EXPRESS ENGINEERING SOLUTIONS

No one can de-code the code like us...!!

PRESSURE VESSEL AND PVELITE SOFTWARE TRAINING

Code Understanding was never so easy...!!

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Lecture no 1 : Introduction to	Hrs	Basic (85 HRS)	Adv (120) HRS
■ Understanding ASME BPV Code ■ Structure of ASME Section VIII div-1 ■ Thin cylinder stress derivations ■ Important code definitions ■ ASME Section VIII div-1 - scope and limitations. ■ Types of loadings on pressure vessel (UG-22) ■ Important Properties of pressure vessel materials. ■ Introduction to UG-23 and ASME Section II Part D, Factor of safety ■ Table U-3 : Year of Acceptable Edition of Referenced Standards in This Division ■ Categories of weld Joints ■ Joint Efficiency and Table UW-12 understanding	6	✅	✅

Lecture no 2 : Internal Pressure Calculations	Hrs	Basic (85 HRS)	Adv (120) HRS

■ Joint Efficiency and Table UW-12 understanding
 	
■ Concept of MAWP
 	
■ Liquid Static head calculations
 	
■ Mill Tolerances- UG-16
 	
■ Units and Conversion
 	
■ Thickness calculation for internal pressure for
 	
  • Cylindrical shell
 	
  • Spherical and Hemispherical shell
 	
  • Conical shell
 	
  • Torispherical dished end
 	
  • Ellipsoidal dished end
 	
  • Flat Head Thickness calculations
	7	✓	✓
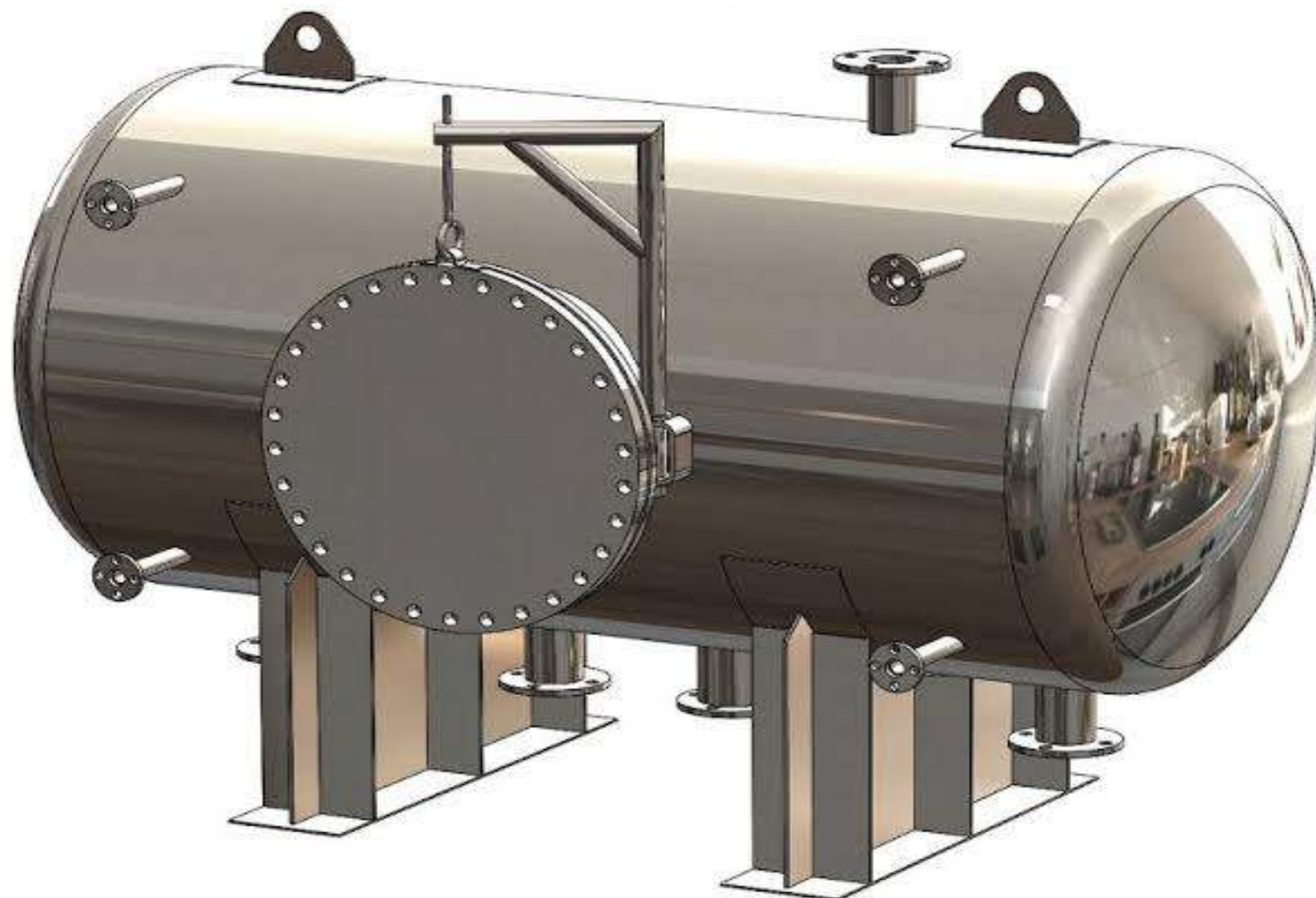
Lecture no 3 : External pressure Calculations	Hrs	Basic (85 HRS)	Adv (120) HRS

