

In this ISSUE

Topic of the Quarter

Certifications

Services Portfolio

Events

Major Projects
1st Qtr. 2022

New Staff

Topic of the Quarter: Ferrite Content Measurement for Duplex Stainless Steel

Duplex stainless steels were introduced and have been actively developed by global companies since 1935. Their features make them very attractive compared to equivalent austenitic grades: higher resistance to Stress Corrosion Cracking, higher mechanical properties and lower alloy cost. They present excellent cost/properties ratios particularly in critical applications including: oil and gas, chemical industry, pulp and paper industry, water systems, desalination plants, pollution control equipment and chemical tankers.

Duplex stainless steels have a microstructure consisting normally of 50% ferrite α and 50% austenite γ . These alloys solidify as ferrite, which then partially transforms to austenite when the temperature decreases. The 50% / 50% microstructure is achieved at room temperature after water quenching from the solution annealing temperature.

Temperature is a key-parameter that drives the microstructure of the duplex materials in both HAZ and weld metal. An inappropriate temperature control can lead to the following issues: (i) the formation of detrimental phases i.e. Sigma, Nitrides and Alpha prime (ii) the formation of an unbalanced microstructure i.e. Ferrite / austenite phase balance control

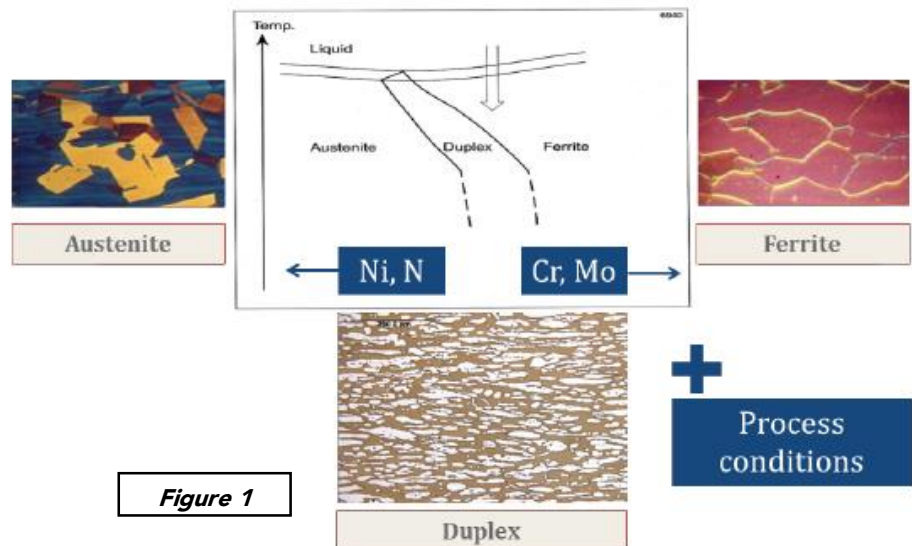


Figure 1

Topic of the Quarter: Ferrite Content Measurement for Duplex Stainless Steel

Ferrite / Austenite Phase Balance Control

Temperature plays an important role on the phase balance of duplex stainless steel:

HAZ/Weld: Over-heating, high cooling rates and improper filler material will result in unbalanced microstructure. This unbalanced microstructure i.e. too high ferrite content may lead to low toughness properties, low ductility and increased corrosion susceptibility of welded area. Hence the control of the ferrite content in duplex stainless very important.

TCR Arabia professional metallurgists are proficient in assessing the ferrite content in any duplex grade via ferrite scope as well as metallographic grid method as per ASTM E562.

