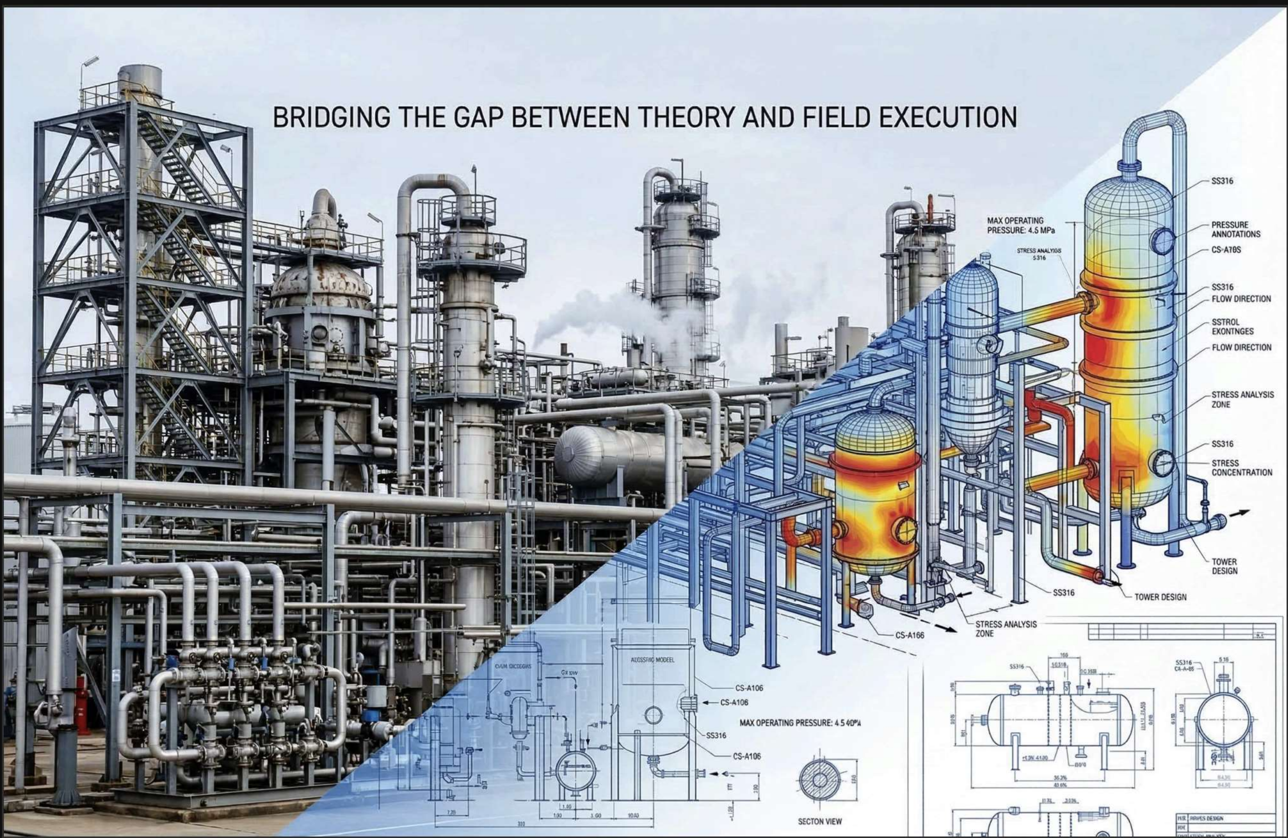
MALYOMAR ENGINEERING
We Take care of Value

ASME®
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

INDUSTRIAL INTEGRITY 2026

THE COMPLETE CURRICULUM



Structural Survival in a
ZERO-TOLERANCE WORLD.

WE TAKE CARE OF VALUE

GLOBAL TRAINING DIVISION

ASME AUTHORIZED TRAINING PROVIDER

"MALYOMAR improves lives through learning. We are founded to develop people using well-recognized training programs, promoted through a unique mixture of Academia and Industry."

THE PROVIDER (ATP)

MALYOMAR Engineering is an **Authorized Training Provider (ATP)** for the American Society of Mechanical Engineers (ASME). This designation ensures that our operational standards meet the rigorous quality requirements of global industrial education.

THE INSTRUCTORS (ATI)

We maintain an elite network of **Authorized Training Instructors (ATI)**. Each expert is vetted for field mastery and pedagogical excellence, ensuring that complex engineering codes are translated into actionable plant-site knowledge.

THE STRONG MARKETPLACE

ENGINEERING & MANAGEMENT LEARNING

2026

30+
YEARS INDUSTRY EXPERIENCE

GLOBAL
AUTHORIZED REACH

EXPERT
CURRICULUM VETTING

ASME AUTHORIZED TRAINING PROGRAMS

MALYOMAR SPECIALIZED TRAINING PROGRAMS

GLOBAL INDUSTRIAL *STEWARDSHIP*

PIPING & PROCESS

Comprehensive guidance through the **B31 Series**. We teach the industrial community to navigate the digital era while maintaining mechanical integrity in process plants and cross-country pipelines.

NUCLEAR & HIGH PRESSURE

Vetting today's heroes to be tomorrow's experts. Our focus is the high-value realization of **ASME Section III and VIII** mandates in the world's most critical infrastructures.

INFRASTRUCTURE & WATER

Driving value in large-scale desalination and transportation projects through **Value Engineering (VE)** and strategic function analysis.

WHAT MAKES US SPECIAL?

"Simply, we take care of value to improve our lives. We are authorized from ASME to teach world-class industry training programs."

GLOBAL SERVICE

MALYOMAR Engineering operates as a global bridge. From the **United States** to **African emerging industrial markets**, and through **Middle Eastern hubs** to **European engineering centers**, we bring simple, session-based learning to high-difficulty technical subjects.

EXPERT FOCUS

IDEA MOMENTUM

RAPID LEARNING

ZERO TOLERANCE

OUR INDUSTRIAL *FOOTPRINT*

Malyomar Engineering provides forensic-level training for sectors where structural failure is not an option. We empower the stewards of global infrastructure.

OIL, GAS & PETROCHEMICAL

Lifecycle integrity for Upstream, Midstream, and Downstream assets.

POWER GENERATION

Nuclear construction, thermal plants, and renewable energy.

WATER & DESALINATION

Optimizing large-scale water production and transport projects.

INFRASTRUCTURE & VE

Value Engineering for transit ensuring maximum structural ROI.

MALYOMAR ENGINEERING
We Take care of Value

QUALITY & ISO GOVERNANCE

HOW MALYOMAR FOLLOWS GLOBAL PROTOCOLS

MALYOMAR ENGINEERING operates under a rigorous management DNA that mirrors the industrial codes we teach. Our internal processes for content validation and instructor qualification are managed through the following frameworks:

ISO 9001:2015: *Alignment with risk-based quality management systems for training delivery.*

ISO 29993: *Adherence to international standards for non-formal education and technical services.*

ASME ATP Mandates: *Absolute accuracy in curriculum design as per American Society of Mechanical Engineers requirements.*

MALYOMAR VIRTUAL CLASSROOM

"The MALYOMAR Virtual Classroom is your integrated solution for receiving certified engineering training without geographical limitations. We have transformed the traditional classroom into a dynamic digital environment, ensuring you don't just receive knowledge, but actively participate."

— Provided by ASME experts.

DEFINING YOUR EXPERIENCE

DIRECT & INSTANT COMMUNICATION
Enjoy live interaction with certified instructors and peers with real-time Q&A capability.

COMPREHENSIVE DIGITAL MATERIALS
Immediate access to all lectures, supplementary tools, and training documents in one central hub.

ADVANCED INTERACTION
Utilize digital tools like instant polls and structured discussion sessions to foster collaboration.

CERTIFICATION GUARANTEE
Receive a digital certificate of completion upon successful program finish, validating your acquired skills.

BUILDING YOUR CORPORATE *TRAINING PLAN*

STEP-BY-STEP STRATEGIC BUILDER

01 ASSET CRITICALITY MAPPING

Identify which plant sections are entering Turnaround or Shutdown. Align course selection (e.g., PD441 for Inspection) with specific project dates.

02 HIERARCHY SKILLS GAP

Divide your team into Foundational (ML523), Technical (PD643), and Leadership (ML516) tiers to ensure a balanced competency pyramid.

03 CUSTOMIZATION BRIEFING

Contact Malyomar to integrate your company's P&IDs into the workshop. We turn generic learning into site-specific troubleshooting.

WORKFORCE PRIORITIES (QUARTER 1 & 2)

- [ ] ____________________
- [ ] ____________________
- [ ] ____________________

MANAGER'S FOCUS

Start your day with a focus on structural resilience. What is the one skill your team needs to prevent the next shutdown?

CONFIDENTIAL PLANNING DATA

BRIDGE YOUR SKILLS GAP

From academic theory to operational mastery. Define your professional trajectory.

MY TARGET DISCIPLINES

PIPING | STRESS | NUCLEAR | VE

SELF-CARE & SOFT SKILLS TRACKING

- ☐ *Technical Writing / Proposals*
- ☐ *Lead Engineering / Mentorship*
- ☐ *Root Cause Investigation*

PROFESSIONAL BRAIN DUMP

Jot down your career ideas here...

MALYOMAR ENGINEERING
We Take care of Value

STEWARDSHIP PLANNER

2026 TRAINING ROADMAP

JANUARY	FEBRUARY	MARCH	APRIL
		PD643 SESSION	

MAY	JUNE	JULY	AUGUST

SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER

PRIORITIES & IMPORTANT TASKS

- [ ]
- [ ]
- [ ]
- [ ]

IMPROVEMENT GOALS

Summarize where you can improve and do better everyday.

STRUCTURAL INTEGRITY
ASSET STEWARDSHIP
DESIGN MASTERY

DATE: ___ / ___ / 2026 SUBJECT: ________________

INDUSTRIAL *ALIGNMENT MATRIX*

OIL, GAS & PETROCHEMICAL

PD370	PD761	PD643
ML511	ML512	ML527

POWER & RENEWABLE

PD642	PD769	PD770
ML520	ML521	PD531

NUCLEAR SAFETY & QA

PD184	PD615	PD632
PD634	PD635	ML526

VESSEL DESIGN & FAB

PD442	PD448	PD636
PD386	PD539	PD583

WATER, DESAL & INFRA

PD670	PD671	ML519
ML503	ML504	ML505

PIPING ENGINEERING

PD643	PD642	PD837
ML501	ML502	ML508

INTEGRITY & FORENSIC

PD441	ML512	ML522
ML517	ML527	

MANAGEMENT & LEAD

ML506	ML516	ML530
ML507	ML518	

PRESSURE & STRESS REFERENCE

PRESSURE CONVERSION

UNIT	PSI	BAR	MPA
1 PSI	1	0.0689	0.0068
1 Bar	14.503	1	0.1
1 MPa	145.03	10	1

TEMPERATURE SCALES

FROM	TO CELSIUS	TO FAHRENHEIT
Celsius	—	(°C × 9/5) + 32
Fahrenheit	(°F - 32) × 5/9	—

ASME B31.3 MANDATORY WALL THICKNESS

$$t = \frac{PD}{2(SEW + PY)}$$

TECHNICAL COMPONENT INTELLIGENCE

API 600 STANDARD VALVE TRIMS

TRIM #	STEM MATERIAL	SEAT FACE MATERIAL
5	13Cr	Stellite (Co-Cr-W)
8	13Cr	13Cr / Stellite
10	316 SS	316 SS
12	316 SS	316 SS / Stellite

ASME NQA-1: 18 BASIC REQUIREMENTS

1. ORGANIZATION
2. QA PROGRAM
3. DESIGN CONTROL
4. PROCUREMENT DOC.
5. INSTRUCTIONS/PROCS
6. DOC. CONTROL
7. PURCHASED ITEMS
8. IDENTIFICATION
9. SPECIAL PROCESSES
10. INSPECTION
11. TEST CONTROL
12. M&TE CONTROL
13. HANDLING & STORAGE
14. INSPECTION STATUS
15. NONCONFORMING ITEMS
16. CORRECTIVE ACTION
17. QA RECORDS
18. AUDITS

GLOBAL ENGINEERING *CODE STANDARDS*

B31 PRESSURE PIPING

B31.1: Power Piping (Thermal/Renewable).

B31.3: Process Piping (Refining/Chemical).

B31.4: Liquid Hydrocarbon Pipelines.

B31.8: Gas Transmission & Distribution.

B31.12: Hydrogen Piping & Pipelines.

BPVC SECTION VIII

Division 1: Design by Rule (Rule-based).

Division 2: Alternative Rules (Design by Analysis).

Division 3: Alternative Rules for High Pressure.

BPVC NUCLEAR (SECTION III)

Subsection NB: Class 1 Components.