■ Failures caused by External Pressure & Concept of External Pressure
 	
■ How external pressure works
 	
■ Line of support concept
 	
■ Significance of L/Do and Do/t ratios
 	
■ Cylindrical shell , Spherical shell
 	
■ Thickness calculation procedures for External pressure
 	
  • Graphical method
 	
  • Tabular Method
 	
■ Thickness calculation for External pressure
 	
  • Cylindrical shell, Thickness reduction by using stiffeners
 	
  • Spherical and Hemispherical shell
 	
  • Conical shell
 	
  • Torispherical dished end
 	
  • Ellipsoidal dished end
 	
  • Flat Head Thickness calculations
	5	✓	✓

■ Concept of Stiffener design for external pressure	0.5	✓	✓

• Procedure for Stiffener design for external pressure,
 	
  • Moment of inertia calculations for various stiffener cross sections.
 	
  • Manual calculations of stiffener sizing
	2	✗	✓

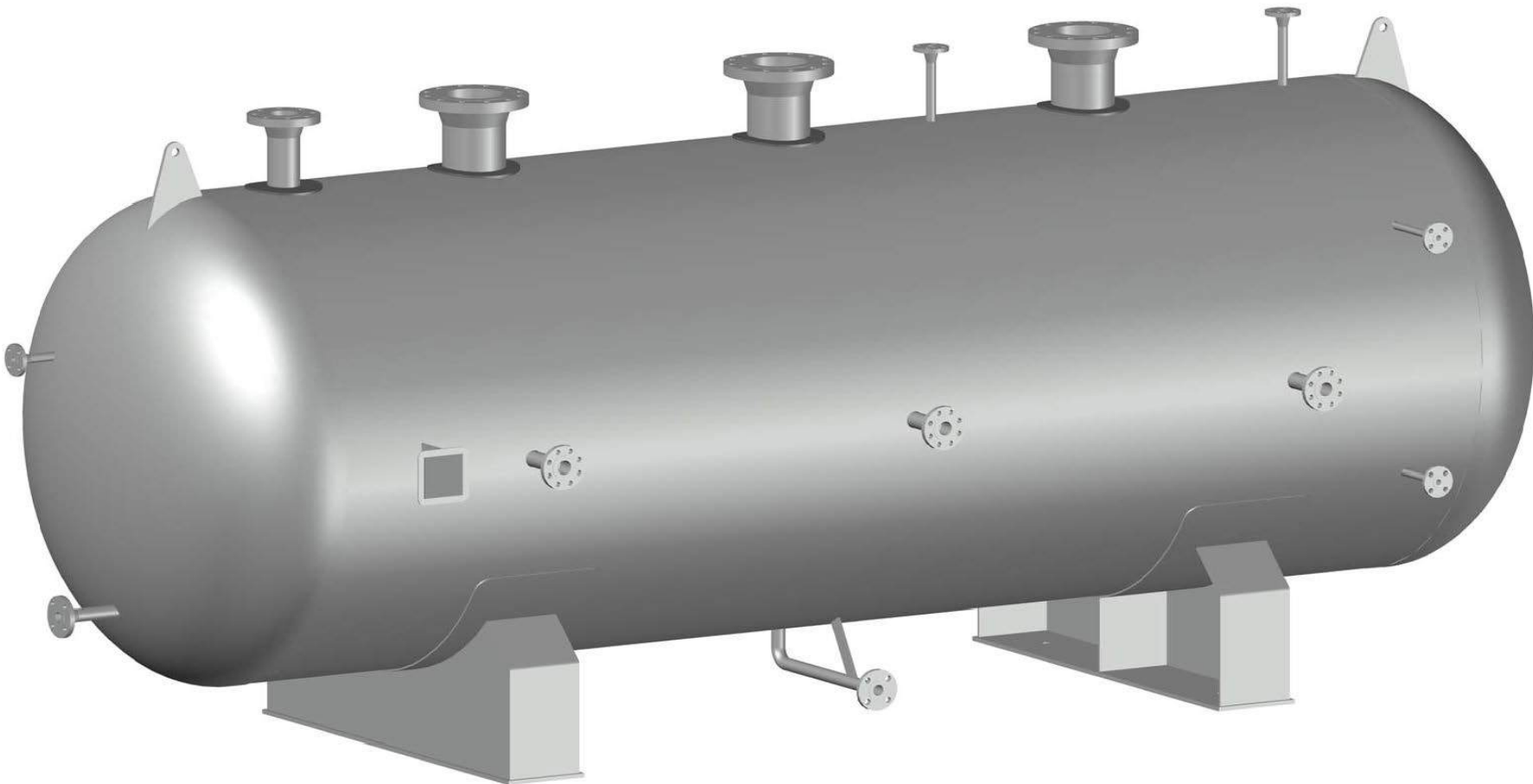| Lecture no 4 : Nozzle Design	Hrs	Basic (85 HRS)	Adv (120) HRS

