 Years in Service



Best Employee 1st Quarter 2023 Gold, Silver, Bronze Awardees

