Training Booklet

EVOLVE by TCR
Innovate your skillset, Empower the mind

215, Pancham Icon, Near D-Mart, Vasna Road,
Kalyan Nagar, Diwalipura, Vadodara, Gujarat 390007

CONTENT

Introduction of Evolve

Evolve at a Glance

- Evolve is a training institute for technical education of engineers, technocrats and technicians from Chemical, Petrochemicals, Fertilizers, Power Plant, Pharmaceutical, General Fabrication & Engineering Industries.
- Evolve is working towards the aim of bridging the gap between theoretical knowledge of the candidates and on job requirements of the industry by providing industry oriented technical education with current technology in use along with real life case studies & practical demonstration.

Mission & Vision

- Evolve is devoted for the creation and dissemination of knowledge and for the education of leaders with wisdom to illuminate the past and shape and serve the future.
- Evolve carries the target to educate the world of engineers & technocrates with the aim of reduction in the damages that can occur in the near future.

Infrastructure

- The institute itself is located in the heart of the city, and provides an atmosphere to motivate its candidates. The institute is well equipped with all necessary facilities required by its candidates to meet the latest technological trends.
- The classrooms provide the most conducive atmosphere for dynamic and focused discussions. They have been designed to bring together analysis with action and are augmented by well equipped facilities.
- The seating arrangement in the classrooms creates the right atmosphere for long hours of learning. They are equipped with multimedia and audio-visual equipment to facilitate effective learning. They are designed to promote maximum interaction between the faculty and the candidates.

Flexibility of Choice

- A wide range of courses are available to the candidates as they can choose according to their bent of interest & ability.
- Evolve imparts advanced curriculum courses on Advanced Metallurgy, Non destructive testing, Corrosion damage evaluation, Metallurgy composition, Fatigue and fracture toughness as well as Plant operational trainings. Such courses are based on our 44 years of experience in serving the oil and gas sector.




"Basics of Metallurgy for Engineers"

"The triumphs of engineering skill rest on a metallurgical foundation".

It is a must to attain conventional knowledge and efficiency in the field of metallurgy. If professionals are from the discipline of Proposal, Engineering, Supply Chain Management, Production / Execution and Quality. Metallurgy helps an individual make an informed decision to identify materials for construction, process optimization along with maintenance practices of the plant

Course Objective

- Creates awareness on the Importance and understanding of Metallurgy in fabrication, operation, maintenance and condition along with the plant equipment monitoring.
- Cultivate knowledge to conduct or supervise failure investigation and communicate effectively with metallurgical experts. Ensure reduction in expenses, increase in profitability, safety and reliability using metallurgical knowledge

Course Content

- Introduction and Importance of Metallurgy
- Correlation of properties with composition and microstructure
- Manufacturing methods (Casting, Rolling, Extrusion and Fogging)
- Defects and Characterization
- Metallography and Interpretation of microstructure
- Heat treatment of steels and cast iron
- Non-ferrous alloys and heat treatment
- Mechanical behavior of steels
- Welding Metallurgy
- Failure analysis
- Corrosion and Preventions
- Non-Destructive Techniques
- Lab visit and Practical Demonstration

Who should attend?

- Engineers (Management level)
- Maintenance / Inspection Engineers
- Process Engineers
- NDT Engineers / Inspectors
- Plant Engineering/Managers
- QA/QC Engineers
- Reliability Engineers
- Metallurgical / Material Engineers
- HAZOP Engineers / Managers
- Other Technical consultants, Laboratory, Sales Personnel, Engineers from allied discipline, disciplines, management and administrative staff.

Course Fees

- Single participant:
- Rs. 9,500.00 for Indian delegates
- USD 230 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Metallography for Engineers"

Course Objective

Metallography is the study of the physical structure and components of metals, typically using microscopy. The surface of a metallographic specimen is prepared by various methods of grinding, polishing and etching. After preparation, it is often analyzed using optical or electron microscopy. Using only metallographic techniques, a skilled technician can identify alloys and predict material properties. After polishing, certain microstructural constituents can be seen with the microscope, e.g., inclusion and nitrides. If the crystal structure is non-cubic (e.g., a metal with a hexagonal-closed packed crystal structure, such as Ti. or Zr.) the microstructure can be revealed without etching using crossed polarized light (light microscopy). Otherwise, the microstructural constituents of the specimen are revealed by using a suitable chemical or electrolytic etchant.

Training Session Topics

- Sample preparation by cutting, outing, grinding, and polishing
- Etching the metals and alloy samples for development of microstructures
- Fe-C phase diagram of steels and cast irons
- Microscopy for observation of microstructures
- Bright and dark field microscopy
- Image analysis of the microstructures
- Quantification of microstructure such as grain size, Inclusion rating and case depth measurement
- Co-relation of microstructures with composition and heat treatment of metals and alloys

Who should attend?

- Engineers (Management level)
- Maintenance / Inspection Engineers
- Process Engineers
- NDT Engineers / Inspectors
- Plant Engineering / Managers
- QA/QC Engineers
- Reliability Engineers
- Metallurgical / Material Engineers
- HAZOP Engineers / Managers
- Other Technical consultants / Laboratory
- Sales Personnel / Engineers from allied discipline
- Disciplines / Management and administrative staff

Course Fees

- Single participant:
- Rs. 6,500.00 for Indian delegates
- USD 200 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Welding Metallurgy to Prevent Corrosion"

Course Objective

The objective of this training program is to provide basic information regarding welding metallurgy and weldability of different stainless steels.

This will include classification, properties and applications of stainless steels such as ASS, FSS, MSS and DSS. In addition to that importance of metallurgy of steels to control microstructure of the weld and defects associated with weld joint.

Training Session Topics

- Welding metallurgy and weldability of different stainless steels.
- Classification, properties and applications of stainless steels such as ASS, FSS, MSS and DSS.
- Importance of metallurgy of steels to control microstructure of the weld and defects associated with weld joint.

Who should attend?

- Engineers of middle management level
- Maintenance / Inspection Engineers
- Process Engineers
- NDT Engineers / Inspectors
- Plant Engineering/Managers
- QA/QC Engineers
- Reliability Engineers
- Metallurgical / Material Engineers
- HAZOP Engineers / Managers
- Other Technical consultants / Laboratory
- Sales Personnel / Engineers from allied discipline
- Disciplines / Management and administrative staff

Course Fees

- Single participant:
- Rs. 5000.00 for Indian delegates
- USD 150 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Localised Corrosion in Stainless Steel"

Course Specification

This course is mainly designed to provide the detailed knowledge in the field of corrosion and the surface that it can be affected. this course will give the proper understanding of the corrosion factor and the various ways it can be detected and tested.
The application of these disciplines should not adversely affect a program, but should reduce costs, timing, technical and legal risks and improve the overall cost of the life cycle.
Stainless steels are widely used in chemical plants and nuclear power plants due to excellent corrosion resistance, good weldability and formability and optimum combination of strength & toughness. They suffer from localized corrosion susceptibility mainly because of the breakdown of passive film. Very large numbers of SS component failures are due to localized corrosion.

Training Session Topics

- Basics of Corrosion and its Control
- Introduction to Stainless Steel
- Localised Corrosion of Stainless steels
- Test Methods for assessing susceptibility to localised corrosion
- Case studies

Who should attend?

- QA/QC Engineers / Managers
- Third Party Inspection agency surveyors
- Personnel involved in Fabrication
- Heat Treatm ent, Forge & foundries shops
- Welding, Metallurgical, Material engineer
- Laboratory Personnel
- Those who needs working understanding of Corrosion in SS and their testing

Course Fees

- Single participant:
- Rs. 8000.00 for Indian delegates
- USD 200 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Corrosion Control Management – Engineering Approach"

Course Specification

- This Intensive course is fruitful in helping operators Identify and reduce safety risks before they escalate, also it focus on asset Integrity play a Major role in both achieving operational excellence and extending the life of aging assets.
- Corrosion control Management is an integral part of engineering disciplines associated with the design, assurance and verification functions that ensures a product, process or system meet its appropriate requirements.
- It is also considered as the discipline and profession of acquiring and applying specific, scientific Mathematical, economic, social, legal and practical knowledge to the assurance and the verification

Course Content

- Corrosion Management, Corrosion Control Measures
- Design & Material Selection
- Fabrication Processes, Corrosion Inhibition
- Coatings, Surface Modification Techniques
- Prediction and Assessment of Corrosion
- Fitness-for-Service Methodologies
- Laboratory Simulation and Corrosion Testing

Who should attend?