■ Types of nozzles
 	
■ Nozzle neck thickness calculation criteria
 	
■ Nozzle neck thickness calculation as per UG-45 Theory and
 	
■ Manaual problem
 	
■ Openings in pressure vessel UG-36
 	
■ Understanding the Reinforcement of Multiple Openings
 	
■ Shape of Opening
 	
■ Openings in end closures
 	
■ Strength and Design of Finished Opening
 	
■ Small opening criteria for cyclinder,cones and flat heads
 	
■ Concept of reinforcement for Cyclindrical and conical shells as per -
 	
   • For normal opening other than large opening- As per UG-37.
 	
   • Reinforcement for large opening- As per UG-37, & 1-7
 	
■ Concept of reinforcement for Dished Ends as per -
 	
   • Reinforcement for all openings - As per UG-37
 	
■ Concept of reinforcement requirements in Flat heads
 	
   • Reinforcement for normal opening other than large
 	
     - opening- As per UG-39.
 	
   • Reinforcement for central large opening- As per
 	
     - Mandatory Appendix -14
 	
■ Understanding of Concept- As per UG-37- For Set in nozzles
	9	✓	✓

	Hrs	Basic (85 HRS)	Adv (120) HRS
■ Understanding of Concept- As per UG-37- For Set on nozzles ■ Manual Problem solving for Set in Nozzle ■ Concept of Multiple openings criteria for Vessels		✗	✓
■ Manual Problem solving for Set on Nozzle ■ Manual Problemo solving for multiple openings ■ Manual Problem solving for openings in flat head asper UG-39(b) ■ Manual Problem solving for openings in flat head asper UG-39(d)- Alternative method	3	✗	✓
Lecture no 5 : Flange design	Hrs	Basic (85 HRS)	Adv (120) HRS
■ Types of Flanges as per its application. ■ Selection OF Standard Flanges ■ Scope Of Mandatory appendix -2 ■ Type of flanges as per Mandatory Appendix -2 ■ Flange design concept and steps as per mandatory Appendix -2 ■ Defining Flange Geometry for Integral flange ■ Defining Flange Geometry for Loose ring and optional type. ■ Blind Flange Design concept ■ Manual Problem for Integral Flange	9	✓	✓
■ Manual Problem for Loose ring Flange ■ Blind Flange Design calculations and fininding deflection as per TEMA ■ Rectangulare Flange Design as per PD-5500	4.5	✗	✓