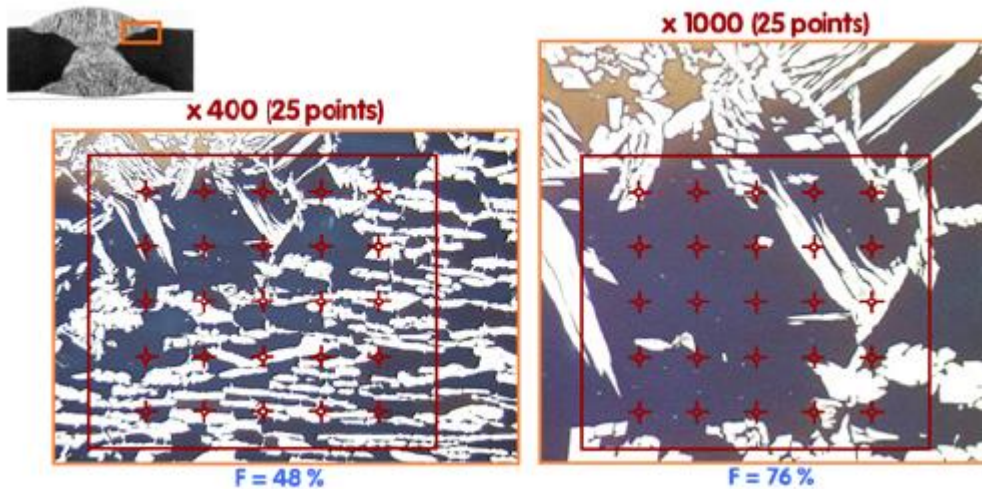


Figure 2

In grid method multiple fields are assessed covering the major representative area in order to achieve the relative accuracy is lesser than 10%. TCR metallurgists ensure the compliance with best industrial practices along with ASTM guidelines to perform the accurate assessment of ferrite content. Assessment results may include but not limited to representative micrograph, ferrite content, number of fields measured, standard deviation, 95% Confidence of interval and relative accuracy.



Certifications:

ISO 9001-2015 Certificate



This is to certify that the management system of:

TCR Arabia Company Ltd.

Main Site: King Abdul Aziz Seaport Facility, P.O. Box8143, 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) and Microbiology Testing Services, Civil Laboratory Testing Services

Certificate Number:
21111010003

Initial Certification Date:
25 March 2014

Date of Certification Decision:
10 March 2020

Issuing Date:
10 March 2020

Valid Until:
24 March 2023



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.



In the issuance of this certificate, Intertek assumes no liability to any party other than to the Client, and then only in accordance with the agreed upon Certification Agreement. This certificate's validity is subject to the organization maintaining their system in accordance with Intertek's requirements for systems certification. Validity may be confirmed via email at certificate.validation@intertek.com or by scanning the code to the right with a smartphone. The certificate remains the property of Intertek, to whom it must be returned upon request.



Certifications:

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



CERTIFICATE OF ACCREDITATION

This is to attest that

TCR ARABIA COMPANY LTD
KING ABDUL AZIZ SEAPORT FACILITY
DAMMAM 32224, KINGDOM OF SAUDI ARABIA

Testing Laboratory TL-783

has met the requirements of AC89, IAS Accreditation Criteria for Testing Laboratories, and has demonstrated compliance with ISO/IEC Standard 17025:2017, General requirements for the competence of testing and calibration laboratories. This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date May 11, 2020



Raj Nathan
President

Visit www.iasonline.org for current accreditation information.



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.



ARAMCO Appreciation Letters:



SINOPEC Appreciation Letters:



فرع شركة سينوبك انترناشيونال بترولايوم 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
* Geophysical Exploration • Drilling • Construction • Heavy Equipment Lease
س.ت: ٢٠٥١٠٢٩٨٩٢، رأس مال ١٠٢٠٠٠٠٠٠٠٠٠٠٠ ريال سعودي - ص.ب ٣٣١٥٩ الخبر 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

Inspection Manpower

NDT Technicians, Plant Inspectors,
Inspection Engineers, Corrosion
Engineers



CONSULTING

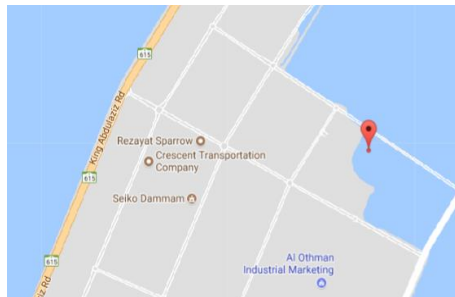
- Stress Analysis
- Risk Based Inspections (RBI)
- Damage Mechanism Study
- Third Party Inspection
- Coker Drum Inspection
- Trainings (NDT, Metallurgy, Welding)
- Plant Asset Integrity Management
- Corrosion Study