Subsection NC: Class 2 Components.

Subsection ND: Class 3 Components.

Subsection NF: Component Supports.

POST-CONSTRUCTION (PCC)

ASME PCC-1: Bolted Flange Joint Assembly.

ASME PCC-2: Repair of Pressure Equipment.

ASME PCC-3: Inspection Planning.

STRESS ANALYSIS *MANDATORY CRITERIA*

Reconstructed from standard industrial stress examination requirements (Ref: image_6b0f3a.png).

ZONE A: COMPUTER ANALYSIS BY STRESS ANALYST REQUIRED
Temp > 155°C (Small Bore) / > 38°C (Large Bore)

ZONE B: VISUAL OR APPROXIMATION REVIEW PERMISSIBLE
Standard Ambient and Low-Cycle Thermal Ranges

ZONE C: COMPUTER ANALYSIS REQUIRED (CRYOGENIC)
Temp < -45°C (Mandatory Analytical Validation)

EXAMINATION LEVEL LOGIC

PIPE SIZE	TEMP RANGE	REQUIRED ACTION
Up to 4"	> 150°C	Formal Computer Analysis
6" to 16"	> 88°C	Formal Computer Analysis
18" & UP	> 38°C	Formal Computer Analysis
Any Size	< -45°C	Cryogenic Computer Validation
All Sizes	Ambient	Visual Review by Stress Analyst

PIPING PRODUCT *COMPARISON TABLE*

SERVICE TYPE	NOMINAL COMP.	PLATES	PIPES	FITTINGS	FORGINGS
CARBON STEEL					
Standard	ASTM A516	A516 Gr.70	API 5L Gr.B	A234 WPB	A105
HIGH TEMPERATURE SERVICE (ALLOY STEEL)					
Low Alloy	1.25Cr-0.5Mo	A387 Gr.11	A335 P11	A234 WP11	A182 F11
Mid Alloy	2.25Cr-1.0Mo	A387 Gr.22	A335 P22	A234 WP22	A182 F22
High Alloy	9.0Cr-1.0Mo	A387 Gr.91	A335 P91	A234 WP91	A182 F91
STAINLESS STEEL					
18Cr-8Ni	304 / 304L	A240-304L	A312 TP304L	A403 WP304L	A182 F304L
18Cr-10Ni	316 / 316L	A240-316L	A312 TP316L	A403 WP316L	A182 F316L

IMPACT OF ALLOYING ELEMENTS

Chromium (Cr): Increases resistance to corrosion and oxidation. Critical for high-temp strength.

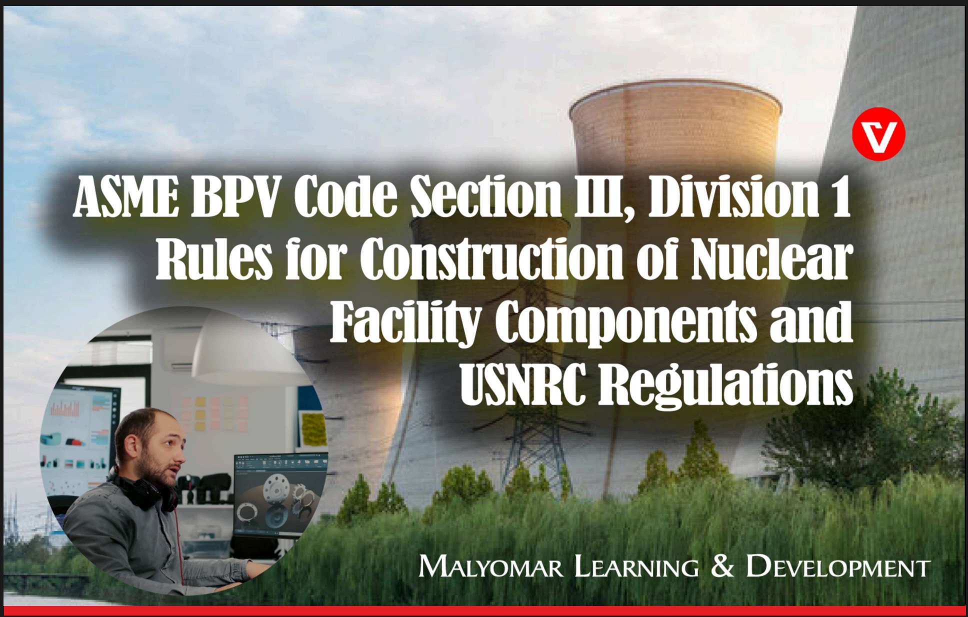
Molybdenum (Mo): Enhances creep strength at high temperatures and pitting resistance.

Nickel (Ni): Improves toughness at low temperatures (cryogenic) and overall ductility.

COURSE ID: PD184

NUCLEAR COMPONENTS: ASME III CONSTRUCTION

Nuclear facilities represent the most complex industrial organisms, requiring a level of structural integrity that transcends standard engineering protocols. This comprehensive curriculum navigates the intricate requirements of ASME Section III, Division 1, bridging the vital interfaces between design, quality assurance, and USNRC regulatory guidance. By exploring the duties of N-type certificate holders and third-party oversight, professionals ensure that these critical vessels operate within a fail-safe environment. This strategic framework establishes the mandatory technical foundation needed to sustain safe, reliable, and compliant nuclear infrastructure in a high-stakes regulatory landscape.



TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify the regulatory interfaces between ASME Section III and USNRC facility requirements.
- Describe safety classifications and design processes for nuclear-grade pressure components.
- Apply NQA-1 quality assurance standards across the nuclear construction lifecycle.
- Execute duties and responsibilities required for N, NA, NV, and NPT certificate holders.
- Explain the role of Authorized Inspection Agencies in ensuring third-party technical oversight.

UNIT SPECIFICATIONS

Total Instructional Hours:	22 Hours
PDHs Earned:	22.0
CEUs Earned:	2.2

Target Audience: *Engineers, designers, and managers involved in the construction, quality assurance, and certification of nuclear-grade pressure components, as well as regulatory personnel interfacing with USNRC standards.*

CURRICULUM MODULES

TOPIC 1: REGULATORY FOUNDATIONS

ASME Section III rules and the USNRC regulatory framework.

TOPIC 2: COMPONENT CLASSIFICATION

Safety classes and the establishment of the design process.

TOPIC 3: QUALITY ASSURANCE (NQA-1)

Integrating high-level QA requirements into technical workflows.

TOPIC 4: CERTIFICATION PROTOCOLS

Managing N, NA, NV, and NPT certificate holder responsibilities.

TOPIC 5: THIRD-PARTY OVERSIGHT

The role of Authorized Inspection and global technical verification.

TOPIC 6: NUCLEAR ENGINEERING FUNDAMENTALS

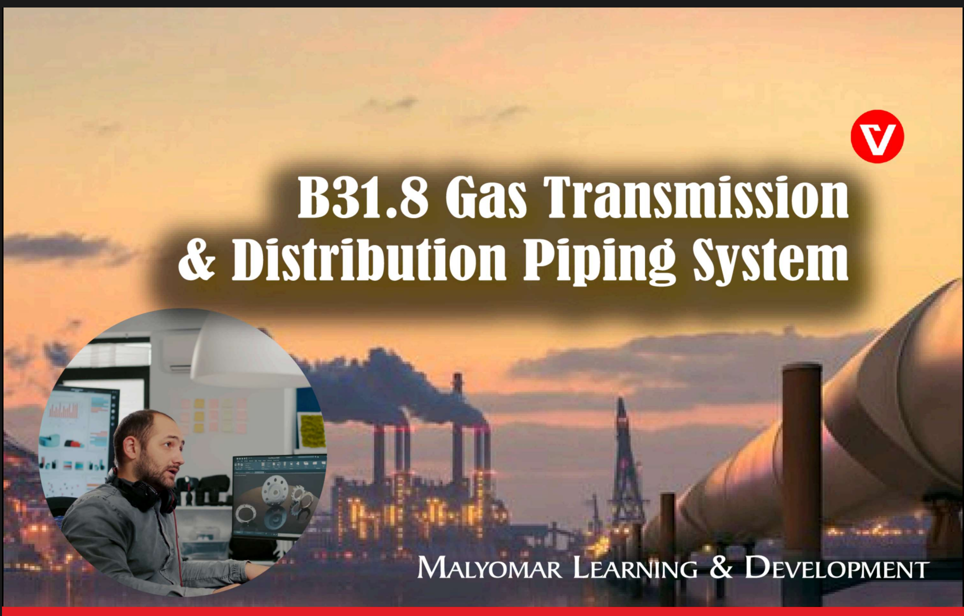
Structural validation and compliance for power generation assets.

Upon completion, participants receive an official certificate from ASME.

COURSE ID: PD370

GAS INFRASTRUCTURE: ASME B31.8 STANDARDS

Gas transmission and distribution piping systems represent the vital energy veins of the industrial organism, delivering high-stakes resources across massive geographic expanses. This specialized curriculum provides a comprehensive technical exploration of the ASME B31.8 Code, the global benchmark for gas infrastructure integrity. By analyzing the critical interfaces between material selection, design safety factors, and cathodic protection, professionals secure the longevity of these essential arteries. This strategic framework ensures that gas networks operate within a fail-safe environment, meeting the zero-tolerance requirements for public safety and structural resilience.



COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify mandatory requirements of the ASME B31.8 Code for gas piping.
- Apply design formulas and safety factors for transmission and distribution lines.
- Describe the essential properties of materials used in high-pressure gas service.
- Execute pipeline integrity management and corrosion control strategies.
- Evaluate construction and testing procedures to ensure site-wide code compliance.

UNIT SPECIFICATIONS

Total Instructional Hours:	**30 Hours**
PDHs Earned:	**30.0**
CEUs Earned:	**3.0**

Target Audience: *Engineers, designers, managers, and quality personnel involved in the planning, design, construction, operation, and maintenance of gas transmission and distribution systems.*

CURRICULUM MODULES

TOPIC 1: SCOPE & MATERIALS

History of the B31.8 Code and material selection for gas service.

TOPIC 2: DESIGN & SAFETY FACTORS

Location classes, design formulas, and pressure-limiting stations.

TOPIC 3: PIPELINE INTEGRITY MANAGEMENT

Managing corrosion, cathodic protection, and structural health.

TOPIC 4: CONSTRUCTION & WELDING

Installation protocols, ditching, and welding quality control.

TOPIC 5: TESTING & COMMISSIONING

Hydrostatic testing, leak detection, and purging procedures.

TOPIC 6: OPERATIONS & MAINTENANCE

Safe O&M practices and emergency response planning.

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: PD386

PRESSURE INTEGRITY: BOLTED FLANGE DESIGN

Bolted flange joints represent the critical mechanical interfaces of the industrial organism, serving as the essential connectors within pressure vessels and piping networks. This technical curriculum explores the sophisticated rules of ASME Section VIII, Division 1 (Appendix 2) for the design and analysis of flange systems. By mastering the complex interaction between bolt loads, gasket behavior, and flange rigidity, professionals safeguard the structural integrity of high-stakes facility boundaries. This strategic framework ensures that industrial joints remain fail-safe, preventing systemic leaks and ensuring zero-tolerance operational safety in high-pressure environments.

MALYOMAR ENGINEERING
We Take care of Value

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify mandatory requirements of ASME Section VIII for bolted flange design.
- Apply Appendix 2 rules to calculate bolt loads and flange moments accurately.
- Describe the mechanical behavior of gaskets and their impact on joint sealing.
- Evaluate flange rigidity and the risk of rotation in high-temperature service.
- Establish best practices for joint assembly and bolt-up procedures to prevent leaks.

UNIT SPECIFICATIONS

Total Instructional Hours:	**30 Hours**
PDHs Earned:	**30.0**
CEUs Earned:	**3.0**

Target Audience: *Engineers, designers, and quality personnel involved in the design, fabrication, and maintenance of pressure vessels and piping systems requiring sophisticated joint analysis.*

CURRICULUM MODULES

TOPIC 1: ASME DESIGN FRAMEWORK
Overview of Section VIII, Div 1 and the role of Appendix 2.

TOPIC 2: GASKET TECHNOLOGY
Material selection, seating factors, and 'm' and 'y' constants.

TOPIC 3: BOLT LOAD ANALYSIS
Calculating minimum required and actual bolt loads.

TOPIC 4: FLANGE STRESS CALCULATION
Analyzing longitudinal hub, radial, and tangential stresses.

TOPIC 5: RIGIDITY AND ROTATION
Limiting flange deformation to ensure long-term sealing.

TOPIC 6: JOINT ASSEMBLY BEST PRACTICES
Standardized bolt-up sequences and torque management.

