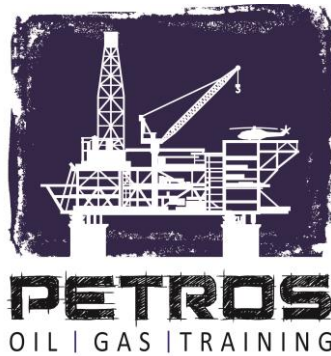


Certificate No : 2022-PTR-EC-PVD-005

Date : January 14th , 2022



CERTIFICATE OF ACCOMPLISHMENT

This is to certify that

REIN KARNA

ID NUMBER : PTR-EC-PVD-005

has completed & finished the Final Project of our E-course

**PRESSURE VESSEL DESIGN
AS PER ASME VIII DIV.1
(MANUAL CALCULATION)**

TRAINER :

Tito Febrianto, S.T - Senior Mechanical Static Engineer

Held by **PETROS Oil Gas Training** covering the subjects as listed on the back page



Certificate Validation

A handwritten signature in black ink, appearing to read "Heru Prasadja".

Heru Prasadja, ST
Director

PRESSURE VESSEL DESIGN AS PER ASME VIII DIV.1 (MANUAL CALCULATION) ECOURSE

Pressure Vessels Introduction

- Definition, Application
- Standard Reference, and tools
- Scope of design
- Outline E-Course

Material Selection and Material Properties Data

- ASME reference
- Required data
- Material Properties and Specification
- Commonly used Material
- Tensile strength and Yield strength
- Allowable stress
- Dimension tolerances

Type of pressure

- Design Pressure
- Static Pressure
- Maximum Allowable Working Pressure (MAWP)
- Maximum Allowable Pressure (MAP)
- Test Pressure
- Others Pressure

Important Assumptions in Designing and Calculation

- Corrosion Allowances
- Joint Efficiency
- Tolerance

Shell Design and Calculation

- References and Equation
- Symbol and Definition
- Minimum Required Data
- Simple Study Case
- Actual Study Case

Head Design Calculation

- References and Equation
- Types of head
- Symbol and Definition
- Study Case

Nozzle Design Calculation

- References and Equation
- Type of nozzles
- Symbol and Definition
- Nozzle for access opening
- Study Case for Access Opening Nozzles
- Nozzle for others
- Study Case for Other Nozzles

Nozzle Reinforcements Design and Calculation

- References and Equation
- Limit of Reinforcement
- Reinforcement Area
- Symbol and Definition
- Simple Study Case
- Actual Study Case

Flanges Design and Selection

- References
- Type of flanges
- Pressure-Temperature Rating
- Study Case Rating Selection
- Study Case Dimension Selection
- Bolt and Nut Selection

Heat Treatment Evaluation

- References and Equation
- Heat Treatment After Forming Evaluation
- Post Weld Heat Treatment Evaluation

Impact Test Evaluation

- References
- Impact Test Requirements
- Material Classification, Governing Thickness, and MDMT Calculation
- MDMT Reduction
- Study Case

Weld Size Evaluation

- Shell and Head
- Nozzle to Shell or Head (without pad)
- Nozzle to Shell or Head (with pad)
- Nozzle to Flanges

MAWP Evaluation and Test Pressure Selection

- Summary MAWP
- Lowest Stress Ratio Calculation
- Test Pressure Selection

Summary Design and Calculation

FINAL PROJECT : **COMPLETED**