Location

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



GPS Location: 26.450525, 50.193787



Events

Client Visits

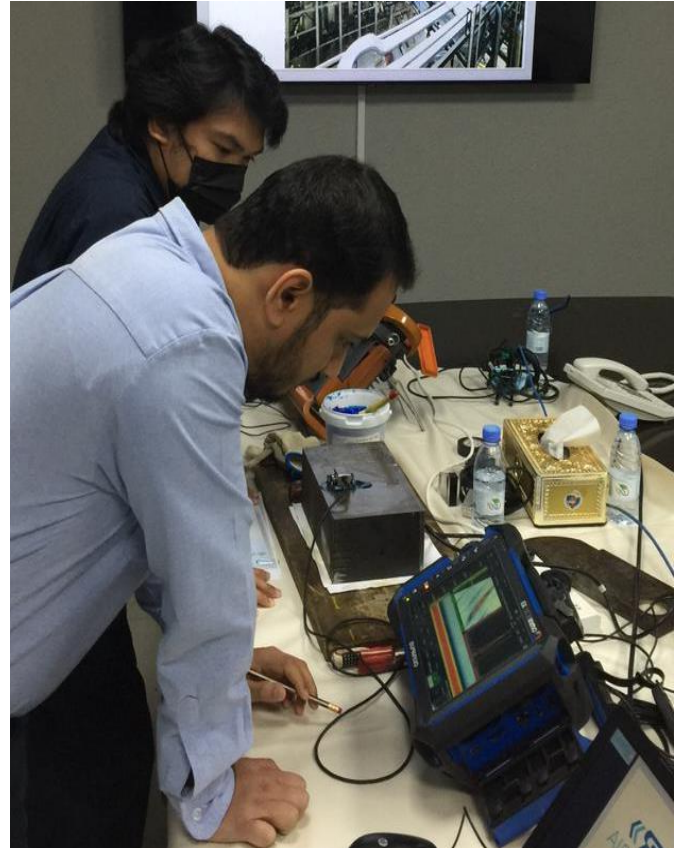


Events

Online Qualification (HTHA)

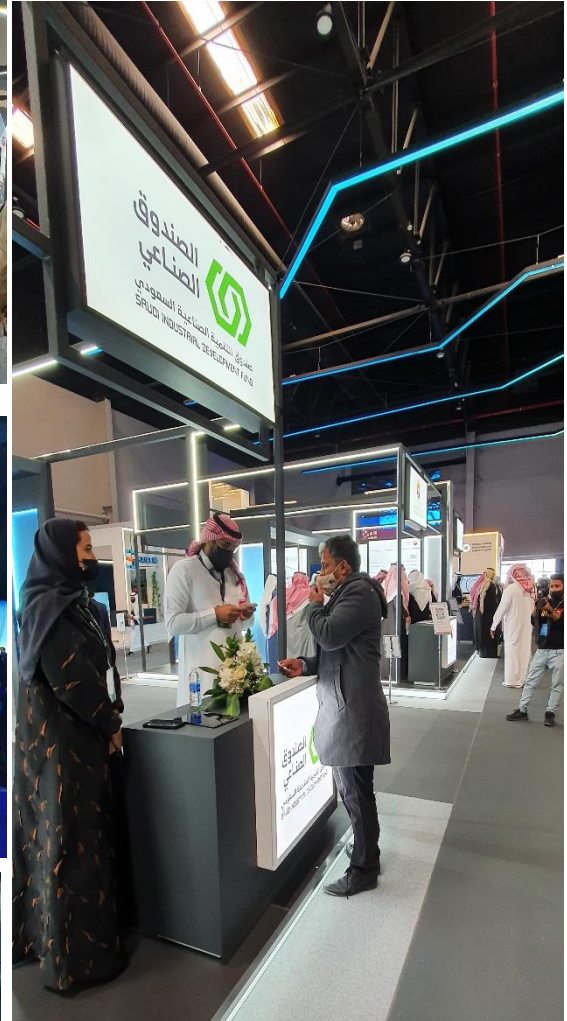


“TCR Arabia has successfully qualified for HTHA Services in SABIC”