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: PD441

INSPECTION & REPAIR:
IN-SERVICE PRESSURE ASSETS

In-service pressure equipment represents the vital muscular framework of an industrial facility, where structural degradation can lead to catastrophic systemic failure. This technical curriculum explores the essential lifecycle management of pressure vessels through the rigorous lens of the NBIC and API-510 standards. By navigating the critical requirements for repairs, alterations, and inspections, professionals safeguard these high-pressure vessels against operational decay. Mastering these regulatory frameworks ensures that every modification adheres to global safety mandates, preserving the facility's operational health and ensuring long-term structural reliability in a zero-tolerance environment.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify essential ASME, NBIC, and API-510 standards for in-service pressure equipment.
- Explain technical differences between NBIC and API-510 repair and alteration requirements.
- Describe the professional responsibilities for users, manufacturers, and jurisdictional agencies.
- Master the documentation and certification processes for National Board Authorization and stamps.
- Execute technical inspections and repairs according to latest industry safety developments.

UNIT SPECIFICATIONS

Total Instructional Hours:	10 Hours
PDHs Earned:	10.0
CEUs Earned:	1.0

Target Audience: *Boiler and pressure vessel inspectors, maintenance engineers, facility managers, and QA/QC personnel responsible for the structural integrity and regulatory compliance of in-service equipment.*

CURRICULUM MODULES

TOPIC 1: REGULATORY FOUNDATIONS

Overview of the NBIC (National Board Inspection Code) and API-510 frameworks.

TOPIC 2: INSPECTION INTERVALS

Determining frequency based on service environment and thickness monitoring.

TOPIC 3: REPAIR AND ALTERATIONS

Technical procedures for standard mechanical repairs and structural modifications.

TOPIC 4: STAKEHOLDER RESPONSIBILITIES

Defining roles for manufacturers, inspectors, and jurisdictional authorities.

TOPIC 5: CERTIFICATION PROTOCOLS

Managing the documentation lifecycle for R-stamps and official reporting.

TOPIC 6: OPERATIONAL CASE STUDIES

Forensic review of in-service equipment failures and effective remediation.

Upon completion, participants receive an official certificate from ASME.

MALYOMAR ENGINEERING
We Take care of Value

ASME SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: PD442

PRESSURE VESSELS: ASME VIII DESIGN

In the high-pressure landscape of industrial processing, pressure vessels serve as the vital containment organs of a facility, where structural failure leads to catastrophic systemic collapse. This technical curriculum navigates the mandates of ASME Section VIII, Division 1, bridging the gap between theoretical design and field fabrication. By performing complex calculations for nozzle reinforcements and Appendix 2 flanges, professionals safeguard these high-stakes vessels against operational decay. This foundational journey ensures that critical equipment remains compliant and resilient, sustaining the operational health of the world's most demanding industrial environments.

MALYOMAR ENGINEERING
We Take care of Value

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify the foundational design and fabrication rules of ASME Section VIII, Division 1.
- Apply precise calculations for nozzle reinforcement and opening design in pressure vessels.
- Execute technical evaluations for Appendix 2 bolted flanges to ensure leak-tight integrity.
- Describe the certification and documentation requirements for industrial pressure vessels.
- Master the integration of Code mandates to verify the structural integrity of pressure equipment.

UNIT SPECIFICATIONS

Total Instructional Hours:	22 Hours
PDHs Earned:	22.0
CEUs Earned:	2.2

Target Audience: *Mechanical engineers, pressure vessel designers, quality control managers, and plant engineers responsible for the design, fabrication, and certification of pressure-retaining equipment.*

CURRICULUM MODULES

TOPIC 1: OPENING AND NOZZLE REINFORCEMENT

Theoretical basis for reinforcement and area calculation workshops.

TOPIC 2: APPENDIX 2 BOLTED FLANGE DESIGN

Mastering load determination and troubleshooting flange assemblies.

TOPIC 3: VESSEL FABRICATION & WELDING

Material selection, joint efficiency, and welding qualification rules.

TOPIC 4: PRESSURE TESTING & NDE

Executing hydrostatic tests and non-destructive examination protocols.

TOPIC 5: CERTIFICATION & DATA REPORTS

Preparation of U-Forms and National Board documentation.

TOPIC 6: CODE INTERPRETATIONS

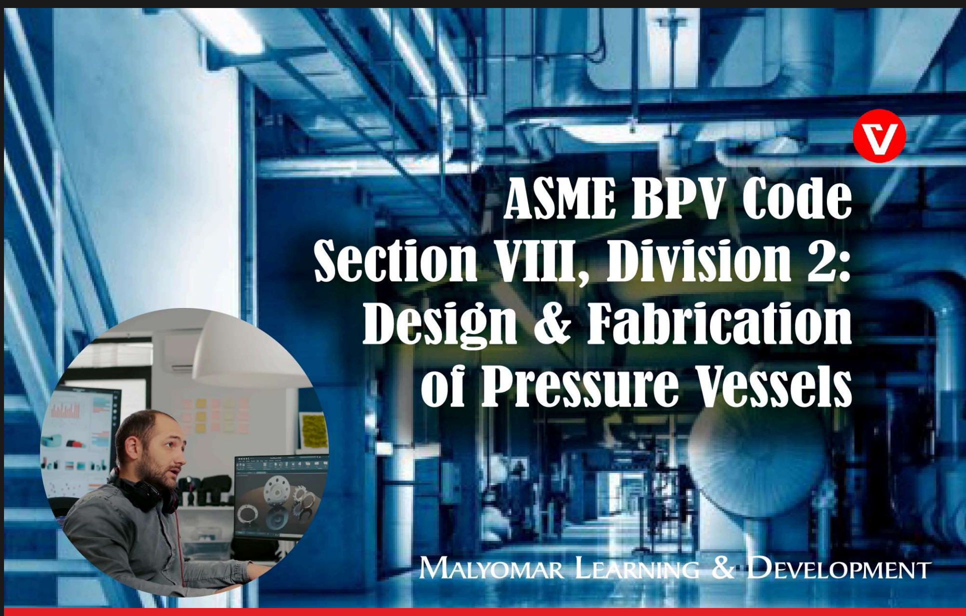
Navigating official inquiries and latest Code developments.

Upon completion, participants receive an official certificate from ASME.

COURSE ID: PD448

PRESSURE VESSELS: ASME VIII FABRICATION

In the high-pressure landscape of industrial processing, pressure vessels serve as the vital containment organs of a facility, requiring absolute structural reliability. This comprehensive curriculum navigates the intricate mandates of ASME Section VIII, Division 1, bridging the gap between theoretical design and field fabrication. By exploring the essential rules for materials, testing, and documentation, professionals safeguard these engineering vessels against catastrophic failure. This technical foundation ensures that critical equipment remains compliant and resilient, sustaining the operational health of the world's most demanding industrial environments.



MALYOMAR ENGINEERING
We Take care of Value

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Describe the historical background and organizational structure of the ASME Section VIII Code.
- Apply Code rules to common design and fabrication scenarios encountered in industrial settings.
- Identify calculations for specialized loadings and situations not explicitly addressed by the Code.
- Explain the preparation of design specifications, data reports, and essential documentation.
- Execute technical inquiries to the Code Committee for official interpretations and revisions.

UNIT SPECIFICATIONS

Total Instructional Hours:	**23 Hours**
PDHs Earned:	**23.0**
CEUs Earned:	**2.3**

Target Audience: *Engineers involved in the design, review, and maintenance of pressure vessels and piping integrity utilizing flanged joints in the petroleum, refining, chemical, and process industries.*

CURRICULUM MODULES

TOPIC 1: CODE FRAMEWORK & FLANGE DESIGN

Design of flange joints and applicability of standards (ID: 11, 37).

TOPIC 2: MATERIALS & BRITTLE FRACTURE

Impact testing requirements and UCS-66 selection logic.

TOPIC 3: FABRICATION & WELDING CONTROL

Joint efficiencies, tolerances, and post-weld heat treatment.

TOPIC 4: NDE & PRESSURE TESTING

Radiography, ultrasonic testing, and hydrostatic procedures.

TOPIC 5: OVERPRESSURE PROTECTION

Rules for relief valves and rupture disks within Section VIII.

TOPIC 6: DOCUMENTATION & CERTIFICATION

Preparation of Design Specs and Manufacturer Data Reports.

Upon completion, participants receive an official certificate from ASME.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD
AUTHORIZED TRAINING PROVIDER

COURSE ID: PD539

BOLTED JOINTS & GASKET BEHAVIOR

Bolted and gasketed joints function as the critical articulations of industrial pressure systems, where the structural health of the entire facility depends on the integrity of every connection. This technical curriculum provides a comprehensive engineer's guide to the complex synergy between bolt loads, gasket behaviors, and tightening procedures. By navigating PVRC leak-tightness calculations and advanced troubleshooting strategies, professionals transform standard assembly into a sophisticated mechanical system. This strategic approach ensures that high-pressure vessels maintain absolute containment while achieving long-term reliability and leak-free performance.

MALYOMAR ENGINEERING
www.malyomar.com

INDUSTRIAL INTEGRITY
Sealing System Standards

MALYOMAR ENGINEERING
We Take care of Value

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Explain how bolted joints function as complex mechanical systems with three primary components.
- Analyze gasket behavior and torque factors to ensure leak-tight pressure vessel connections.
- Apply precise bolt load assessments and tightening procedures for structural joint integrity.
- Execute PVRC leak-tightness calculations to optimize bolted flange joint design and selection.
- Identify advanced troubleshooting and remediation strategies for existing flange connections.

UNIT SPECIFICATIONS

Total Instructional Hours:	15 Hours
PDHs Earned:	15.0
CEUs Earned:	1.5

Target Audience: *Engineers responsible for the specification and assembly of bolted joints. Professionals with two years of field experience will find this particularly beneficial for maintenance value.*

CURRICULUM MODULES

TOPIC 1: ASME PCC-1 GUIDELINES (ID: 61)
Established assembly protocols for bolted flange joints.

TOPIC 2: TIGHTENING PROCEDURES (ID: 291)
Torque management and hydraulic tensioning mechanics.

TOPIC 3: GASKET FAILURE PREVENTION (ID: 62)
Analyzing blowout, crushing, and operational degradation.

TOPIC 4: JOINT CALCULATION METHODS (ID: 301, 302, 303)
Appendix 2, EN 1591-1, and Finite Element Analysis (FEA).

TOPIC 5: PVRC LEAK-TIGHTNESS
Theoretical basis for modernized gasket constants.

TOPIC 6: TROUBLESHOOTING FIELD PROBLEMS
Forensic review of chronic industrial leaks and remediations.

Upon completion, participants receive an official certificate from ASME.

MALYOMAR ENGINEERING
We Take care of Value

AUTHORIZED TRAINING PROVIDER

COURSE ID: PD583

PRESSURE RELIEF DEVICES: DESIGN & MAINTENANCE

Pressure relief devices represent the final, vital fail-safe within any industrial organism, serving as the ultimate barrier between controlled operation and catastrophic explosion. This comprehensive curriculum explores the complete lifecycle of these critical safety components through the rigorous lens of ASME and API standards. By navigating the complexities of design, sizing, and materials, professionals ensure that pressurized equipment never exceeds maximum allowable working pressures. From installation to National Board VR certification, this training establishes the technical foundation necessary to safeguard high-pressure vessels and preserve human life.

MALYOMAR ENGINEERING
We Take care of Value

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Explain Code requirements for pressure relief devices within ASME and API standards.
- Apply API RP 520 and 576 criteria for the precise sizing and selection of PRDs.
- Execute inspection and testing protocols according to NBIC and industry regulations.
- Master the requirements for establishing a National Board VR valve repair program.
- Identify strategic material selection for various pressure valves and rupture disks.

UNIT SPECIFICATIONS

Total Instructional Hours:	30 Hours
PDHs Earned:	30.0
CEUs Earned:	3.0

Target Audience: *Engineers, manufacturers, and inspectors responsible for overpressure protection and the safety of pressurized systems across the petroleum, chemical, and power industries.*

CURRICULUM MODULES

TOPIC 1: REGULATORY FRAMEWORK & MATERIALS
ASME Section VIII, Div 1 and API 520 foundational rules.

TOPIC 2: ASME DESIGN FUNDAMENTALS
Establishing design pressure and temperature for PRDs.

TOPIC 3: SIZING AND SELECTION (API 520)
Relief scenarios, orifice sizing, and selection logic.

TOPIC 4: INSTALLATION AND HANDLING
Piping considerations, inlet/outlet pressure drops.

TOPIC 5: INSPECTION AND MAINTENANCE
In-service inspection and testing protocols for PRDs.

TOPIC 6: NATIONAL BOARD VR PROGRAM
Managing valve repair certification and stamp requirements.

Upon completion, participants receive an official certificate from ASME.

