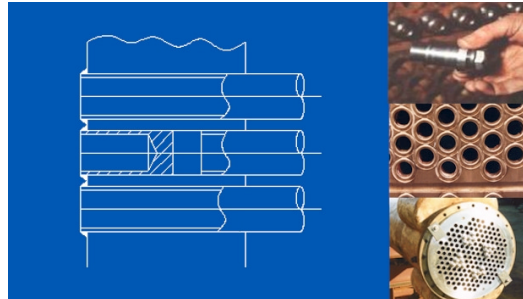




Heat Exchanger Tube Repair Training Course



Introduction

- Heat exchanger overview
- Tubes
- Tube to tubesheet joints
- Causes of leakage

Inspection and Testing

- Leak detection
- Leak location
- Tube survey techniques
 - Eddy current
 - Magnetic flux leakage testing
 - Ultrasonic
- Record keeping

Pre-Repair Considerations

- Evaluation of root cause of leak
- Planning a successful repair
- Avoid common mistakes

Tube Re-Expansion

- Expansion overview
- Re-expansion considerations
- Expansion techniques
- Expansion pitfalls
- Alternative to expansion

Tube End Welding

- Welding overview
- Welding considerations
- Welding procedures

Tube Plugging

- Plugging considerations
- Tube plug types
 - Taper plugs
 - Welded plugs
 - Removable plugs
 - Explosive plugging
 - Proprietary systems
- Plug selection
- Supporting failed tubes
- Installation procedures
- Safety considerations

Tube Sleeves

- Sleeving considerations
- Types of sleeve
- Installation procedures

Re-Tubing

- Re-tube vs replace
- Tooling for tube removal
- Re-tubing procedures

Selection of Repair Technique

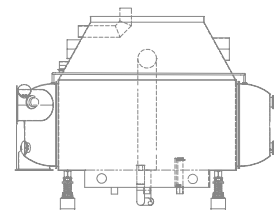
- Comparison of techniques
- Factors in decision-making

Avoiding Future Leaks

- Addressing root causes
- Planning ahead
- Design improvements

Repair Solutions for:

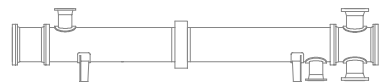
- Steam surface condensers



- Feedwater heaters



- Power plant shell & tube exchangers
- Condensate coolers



- Component cooling water exchangers

