



**UNIT 1 - Introduction to
Pressure and Leak Testing**



PRESSURE & LEAK TESTING
TRAINING

Who will Benefit from this Course

This course aims to provide the knowledge and techniques for carrying out pressure testing and leak testing in the workplace. It is beneficial for personnel who are required to carry out such test.

Course Aims & Objectives

Introduction to Pressure and Leak Testing

Leak Testing and Pressure Testing Methods and Associated Hazards

Preparing a Leak Test

Carrying out a Leak Test

Test Pressure and Test Documentation

Course Learning Outcomes

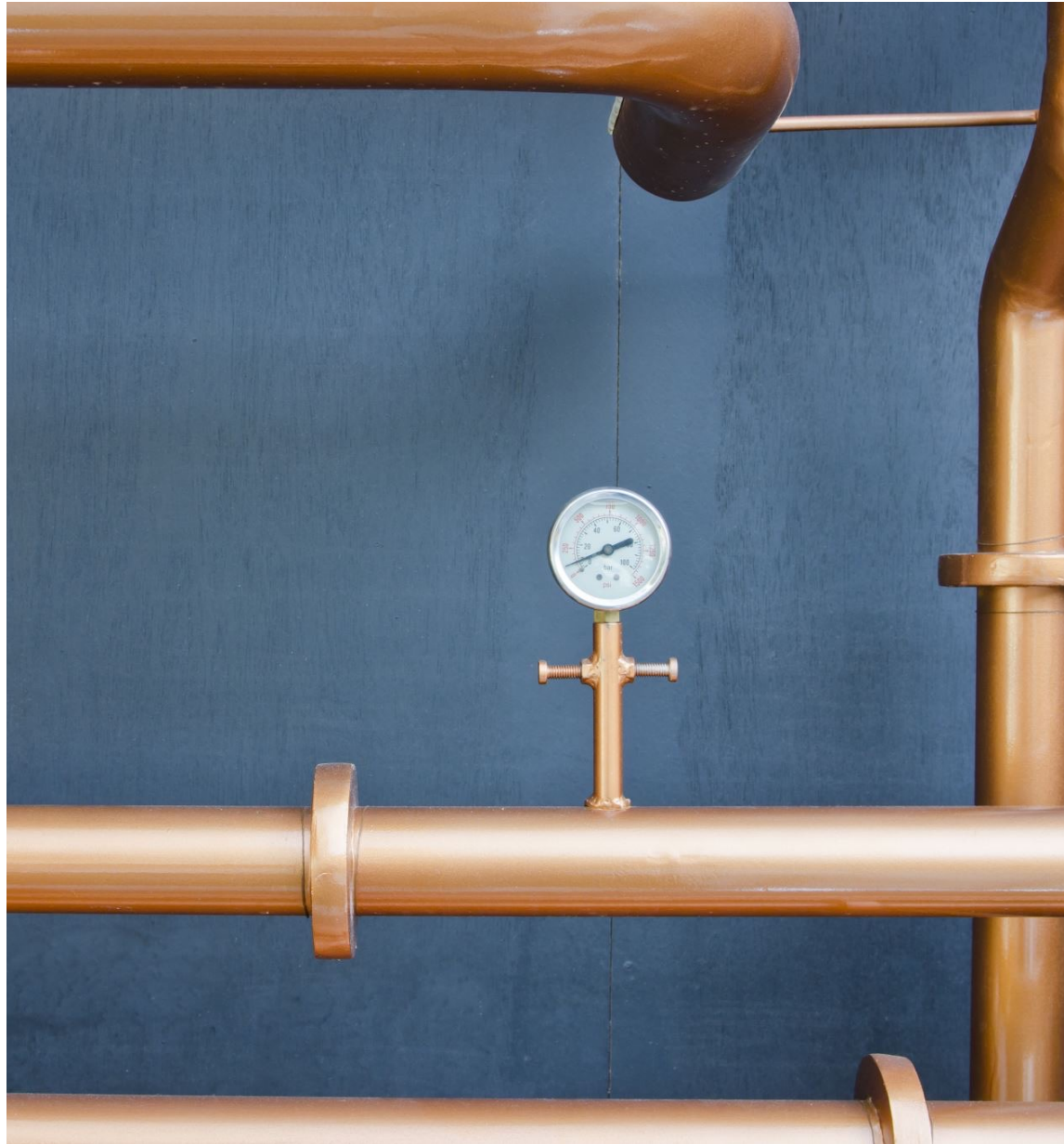
1. Importance of leak testing of disturbed joints on hydrocarbon systems prior to returning to service.
2. Various methods of leak testing, and pressure testing of vessels and pipework, and will also consider the hazards associated with hydrostatic and pneumatic testing.
3. Planning a leak test, the use of P&IDs, valve line-up checklists and task risk assessment
4. Practicalities of leak testing on site, the safety precautions required, and how pressure is applied incrementally.
5. Test pressures and how these are controlled below design pressure, in addition to discussing the compilation of test documentation prior to handover to Operations
6. Accumulator charging

What is Leak Testing

- Leak testing is the process of checking a system for leaks (a defect). Leak testing can be achieved using various leak detection methods and is employed to test for defects in products and to ensure the proper function and maintenance of industrial systems and pipelines. The choice of the detection method depends on which method is most appropriate for the system at hand.

What is Pressure Testing

- Pressure testing or hydrostatic testing is the test which is carried out after the installation of any pipeline before it is put into use. The purpose of the pressure testing is to investigate the various limits of the pipeline which will test areas such as the reliability, maximum capacity, leaks, joint fittings and pressure. Without this information the pipe can not be put into service and the owner/operators have no knowledge if the pipe meets the set requirements.



Systems or equipment require pressure testing

- Examples:
- compressed gas cylinders, boilers, tubing, pipelines, and other vessels.

Some risk mitigation measures that should be taken while carrying out pressure or leak testing are:

- Barricade the test area and restrict access to trained personnel only.
- Use calibrated equipment and follow appropriate ratings for fittings and valves.
- Minimize the use of flexible fittings and connections.
- Position test equipment and people in safe areas
- Control the conditions to prevent additional, transient pressures.
- Do not make adjustments to equipment under pressure.
- Design for release of the high pressure on test completion.
- Properly vent the air from the system to avoid air pockets.
- Maintain the pressure level within the specified factor of the design pressure.
- Monitor the system closely during the test to prevent any sudden failures

Some risk mitigation measures that should be taken while carrying out pressure or leak testing are:

- Barricade the test area and restrict access to trained personnel only.
- Use calibrated equipment and follow appropriate ratings for fittings and valves.
- Minimize the use of flexible fittings and connections.
- Position test equipment and people in safe areas
- Control the conditions to prevent additional, transient pressures.
- Do not make adjustments to equipment under pressure.
- Design for release of the high pressure on test completion.
- Properly vent the air from the system to avoid air pockets.
- Maintain the pressure level within the specified factor of the design pressure.
- Monitor the system closely during the test to prevent any sudden failures

Exposure to low oxygen concentrations can be extremely dangerous.

The effects of oxygen-deficient atmospheres can include:

- Giddiness
- Mental confusion
- Loss of judgment
- Loss of coordination
- Weakness
- Nausea
- Fainting
- Loss of consciousness
- Death

The intensities of the effects increase rapidly with falling oxygen concentration and longer exposure duration. Any exposure to an atmosphere containing less than 17% oxygen presents a risk.