MALYOMAR ENGINEERING
We Take care of Value

AUTHORIZED TRAINING PROVIDER

COURSE ID: PD615

NUCLEAR PIPING SYSTEMS ASME BPV CODE, SECTION III AND B31.1: DESIGN, INTEGRITY-OPERABILITY ASSESSMENT, AND REPAIRS

Nuclear piping systems serve as the critical circulatory network of a nuclear power facility, where the fusion of extreme thermal dynamics and high-pressure requirements demands absolute technical mastery. This curriculum provides a forensic deep-dive into the complex interfaces between ASME Section III (Nuclear) and ASME B31.1 (Power Piping) mandates. By exploring advanced design methodologies, integrity assessment protocols, and certified repair strategies, professionals bridge the gap between regulatory theory and field-level execution. This strategic framework establishes the mandatory technical foundation required to ensure that these high-value assets remain fail-safe, reliable, and compliant throughout their entire operational lifecycle.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Differentiate between design mandates of ASME Section III and ASME B31.1.
- Master stress analysis criteria for nuclear piping Class 1, 2, and 3 components.
- Implement rigorous integrity assessment protocols for high-cycle fatigue environments.
- Execute certified repair and alteration strategies within nuclear facility envelopes.
- Navigate the regulatory landscape of USNRC and global nuclear oversight bodies.

UNIT SPECIFICATIONS

Total Instructional Hours:	**15 Hours**
PDHs Earned:	**15.0**
CEUs Earned:	**1.5**

Target Audience: *Piping engineers, stress analysts, nuclear facility maintenance managers, and QA/QC inspectors specializing in the design, integrity, and lifecycle management of nuclear power generation piping systems.*

CURRICULUM MODULES

TOPIC 1: CODE BOUNDARIES & INTERFACES

Defining jurisdiction between Section III and B31.1 in plant layout.

TOPIC 2: NUCLEAR STRESS ENGINEERING

Criteria for primary, secondary, and peak stresses in nuclear conduits.

TOPIC 3: FATIGUE & SEISMIC CONSIDERATIONS

Dynamic validation protocols for high-reliability piping anchors.

TOPIC 4: MATERIAL TRACEABILITY & QA

Establishing the pedigree of materials in nuclear service environments.

TOPIC 5: IN-SERVICE REPAIR PROTOCOLS

Technical execution of repairs under N-type certificate constraints.

TOPIC 6: SYSTEM LIFECYCLE STEWARDSHIP

Predictive maintenance and forensic integrity modeling.

Upon completion, participants receive an official certificate from ASME.

MALYOMAR ENGINEERING
We Take care of Value

AUTHORIZED TRAINING PROVIDER

COURSE ID: PD632

NUCLEAR COMPONENTS: DESIGN BY STRESS ANALYSIS

Nuclear energy infrastructure requires a level of structural validation that transcends standard design-by-rule methodologies. This expert-led curriculum provides essential guidance on the updated ASME Section III, Division 1, Appendix XIII, focusing on Design by Stress Analysis for Class 1, 2, and 3 components. By mastering the classification of primary and secondary stresses from finite element results, professionals ensure that critical nuclear containment organs can withstand complex mechanical and thermal loading combinations. This strategic framework provides the analytical depth necessary to ensure long-term fatigue life and structural resilience.

MALYOMAR ENGINEERING
www.malyomar.com

NUCLEAR INTEGRITY
Advanced Stress Standards

MALYOMAR ENGINEERING
We Take care of Value

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Apply ASME Section III Appendix XIII criteria for Design by Stress Analysis.
- Process finite element results using stress classification cut lines and rules.
- Evaluate primary and secondary stresses under diverse mechanical load combinations.
- Analyze Level A and Level B cyclic loadings to ensure long-term fatigue life.
- Execute special stress limit evaluations for shear, torsion, and bearing loads.

UNIT SPECIFICATIONS

Total Instructional Hours:	30 Hours
PDHs Earned:	30.0
CEUs Earned:	3.0

Target Audience: *Nuclear plant engineers, stress analysts, FEA specialists, and structural designers requiring advanced stress classification skills for Class 1, 2, and 3 components.*

CURRICULUM MODULES

TOPIC 1: APPENDIX XIII STRUCTURE & RULES
Classification logic and stress intensity limits.

TOPIC 2: STRESS CLASSIFICATION CUT LINES
Processing finite element results for primary stresses.

TOPIC 3: SECONDARY AND PEAK ANALYSIS
Evaluating thermal and discontinuity stress behaviors.

TOPIC 4: CYCLIC LOADING & FATIGUE
Shakedown evaluation and cumulative usage factor.

TOPIC 5: SPECIAL LIMIT EVALUATIONS
Mastering shear, torsion, and bearing stress limits.

TOPIC 6: STRUCTURAL SYSTEM VALIDATION
Final compliance and design certification protocols.

Upon completion, participants receive an official certificate from ASME.

MALYOMAR ENGINEERING
We Take care of Value

ASME SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: PD634

NUCLEAR COMPLIANCE: GLOBAL QA STANDARDS

Nuclear facilities represent the most complex industrial organisms, where safety depends on a perfectly synchronized regulatory DNA. This technical curriculum explores the interface between the world's most influential quality standards, including ASME NQA-1, ISO 9001, and IAEA GS-R-3. By performing a sophisticated side-by-side comparison, professionals navigate the critical agreements and differences in management systems required for nuclear applications. This strategic mapping ensures that global supply chains maintain a unified approach to structural integrity and safety across the entire facility lifecycle.

MALYOMAR ENGINEERING
We Take care of Value

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify the organization and scope of ASME Section III for nuclear component construction.
- Describe the technical contents and structural organization of the ASME NQA-1 Standard.
- Compare international management systems including ISO 9001 and IAEA GS-R-3 frameworks.
- Apply global quality assurance requirements to nuclear manufacturing and fabrication.
- Analyze agreements and differences between diverse international safety series standards.

UNIT SPECIFICATIONS

Total Instructional Hours:	15 Hours
PDHs Earned:	15.0
CEUs Earned:	1.5

Target Audience: *Engineers, managers, and quality personnel in the nuclear industry responsible for international standard alignment, cross-border fabrication, and global regulatory compliance.*

CURRICULUM MODULES

TOPIC 1: ASME SECTION III & NQA-1 FOUNDATIONS

Structural organization and quality requirements for nuclear construction.

TOPIC 2: IAEA AND ISO STANDARDS

Exploring IAEA Safety Series GS-R-3 and ISO 9001:2008 for nuclear safety.

TOPIC 3: CROSS-STANDARD COMPARISON ANALYSIS

Identifying agreements and differences across international frameworks.

TOPIC 4: MAPPING MANAGEMENT SYSTEMS

Integrating diverse standard requirements into a unified global compliance model.

TOPIC 5: GLOBAL SUPPLY CHAIN QA

Ensuring quality across multi-national nuclear manufacturing operations.

TOPIC 6: CERTIFICATION AND VERIFICATION

Final auditing and validation protocols for global nuclear applications.

Upon completion, participants receive an official certificate from ASME.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: PD635

NUCLEAR FACILITIES:
ASME NQA-1 QUALITY

Nuclear facilities represent the most complex industrial organisms, where safety depends on a flawlessly executed regulatory DNA. This technical curriculum explores the fundamental principles of ASME NQA-1, the global benchmark for nuclear quality assurance and operational integrity. By bridging the critical interface between Section III construction rules and long-term facility modifications, professionals ensure that every structural component meets the highest safety standards. This strategic framework establishes the technical foundation necessary to navigate the rigorous requirements of manufacturing and examination within the high-stakes nuclear landscape.

MALYOMAR ENGINEERING
We Take care of Value

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Explain the purpose of NQA-1 and its strategic role in nuclear construction and operation.
- Describe the 18 criteria basis of the NQA-1 Standard as defined in Part 1 requirements.
- Identify the structural organization and major technical activities covered in the Standard.
- Analyze the critical differences between Parts 1, 2, 3, and 4 for facility applications.
- Master the application of ASME quality codes to ensure absolute nuclear structural integrity.

UNIT SPECIFICATIONS

Total Instructional Hours:	**15 Hours**
PDHs Earned:	**15.0**
CEUs Earned:	**1.5**

Target Audience: *Engineers, managers, and quality personnel involved in the design, construction, and operation of nuclear facilities, or those in a supporting-supplier role.*

CURRICULUM MODULES

TOPIC 1: INTRODUCTION AND CORE REQUIREMENTS

Scope, Application of NQA-1 Part I, and the 18 Criteria Framework.

TOPIC 2: PART III NONMANDATORY APPENDICES

Role of Appendices in Quality Programs and Section Analysis.

TOPIC 3: PART IV APPENDICES & FACILITY ACTIVITY

Technical subjects and application for Section III Work Activities.

TOPIC 4: MANUFACTURING AND FABRICATION QA

Ensuring quality control during the production of nuclear components.

TOPIC 5: EXAMINATION AND AUDIT PROTOCOLS

Implementing mandatory oversight and validation cycles.

TOPIC 6: COMPLIANCE CERTIFICATION

Managing documentation for regulatory verification and acceptance.

Upon completion, participants receive an official certificate from ASME.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: PD636

INDUSTRIAL SEAMS: PRINCIPLES OF WELDING

Welding serves as the vital connective tissue of industrial infrastructure, where the integrity of every seam determines the overall health of the mechanical organism. This technical curriculum explores the fundamental principles of welding technology, from the complex electric circuits of the arc to the metallurgical transformation of structural materials. By navigating the nuances of weld design and symbol communication, professionals ensure that these high-pressure vessels maintain absolute structural excellence. Understanding the dimensional effects and troubleshooting protocols of diverse welding processes is essential for safeguarding assets against operational failure.

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify the metallurgical and dimensional effects of welding on industrial structures.
- Describe basic weld design concepts and the application of symbols on drawings.
- Explain the mechanical advantages and electrical circuits of diverse arc-welding processes.
- Apply non-destructive examination (NDE) techniques to verify the integrity of welded connections.
- Execute strategic troubleshooting protocols to resolve common problems within welding systems.

UNIT SPECIFICATIONS

Total Instructional Hours:	**15 Hours**
PDHs Earned:	**15.0**

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD
AUTHORIZED TRAINING PROVIDER

COURSE ID: PD642

ENERGY INFRASTRUCTURE: ASME B31.1 POWER PIPING

Power piping systems serve as the essential veins of the global energy transition, transporting vital resources across thermal, solar, and geothermal landscapes. Within the rigorous framework of ASME B31.1, these systems require a sophisticated lifecycle approach to safeguard against catastrophic failure and operational decay. This curriculum explores the technical evolution of power infrastructure from initial design to final maintenance, bridging the gap between regulatory compliance and long-term reliability. By mastering these foundational engineering rules, professionals ensure that these massive energy vessels maintain absolute integrity while achieving high-stakes safety and cost-efficiency goals.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify technical differences between Design by Rule and Design by Analysis methodologies.
- Describe principal failure modes and inspection criteria for high-pressure piping components.
- Apply ASME B31.1 requirements for materials selection, fabrication, and welding qualification.
- Execute formal analysis for piping flexibility and stress intensification factor development.
- Master Code mandates for the safe operation and lifecycle maintenance of power piping.

UNIT SPECIFICATIONS

Total Instructional Hours:	30 Hours
PDHs Earned:	30.0
CEUs Earned:	3.0

Target Audience: *Power piping engineering professionals, mechanical engineers at thermal/renewable plants, and design specialists responsible for high-pressure energy infrastructure.*

CURRICULUM MODULES

TOPIC 1: POWER PIPING DESIGN RULES

Pressure design of straight pipe and components (ID: 377, 378).

TOPIC 2: STRUCTURAL INTEGRITY ASSESSMENT

Guarding against pipe collapse and overstress conditions (ID: 379).

TOPIC 3: FLEXIBILITY & FACTORS

Adequate flexibility and Stress Intensification Factors (ID: 380, 381).

TOPIC 4: MATERIALS & METALLURGY

Control, selection, and metallurgical evaluation of steels (ID: 385, 386).

TOPIC 5: FABRICATION & WELDING QC

Welding qualifications and assembly of piping systems (ID: 387, 388).

TOPIC 6: TESTING & LIFECYCLE MAINTENANCE

Mandatory examination, testing, and safe operational protocols.

Upon completion, participants receive an official certificate from ASME.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD
AUTHORIZED TRAINING PROVIDER

COURSE ID: PD643

PROCESS PIPING: ASME B31.3 SYSTEMS

Process piping networks function as the vital circulatory system of the industrial organism, delivering high-stakes fluid streams across complex refineries and chemical landscapes. Within the rigorous framework of ASME B31.3, these systems require a sophisticated engineering approach to manage extreme thermal and pressure volatility. This technical journey explores the lifecycle of process infrastructure from material selection to final validation, bridging the gap between mandatory code compliance and expert-level structural optimization. By mastering these foundational rules, professionals safeguard these massive industrial veins against catastrophic failure, ensuring the long-term operational resilience and safety of global processing facilities.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify the scope and organizational framework of the ASME B31.3 Process Piping Code.
- Apply pressure design formulas for straight pipes, bends, and specialized components.
- Describe the essential properties and selection criteria for industrial piping materials.
- Analyze system flexibility and Stress Intensification Factors (SIF) to prevent overstress.
- Execute mandatory inspection, examination, and testing protocols for site-wide compliance.