- Mechanical engineers of middle management level
- Maintenance / Inspection Engineers
- Process Engineers / Design Engineers
- Plant Engineering/Managers
- Other Technical consultants
- Laboratory
- Sales Personnel
- Engineers from allied discipline
- Disciplines
- Management and administrative staff

Course Fees

- Single participant:
- Rs. 9,500.00 for Indian delegates
- USD 230 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Intergranular Corrosion of Austenitic Stainless Steel"

Course Specification

Corrosion is an Integral part of Engineering disciplines associated with the design, assurance and verification functions that ensure a product, process or system to meet its intended requirements. Intergranular corrosion in stainless steel material is critical factor in determining life and safe operation of the Industrial components. This course is designed to provide insights of fundamentals of intergranular corrosion, metallurgy of Stainless steel, methods of accessing Intergranular corrosion, practical demonstration of test methods and its applicability in industrial scenarios.

Course Content

- Fundamentals of intergranular corrosion
- Causes and forms of corrosion
- Classification of stainless steels and microstructures
- ASTM A262 Practise A-Oxalic Acid Etch Test
- ASTM A262 Practise B-Ferric Sulfate-Sulfuric Acid Test
- ASTM A262 Practise C-Nitric Acid Test
- ASTM A262 Practise E-Copper–Copper Sulfate–Sulfuric Acid Test
- Practical demonstration of IGC Testing of stainless steel material

Who should attend?

- Mechanical engineers of middle management level
- QA/ QC engineers
- Maintenance / Inspection Engineers
- Process Engineers / Design Engineers
- Plant Engineering / Managers
- Other Technical consultants
- Laboratory
- Sales Personnel
- Engineers from allied discipline
- Management and administrative staff
- Who needs a working knowledge and understanding of metals and their applications

Course Fees

- Single participant:
- Rs. 9,500.00 for Indian delegates
- USD 230 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Welding Procedure Specification (WPS)
Welding Procedure Qualification Record (WPQR)
Welder Performance Qualification (WPQ)"

A Welding Procedure Specification (WPS) is the formal written document that describes welding procedures to guides welding operators to make sound and quality production welds according to the code requirements. This is basically to use repeatable and trusted welding techniques.

WPS is supported by a Procedure Qualification Record(PQR or WPQR) . A PQR is a record of a test Weld performed and tested more rigorously to produce a good Weld.

Individual Welders are certified with a qualification test documented in a Welder Qualification Test Record to show that they have the understanding and demonstrated ability to work within the specified WPS .

Course Specification

The objective of the workshop is to deliver and the share the knowledge of WPS and PQR to the fresh welding engineers, supervisors, welding inspectors and welders.

Training Session Topics

- Introduction to Steels, Alloy Steels and Stainless steels
- Basic Welding Methods (SMAW, GTAW, GMAW and SAW)
- Metallurgical aspect of welding
- Understanding of ASME SEC IX requirements
- Destructive and Non-destructive testing of Welded structures
- Importance of WPS/PQR
- Essential and non-essential variables
- Case studies on WPS/PQR/WPQ
- To develop a test coupon by SMAW in 1G position
- To demonstrate destructive methods of the weld as per ASME codes

Who should attend?

- Fresh welding engineers
- Welding Supervisors
- Welding inspector and welders
- Persons involved in Fabrication
- Inspection Engineers
- QA/QC Engineers / Managers

Course Fees

- Single participant:
- Rs. 9,500.00 for Indian delegates
- USD 230 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Reformer Tube: Damage Mechanisms, Failure Investigation, Inspection and Remaining life Assessment"

Course Objective

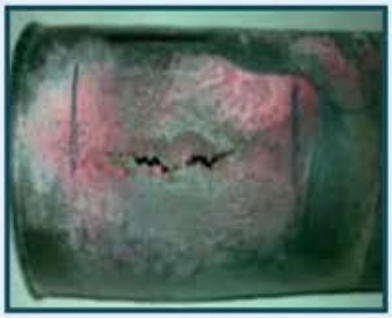
This course especially emphasizes on the practical understanding of principles of degradation that occurs in short term and long-term operation of reformers. Provides metallurgical understanding and damage mechanisms of Reformer tube. Helps you to solve the problems and take the first-hand judgement on the reformer tube. Develops an attitude to analyse the difference in metal behaviour helps to decide better mitigation to the persistent tube failures.

Recognise general procedures, techniques and precautions in failure analysis and how stress systems relate to fracture of ductile and brittle materials. helps you to conduct and supervise basic failure Investigation and effectively communicate with Metallurgists on more complicated cases.

Invented to improve reliability of company operations, cost savings, increase profitability, and enhances safety.

Training Session Topics

- Introduction
- Basics of metallurgy and heat resistant stainless steel
- Design considerations of reformer tube
- Damage mechanism in reformer tube
- Metallurgical evolution of creep resistance reformer tube material
- Remaining life assessment of reformer tubes
- When to retire reformer tube
- NDT in reformer tube
- Failure investigation approach and case studies



Who should attend?

- Engineers of middle management level
- Maintenance / Inspection Engineers
- Process engineers / Reliability Engineers
- Plant Engineers / Managers
- QA / QC Engineers
- Metallurgical / Materials Engineers
- HAZOP Engineers / Managers
- Other Technical /Laboratory / Sales Personnel
- Engineers from allied disciplines / Management and administrative staff who need a working understanding of metals and their applications

Course Fees

- Single participant:
- Rs. 15,000.00 for Indian delegates
- USD 450 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Boiler tube failures interface between Operation & Maintenance"

Course Objective

- Acquire a clear understanding for different damage mechanisms prevailing in boiler tube
- failures will be developed.
- Gain a valuable working understanding of the basic principles of short-term and long-term degradation of boilers.
- Knowledge to increase the problem-solving attitude and asses the failure of the Boiler tube first-hand.
- Analysis of the difference in metal behaviour helps to determine better mitigation of the persistent failure of the boiler tube.
- Recognize general procedures, techniques and precautions in analysing failures and how stress systems relate to ductile and brittle fracture in materials.
- Reach the knowledge required to conduct or supervise basic failure investigations and communicate with metallurgists & other experts on more complicated cases. Invention to improve reliability of company operations, cost savings, increase profitability, and enhance.

Why this course

This training is specially fruitful to give you a vivid understanding for different damage Mechanism Prevailing in boiler tube failures. It further helps you to understand the basic principles of short term and long term degradation of boilers. Trains you to solve the problem and assess the failure. Assist you to analyse the difference in Metal behaviour and determine better mitigation of the failure. It helps you recognise how stress systems relate to Ductile and Brittle fractures in Materials. Provides knowledge to conduct and supervise failures and communicate with Metallurgist. Improve reliability of the company operations, cost saving and increase profitability.

Training Session Topics

- Materials & Metallurgy
- Damage Mechanism of Boiler Tube
- Water Chemistry
- Boiler Inspection
- NDT techniques for Boiler Tube Components
- Erosion Problem
- Case studies of Failure Investigation of Boiler Tube
- TCR lab Visit & Question Answer Session

Who should attend?

- Mechanical Engineers of middle management level
- Maintenance / Inspection Engineers / Reliability Engineer / Plant Engineers / Managers
- Boiler inspectors / Process engineers / HAZOP Engineers / Managers
- QA / QC Engineers / Metallurgical / Materials Engineers
- Other Technical, Laboratory, Sales Personnel, Engineer from other disciplines, management and administrative staff who need a working understanding of metals and their applications.

Course Fees

- Single participant:
- Rs. 15,000.00 for Indian delegates
- USD 300 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Heat Exchanger : Inspection, Condition Assessment Fitness for Service and Failure Investigation"

Course Objective

- Understating of metallurgical aspects of heat exchanger, design and manufacturing considerations.
- Gain valuable inputs on principles of degradation that occurs in short term and long-term operation of heat exchangers.
- Design aspects related to failure.
- Welding issues related to heat exchangers.
- Metallurgical understanding of the heat exchanger tubes.
- Exposure to increase the problem-solving attitude and take the first-hand judgment on the heat exchanger failures.
- Understanding the difference in metal behavior to mitigate the persistent tube failures.
- Acquiring general procedures, techniques and precautions in failure analysis and how stress systems relate to fracture of ductile and brittle materials.
- Latest NDT inspection techniques for tube assessment.
- Achieve the knowledge required to conduct or supervise basic failure investigation and effectively communicate with metallurgists & other experts on more complicated cases.
- Preparing oneself to improve reliability of company operations, cost saving, increase profitability, and enhances safety.

Who should attend?

- Introduction to Heat Exchangers & its Process
- Metallurgy for heat exchangers
- Design considerations of heat exchangers
- Damage mechanism in the Heat exchangers
- Process design considerations
- Failure investigation of heat exchangers with case studies
- Inspection and advanced technique for heat exchangers
- Fitness for service of Heat exchangers
- Lab visit and practical demonstration of various inspections

Who should attend?

