



NARGAN
ACADEMY



Pressure vessel Design Course

(ASME Sec. VIII. Div.1 + PVELITE Software)

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WHY CHOOSE THIS TRAINING COURSE?

This course is project oriented. Besides being familiar with standards, handbooks, and basic conceptions of designing the pressure vessels, different kinds of supports, materials and usable details will be modeled in format of 5 different projects that are being used in oil, gas and petrochemical industry right now.

Additionally, the process of making datasheet to drawing mechanical engineering will be done.

WHO IS THIS TRAINING COURSE FOR?

- B.E / B.Tech in Mechanical /Chemical /Petroleum Engineering
- Trainees should have an appreciation for mechanical engineering theory and principles.

All the engineers who want to work in the fields of design, supervision, construction or procurement of under-pressure equipment, should be familiar with design requirements, codes and standards, types of materials, necessary tests, etc.

WHAT ARE THE GOALS?

By the end of this course, the participants have got familiar with different types of codes, standards, handbooks, and important design requirements of pressure vessels. Also, they'll competent in vessels' design, supports types, attachments and working with different materials. Moreover, different types of departments in EPC, employer and vendor companies will be introduced and the way of designing and calculating and preparing mechanical engineering drawing based on process data sheet will be taught.



Mohammad Hasan Amirkalaei

WORK EXPERIENCE :

- Senior Mechanical Engineer (Equipment engineer including static equipment and different types of cranes in Mechanical department)
- Deputy engineer and supervisor of engineering design projects such as the project related to Sadaf ESBR plant in most technical stages of engineering affairs including basic design, bid stage, vendor document checking and observing all junior engineers who are involved in this project.
- Leader engineer of engineering design projects such as Gachsaran petrochemical company in most technical stages of engineering affairs including designing a jib crane on the roof of a storage tank for lifting main bodies of two pumps in period of maintenance and vendor document checking and observing all junior engineers who are involved in this project. | Nargan company | 2015-present | Tehran, Iran

COURSE Syllabus (32 Hours)

- Introduction to ASME Section VIII and divisions
- Introduction about pressure vessels and scope of work and design
- General requirements about materials, design, components, fabrications, (UG parts)
- Requirements for pressure vessels constructed of carbon, low and high alloy steels (UCS and UHA parts)
- Welding requirements of pressure vessels (UW parts)
- PVELITE software introduction
- Definition: Shell, Head, Nozzle, Supports, Reinforcing, Corrosion allowance, Joint efficiency, tangent line...
- Pressure vessel component (Main component, internal & external attachments)
- Determine shell thicknesses of cylindrical shell and dish head due to internal and hydrostatic pressure, external pressure due to vacuum condition. Stiffener ring design and positioning
- Determine the shell thickness for lower end cylindrical shell and dish head, skirt support and base ring due to wind and seismic load
- Determine required reinforcement at cylindrical shell and dish head due to shell opening, nozzle loadings
- Horizontal & vertical vessels design using PVELITE software.
- Introduction to all type of supports (saddle, lug, leg and skirt) and modeling using PVELITE software
 - Design for leg and lug support and local stress analysis
 - Design for the saddle support, base plate, rib and web
 - Identify type of common stresses at horizontal supported pressure vessel
 - Apply corrective methods in reducing the stress at horn of saddle, tip of wear plate, shell plate at the saddle and dish head (if applicable)
 - Skirt and base ring design
- Introduction to nozzle/ flanges and designing (WN, LWN, Self-reinforcing nozzles and blind flange)
- Introduction to Nozzle-Pro software and basic nozzle calculation using Nozzle-Pro
- Modeling for internals and externals weight like trays, packing, platform, ladder
- Modeling for liquid, insulation, fireproofing, lining, cladding
- Determine MAWP of the vessels and hydro-test results
- Analyzing results using the PVELITE reporting and editing models