



Best Technology Solutions (BTS)

## **Repair of Pressure Equipment & Piping (Conforms to ASME Codes)** Training program

### **Introduction:**

This course provides methods for repair of equipment and piping within the scope of ASME Pressure Technology Codes and Standards after it has been placed in service. These repair methods include relevant design, fabrication, examination, and testing practices and may be temporary or permanent, depending on the circumstances. The methods provided in this course address the repair of components when repair is deemed necessary based on appropriate inspection and flaw assessment. These inspection and flaw evaluation methods are not covered in this document, but are covered in other post-construction codes and standards. It also covers technical procedures and information.

This course will cover topics such as an introduction to weld repairs, differentiation in requirements between production and in-service-repairs, considerations for weld repair (including decision tree), qualification requirements, industry best practices, techniques for weld repair such as temper bead/controlled deposition repair, novel repair technologies such as taper stitch welding, repair methodologies for different types of failure mechanisms such as creep, SSCC, corrosion damage and clad repair. This course provides guidance on various types and methods of repairs to piping, pressure vessels, heat exchangers, and similar equipment.



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## Who Should Attend?

Plant engineers, non-destructive testing engineers, materials and corrosion engineers, plant inspectors responsible for managing the integrity of ageing process equipment, pipelines, boilers and storage tank, piping engineers and designers, fabricators and erectors, QA/QC personnel, engineers and maintenance personnel who desire a more in depth understanding of the Fabrication and Examination rules of the ASME Codes & Standards, operation, mechanical and maintenance personnel, inspection and quality personnel responsible for specifying, operating, inspecting and maintaining piping systems, code compliance personnel, regulatory personnel, consulting engineers, design engineers, maintenance engineers, project engineers, maintenance personnel, service engineers, planners and schedulers, M & E foremen, technical assistants & coordinators & technicians, public safety officials, and government regulators

## Course Objectives:

By the end of this course delegates will learn about:

- Understand the considerations to be applied before carrying out weld repairs
- Prepare method statements and carry out qualifications
- Apply industry best practice for weld repair



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## Course Outline:

### Scope, Organization and Intent Welded Repairs

- Butt-Welded Insert Plates in Pressure Components
- External Weld Overlay to Repair Methods for Internal Thinning
- Seal-Welded Threaded Connections and Seal Weld Repairs
- Welded Leak Box Repair
- Welded Lip Seals (in the course of preparation)
- Full Encirclement Steel Reinforcing Sleeves for Piping
- Repair Method Using Fillet Welded Lap Patches With Reinforcing Plug
- Welds (in the course of preparation)

### Mechanical Repairs

- Replacement of Pressure Components
- Freeze Plugs
- Damaged Threads in Tapped Holes
- Flaw Excavation and Weld Repair
- Flange Refinishing
- Mechanical Clamp Repair
- Pipe Straightening or Alignment Bending



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- Damaged Anchors in Concrete
- Valves With Pressure-Seal-Type Bonnets
- Hot Bolting

### Non-Metallic and Bonded Repairs

- Non-metallic Composite Repair Systems for Piping and Pipework: High-Risk Applications
- Non-metallic Composite Repair Systems for Piping and Pipework: Low-Risk Applications
- Non-metallic Internal Lining for Pipe: Sprayed Form for Buried Pipe

### Examination and Testing

- Pressure and Tightness Testing of Piping and Equipment
- Repairs and Alterations Without Pressure Testing