- Engineers of middle management level / HAZOP Engineers / Managers
- Maintenance / Inspection Engineers / Process engineers / Plant Engineers / Managers
- QA / QC Engineers / Reliability Engineers / Metallurgical / Materials Engineers
- Other Technical / Laboratory / Sales Personnel / Engineers from allied disciplines
- Management and administrative staff who need a working understanding of metals and their applications.

Course Fees

- Single participant:
- Rs. 15,000.00 for Indian delegates
- USD 300 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Damage Mechanisms and Life Management of Gas Turbine Components"

Course Objective

This Intensive training is specially productive in educating the candidates the role of Metallurgy and prevailing high temperature degradation mechanism of various super alloys that defines the Integrity of gas Turbine unit. The focus will be on most current problems, failure modes along with Recent case studies. Individual case study shall be discussed and next step option for failure prevention and life assessment shall be provided. A comprehensive set of notes updated with the latest industry issues shall be provided.

Training Session Topics

- Introduction to Gas Turbine
- Basics of Metallurgy for Gas Turbine Materials
- Damage Mechanism of Gas Turbine Component
- Coatings for Gas Turbine components and degradations
- Rejuvenation and Remaining life assessment of hot gas path components
- NDT for Gas Turbine components
- Failure analysis: fatigue due to over temperature & hot corrosion,
- TMF cracking and fatigue due to overtem perature.
- Case studies of Gas Turbine components
- Advances in Gas Turbine Technology

Who should attend?

- Engineers of Middle Management level
- Maintenance / Inspection Engineers
- Process Engineers / Design Engineers
- Plant Engineering / Managers
- Surveyors / Loss assessors
- Other Technical consultants / Laboratory
- Sales Personnel / Engineers from allied discipline
- Disciplines / Management and administrative staff.

Course Fees

- Single participant:
- Rs. 15000.00 for Indian delegates
- USD 300 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Damage Mechanisms Inspection and RLA of Steam Turbine Components"

Course Objective

This Intensive 16-hour course will educate the candidates with the role of Metallurgy and prevailing high temperature degradations mechanism of various alloys that defines integrity of steam Turbine unit. Commonly prevailing Industry problems and failure modes will be presented along with many recent case histories .Individuals can discuss their own case studies and stablish next-step option for failure prevention and life assessment. A comprehensive set of notes shall be provided to each and every Individuals updated with the latest Industry issues.

Training Session Topics

- Introduction to Steam Turbine
- Basics of Metallurgy for Steam Turbine Materials
- Damage Mechanism of Steam Turbine Component – Part 1 & Part 2
- Case studies of Failure Investigation of Steam Turbine
- Residual Life Assessment of Steam Turbine
- Inspection & Application of NDT for Turbine Components
- NDT Techniques for Turbine Components

Who should attend?

- Mechanical Engineers (Management level)
- Maintenance / Inspection Engineers
- Process Engineers / Design Engineers
- Plant Engineering / Managers
- Other Technical consultants / Laboratory
- Sales Personnel / Engineers from allied discipline
- Disciplines / Management and administrative staff

Course Fees

- Single participant:
- Rs. 15,000.00 for Indian delegates
- USD 300 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Hydrotreating / Cracking REAC-Reactor Effluent Air Cooler Damage Mechanisms Corrosion Fitness for Service Inspection"

Course Objective

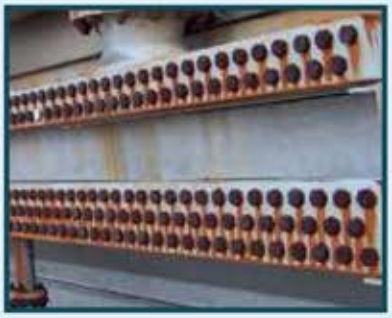
- Learn the Importance and Working of REAC in a Hydro Unit
- Elucidate the Consequences of processing of crude oil laden with sulfur and nitrogen
- Illuminate the possibility of a fire accident occurring in REAC due to its failure
- Illustrate the various damage mechanisms and failure analysis in the form of case studies
- Learn the preventive approach

Training Session Topics

- Role of REAC in Hydrotreating / cracking
- Materials for REAC tubes and header
- Design considerstion for REAC
- Role of NACE material certification and testing
- Current standards and its role
- Operational aspects and water injection for REAC
- Damage mechanisms and mitigation
- Inspection during fabrication and in-service
- Failure investigation of REAC components
- Fitness for service assessment
- NDT methods & limitations for REAC application
- Improving the reliability based on present condition

Course Fees

- Single participant:
- Rs. 35000.00 for Indian delegates
- USD 600 for Foreign Delegates.
- GST@18.00% applicable on above fees.



"T-91/P-91 High Pressure Welding Technology"

Course Objective

- To provide broad outline of concepts and basis of developments of T-91 / P-91 steel and their properties.
- To provide basic Understanding and fundamental knowledge on metallurgy and welding technology of T-91.
- Exposure to various aspects of welding of T-91 / P-91 steel including pre-heating and post weld heat treatment.
- Role of repair welding, NDT & inspection with special reference to T-91 / P-91 steel.

Why this course is so important?

- T-91 & P-91 materials are extensively used in power, petrochemicals and fertilizer industries. These materials have allowed the additional temperature rise over and above conventional ferritic steels. This has allowed process plant designers to increase the productivity and to reduce material thickness used in industries.
- TCR Advanced has taken a lead to identify these areas and to train industrial professionals so that the material behaviour is understood from welding and fabrication point of view. That will ensure longer and reliable service life of components to prevent failure.

Who should attend?

- Welding Supervisors/ Fabricators
- Designers / Process Engineers
- Maintenance Engineers
- Managers/ Manufacturers
- Power Plant Engineers
- Petrochemicals & Fertilizer Engineers
- QA/ QC/ Reliability Engineers
- Metallurgical / Materials Engineers

Course Fees

- Single participant:
- Rs. 15,000.00 for Indian delegates
- USD 300 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Low Temperature Service: Concept on Metal Properties, Manufacturing & Testing"

Course Objective

- When designing equipment for low-temperature applications, it is important to keep in mind that low temperature can adversely effect on properties of many commonly-used engineering metals.
- Low temperature application of metallic components needs an engineering understanding for reliable and safe operation. It is well known that metals/alloys behavior different with respect to temperature applications. For cryogenic or low temperature services the principal damage mechanism is susceptibility to brittle fracture arising from DBTT (ductile to brittle transition temperature) phenomena. The mechanism and behavior of different metals would help to take timely decision with respect to allied damage mechanisms and its effect on properties. This course is designed to help design, fabrication, maintenance and inspection engineers dealing with cryogenic services.

Course Content

- Basic principles of Metallurgy
- Tensile Properties and Testing
- Hardness Test
- Bend Test
- Impact Toughness Test
- Inspection Techniques for low temperature services
- Significance of Flaws with respect to Brittle Fracture
- Assessment of existing equipment for brittle fracture
- Ductility to brittle transition
- Practical Demo for various mechanical tests

Who should attend?

- Mechanical engineers of middle management level
- Maintenance / Inspection Engineers
- Process Engineers / Design Engineers
- Plant Engineering/Managers
- Other Technical consultants
- Laboratory
- Sales Personnel
- Engineers from allied discipline
- Management and administrative staff
- Also understanding of metals and their applications

Course Fees

- Single participant:
- Rs. 20,000.00 for Indian delegates
- USD 370 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Damage Mechanisms for Static Equipment for Refineries / Petrochemical / Fertilizer and Process Industries"

Course Objective

- To highlight damage mechanisms monitoring & mitigation for refineries, petrochemicals, fertilizers & process industries sector in India.
- To bring awareness on integrity of equipment & improve work knowledge among these sectors.

Why Reliability of Static Equipment is so Important?

- Huge loss of product & production
- Higher maintenance cost
- Affects the on-stream service factor
- To avoid emergency shutdown
- To increase equipment life

Who should attend?

- Mechanical engineers of middle management level
- Process Engineers / QA/ QC engineers
- Maintenance / Inspection Engineers / Plant Engineering
- Reliability Engineers/ RBI Engineers / Managers
- Metallurgical / Materials Engineers
- HAZOP Engineers / Managers
- All inspection/ NDT/ RBI experts & head of department

Course Fees

- Single participant:
- Rs. 30,000.00 for Indian delegates
- USD 580 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Eddy Current Testing awareness"

Course Objective

This training is specially designed to provide practical demonstration for Eddy current testing techniques. It enables you to understand the use of non-destructive technique with respect to the flaw anticipated. It assists you to recognize the requirement of training and certification of NDT personnel and requirements of non-destructive testing laboratory. It inculcates knowledge to conduct and supervise basic non destructive testing and helps you to communicate effectively with metallurgy experts on complicated cases.