UNIT SPECIFICATIONS

Total Instructional Hours:	30 Hours
PDHs Earned:	30.0
CEUs Earned:	3.0

Target Audience: *Engineers, designers, and managers involved in the design, fabrication, and maintenance of process piping for refineries, chemical plants, and pharmaceutical facilities.*

CURRICULUM MODULES

TOPIC 1: DESIGN BASIS & LOAD DEFINITION

Determining design conditions and allowable stress (ID: 411, 412).

TOPIC 2: COMPONENT PRESSURE DESIGN

Sizing pipes, elbows, and branch reinforcements (ID: 413, 414).

TOPIC 3: FLEXIBILITY & STRUCTURAL INTEGRITY

Static analysis, support selection, and thermal expansion (ID: 415).

TOPIC 4: MATERIAL CONTROL & METALLURGY

Material specifications and temperature limits (ID: 421, 422).

TOPIC 5: FABRICATION & QUALITY CONTROL

Welding qualifications, assembly, and joint efficiency (ID: 423, 424).

TOPIC 6: INSPECTION & SITE VALIDATION

Non-destructive examination and hydrostatic leak testing protocols.

Upon completion, participants receive an official certificate from ASME.

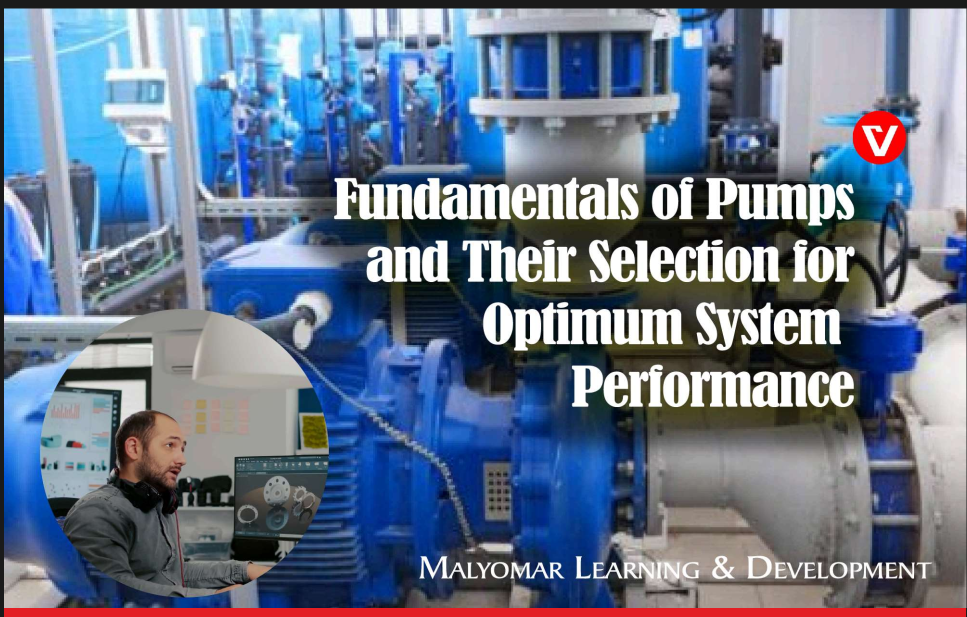
MALYOMAR ENGINEERING
We Take care of Value

AUTHORIZED TRAINING PROVIDER

COURSE ID: PD670

FUNDAMENTALS OF PUMPS: SELECTION & OPTIMIZATION

In the complex anatomy of industrial facilities, pumps function as the mechanical heart that drives the lifeblood of production through intricate piping networks. This curriculum navigates the vital synergy between pumps and valves, exploring how their interaction determines the overall health and efficiency of hydraulic systems. By bridging the gap between hardware selection and field installation, professionals learn to mitigate operational bottlenecks and troubleshoot persistent system failures. Participants gain the strategic expertise required to size pipeline diameters and optimize flow dynamics, ensuring that vital infrastructure remains resilient, cost-effective, and capable of achieving peak performance.



MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify the fundamental mechanical principles governing pump and valve interaction in systems.
- Describe technical criteria for the precise selection and sizing of pumps for flow performance.
- Apply cost-effective decision-making strategies for pipeline diameter sizing and optimization.
- Execute advanced troubleshooting and maintenance protocols to prevent poor system operation.
- Master the integration of pumps and valves to ensure long-term structural and hydraulic integrity.

UNIT SPECIFICATIONS

Total Instructional Hours:	**15 Hours**
PDHs Earned:	**15.0**
CEUs Earned:	**1.5**

Target Audience: *Design engineers, process selection engineers, procurement personnel, project engineers, and O&M specialists in the chemical, oil & gas, and power industries responsible for hydraulic systems.*

CURRICULUM MODULES

TOPIC 1: PUMP AND VALVE SYNERGY
Governing principles and interdisciplinary system roles.

TOPIC 2: CENTRIFUGAL VS. POSITIVE DISPLACEMENT
Selection criteria based on fluid properties and flow requirements.

TOPIC 3: HYDRAULIC SIZING METHODS
Diameter optimization and pressure loss management.

TOPIC 4: SYSTEM CURVE ANALYSIS
Matching pump performance to physical system resistance.

TOPIC 5: TROUBLESHOOTING PROTOCOLS
Root cause analysis for cavitation, vibration, and low performance.

TOPIC 6: LIFECYCLE ASSET MAINTENANCE
Establishing structural and hydraulic reliability standards.

Upon completion, participants receive an official certificate from ASME.

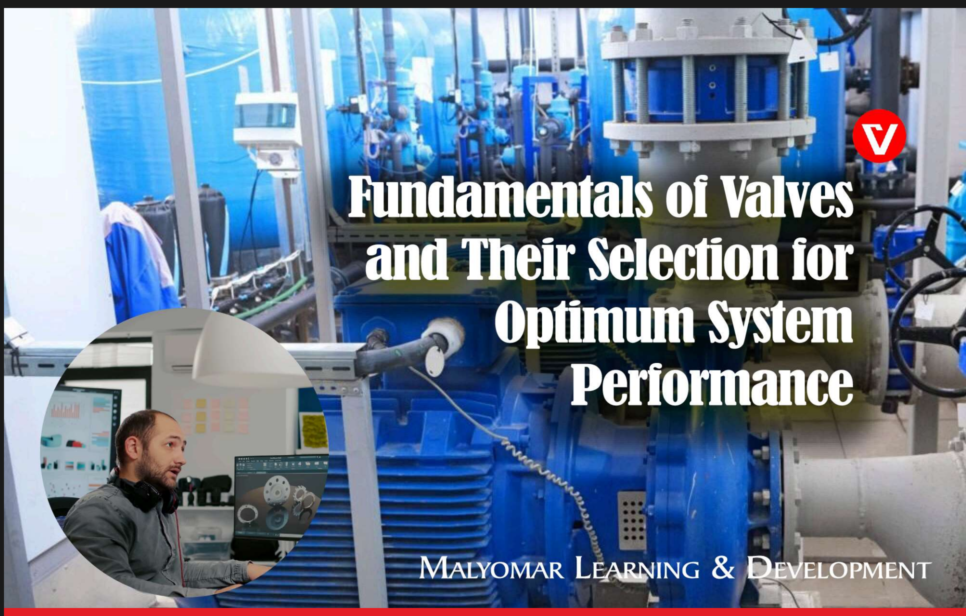
MALYOMAR ENGINEERING
We Take care of Value

ASME SETTING THE STANDARD
AUTHORIZED TRAINING PROVIDER

COURSE ID: PD671

FUNDAMENTALS OF VALVES: SELECTION & BEHAVIOR

In the complex anatomy of industrial facilities, valves function as the vital regulators that control the lifeblood of production through intricate piping networks. This technical curriculum explores the essential synergy between valves and pumps, focusing on how their interaction determines the overall efficiency of hydraulic systems. By bridging the gap between hardware selection and field installation, professionals learn to mitigate operational bottlenecks and troubleshoot persistent failures. Participants gain the strategic expertise required to optimize flow control and sizing, ensuring that vital infrastructure remains resilient, cost-effective, and capable of achieving peak performance.



TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify the fundamental mechanical principles governing valve and pump interaction.
- Describe technical criteria for the precise selection and sizing of industrial valves.
- Apply cost-effective strategies for pipeline diameter sizing and flow optimization.
- Execute advanced maintenance and troubleshooting protocols for valve performance.
- Master the integration of flow control components to ensure long-term system integrity.

UNIT SPECIFICATIONS

Total Instructional Hours:	18 Hours
PDHs Earned:	18.0
CEUs Earned:	1.8

Target Audience: *Design engineers, process selection engineers, procurement personnel, project engineers, and O&M specialists in the chemical, oil & gas, and power industries responsible for flow control.*

CURRICULUM MODULES

TOPIC 1: REVIEW OF PRELIMINARY TOPICS
Core governing principles and system roles (ID: 577).

TOPIC 2: PUMPS & SYSTEM INTERACTION
Interdisciplinary roles and pump selection basics (ID: 579).

TOPIC 3: METERS IN PIPELINES
Flow measurement and pressure drop foundations (ID: 578).

TOPIC 4: POSITIVE DISPLACEMENT PUMPS
Advanced selection criteria for specialized flows (ID: 580).

TOPIC 5: INDUSTRIAL VALVE TECHNOLOGY
Detailed selection, behavior, and sealing mechanics (ID: 581).

TOPIC 6: SITE IMPLEMENTATION & BEST PRACTICES
Installation, maintenance, and reliability protocols (ID: 582).

Upon completion, participants receive an official certificate from ASME.

MALYOMAR ENGINEERING
We Take care of Value

ASME SETTING THE STANDARD
AUTHORIZED TRAINING PROVIDER

COURSE ID: PD761

B31.8S PIPELINE: INTEGRITY MANAGEMENT

Natural gas transmission networks function as the critical energy veins of modern society, where systemic failure is not an option. This specialized curriculum explores the ASME B31.8S standard, the definitive blueprint for managing the structural integrity of gas pipelines. By integrating threat assessment, data management, and mitigation strategies, professionals shift from reactive maintenance to proactive engineering stewardship. This strategic framework ensures that high-pressure energy vessels remain resilient and compliant, sustaining the operational health of national infrastructure against the rigors of environmental and operational decay.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify the essential elements and technical scope of the ASME B31.8S standard.
- Describe data integration and risk assessment protocols for pipeline integrity management.
- Apply strategic mitigation and repair techniques to address identified system threats.
- Execute lifecycle maintenance plans to ensure long-term compliance and structural safety.
- Master the interface between B31.8S requirements and US DOT regulatory mandates.

UNIT SPECIFICATIONS

Total Instructional Hours:	15 Hours
PDHs Earned:	15.0
CEUs Earned:	1.5

Target Audience: *Pipeline integrity managers, risk assessment engineers, regulatory compliance officers, and O&M personnel responsible for the safe and reliable operation of gas transmission networks.*

CURRICULUM MODULES

TOPIC 1: B31.8S INTEGRITY PROGRAM (ID: 368)

Program implementation and essential elements (ID: 834).

TOPIC 2: THREAT IDENTIFICATION & DATA

Collecting and integrating data for systemic vulnerability analysis.

TOPIC 3: RISK ASSESSMENT METHODS

Qualitative vs. quantitative protocols for high-pressure networks.

TOPIC 4: MITIGATION & REPAIR STRATEGIES

Engineering interventions for corrosion, mechanical damage, and SCC.

TOPIC 5: PERFORMANCE & IMPROVEMENT

Managing the performance plan and continuous validation cycles.

TOPIC 6: REGULATORY COMPLIANCE INTERFACE

Aligning B31.8S with US DOT and international safety mandates.

Upon completion, participants receive an official certificate from ASME.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: PD769

THERMAL ENGINES: BOILERS O&M (ASME/API)

In the high-energy landscape of industrial production, boilers and fired pressure equipment serve as the vital thermal engines of a facility, where operational stability is essential for survival. This comprehensive curriculum explores the intricate requirements of ASME and API standards, bridging the gap between automated operation and manual maintenance stewardship. By integrating manufacturer recommendations with rigorous safety protocols, professionals mitigate the risks of unscheduled shutdowns. This strategic framework ensures that these high-pressure vessels remain efficient and compliant, sustaining the operational health of the world's most demanding industrial organisms.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify the regulatory basis for applying ASME and API standards to fired pressure equipment.
- Describe fundamental principles for the safe operation of power and heating boiler systems.
- Apply manufacturer recommendations and code mandates to establish robust maintenance programs.
- Execute technical calculations to verify the structural safety of boilers during operation.
- Master repair and maintenance protocols to maximize cost savings and prevent shutdowns.