Events

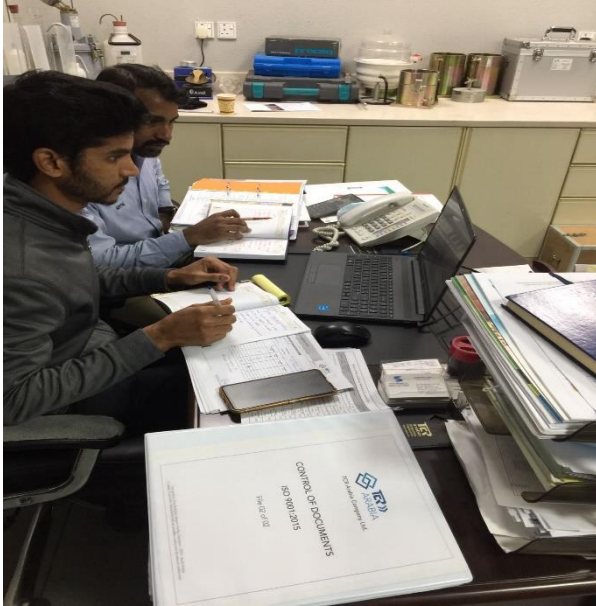
IKTVA Forum & Exhibition 2022



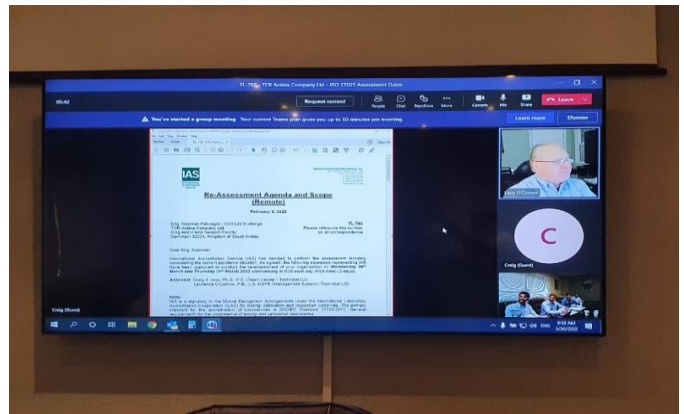
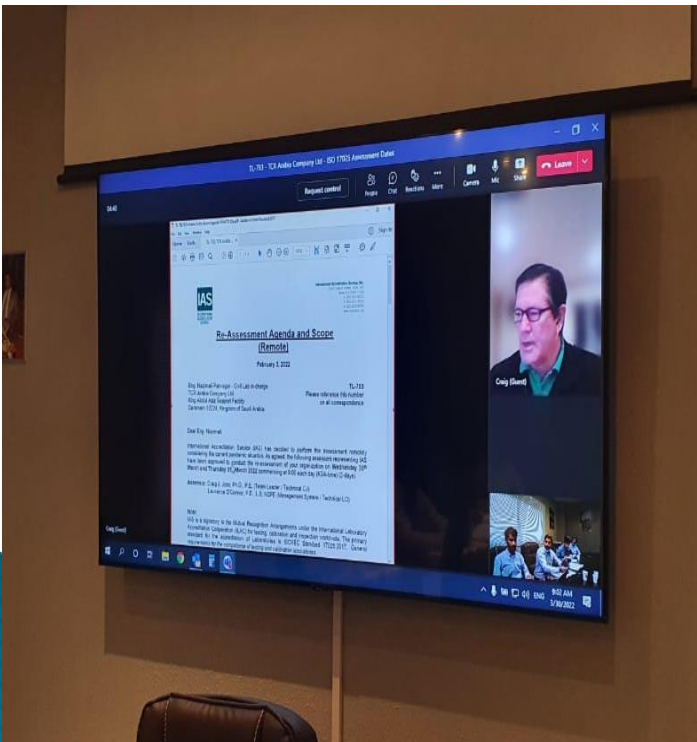
Events

Online Audit

ISO 9001:2015



ISO 17025



Major Projects of 1st Quarter of 2022

S.N	Clients	Project Description
1	SABIC (Ibn-Sina)	POM Plant TAM 2022 - ANDT & Saferad Services
2	SABIC (United)	ET TAM 2022 – Tube Inspection & PAUT Services
3	SABIC (Technology & Innovation Center)	Submersible Robotic Inspection
4	SABIC (Petrokemya South)	Olefins TAM 2022 – Tube Inspection
5	SABIC (Petrokemya South)	VCM TAM 2022 – ANDT Services
6	SABIC (Ibn Zahr)	MTBE II TAM 2022 – CNDT & ANDT Services
7	SABIC (Saudi Kayan)	Helium Leak Testing of LDPE Reactor
8	SABIC (Yansab)	RLA of Furnace Tubes
9	GEMTEC (Saudi Electricity Co.)	Failure Analysis of Pipes Filtered Water System
10	Advance Petrochemical Co.	Piping Stress Analysis to Identify the Root cause of cracks on MP & LP Steam line
11	Saudi Electricity Co – PP10	Piping Stress Analysis to Identify the Root cause of cracks on MP & LP Steam line
12	Petrojet – HUGRS project	Welder Qualification Services
13	Nesma & Partners	Marjan Project – Welder Qualification Services
14	CPP – Saudi Aramco Gas Compression Pipeline	Welder Qualification Services
15	ARCC – HUGRS project	Welder Qualification Services

New Staff

TCR welcomes its new team members and wishes them great success ahead



Ahmed Ali Zabbani
Technician – Machine Shop



Abdullah Al-Khudair
Technician – Machine Shop



Abdullah Al-Yosif
Mech Lab. Asst. – Mechanical Lab.



Azzam Bakheet
Sales Coordinator – Sales Department



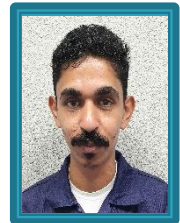
Hussain Mudeikher
Inspector – Welding Department



Ahmed Al-Mubereek
Inspector – Welding Department



Ali Al-Saroj
Technician
Metallurgy Department



Habib Al-Atiyah
Technician
Metallurgy Department