Training Session Topics

- Introduction to heat exchanger, types and damage mechanism in HE
- Introduction to eddy current testing principles and theory
- Calibration with case study
- Difference between eddy current
- Saturated probe eddy current and remote field testing
- Practical demonstration on Olympus MS 5800 equipment

Who should attend?

- NDT Technicians
- Engineers of junior management level
- Fresh /Junior Inspection Engineers
- Trainee process engineers
- Trainee Plant Engineers / Managers
- QA / QC Engineers
- Metallurgical / Materials Engineers
- Other Technical / Laboratory
- Engineers from other allied disciplines
- Management and administrative staff Who need a working understanding of NDT and their applications

Course Fees

- Single participant:
- Rs. 6,000.00 for Indian delegates
- USD 170 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Hydrogen damage For Industries Asset integrity and damage mechanism"

Course Objective

This intensive training is specially designed to Introduce you to Hydrogen and Metal Interaction. It provides training of the theory of Hydrogen Penetration. Thorough knowledge is imparted on Embrittlement Blistering and Debonding .Proper guidance is provided in Hydrogen Induced Cracking and Hydrogen Flaking and also Stress oriented Hydrogen cracking. Guides you to Inspect and Mitigate the problems.

Training Session Topics

- Introduction to Hydrogen and Metal Interaction
- Theory of Hydrogen Penetration
- Sources of Hydrogen
- Hydrogen Embrittlement
- Hydrogen Blistering
- Hydrogen Debonding
- Hydrogen Induced Cracking
- Hydrogen Flacking
- Stress Oriented Hydrogen Cracking
- High Temperature Hydrogen Attack
- Inspection and Mitigation methods

Who should attend?

- Inspection Engineers
- Design Engineers
- Technical Service Engineers Process Engineers
- Reliability Engineers

Course Fees

- Single participant:
- Rs. 20,000.00 for Indian delegates
- USD 400 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"High Temperature Degradation of Industrial Components"

Course Objective

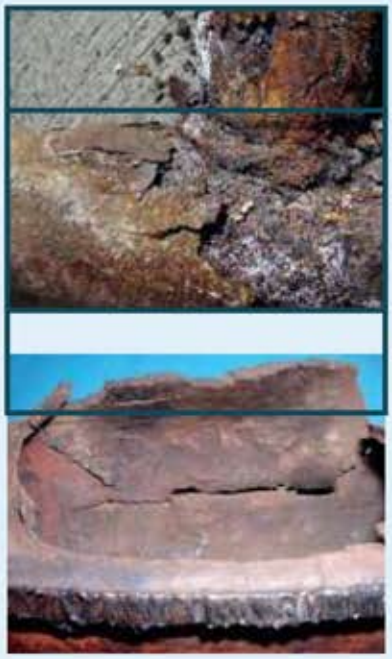
This course introduces you to high temperature materials and metallurgical factors and process control for high temperature materials. Deals with the damage mechanisms for High temperature components. Shows different Inspection methods for early damage mechanisms to identify on-set of damage mechanisms.

Training Session Topics

- Introduction to high temperature materials
- Metallurgical factors and process control for high temperature materials
- Damage Mechanisms for High Temperature Components
- Case Studies and Failure Investigation
- Inspection methods for early damage mechanisms to identify on-set of damage mechanisms

Who should attend?

- Mechanical Engineers of middle management level
- Process Engineers
- Inspection Engineers
- Design Engineers
- Technical Service Engineers
- Reliability Engineers



Course Fees

- Single participant:
- Rs. 20,000.00 for Indian delegates
- USD 400 for Foreign Delegates.
- GST@18.00% applicable on above fees.

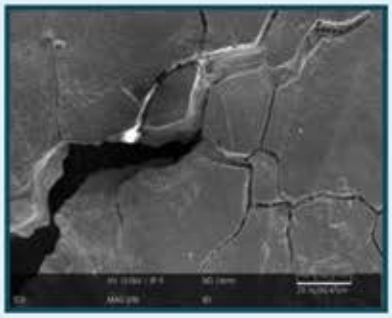
"Defect Analysis in Engineering Components by Scanning Electron Microscope (SEM) and Energy Dispersive Spectroscopy (EDS)"

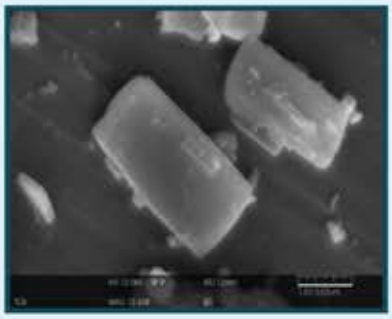
Course Specification

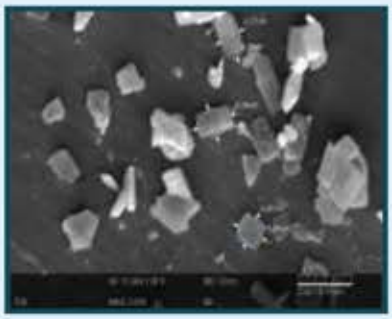
- Scanning Electron Microscope (SEM) is upcoming as a valuable new tool for the non-destructive inspection, examination and evaluation of materials, both metallic and non-metallic, also assemblies and surfaces. One of the unique advantages of Scanning Electron Microscopy is the fact that many specimens can be examined with minimal specimen preparation activity.
- EDS (Energy Dispersive Spectroscopy) is attached with SEM which is used to analysis the chemical composition of the defects presents in the samples. It can be used to identify composition of corrosion products present on surface and within cracks.

Training Session Topics

- Principles of Scanning Electron Microscope
- Sample Preparation technique for SEM
- Principles of Energy Dispersive Spectroscopy
- Demonstration of SEM with EDS
- Working of SEM with Instrumentation
- Actual study of various defects in components
- Hands-on training with attendee's samples







Who should attend?

- QA / QC Engineers
- Managers from foundries and forging
- R&D Engineers
- Academic Trainers

Course Fees

- Single participant:
- Rs. 6,000.00 for Indian delegates
- USD 170 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Distillation Operation, Control & Troubleshooting"

Training Session Topics

- General Introduction
- Distillation equipment
- Process Control
- Commissioning
- Troubleshooting

Who should attend?

- Engineers of Middle Management level
- 1st Line Operations personnel
- Operation Supervisors
- 1st Line Maintenance personnel
- Maintenance Supervisors
- Senior Plant Supervisors
- Operations Engineers
- Process Support Engineers
- Design Engineers
- Cost Engineers

Course Fees

- Single participant:
- Rs. 20,000.00 for Indian delegates
- USD 450 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Selection of NDT for effective and result"

Course Objective

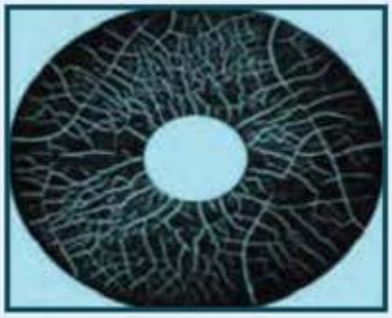
This Training program proves to be productive as it enables a clear vision of non-destructive testing techniques like UT, MT, PT, RT etc with practical demonstration. Procure valuable working understanding of use of non-destructive technique with respect to flaw anticipated. Recognizes the requirement of training and certification of NDT personnel and requirements of non-destructive testing laboratory. Enables to capture the required knowledge to conduct and supervise basic non-destructive testing and communicate effectively with Metallurgists & other experts on more complicated cases. Invention to improve reliability of company operations, cost savings, increase profitability, and enhance competence.

Training Session Topics

- Introduction of conventional NDT techniques
- Selection of NDT process
- Basics of metallurgy & material properties
- Characterisation of flaws
- Introduction of RT / UT/ PT/ MT/ VT / Eddy Current
- Acoustic Emission Testing / Thermography
- Advanced NDT techniques
- Question Answer Session

Who should attend?

- NDT Technicians
- Engineers of Junior Management level
- Fresh / Junior Inspection Engineers
- Trainee process engineers
- Trainee Plant Engineers / Managers
- QA / QC Engineers
- Metallurgical / Materials Engineers
- Other Technical / Laboratory
- Sales Personnel / Engineers from allied disciplines
- Management and administrative staff who need a working understanding of NDT and their applications



Course Fees

- Single participant:
- Rs. 4,000.00 for Indian delegates
- USD 150 for Foreign Delegates.
- GST@18.00% applicable on above fees.