Lecture no 6 : PWHT and PFHT	Hrs	Basic (85 HRS)	Adv (120) HRS
■ Welding Procedure understanding ■ HAZ and Residual stress understanding ■ How stress relieving works? ■ Understanding the need and significance of PWHT (UCS-56) ■ PWHT exemption requirements in ASME codes ■ Procedures and methods for PWHT ■ PFHT requirements of code ■ Procedures for PFHT ■ Heating / cooling rates	1.5	✅	✅
■ Manual problems solving for PWHT and PFHT calculations	1.7	✅	✅

Lecture no 7 : Impact Testing	Hrs	Basic (85 HRS)	Adv (120) HRS
■ Low temperature working of different material ■ Governing thickness concept for impact testing ■ Understanding Impact test requirement ■ Impact test code exemptions ■ Impact test acceptance criteria ■ Material Thickness criteria for impact test ■ Impact test exemption curves	3.5	✓	✓
■ Manual Problem solving for Impact testing requirement	1.5	✗	✓
Lecture no 8 : Lifting Lug design	Hrs	Basic (85 HRS)	Adv (120) HRS
■ Lifting Lug Design ■ Lifting Lug Design-PvElite	2	✓	✓

Lecture no 9 : Hydrostatic test(UG-99), Pneumatic test(UG-100) requirements of code, procedure and significance	Hrs	Basic (85 HRS)	Adv (120) HRS
■ Pressure Testing Requirements ■ Important definitions- MAWP, LSR, Calculated test pressure ■ Hydrostatic Test requirement and significance ■ Hydrostatic test procedure and code requirements ■ Pneumatic Test requirement and significance ■ Pneumatic test procedure and code requirements ■ Calculating test pressures, Inspection pressures ■ Understanding pressurization stages , Test temperatures, Test ■ Time significance. ■ Proof tests to establish maximum allowable working pressure	1.75	✓	✓
■ Manual Problem Solving and PvElite hydrotest calculations	2	✗	✓

Lecture no 10 : Wind , Seismic and Combine Loading	Hrs	Basic (85 HRS)	Adv (120) HRS
■ Understanding Concept of Wind load ■ Calculation of wind load as per IS 875 ■ Understanding concept Of Seismic load ■ Calculation of seismic load as per IS 1893 ■ Concept of Combine Loading	4	✅	✅
■ Manual Problem Solving for seismic Load + PvElite calculations ■ Manual Problem Solving for wind Load + PvElite calculations ■ Manual Problem Solving for combine loadings + PvElite calculations	5	❌	✅
Lecture no 11 : Materials	Hrs	Basic (85 HRS)	Adv (120) HRS
■ Properties of materials ■ Microstructure of materials ■ Types of Corrosion and corrosion Rates ■ Material chemical compositions ■ Effect of alloying elements on material properties ■ Material product forms ■ Material specifications ■ Material selection guide	4.5	✅	✅

Lecture no 12 : All Weld Figures	Hrs	Basic (85 HRS)	Adv (120) HRS
■ Various types of Weld joints ■ Openings near welding UW-14 ■ Weld taper transition and gap between welds	3	✓	✓
Lecture no 13 : Supports	Hrs	Basic (85 HRS)	Adv (120) HRS

■ Types of Supports
 	
■ Significance of following types of supports
 	
  • Skirt Support
 	
  • Leg Support
 	
  • Lug Support
 	
  • Saddle Support
 	
■ Stresses in Vessel due to Saddle Locations
 	
■ Procedure for saddle support location
	3.5	✓	✓

■ Calculation of stresses in vessel component as per Zic Method (Div.2) ■ Manual Problem Solving for calculation of stresses in vessel ■ Manual Problem Solving for saddle support design	4.5	✗	✓
■ WRC concept and sign conventions	2		

Lecture no 14 : PvElite	Hrs	Basic (85 HRS)	Adv (120) HRS
■ Intoduction to software all commands ■ Horizontal Vessel Design ■ Vertical Column Design	13	✅	✅
Lecture no 15 : Q & A	Hrs	Basic (85 HRS)	Adv (120) HRS
■ Live Online Question and answer sessions after every topic	14	✅	✅

◆ Thank You ◆

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