UNIT SPECIFICATIONS

Total Instructional Hours:	10 Hours
PDHs Earned:	10.0
CEUs Earned:	1.0

Target Audience: *Boiler operators, maintenance engineers, facility managers, and quality personnel responsible for the safe and efficient operation of power and heating boilers in industrial and municipal environments.*

CURRICULUM MODULES

TOPIC 1: REGULATORY & COMPLIANCE FRAMEWORK

Integration of ASME and API mandates for fired pressure equipment.

TOPIC 2: POWER AND HEATING BOILER OPERATION

Governing principles for safe and stable thermal generation.

TOPIC 3: STRATEGIC MAINTENANCE STEWARDSHIP

Applying manufacturer and code requirements to O&M cycles (ID: 369).

TOPIC 4: FIRED EQUIPMENT MAINTENANCE AND REPAIRS

Detailed maintenance protocols for critical heating assets (ID: 835).

TOPIC 5: OPERATIONAL SAFETY & CALCULATIONS

Verifying structural integrity and operational health under load.

TOPIC 6: COST-EFFICIENCY & SHUTDOWN PREVENTION

Management frameworks to maximize industrial asset longevity.

Upon completion, participants receive an official certificate from ASME.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: PD770

PRESSURE INTEGRITY: BOILER REPAIR & ALTERATION

In the high-energy landscape of industrial facilities, boilers function as the vital thermal engines where structural degradation can lead to catastrophic systemic failure. This technical curriculum explores the essential lifecycle management of fired pressure equipment through the rigorous lens of the NBIC and API standards. By navigating the critical requirements for repairs, alterations, and inspections, professionals safeguard these high-pressure vessels against operational decay. Mastering these regulatory frameworks ensures that every modification adheres to global safety mandates, preserving the facility's operational health and ensuring long-term structural reliability.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify essential NBIC and API standards for the inspection of fired pressure equipment.
- Apply precise repair and alteration rules to ensure the structural integrity of industrial boilers.
- Execute technical inspections to identify and remediate operational degradation and damage.
- Master the documentation and certification processes required for jurisdictional compliance.
- Explain the professional responsibilities of manufacturers and inspectors in lifecycle management.

UNIT SPECIFICATIONS

Total Instructional Hours:	**15 Hours**
PDHs Earned:	**15.0**
CEUs Earned:	**1.5**

Target Audience: *Boiler inspectors, maintenance engineers, facility managers, and quality control professionals responsible for the structural integrity, repair, and regulatory compliance of power and heating boilers.*

CURRICULUM MODULES

TOPIC 1: STANDARDIZED INSPECTION PROTOCOLS

Core requirements of NBIC and API for fired pressure equipment.

TOPIC 2: DAMAGE MECHANISM ANALYSIS

Identifying operational degradation, corrosion, and thermal fatigue.

TOPIC 3: REPAIR & ALTERATION RULES

Mandatory protocols for ensuring structural safety during modifications.

TOPIC 4: TECHNICAL STEWARDSHIP & O&M

Integrating maintenance with industry best practices (ID: 370).

TOPIC 5: BOILER MAINTENANCE CASE STUDIES

Detailed forensic analysis of heating asset repairs (ID: 836).

TOPIC 6: DOCUMENTATION & COMPLIANCE

Managing certification, R-stamps, and jurisdictional verification.

Upon completion, participants receive an official certificate from ASME.

COURSE ID: PD838

ASME B31.3 AND B31.1 PRACTICAL PIPING DESIGN:
PROCESS AND POWER APPLICATIONS

Mastering the complexities of process and power piping is essential for modern infrastructure integrity, serving as the vital circulatory system of global industrial facilities. This expert-led program bridges the critical gap between theoretical design and field fabrication through the rigorous lens of ASME B31.3 and B31.1 codes. Participants gain deep insights into material selection, flexibility analysis, and inspection protocols while navigating the subtle differences between global standards. From initial component selection to final assembly, this training provides the technical foundation needed to ensure absolute code compliance, safeguarding high-pressure vessels and ensuring long-term system reliability in high-stakes environments.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify professional responsibilities in the design, fabrication, and testing of piping.
- Describe technical requirements and key differences between ASME B31.3 and B31.1 codes.
- Apply quality and safety requirements defined in the latest ASME process and power codes.
- Explain principal failure modes of piping components and strategic inspection techniques.
- Master simplified and formal analysis techniques for professional piping layout design.

UNIT SPECIFICATIONS

Total Instructional Hours:	30 Hours
PDHs Earned:	30.0
CEUs Earned:	3.0

Target Audience: *Jurisdictional personnel, in-company examination and inspection staff, and QA/QC specialists seeking to understand the design and construction requirements they are responsible to assure and control.*

CURRICULUM MODULES

TOPIC 1: SCOPE AND DEFINITIONS

Core jurisdictions of Para 300 (B31.3) and Para 100 (B31.1).

TOPIC 2: DESIGN CONDITIONS & CRITERIA

Establishing design pressure, temperature, and allowable stresses.

TOPIC 3: FLEXIBILITY AND SUPPORT

Thermal expansion analysis and support selection (Para 319-321 / 119-121).

TOPIC 4: MATERIALS & BELLOWS

Material control (Chapter III) and metallic bellows expansion joints.

TOPIC 5: FABRICATION & ASSEMBLY

Joint requirements, welding, heat treatment, and erection standards.

TOPIC 6: INSPECTION & TESTING

Examination protocols and hydrostatic leak testing requirements.

Upon completion, participants receive an official certificate from ASME.

MALYOMAR ENGINEERING
We Take care of Value

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML501

PIPING FLEXIBILITY & SUPPORT

Piping systems serve as the vital arteries of industrial plants, enduring constant thermal expansion and operational shifts. Within the framework of ASME B31.3, ensuring adequate flexibility is not merely a design choice but a foundational necessity for structural survival. This curriculum addresses the critical balance between thermal movement and terminal stresses, preventing the distortion and leakage that threaten plant longevity. By navigating complex code provisions, professionals ensure these engineering vessels maintain their integrity under the most demanding environmental and operational conditions.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify responsibilities for piping designers to implement essential code provisions.
- Describe the mandatory technical foundation for advanced piping stress engineering.
- Establish complete awareness of piping support systems for maintenance excellence.
- Master the flexibility requirements necessary to prevent thermal expansion failures.
- Apply B31.3 design criteria to mitigate leakage and overstress in process piping.

COURSE SPECIFICATION

Total Instructional Hours:	**30 Hours**
PDHs Earned:	**30.0**
CEUs Earned:	**3.0**

CURRICULUM MODULES

- **Principles of System Flexibility:** Stress types, strain analysis, and structural behavior modeling.
- **ASME B31.3 Analysis:** Mandatory technical requirements for formal and simplified flexibility analysis.
- **Failure Theories:** Investigating mechanical catalysts and increasing system flexibility via engineering means.
- **Pipe Support Systems:** The strategic role of supports in maintaining industrial plant integrity.
- **Hardware Selection:** Classification and technical selection criteria for the main types of pipe supports.
- **Integration Workshop:** Applying flexibility provisions to complex industrial piping architectures.

Target Audience: *Piping engineers, stress analysts, mechanical leads, and piping designers seeking a robust foundation in B31.3 flexibility and support requirements.*

Upon completion, participants receive an official certificate from MALYOMAR.

COURSE ID: ML502

PIPING RESILIENT SUPPORTS

Viewing industrial refineries as living organisms highlights the critical role of piping as the vital blood vessels of production. Resilient supports like springs and dampers are the essential joints that allow these systems to breathe and adapt to thermal stress. Under the ASME B31.3 framework, this technical curriculum navigates the entire lifecycle of hardware, from initial design to long-term maintenance. By transforming pipe supports from simple structural members into strategic assets, engineers ensure a quiet, reliable operational life while preventing distortion and failure.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Cover the complete lifecycle of resilient supports from engineering design to maintenance.
- Describe the true technical function of hardware while clearing common industry myths.
- Apply ASME B31.3 flexibility provisions using advanced springs, bellows, and dampers.
- Master the transition of pipe supports from structural members to high-value plant assets.
- Explain hardware handling techniques to prevent thermal expansion failure and distortion.

COURSE SPECIFICATION

Total Instructional Hours:	**30 Hours**
PDHs Earned:	**30.0**
CEUs Earned:	**3.0**

CURRICULUM MODULES

- Importance of sufficient piping flexibility in industrial networks.
- Functional analysis of springs, dampers, and flexible bellows.
- Technical selection and specification protocols for resilient hardware.
- Strategic procurement requirements and quality assurance for supports.
- Precision installation techniques to ensure design intent and safety.
- Maintenance and lifecycle management of resilient piping components.
- Case studies: Forensic analysis of support failures and remediations.

Target Audience: *Piping engineers, stress analysts, mechanical leads, and maintenance specialists responsible for the structural flexibility and hardware integrity of industrial piping networks.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML503

VALUE ENGINEERING: TRANSPORTATION

Large-scale transportation networks function as the essential nervous system of modern society, where every capital investment must yield maximum functional performance. This technical curriculum explores Value Engineering (VE) as a sophisticated engine for project optimization, moving beyond simple cost-cutting to ensure long-term structural value. By applying the SAVE International methodology to roads, rail, and transit infrastructure, professionals bridge the gap between initial design and operational excellence. This strategic framework establishes the technical foundation needed to optimize multi-million dollar investments while maintaining absolute safety and quality standards.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify technical opportunities for value optimization in large-scale transportation projects.
- Apply SAVE International Value Methodology to enhance project functional performance.
- Master Function Analysis to isolate high-cost, low-value components in infrastructure design.
- Execute multidisciplinary VE workshops to harmonize civil, electrical, and mechanical goals.
- Describe the strategic impact of Value Engineering on the project Total Cost of Ownership.

COURSE SPECIFICATION

Total Instructional Hours:	**20 Hours**
PDHs Earned:	**20.0**
CEUs Earned:	**2.0**

CURRICULUM MODULES

- **Introduction to Value Methodology:** Core principles and cross-industry applications.
- **Function Analysis:** Identifying the "verb-noun" DNA of transportation assets.
- **The Job Plan Phases:** Information, Creative, Evaluation, and Development phases.
- **Case Study Analysis:** Successful VE implementations in rail and highway projects.
- **Lifecycle Costing (LCC):** Predicting long-term operational and maintenance costs.
- **Team Dynamics:** Leading multidisciplinary teams through the technical VE process.
- **Implementation Strategy:** Transitioning VE results into finalized design modifications.

Target Audience: *Civil engineers, project managers, infrastructure designers, and public utility professionals seeking a systematic framework for performance and cost optimization.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

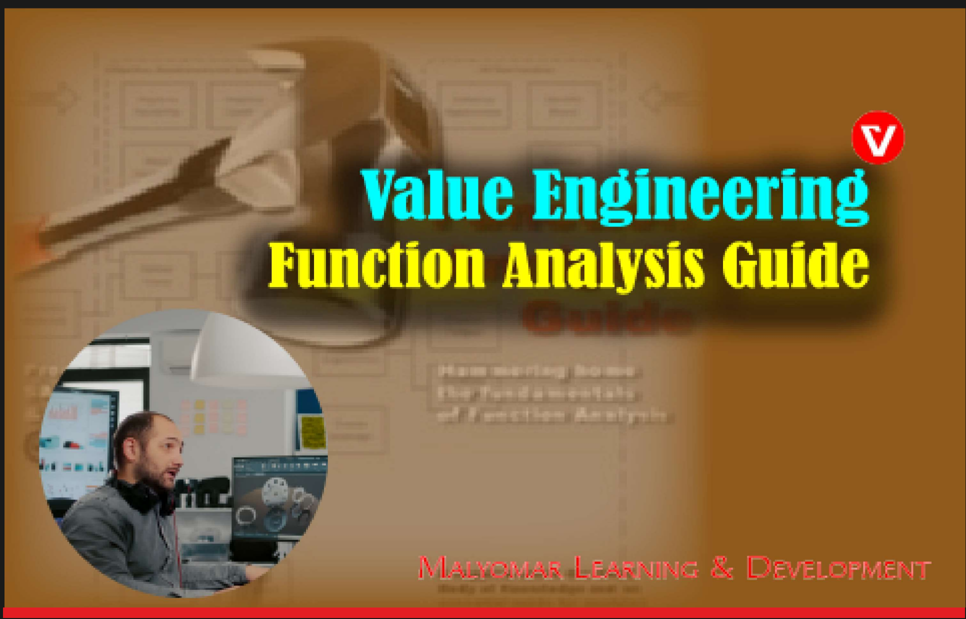
ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML505

FUNCTION ANALYSIS GUIDE

Function Analysis serves as the essential DNA of Value Methodology, providing the structural pillar upon which all strategic optimization is built. This comprehensive curriculum explores the SAVE International Function Analysis Guide, transforming abstract project goals into clearly defined, actionable functions. By navigating this supplemental framework to the VM Guide, professionals gain the precision necessary to implement high-value solutions across diverse industries. Understanding these core phases ensures that every project component fulfills its vital purpose while maximizing organizational performance and resource efficiency.



MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Establish a robust technical understanding of Function Analysis as the core VM pillar.
- Implement the SAVE International Guide to define actionable project functions precisely.
- Apply advanced function-oriented techniques to optimize project performance.
- Execute strategic VM phases by integrating supplemental guide frameworks effectively.
- Evaluate project components through the lens of function to maximize organizational value.

COURSE SPECIFICATION

Total Instructional Hours:	**10 Hours**
PDHs Earned:	**10.0**
CEUs Earned:	**1.0**

CURRICULUM MODULES

- **Fundamentals of Function Analysis:** Definitions and historical context.
- **Function Definition:** Mastering Naming Conventions (Verb/Noun).
- **Function Types:** Basic, Secondary, and Aesthetic functions.
- **Strategic Implementation:** The Function Analysis phase of the Job Plan.
- **FAST Diagramming:** Creating Function Analysis System Technique maps.
- **Integration Workshop:** Using the FA Guide alongside the core VM Guide.
- **Value Measurement:** Assessing function vs. cost for resource efficiency.

***Target Audience:** Designers, analysts, and project engineers responsible for identifying and defining essential system purposes within a Value Management framework.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

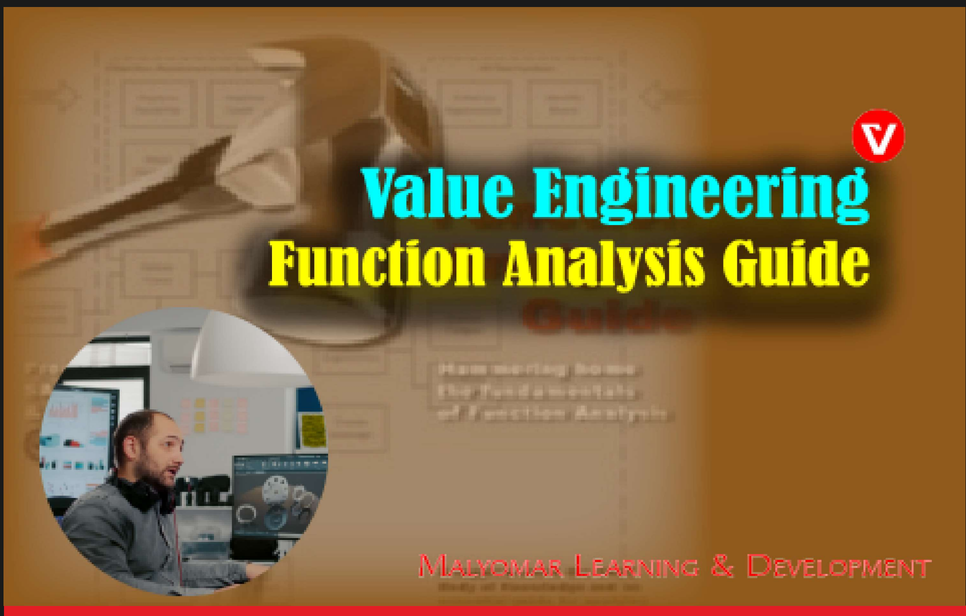
ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML505

FUNCTION ANALYSIS GUIDE

Function Analysis serves as the essential DNA of Value Methodology, providing the structural pillar upon which all strategic optimization is built. This comprehensive curriculum explores the SAVE International Function Analysis Guide, transforming abstract project goals into clearly defined, actionable functions. By navigating this supplemental framework to the VM Guide, professionals gain the precision necessary to implement high-value solutions across diverse industries. Understanding these core phases ensures that every project component fulfills its vital purpose while maximizing organizational performance and resource efficiency.



TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Establish a robust technical understanding of Function Analysis as the core VM pillar.
- Implement the SAVE International Guide to define actionable project functions precisely.
- Apply advanced function-oriented techniques to optimize project performance.
- Execute strategic VM phases by integrating supplemental guide frameworks effectively.
- Evaluate project components through the lens of function to maximize organizational value.

COURSE SPECIFICATION

Total Instructional Hours:	**10 Hours**
PDHs Earned:	**10.0**
CEUs Earned:	**1.0**

CURRICULUM MODULES

- **Fundamentals of Function Analysis:** Definitions and historical context.
- **Function Definition:** Mastering Naming Conventions (Verb/Noun).
- **Function Types:** Basic, Secondary, and Aesthetic functions.
- **Strategic Implementation:** The Function Analysis phase of the Job Plan.
- **FAST Diagramming:** Creating Function Analysis System Technique maps.
- **Integration Workshop:** Using the FA Guide alongside the core VM Guide.
- **Value Measurement:** Assessing function vs. cost for resource efficiency.

***Target Audience:** Designers, analysts, and project engineers responsible for identifying and defining essential system purposes within a Value Management framework.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD
AUTHORIZED TRAINING PROVIDER

COURSE ID: ML506

WRITING TECHNICAL PROPOSAL: TO ATTRACT AND WIN CLIENTS

In an increasingly saturated global marketplace, a company's ability to articulate its value proposition serves as its vital lifeline to new opportunities. This curriculum explores the strategic architecture of technical proposals, shifting the focus from simple documentation to a sophisticated engine for client acquisition. Whether navigating the high stakes of the corporate world or scaling an independent venture, managers must transform their writing into a competitive weapon. By refining the proposal lifecycle, professionals secure a decisive edge in winning business while ensuring sustainable long-term growth and commercial resilience.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Establish a deep technical understanding of the core business value proposition.
- Implement a sophisticated proposal writing lifecycle to secure high-value contracts.
- Execute strategic client management techniques to ensure long-term business retention.
- Apply advanced persuasive documentation strategies to outperform corporate competitors.
- Master the alignment of technical scope with commercial risk mitigation.

UNIT SPECIFICATIONS

Total Instructional Hours:	10 Hours
PDHs Earned:	10.0
CEUs Earned:	1.0

***Target Audience:** Managers, independent entrepreneurs, and business development specialists in the industrial and engineering sectors responsible for securing multi-million dollar EPC contracts.*

CURRICULUM MODULES

TOPIC 1: STRATEGIC ARCHITECTURE

Designing the structural flow and narrative of a winning proposal.

TOPIC 2: PROPOSAL WRITING LIFECYCLE

From initial bid invitation to final commercial submission.

TOPIC 3: CLIENT ACQUISITION ENGINE

Positioning technical capabilities as a competitive advantage.

TOPIC 4: BUSINESS RETENTION STRATEGIES

Managing post-award relationships and ensuring long-term growth.

TOPIC 5: RISK & COMMERCIAL ALIGNMENT

Synchronizing engineering scope with fiscal and legal requirements.

TOPIC 6: PERSUASIVE DOCUMENTATION

Advanced writing techniques for high-stakes corporate tenders.

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME SETTING THE STANDARD
AUTHORIZED TRAINING PROVIDER

COURSE ID: ML507

FAST CREATIVITY & INNOVATION

Innovation serves as the respiratory system of a competitive enterprise, ensuring continuous vitality through systematic creative evolution. This technical curriculum explores the Function Analysis System Technique (FAST) as the primary catalyst for inventive problem solving within the Value Methodology. By bridging the gap between abstract brainstorming and disciplined function logic, professionals transform complex challenges into optimized technical solutions. Understanding the "Why-How" logic of FAST ensures that creativity is not a random outlier, but a reliable, engineered outcome that drives long-term organizational excellence.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify technical contradictions and resolve them through systematic creativity.
- Execute Function Analysis System Technique (FAST) diagrams for complex projects.
- Apply the "Why-How" logic to validate project scope and functional purpose.
- Execute creative workshops that transform brainstorming into disciplined engineering.
- Master the integration of FAST with the core Value Methodology Job Plan.

COURSE SPECIFICATION

Total Instructional Hours:	**10 Hours**
PDHs Earned:	**10.0**
CEUs Earned:	**1.0**

CURRICULUM MODULES

- **The Logic of FAST:** Understanding the history and evolution of diagramming.
- **The "Why-How" Dimension:** Building the logical path of functional purpose.
- **Critical Path Analysis:** Identifying the basic functions that drive project value.
- **Technical Contradictions:** Using FAST to isolate and resolve design bottlenecks.
- **Creative Brainstorming:** Techniques for high-impact innovation within teams.
- **FAST Case Studies:** Real-world examples in infrastructure and product design.
- **Implementation Strategy:** Transitioning FAST results into the Job Plan.

Target Audience: *Engineers, designers, managers, and quality professionals seeking to solve complex problems through systematic, function-oriented creativity.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME SETTING THE STANDARD
AUTHORIZED TRAINING PROVIDER

COURSE ID: ML508

STRESS ANALYSIS FOR PIPING DESIGNERS

Every industrial organism requires a balanced distribution of internal forces to ensure structural longevity. For piping designers, understanding the transition from spatial layout to stress distribution is a critical skill. This technical curriculum bridges the gap between 3D modeling and structural validation, focusing on the fundamental mechanics of thermal expansion, weight, and terminal loads. By mastering these principles, designers move beyond routine routing to become strategic architects of system integrity, ensuring that high-pressure vessels operate within a fail-safe environment.

MALYOMAR ENGINEERING
www.malyomar.com

DESIGN INTEGRITY
Structural Architects

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify the primary causes of piping stress and their impact on system layout.
- Describe the fundamental mechanics of thermal expansion and weight distribution.
- Apply ASME B31.3 criteria to resolve overstress and terminal load issues.
- Execute layout modifications that enhance system flexibility and structural safety.
- Master the interface between piping design and formal stress analysis requirements.

COURSE SPECIFICATION

Total Instructional Hours:	**18 Hours**
PDHs Earned:	**18.0**
CEUs Earned:	**1.8**

CURRICULUM MODULES

- **Intro to Pipe Stress Engineering:** Fundamental concepts for designers.
- **Thermal Expansion:** Managing pipe growth and temperature shifts.
- **Primary vs. Secondary Stresses:** Categorizing weight and thermal loads.
- **Support Selection:** Strategic placement and hardware classification.
- **Terminal Loads:** Managing forces on equipment nozzles and vessels.
- **Flexibility Analysis:** Simplified techniques for layout validation.
- **Layout Optimization:** Workshop on resolving complex stress bottlenecks.

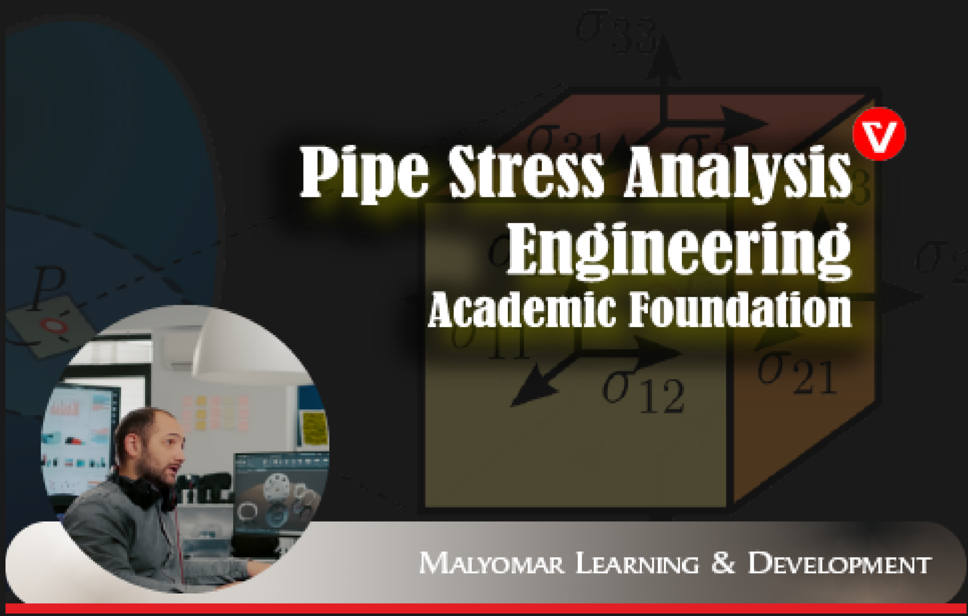
Target Audience: *Junior and Senior Piping Designers, 3D Modelers, and Layout Engineers seeking to bridge the gap between spatial routing and structural integrity.*

Upon completion, participants receive an official certificate from MALYOMAR.