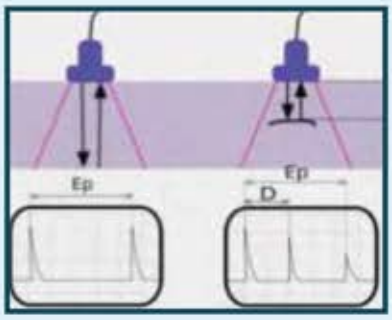
"Non-Destructive Testing - Training on Ultrasonic Testing Level – II"

Course Objective

This course has been specially designed to provide a vivid knowledge for ultrasonic techniques with practical demonstration. A thorough understanding regarding the usage of non-destructive technique in regards to the flaw anticipated is provided. Importance of training and certification of NDT personnel and requirements of non-destructive testing laboratory is shown...Further this training is designed to procure the knowledge required to conduct and supervise basic Non-destructive testing and to be able to communicate effectively with the Metallurgists experts on more complicated issues.

Training Session Topics

- Practical training on latest equipment
- Equipment for ultrasonic applications
- Calibration techniques
- System checks and calibrations
- Inspection techniques
- Variables & applications
- Evaluation of test results
- Advantages and limitations
- Practical Training on latest equipment



Who should attend?

- NDT Technicians
- Engineers of Junior Management level
- Fresh / Junior Inspection Engineers
- Trainee process engineers
- Trainee Plant Engineers / Managers
- QA / QC Engineers
- Metallurgical / Materials Engineers
- Other Technical / Laboratory
- Sales Personnel / Engineers from allied disciplines
- Management and administrative staff who need a working understanding of NDT and their applications

Course Fees

- Single participant:
- Rs. 10,000.00 for Indian delegates
- USD 220 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Non-Destructive Testing - Training on Magnetic Particle Testing Level –II"

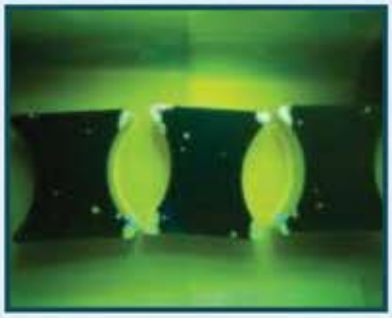
As per SNT TC 1A guide lines

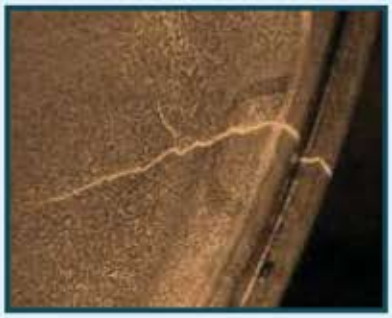
Course Objective

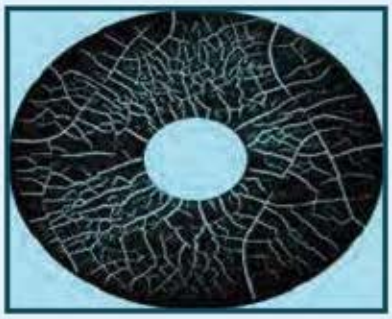
- This training proves to be fruitful as it inculcates understanding for magnetic particle test techniques with practical demonstration. Enables a valuable working understanding in the usage of non-destructive technique with respect to the flaw anticipated. Recognize the requirement of training and certification of NDT personnel and requirements of nondestructive testing laboratory.
- Achieve the knowledge required to conduct or supervise basic nondestructive testing and effectively communicate with metallurgists & other experts on more complicated cases. Invention to improve reliability of company operations, cost savings, increase profitability, and enhance competence.

Training Session Topics

- History & Theories of NDT testing
- Equipment for MPI applications
- Techniques of NDT testing
- Introduction to American and British Codes
- Discussion of Level I and II questions in ASNT
- Advantages and limitations of NDT testing
- Practical training on latest equipment







Who should attend?

- NDT technicians
- Engineers of junior management level
- Fresh / Junior Inspection Engineers
- Trainee Process Engineers
- Trainee Plant Engineers / Managers
- QA / QC engineers
- Metallurgical / Materials engineers
- Other technical / Laboratory
- Engineers from other allied disciplines
- Management and administrative staff who need a working understanding of NDT and their applications.

Course Fees

- Single participant:
- Rs. 7,000.00 for Indian delegates
- USD 180 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"NDT Training on Dye Penetration Testing Level –II"

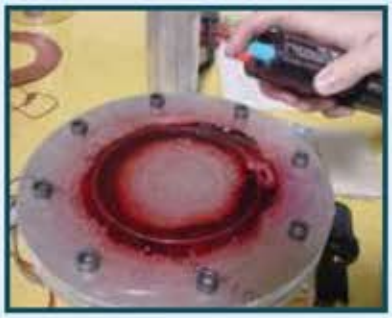
As per SNT TC 1A guide lines

Course Objective

This Course is specially designed to impart a knowledge in Dye Penetration Testing techniques with Practical demonstration. I provides valuable understanding of use of Non-destructive technique with respect to the flaw anticipated. To recognize the requirement of Training and certification of NDT personnel and requirements of non-destructive testing laboratory. To acquire the knowledge required to conduct or supervise basic non-destructive testing and effectively communicate with metallurgists' experts on more complicated cases. For improving reliability of company operations, cost savings, increased profitability, and enhanced competence.

Training Session Topics

- History & development
- Penetrant equipment & materials
- Penetrant procedures
- Techniques & variables
- Evaluation & disposition
- Penetrant testing applications
- Quality control considerations
- Advantages & limitations



Who should attend?

- NDT technicians
- Junior management level engineers
- Fresh / Junior inspection engineers
- Trainee process engineers
- Trainee plant engineers / Managers
- Q A / Q C Engineers
- Metallurgical / Materials engineers
- Other technical / laboratory
- Engineers from other allied disciplines
- Management and administrative staff who need a working understanding of NDT and their application

Course Fees

- Single participant:
- Rs. 7,000.00 for Indian delegates
- USD 200 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"PAUT & TOFD:
Introduction, Calibration & Interpretation"

Course Objective

The principle aim of this intensive workshop is to develop understanding for PAUT & TOED techniques with practical demonstration. In addition an in-depth working understanding for the usage of non-destructive technique with respect to flaw anticipated is provided. Enables you to recognise the requirement of training and certification of NDT personnel and requirement of non-destructive testing laboratory. Thorough knowledge is procured to conduct and supervise basic non-destructive testing and assists you in effective communication with metallurgist and other experts on more complicated cases. Invention to improve reliability of company operations, cost savings, increase profitability, enhance competence.

Training Session Topics

- Introduction of conventional ultrasonic testing and Process discontinuities
- Introduction to PAUT and TOFD, difference between conventional UT and Advance UT, Advantages and drawbacks
- Introduction of Omni scan MX2, PAUT Probes and wedges, TOFD probes and wedges.
- Introduction to Omni PC
- Significance of scan plan preparation for PAUT and TOFD
- Introduction of Omni scan MX2
- Demonstration of Calibration steps
    - Wedge delay
    - Sensitivity
    - TCG
- Encoder
- Demonstration on known defective sample
- Interpretation

Who should attend?

- NDT Technicians
- Engineers of junior management level
- Fresh /Junior Inspection Engineers
- Trainee process engineers
- Trainee Plant Engineers / Managers
- QA / QC Engineers
- Metallurgical / Materials Engineers

Course Fees

- Single participant:
- Rs. 10,000.00 for Indian delegates
- USD 220 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Pressure Vessel Mechanical Design as per ASME PV Codes"

Course Objective

This Training is specially designed to train Individuals who have Profound interest in the orientation to the pressure vessel design, related codes (ASME PV Code Sec VIII Div. 1), as well as those who are seeking better understanding of the software applications

Training Session Topics

- Types of Process Equipment and Vessels
- Selection of Engineering Materials of Vessels and Components
- Design of Cylindrical Shell under Internal Pressure
- Design of Spherical Shell, Hemispherical Heads, Ellipsoidal Heads, Tori-spherical Heads
- External Pressure Design for Cylinders, Heads, Stiffening Rings
- Bolted Flanges and Wind Load Analysis
- Flange Bolt Sizing, and Bolt Loadings
- Orientation to software design applications
- Design of Openings (Nozzles) in pressure vessels
- Reinforced Opening
- Large opening design as per Appendix I-7
- Local Load Stress Analysis (WRC107)
- Design of Supports (Skirts, Saddles, Leg, Brackets)
- Seismic Load considerations and analysis
- Orientation to software design applications

Who should attend?

- Experienced Professionals who wish to brush up their knowledge and stay abreast with the latest in the industry.
- Engineers and Technologists and fresher from varied technical background interested in learning more about Pressure Vessel design and analysis disciplines.

Course Fees

- Single participant:
- Rs. 30,000.00 for Indian delegates
- USD 550 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Failure Prevention, Repairs and life Enhancement of Piping, Vessels and Tanks"

Course Objective

This Programme is designed to refresh engineers for the prevention, repair and Improvement of the life of Piping, tanks and vessels. This covers Orientation of damage Mechanisms, failure prevention, proper repairs and improvement of the safety of piping systems, vessels and tanks.

