

Scandinavian Academy Training Center

Mobile | 00966536473335 : Mobile | 00966112695229 : Phone : 00966552365295
Email | info.en@scandinavianacademy.co Web site:https://scandinavianacademy.co/en :
Riyadh - Al Khaleej District - Sheikh Abdul Aziz Bin Abdul Rahman Bin Bishr Street - 13223 - Office No. 5 | P.O.BOX : 13224

# Course: Hydrostatic Pressure Test According to ISO 9080 and ASTM D2837

| Code | City | hotel | Start | End | price | Language - Hours |
|---|---|---|---|---|---|---|
| OG-751SA | Riyadh | Hotel Meeting Room | 2027-02-07 | 2027-02-11 | 12950 SR | En - 25 |

## PROGRAMME SUMMARY: -

Pressure testing of newly manufactured and installed pipework and pressure vessels is an essential part of ensuring that assets meet their operational requirements. However, the number of reported failures indicate that current processes and available guidance relating to pressure testing are not adequate, both in the factory and on-site. Pressure Testing Procedures and Best Practice Training outlines the responsibilities in the Health and Safety Executives Guidance note GS4 “Safety Requirements for Pressure Testing” and how to meet those requirements. A review of case studies is conducted to demonstrate where ‘things go wrong’ and how to prevent such incidents in the future. A significant emphasis will be placed on the ‘Test Supervisors’ roles and responsibility and the safe systems of work that must be in place. The safe system of work provides written instructions to test engineers and requires sufficient information to ensure correct: Within the boiler, piping and pressure vessel industry, safety relief valves are of most essential importance. Pressure relief valves are the last line of defense against catastrophic failure or even loss of life. The course covers safety valve types, codes & standards and designs, materials, specification and selection, sizing, installation & testing, preventive maintenance procedures, operation and troubleshooting. A number of different instructional methods are used throughout the course to allow interactive learning and to give practical examples from the manufacturing and service industry to enable the delegates to operate select, size, install, test and troubleshoot safety valves upon course completion.

## OBJECTIVE:-

- Familiarize participants with the functions and applications of safety relief valves,

their types, designs and components.

- Enable appropriate safety valve sizing and selection for liquid, gas and vapor applications
- Train participants to install, inspect, test & troubleshoot a variety of safety valves.
- To increase the participant’s awareness and understanding that the mechanical integrity of relief valves depends jointly on the proper design, operation, condition assessment, and maintenance of the equipment.
- To provide the participants with a clear understanding of the degradation mechanisms that relief valves could be subjected to over their operating life, how to identify them, predict and determine their impact, and what appropriate measures can be taken to prevent and control the resultant damage.
- To provide the participants with the knowledge and failure analysis skills they need to conduct damage and failure analysis so as to prevent similar failures from happening.
- To understand requirements of industry codes/standards and approval authorities.
- In-situ Testing Techniques – Onsite Testing of Safety Relief Valves.
- Emerging Technologies in Pressure Relieving Devices
- Use Valve Star / PRV size software for Safety Relief Valve Sizing & selection from Leser and CROSBY..

## WHO SHOULD ATTEND :-

- Engineers / Supervisors / Technicians from Maintenance Operations Department .
- Maintenance Service Department and Inspection & Materials Technology Section.
- Chemical, Process, Petroleum Engineers
- Design Engineers
- Piping Engineers
- Plant Engineers
- Plant operators
- Mechanics
- Safety inspectors.
- For all oil and gas industries

# CONTENT OF THE PROGRAM: -

## INTRODUCTION –SAFETY RELIEF VALVES:-

- History
- Pressure Relief Devices ( ReClosing, Non- ReClosing)
- Reclosing Pressure Relief Devices
- Pressure Relief Valves
- Safety Valves
- Relief Valves
- Safety Relief Valve
- Non Reclosing Pressure Relief Devices
- Rupture Disk
- Breaking Pin devices
- Buckling Pin devices
- Shear Pin devices
- Fusible Plug devices

## OVERPRESSURE PROTECTION:-

- Safety Relief Valves in a Process
- Causes of Overpressure (Blocked Discharge, Fire Case, Thermal Expansion
- Runaway Reaction, Tube Rupture in Heat Exchangers)
- Overpressure Protection Requirements