This programme is intended to train Individuals to supervise and inspect Welded structures, identify defects and repair them. This training allows Welding Inspectors to inspect equipment and structures in accordance with ASME PV Code Welding Sec IX guidelines. Operating staff will benefit from improving the maintenance and profitability of plant systems.

Training Session Topics

- Overview of Oil & Gas and Process Industry- Process Equipment, Piping and Pipeline Systems
- Process Equipment and Piping Systems in Oil and Gas Sector, Petrochemical and Chemical Plants
- Selection of Engineering Materials of Process Equipment & Piping System
- Failure Modes & Damages of Process Equipment and Systems
- Risk based Inspection Programs
- Inspection Practices
- Tips to Minimize Corrosion and Failures
- Welding Inspections and Quality Assurance
- Welding Quality Assurance ASME Sec IX
- Proper Inspections, Repairs and Maintenance. Quality Control,
- Inspection of Process Equipment, Maintenance Guidelines
- Welding Defects Inspection and NDE
- Piping Inspection & Testing Practices, Maintenance Guidelines
- Piping Inspection Frequency and Extent of Inspection / under shutdown
- Repairs of damaged Vessels in Service, Maintenance Guidelines of Equipment
- In-service Inspection for Safe Remaining Life
- Tank Inspection for Suitability for Service
- Tank Inspection Repair & Alteration API 653 Sec 9

Who should attend?

- Experienced professionals who want to concentrate their knowledge and stay up to date in the industry.
- Engineers, Technologists and Freshers interested in learning more about welding technology, quality assurance, inspection and evaluation of soil defects from a variety of technical backgrounds.

Course Fees

- Single participant:
- Rs. 20,000.00 for Indian delegates
- USD 400 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Risk Based Inspection (RBI) in Process, Petrochemical, Oil and Gas Plants"

Course Objective

The program will guide to proper understanding of consequences of failures and the likelihood of failures.

The program shall cover the identification of high-risk areas of operating units, estimate the risk values with operation of each equipment items in a refinery, petrochemical and chemical process plants, prioritize the equipment inspections, design appropriate inspection program and systematic management of risk of equipment.

Training Session Topics

- Introduction and Application of Risk based Inspection (RBI) to Process Plant Safety
- Risk Analysis including Hazards Analysis
- Qualitative and Quantitative Approach to RBI
- Consequence Analysis (Fluid Properties, amount available for release, estimate of release rate, post leak response and estimate of potentially hazard area)
- Likelihood Analysis (Failure Frequencies, Equipment modification factor, Plant Management System, Auditing)
- Development of Inspection Programs to Reduce Risk
- Plant Database Structure
- Explanation of Base Resource Documents and Technical Modules (includes thinning, stress corrosion cracking, high temperature hydrogen attack, furnace tubes, mechanical fatigue, brittle fracture, equipment lining, external damage)
- Role of Proper Selection of Materials of Construction of Equipment & Machines and Discussions on Plant Case Histories

Who should attend?

- Experienced Professionals who wish to brush up their knowledge and stay abreast with the latest in the industry
- Engineers and Technologists and fresher from varied technical background interested in learning more about Welding technology
- Quality Assurance
- Inspections and Evaluation of Weld Defects

Course Fees

- Single participant:
- Rs. 20,000.00 for Indian delegates
- USD 400 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Storage Tank Design, In-Service Inspection, Maintenance and Repairs for Chemicals, Oil and Petroleum Terminals"

Course Specification

This Training is specifically designed to educate the individuals who are keen on proper application of the Storage Tank design, construction and Inspection codes, as well as those who are seeking better understanding of Design and Inspection of storage Tanks at the chemicals, oil & Petroleum Storage Terminals. The Program shall also cover In-Service maintenance and Repairs of damaged and deteriorated Tanks in operation.

Training Session Topics

- Design of Welded Steel Tanks for Oil Storage (API 650) & (API 620)
- Orientation to the tank design software/ ETank
- Storage tank design as per IS:803 and API:650, Practical Exercise
- Lining of Aboveground Petroleum Storage Tank Bottoms (API RP 652)
- Cathodic Protection of Aboveground Petroleum Storage Tanks (API RP 651)
- Welding Quality Assurance, ASME PV Code Welding, Sec IX
- Damages and Deterioration of Tanks in operation at tank farms
- Tank Inspection, Sec 6 (API 653)
- Examination and Testing, Sec 12 (API 653)
- Understanding Tank Roof Assembly (Fixed/ Floating)
- Supported and Domed Roof
- Maintenance practices, planning and Repairs for extended service

Who should attend?

- Experienced Professionals who wish to brush up their knowledge and stay abreast with the latest in the industry
- Engineers and Technologists and fresher from varied technical background interested in learning more about Welding technology
- Quality Assurance
- Inspections and Evaluation of Weld Defects

Course Fees

- Single participant:
- Rs. 30,000.00 for Indian delegates
- USD 550 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Piping Systems and Pipeline Integrity in Process Industries"

Course Specification

This is specially designed to educate the engineers for the Piping and pipeline design as per ASME B31 and Inspection of the piping systems and their evaluation of Fitness-for-service as per API 570 and API 579. Special emphasis would be put on design. considerations, sizing,rating, pipeline integrity, internal inspections, analysis, repair, pressure testing, painting and coating. More information will be provided in pipeline defects, determining pipeline Integrity cracks, corrosion, and other possible failures and damages. This will include instructions and guidelines on the applications of relevant codes & standards.

Training Session Topics

- Piping & Pipeline Terminology, Components
- Piping & Pipeline design standards, ASME B31.1, B31.3, B31.4, B31.8
- Pipeline Design, Construction & Maintenance / API 579 (Fitness-for-Service) Analysis
- Materials / Weld Discontinuities / Welding Processes
- Corrosion principles type Inspection
- Discussion on API 570 (Piping & Pipeline Inspection, repairs, alteration and re-rating)
- Inspection Interval / Corrosion Rate evaluation
- Minimum Safe Thickness evaluation
- Pipeline Integrity Management and Strategies
- Pressure and Leak Testing, Hydro Test
- Main factors affecting pipeline integrity
- External and internal Protection, Cathodic Protection

Who should attend?

- Experienced Professionals who wish to brush up their knowledge and stay abreast with the latest in the industry.
- Engineers, Technologists and Fresher from varied technical background interested in learning more about welding technology
- Quality Assurance, Inspections and Evaluation of Weld Defects.

Course Fees

- Single participant:
- Rs. 30,000.00 for Indian delegates
- USD 550 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Fitness for Service of Equipment and Piping per API 579 and ASME FFS1"

Course Objective

This Three day intensive Training Programme is particularly productive as it helps you understand the damages of your Equipment and connected piping while it is under fabrication, handling ,erection and in prolonged service .Service exposure for a longer for a longer duration pose challenges to equipment safety and Integrity. The damage and defects are detected during regular inspection at different stages.

Fitness-For- Service (FFS) assessments are required through engineering analysis to demonstrate the structural integrity of components containing flaw or damages. The guidelines provided in API 579/ ASME FFS-1 are used to make run-repair-replace decisions of pressurised components after inspection, if they can continue to operate safely. Recommended practice as presented supplement and augment requirements and decisions while implementing inspections as per API 510, API 570 and API 653.

The course will cover situations encountered in pressure vessels, heat exchangers, tanks and connected piping in refining and petrochemical industry.

Training Session Topics

- Understanding of Process Plant System under Analysis
- General Flaw and Damage Mechanism
- Assessment of Equipment and Piping for Brittle Fracture
- Assessment of General Metal Loss / Local Metal Loss
- Assessment of Pitting Corrosion
- Assessment of Blisters and Laminations
- Assessment of Weld Misalignment and Shell Distortions
- Assessment of Crack-Like Flaws (Part 1) & (Part 2)
- Assessment of Fire Damage
- Thickness, MAWP, Stress Evaluation for FFS Assessment

Who should attend?

- Experienced Professionals who wish to brush up their knowledge and stay abreast with the latest in the industry.
- Engineers and Technologists and fresher from varied technical background interested in learning more about welding technology
- Quality Assurance, Inspections and Evaluation of Weld Defects.

Course Fees

- Single participant:
- Rs. 4,5000.00 for Indian delegates
- USD 800 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Physical & Chemical testing of metals"

Course Objective

This intensive training is specially designed to perceive the significance and importance of preliminary test like Chemical and Mechanical. Provides working understanding of Physical & Chemical Testing. Enables to procure knowledge required to conduct or supervise Physical & Chemical testing of the Metals. It further helps to recognise general procedures, techniques and precautions in Physical & Chemical Testing. Awareness of requirements of ISO/IEC-17025 related to Chemical and Mechanical testing is created.

Training Session Topics

- Introduction to destructive & non-destructive test for chemical
- Introduction to material properties
- National International standards for mechanical & chemical tests
- Types of Chemical Tests & Mechanical Tests
- Introduction of Tensile test
- Types of Hardness test
- Flaring & flattening test for tubes & pipes
- Introduction of Impact test
- Calibration requirements for material testing
- Specific requirements of ISO/IEC-17025 for chemical and mechanical

Who should attend?

- Maintenance / Inspection Engineers
- QA / QC Engineers
- Metallurgical / Materials Engineers
- Other Technical / Laboratory
- Sales Personnel / Engineer from allied disciplines
- Management and administrative staff who need a working understanding of metals and their applications

Course Fees

- Single participant:
- Rs. 6,000.00 for Indian delegates
- USD 150 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Evolving approach to site operation and maintenance on substation equipment & advanced monitoring system"

Course Objective

This intensive Training proves to be productive in providing knowledge about the functioning and working of switch yard equipment. Provides better understanding of operation and maintenance. Gives knowledge about evolving maintenance procedure. Introduces you to the need for advanced monitoring system and its effective use. above all it minimizes failures.

Training Session Topics

- PRE-ASPIRATION
- Substation single line diagram
- Parameters / Rating
- Design basics
- Circuit breakers and isolators
- Identification substation equipment
- Circuit breakers, Instrument transformers, Transformers,
- Disconnector, Lightening Arrestor
- Construction, Application
- Linking to operation and maintenance
- Evolving maintenance practice
- Case study to prevent major failure need for advance monitoring system
- POST ASSIMILATION

Who should attend?

- Electrical Engineers
- Inspection engineers / Storage and third-party inspectors
- Technicians / Operation / Commissioning
- Maintenance CARE people who are involved or make a fresh start up - in day to day installation
- Operation and maintenance work of 66KV electrical switch yard equipment

Course Fees

- Single participant:
- Rs. 9,500.00 for Indian delegates
- USD 280 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Corrosion Under Insulation"

Course Objective

- Corrosion is a major issue which erodes the profits of an Organization. The corrosion that occurs on insulated Piping/equipment at any faculty is particularly difficult to track and prevent with a possibility of surprise disruption in operation and causes loss of production and increased maintenance costs which ultimately causes erosion in profits.
- CUL, therefore needs to be combated and tamed for example brought under control through systemic efforts. New plants under construction must take cognizance of learning from CUL incidents and shall use specifications on Painting. Insulation which already incorporate these leaning.

Training Session Topics

- The training will cover, Why CUI has become a major problem in today's context
- Various corrosion mechanisms and major parameters which influence the rate of degradation in insulated piping / equipment
- This training will also cover various NDE methods available and successfully used to detect CUI
- Strategies for defining scope of work in detecting CUI based on RBI (Risk Based Inspection) approach
- The NACE RP 0198 and API RP 583 will be discussed in detail and also study from various published case studies on CUI
- History and introduction to Corrosion Under Insulation (CUI)
- How does CUI occur
- How to detect CUI – Methods
- How to detect CUI – Strategies
- How to combat CUI (Operating Plant & New Plan Painting)
- How to combat CUI (New Plant Insulation)
- Case study

Who should attend?

- Inspection / Corrosion Engineers
- Maintenance Engineers / Operations Engineers
- Design Engineers / Project Engineers
- Construction Engineers / Reliability Engineers etc.

Course Fees

- Single participant:
- Rs. 12,000.00 for Indian delegates
- USD 250 for Foreign Delegates.
- GST@18.00% applicable on above fees.

"Renewal Energy & Grid Integration"

Course Objective

- Renewable energy technologies are clean sources of energy that have a much lower environmental impact than conventional energy technologies. Electricity generation is the leading cause of industrial air pollution in the world. Most of our electricity comes from coal, nuclear, and other non-renewable power plants. Producing energy from these resources takes a severe toll on our environment, polluting our air, land, and water.

  This program on Renewable energy integration aims to assist and achieve the following objectives:
- Understand the fundamentals of the Energy generation, transmission and distribution systems
- Understand the importance and roles of renewable energy in this modern age
- How to maximize the natural resources of renewable energy
- Understand the components architecture of the solar and wind power generations
- Create awareness in understanding the types of renewable energy
- Understand the characteristics and operations of each type of renewable energy
- Integration of Renewable Energy with existing Grid – challenges & forward path

Who should attend?

- Energy Sector Engineers & Managers
- Utility Project Engineers & Managers
- Design Engineers
- Power & Utility Plant Engineers
- Transmission & Distribution Sector Engineers

Course Fees

- Single Participant
- INR 7000/- for Indian Delegates
- USD 210 for Foreign Delegates

"Understanding Process Industry and Basics"

Course Objective

- Create awareness on the Process Industry basics along with the plant equipment engaged in service.
- Cultivate knowledge on process industry functioning and equipment's. Ensure reduction in orientation time, increase understanding and work ability of plant personnel, to implement safety and reliability using basic knowledge.

Who should attend?

- Process Engineers
- Process Plant Operation Personnel
- Plant Managers
- Design Engineers
- Maintenance Engineers
- Inspection / Reliability Engineers
- Safety Managers

Course Fees

- Single Participant
- INR 6500/- for Indian Delegates
- USD 190 for Foreign Delegates

"Project Execution Business Process"

Course Objective

In today's competitive world, work is planned and executed through mission-based teams. As a result, project and program management skills are more necessary and more in demand than ever before. Projects and programs are the core of any organization's strategic initiatives. Senior leaders acknowledge that their organizations struggle to bridge the gap between strategy and execution.

The key learnings this program includes are:

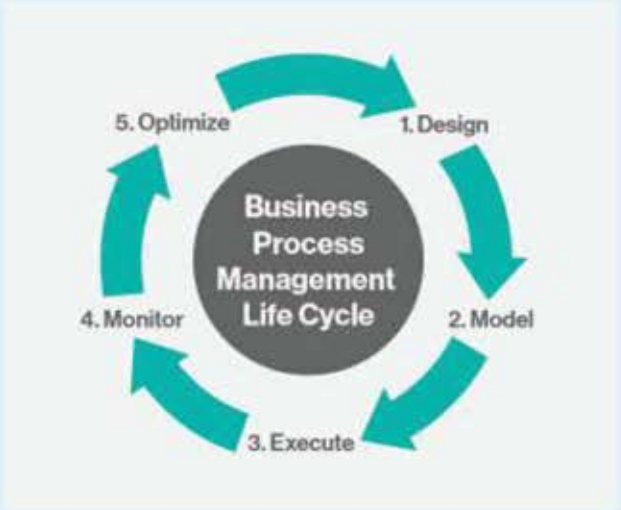
- Understanding the principles and fundamentals of Project Execution methods and approaches.
- Awareness of the requirements for integrating Design, Procurement, Construction and Start-up phases in a structured approach
- Appreciation of industry-wide recognized Project Framework and Standards for Project Execution
- Recognition and understanding of how to manage the Design, Procurement and Construction phase expectations effectively and successfully
- How to execute Design, Procurement & Construction phases taking a collaborative approach within the overall project life-cycle

Who should attend?

- Project Engineers
- Project Managers
- Procurement and Construction personnel
- Contract Engineers
- Plant Construction Engineers
- Process Engineers

Course Fees

- Single Participant
- INR 7000/- for Indian Delegates
- USD 200 for Foreign Delegates



"Water Treatment Plant & System for Industry"

Course Objective

- The treatment of water & wastewater is a complex process involving different process steps. The utilities & process plants play a key role in the water treatment. The decisions and actions by these plants have a major influence on the treatment results. In this course, you acquire knowledge on water and wastewater treatment. The water cycle and the water chain approach are explained.
- Cultivate knowledge on water treatment system functioning » and equipment.

Who should attend?

- Project Engineers
- Process Plant Operation Personnel
- Plant Managers
- Design Engineers
- Maintenance Engineers
- Power & Utility plant Engineer

Course Fees

- Single Participant
- INR 6500/- for Indian Delegates
- USD 190 for Foreign Delegates

Faculty

Mr. Paresh Haribhakti

Managing Director,
TCR Advanced

Authored the book titled as "Failure Investigation of Boiler Tubes".

With an experience of 29 years in metallography and microstructure, Paresh Haribhakti has solved more than 4000 industrial issues. Being the pioneer in the field of in-situ metallography and Materials engineering, he has an expertise in petrochemical plants, oil and gas transmission pipelines, offshore structures, ships, pharmaceutical plants, food processing equipment, gas turbine engine components and weldments.