## PRESSURE RELIEF VALVES – WORKING PRINCIPLE & COMPONENTS & SPECIFICATION:-

- Conventional Pressure Relief Valves
- Pilot Operated Pressure Relief Valves
- Balanced Bellow Pressure Relief Valves
- Power & Temperature Actuated Pressure Relief Valves

- Relief Vs Safety Valve
- Components & Accessories of Relief Valves
- Specifying Pressure Relief Valves

## SAFETY VALVES – WORKING PRINCIPLE & COMPONENTS, SPECIFICATION

- Working Principle
- Classification ( Actuation, Lift, Seat Design, lever, bonnet )
- Major Components / Accessories
- Locations
- Specifying Safety Valves

## CODES & STANDARDS:-

- Overview operational requirements
- ASME & API codes and standards-clarifications
- National Board approval
- Main paragraph excerpts from ASME VIII
- BS EN ISO 9080
- ASTM D2837.

## DESIGN FUNDAMENTALS

- Materials of Construction
- Direct spring-operated Safety Relief Valves
- Introduction
- Functionality
- General design
- Design of main assemblies
- Design differences
- Types of spring-operated SRV`s
- Controlled safety pressure relief system (CSPRS)
- Pilot Operated Safety Relief Valves

## SIZING & SELECTION:-

- Introduction
- Gas and vapor sizing
- Steam sizing (sonic flow)
- Liquid sizing
- Combination devices
- Two phases or flashing flow
- Two phase liquid/ vapor flow
- Two phase system with flashing or non-condensable gas
- Sub cooled liquid flashing
- Two phase system with flashing and non-condensable gas

## SAFETY RELIEF VALVE SELECTION:-

- Seat tightness
- Blowdown
- Service temperature
- Weight and/ or height
- Back pressure
- Orifice size – sizing
- Two phase flow
- Type of fluid
- Reciprocating compressors
- Liquid
- Materials

## INSTALLATION:-

- Inlet and outlet piping
- Calculating piping losses
- Calculating outlet piping
- Location of installed SRVs

- Reaction forces and bracing
- Temperature transmission on installed SRVs
- Installation guidelines

**MAINTENANCE:-**

- Determining maintenance frequency and cost
- Transportation and dirt
- Preinstallation handling and testing of the pressure relief valve
- Maintenance procedure ( Pretest, Disassembly, Repair, Assembly & Testing)

**TROUBLESHOOTING:-**

- Seat leakage
- Chatter
- Premature opening
- Valve will not open
- Valve open above set pressure
- Valve does not reclose
- Bellows failure
- Springs

**The Scandinavian Academy for Training Center** adopts the latest scientific and professional methodologies in training and human resource development, aiming to enhance the efficiency of individuals and organizations. Training programs are delivered through a comprehensive approach that includes:

- Theoretical lectures supported by PowerPoint presentations and visual materials (videos and short films).
- Scientific evaluation of participants before and after the program to measure progress and knowledge acquisition.
- Brainstorming sessions and practical role-playing to simulate real-life scenarios.
- Case studies tailored to align with the training content and participants work nature.
- Assessment tests conducted at the end of the program to evaluate the achievement of training objectives.

Each participant receives the training material (both theoretical and practical) in printed form and saved on a CD or flash drive. Detailed reports, including attendance records, final results, and overall program evaluations, are also provided.

Training materials are prepared professionally by a team of experts and specialists in various fields. At the end of the program, participants are awarded a professional attendance certificate, signed and accredited by the Scandinavian Academy for Training Center.

**Program Timings:  9:00 AM to 2:00 PM**

**The program includes:**

- A daily buffet provided during the sessions to ensure participants comfort.
- A closing ceremony on the final day to distribute certificates and celebrate participants achievements.
- **Note: All prices are exclusive of 15% Value Added Tax (VAT).**

# Our Success Partners

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المملكة العربية السعودية - الرياض - حي الخليج - شارع الشيخ عبد العزيز بن عبد الرحمن بن بشر - 13223 - مكتب رقم 5
Riyadh - Al Khaleej District - Sheikh Abdul Aziz Bin Abdul Rahman Bin Bishr Street - 13223 - Office No. 5