Mr. Ketan Upadhyay

GM – Reliability Engineering
TCR Advanced

With an experience of 26 years in correlation of properties with composition and microstructure, Ketan Upadhyay has become an expert in manufacturing methods like casting, rolling, extrusion and forging defects. Mechanical behaviour of steel, failure analysis, Welding metallurgy as well as non-destructive technology is his passion. Ketan Upadhyay is a qualified level II for Acoustic Emission Testing (IISC, Bangalore), Vibration Analyst VT-II (Entec IRD) and Ultrasonic Flaw Detection (EEC, Mumbai).

Mr. Gopul Patel

General Manager,
TCR Advanced

Gopal Patel has an extensive knowledge of vacuum technology and has worked as Scientific Officer at department of science and technology sponsored research centre.

He is qualified as NDT level II in M.T., P.T., U.T. and E.T. and has experience of various advanced methods of material characterization and has worked extensively in the field of microscopy.

He is actively involved in establishing new testing facilities at TCR lab as well as on site.

Mr. Kamlesh Rana

Technical Manager
TCR Advanced

Kamlesh Rana has vast experience of fabrication and forging fields.

He has more than 20 years of experience.

He is qualified internal auditor for ISO 9001 and has handled API audits.

He headed quality and assurance department of various forge-shops.

Mr. Hemant Pradhan

Technical consultant
TCR Advanced

Hemant Pradhan is a Mechanical engineer with over 34 years of experience in design, detail engineering services, projects, inspection, mechanical construction, procurement, estimation etc. for fertilizer and petrochemical plants and projects. His major experience field has been design, detailed engineering, trouble shooting of fertilizer plants like ammonia, urea, DAP, ASP, AS, phosphoric acid, sulphuric acid etc.; petrochemical plants like Caprolactam, Melamine, Nylon-6, and utility/co-generation/ boiler and water treatment plants.

Mr. M. N. Patel

Ex. Associate Professor, Metallurgy & Materials Engineering Department
Consultant, TCR Advanced

M. N. Patel has 35 years of teaching experience in Plastic Deformation of Metals, Mechanical Metallurgy, NDT and Failure Analysis in Under Graduate as well as Post Graduate levels. He also has an expertise in Mechanical behaviour of metals, selection of materials and failure analysis, physical metallurgy and welding metallurgy. He has written 16 research papers published by national journals in the field of weld ability of steels, corrosion of steels, sensitization of stainless steel and failure analysis.

Mr. B. K. Shah

EX-Head,
Quality Assurance Division,
BARC

B.K. Shah has done B.Sc. Eng. (Metallurgy) from Regional Institute of Technology (RIT), Jamshedpur (First Class with Distinction- 1st Rank) and MTech. (Corrosion Sc. &Eng.) from Indian Institute of Technology (IIT), Bombay (CPI 10.0- 1st Rank). He joined BARC in 1973(17th batch of BARC Training School). He has been outstanding scientist of the department of Atomic energy. He retired as head, Quality assurance division, BARC on 31st December 2011. Presently, he is Raja Ramanan Fellow at BARC, Mumbai.

Mr. Narendra Kumar Roy

Director,
Charisma Careers Pvt. Ltd

Narendra Kumar Roy is B.Sc. (Engineering)- Mechanical (1st Class), Bihar Institute of Technology, Sindri, Ranchi University, India (Year 1966). Master of Engineering; Specialisation in Mechanical Machine Design; University of Roorkee; India (Year 1968).
Working as Director on the board of Charisma Careers Pvt. Ltd, Vadodara, Gujarat and Technical Expert with Charisma Global Networks Ltd, Auckland, New Zealand.
Received the President of India Cash Prize instituted by the Indian Society of Theoretical & Applied Mechanics, Kharagpur for the best paper presented at the annual conference in Surat 1977

Dr. P. B. Joshi

Prof. Metallurgical & materials,
MSU-Baroda
Consultant, TCR Advance

Authored the book titled as "Failure Investigation of Boiler Tubes".
Dr P. B. Joshi is a professor in department of metallurgical and materials engineering, Faculty of technology and engineering, Maharaja Sayajirao University, Vadodara. He is a Ph. D. in material engineering.
He is having more than 25 years of teaching experience in the field of metallurgy. He has more than 50 research publications in international journals & national journals, and authored a book titled "Materials for Electrical and Electronic Contacts".

Dr. Mukesh Pandya

Corrosion expert,
TCR Advanced

Mukesh Pandya is Ex-DGM (Research) from Gujarat State Fertilizer Company (GSFC) Limited, India's premier fertilizer company. He is having a Ph.D. in corrosion from Gujarat University.
He has more than 25 years of experience in corrosion evaluation, materials selection, failure investigation and online corrosion monitoring in chemical, petrochemical and fertilizer industries and possesses in-depth knowledge on various forms of corrosion also having vast experience in conducting laboratory and field experiments on corrosion measurements as per national and international standards.

Mr. Prakash Shende

Consultant Engineering

Prakash Shende is a 1970 graduate in Mechanical Engineer from VJTI Mumbai. He also completed his AMIE in Chemical Engineering from Institute of Engineers India.
He has over 44 years of work experience in Oil, Petrochemical, Fertilizer Industry. He has worked in renowned and reputed companies like Reliance Industries Ltd., Bharat Petroleum Corporation Ltd., Hindustan Petroleum Corporation Ltd., Essar Oil Ltd., Gujarat State Fertilizer Co., Finolex Industries Ltd., Humphreys and Glasgow Consultants etc. in India and had a 2-year stint in PEQUIVEN in Venezuela.

Dr. G. H. Thanki

Director and Principal Consultant Corrosion Control & Monitoring Consultancy

G. H. Thanki brings over 40 years of experience in Corrosion Technology, including 15 years in senior leadership roles as Corrosion Management Advisor to Corporate World. He has > 65 Technical Papers and served as Corrosion Consultant to The World Bank, UNIDO and a few European Companies. Conducted Training Programmes encompassing a wide spectrum of corrosion engineering field to > 60 corporate in India and Abroad. Chaired and convened Technical sessions in National and International conferences.

Prof. A. K. Singh

FIE, FSPE, MISNT, MIW, MIIM

A. K. Singh is a Fellow of Institution of Engineers (India), Fellow of Society of Power Engineers (India), Member of Indian Institute of Welding, Member of Indian Society for Non- Destructive Testing, Member of Indian Institute of Metals.
He was the Vice Chairman of Society of Power Engineers (India), Vadodara and Chairman of the Baroda Chapter of Indian Society for Non-Destructive Testing.
He was awarded with Engineering Excellence and Achievements Award & International Business Excellence Award.

Mr. P. Trivedi

Consultant Engineering

P. Trivedi gained a BE (Electrical) with specialisation in switchgear and protection in 1974 from Gujarat University, Ahmedabad, going on to further study Cost Accountancy (1976) and Business Management (2005) for which he achieved an "Outstanding Performance" result. His career path has been wide including Electrical Engineer with the Indian Navy & Scindia Steam Navigation.

Mr. Subrahmanya Bhat

Consultant Engineering

Subrahmanya Bhat, postgraduate in Analytical Chemistry is General Manager – ONGC (Retired), served ONGC for 32 years with responsibilities at Oil & Gas well sites at various oilfields to research centers, for exploration and production activities.
He has coordinated more than 100 studies/RD projects related to Identification of Material of Construction (MOC), Corrosion Inhibitor/formulation/ selection, premature failure analysis for Corrosion Control, Chemical process control, in Oil & Gas fields, Chemical Industries, Underground coal gasification, hydrogen generation by thermo-chemical water splitting and coal bed methane production.

D. M. Butala

Ex-executive director, GSFC Ltd.

D. M. Butala Techint consulting engineers, Baroda. Technical consultant project finance div. SBI- corporate office
Ex- executive director, GSFC Ltd. Dinesh Butala – Chemical Engineer with 48+ years of strong experience in Project Management, Process Design, Technology Upgradation, Debottlenecking, Energy conservation & optimization, Commissioning, Process Safety, Plant Operation, Maintenance R&D support with stress on Pilot Plant Design and scaling up, Application Development in the field of Petrochemicals, Plastics and Fertilizers R & D and Refinery (Middle East).

Dr. V. R. Krishnan

Consultant Engineering

Dr. V. R. Krishnan is a distinguished professional in the field of Materials Technology. With a Bachelor's Degree in Metallurgy and Master's Degree in industrial Metallurgy from IIT Madras, he has a Doctorate in Mechanical Engineering from IIT Delhi specializing in Underwater Welding. An immensely rich professional working experience as a specialist in Material Selection, Material Processing, Materials Performance, corrosion, Welding, Febrication, Quality Assurance, Integrity Analysis, Fitness for Purpose, Residual Life Analysis (RLA), Certification and Trouble Shooting has made Dr. Krishnan an expert in metallurgy.

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