COURSE ID: ML509

STRESS ENGINEERING: ACADEMIC FOUNDATION

Every sophisticated engineering vessel requires a robust mathematical anchor to withstand the forces of industrial operation. This curriculum serves as the essential academic bridge for piping engineers transitioning into the specialized domain of stress analysis. By reinforcing critical engineering foundations and fundamental physics, the program ensures that practitioners possess the analytical depth required for complex system evaluations. This preparatory journey transforms raw field experience into a refined technical asset, establishing the rigorous theoretical framework necessary for structural excellence.



MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Establish a robust technical link between practical piping experience and stress analysis.
- Apply fundamental engineering principles to prepare for advanced structural evaluations.
- Solve complex analytical problems through precise manual calculation techniques.
- Describe the academic foundations required to master professional stress engineering.
- Transition from field intuition to rigorous mathematical system validation.

COURSE SPECIFICATION

Total Instructional Hours:	**24 Hours**
PDHs Earned:	**24.0**
CEUs Earned:	**2.4**

CURRICULUM MODULES

- **Intro to Stress Analysis:** Fundamentals and load definitions (ID: 200).
- **Mechanical Principles:** Stress, strain, and material behavior in piping elements.
- **Modeling Frameworks:** Essential elements and support modeling (ID: 201).
- **Load Case Generation:** Static analysis and code compliance (ID: 202).
- **Results Interpretation:** Reviewing stress reports and troubleshooting (ID: 295).
- **Component Analysis:** Expansion joints and specialty modeling (ID: 296).
- **Mathematical Workshop:** Precise manual calculations for system validation.

***Target Audience:** Piping engineers transitioning into specialized stress analysis roles and professionals seeking to reinforce the mathematical foundations required for structural mechanics.*

Upon completion, participants receive an official certificate from MALYOMAR.

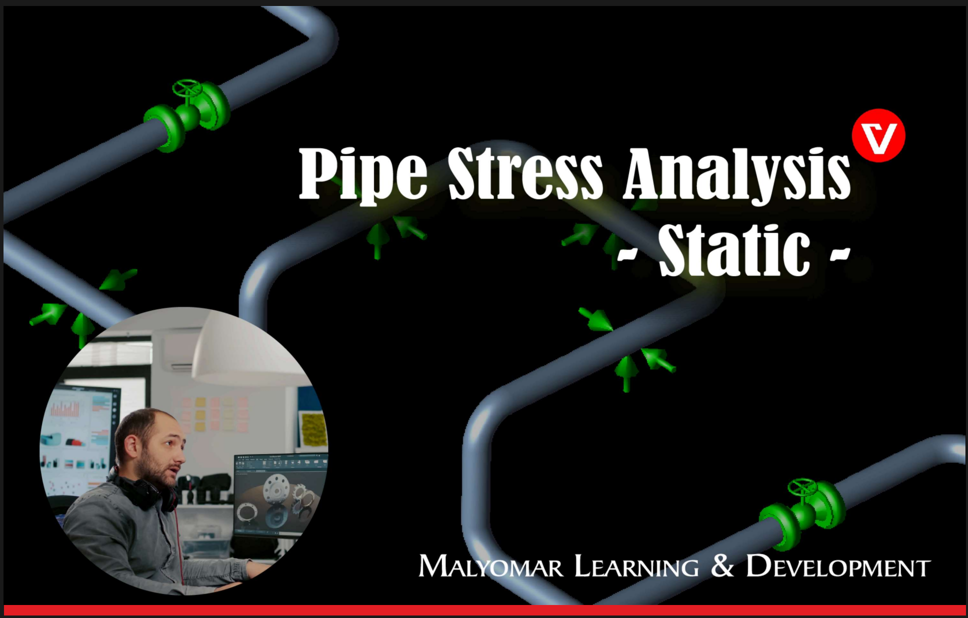
MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD
AUTHORIZED TRAINING PROVIDER

COURSE ID: ML510

PIPE STRESS ANALYSIS, STATIC

Mastering the static behavior of piping systems is the foundational requirement for ensuring structural integrity in high-stakes industrial environments. This high-intensity curriculum functions as an industrial training ground, where seventy-five percent of the program is dedicated to hands-on workshops focused on static load analysis. By simulating the essential technical challenges encountered in daily field operations—including weight, pressure, and thermal loads—trainees build a reliable foundation in professional analysis. This practical immersion ensures that the vital blood vessels of industrial infrastructure are analyzed with precision, securing the operational health and longevity of complex process facilities.



MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify essential static stress analysis protocols required for professional engineering roles.
- Apply fundamental analysis techniques to resolve common day-to-day industrial piping challenges.
- Master industry-standard software to simulate and solve critical sustained and thermal scenarios.
- Describe technical workflows for transitioning academic concepts into practical static field applications.
- Execute workshop-based calculations to verify structural integrity and system compliance standards.

UNIT SPECIFICATIONS

Total Instructional Hours:	**30 Hours**
PDHs Earned:	**30.0**
CEUs Earned:	**3.0**

Target Audience: *Entry-level piping engineers, stress analysts, and mechanical graduates seeking a practical workshop-based immersion into industrial static piping analysis and structural validation.*

CURRICULUM MODULES

TOPIC 1: STATIC PIPING STRESS THEORY
Governing principles, stress-strain relationships, and static failure criteria.

TOPIC 2: STATIC LOAD MODELING
Weight, internal pressure, and establishing structural boundary conditions.

TOPIC 3: WORKSHOP: THERMAL FLEXIBILITY
Hands-on design and optimization for thermal expansion management.

TOPIC 4: ANALYZING SUPPORT REACTIONS
Evaluating static load transfer to structural steel and terminal equipment.

TOPIC 5: SUSTAINED VS. OCCASIONAL STATIC LOADS
Introduction to basic load case combinations for code compliance.

TOPIC 6: FINAL ASSESSMENT: PROBLEM SOLVING
Executing a complete static analysis cycle for a standard piping segment.

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD
AUTHORIZED TRAINING PROVIDER

COURSE ID: ML511

PIPING ENGINEERS:
PLANT CONSTRUCTION

The construction of a petrochemical plant is akin to the assembly of a complex living organism, where piping networks serve as the vital arteries of future operation. This technical curriculum defines the critical responsibilities of piping engineers across the construction, commissioning, and start-up phases. By analyzing the unique perspectives of owners, clients, and contractors, professionals bridge the gap between theoretical planning and site reality. Using real-world examples, this course shifts focus toward specialized engineering stewardship, ensuring the structural and functional health of these massive industrial vessels during the high-stakes transition to mechanical completion.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify technical roles of piping engineers during plant construction and start-up phases.
- Describe the strategic perspectives of owners, clients, and contractors in site operations.
- Apply engineering principles to transition from general site roles to specialized domains.
- Execute real-world examples to increase professional capabilities for on-site management.
- Master the coordination between commissioning and recommissioning for seamless delivery.

COURSE SPECIFICATION

Total Instructional Hours:	**24 Hours**
PDHs Earned:	**24.0**
CEUs Earned:	**2.4**

CURRICULUM MODULES

- **Construction Contracts:** Risk allocation and project budget management (ID: 324).
- **Planning Integration:** Critical Path Method (CPM) and sequencing (ID: 326).
- **Field Engineering:** Design authority, technical queries, and RFI management (ID: 325).
- **Site Supervision:** Manpower productivity and safety enforcement (ID: 327).
- **Materials & Welding QC:** Traceability and WPS review protocols (ID: 328).
- **Testing & Turnover:** NDE management and mechanical completion (ID: 329).
- **Commissioning Coordination:** Seamless delivery and start-up stewardship.

Target Audience: *Piping Field Engineers, Construction Engineers, QA/QC Inspectors, and Design Engineers preparing for high-stakes site assignments in petrochemical facilities.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML512

AS-BUILT ENGINEERING: ASSETS MANAGEMENT

The transition from construction to operations represents a critical milestone where as-built documentation serves as the definitive genetic blueprint of an industrial facility. This technical curriculum explores the establishment of robust procedures for validating the final installed condition of physical assets. By prioritizing digital integrity and ISO 19650 standards, professionals synchronize 3D spatial models with critical maintenance data. This integration ensures that the vital information flows required for safety and compliance remain accurate and accessible throughout the entire asset lifecycle.

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Establish robust technical procedures for creating and validating accurate as-built data.
- Implement ISO 19650 standards to ensure high-level digital data integrity for oil and gas.
- Apply spatial and non-spatial data integration techniques for modern management systems.
- Execute seamless handover protocols for as-built data into Asset Management Systems.
- Describe the impact of accurate asset documentation on long-term operational safety.

COURSE SPECIFICATION

Total Instructional Hours:	**30 Hours**
PDHs Earned:	**30.0**
CEUs Earned:	**3.0**

CURRICULUM MODULES

- **The Importance of As-Built:** Crucial role in revamp projects and risk mitigation (ID: 320).
- **As-Built Data Collection:** Traditional taping vs. laser scanning and point clouds (ID: 321).
- **Data Verification:** Best practices for site visits and physical-to-digital data verification.
- **Modeling As-Built Data:** Converting point clouds into usable 3D models and plans (ID: 322).
- **System Integration:** Merging as-built data into existing industrial models and databases.
- **Documentation & Handover:** Managing data standards, digital twins, and project closeout (ID: 323).
- **Asset Management Systems:** Executing the final synchronization with maintenance platforms.

Target Audience: *Piping designers and engineers, field engineers, site surveyors, project engineers, and quality control professionals involved in revamp or brownfield projects.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

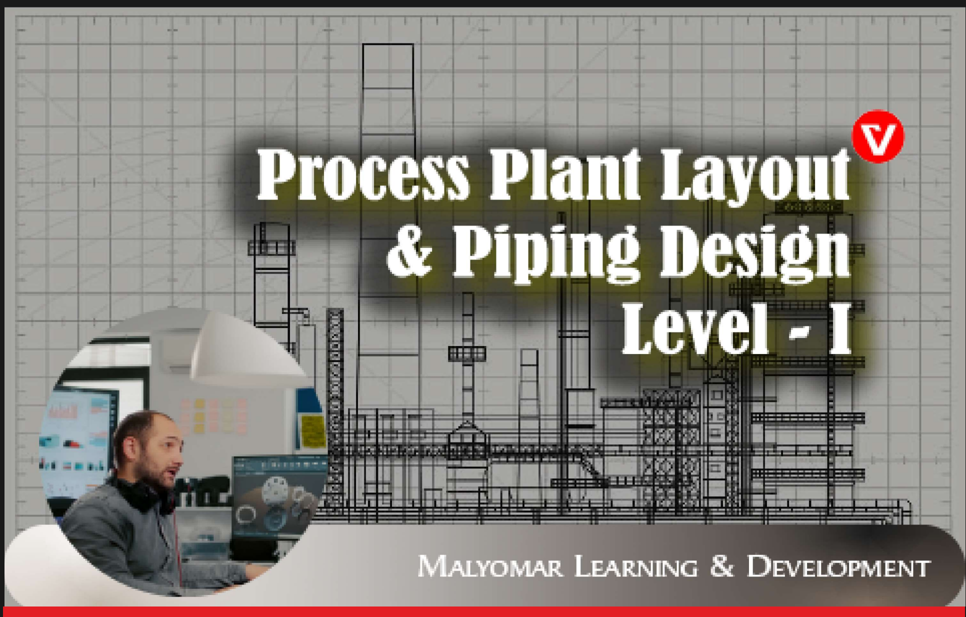
ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML513

ADVANCED STRESS: DYNAMIC ANALYSIS

Industrial organisms are never truly static; they are systems in constant motion, subject to transient forces, mechanical vibrations, and harmonic resonance. This advanced curriculum explores the dynamic foundation of pipe stress engineering, moving beyond static equilibrium into the realm of time-dependent behavior. By mastering modal analysis, spectrum evaluation, and harmonic responses, professionals ensure that piping networks remain resilient against the pulse of production. This technical journey transforms complex vibrations into manageable engineering data, safeguarding high-stakes assets from fatigue and operational failure.



MALYOMAR ENGINEERING
www.malyomar.com

DYNAMIC VITALITY
Transient Force Management

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify the fundamental differences between static and dynamic system behavior.
- Establish a technical foundation for performing advanced Modal and Harmonic analysis.
- Apply Spectrum analysis techniques to mitigate seismic and transient load impacts.
- Execute dynamic simulations to prevent mechanical resonance and fatigue failure.
- Evaluate complex vibration reports to optimize piping support and damping strategies.

COURSE SPECIFICATION

Total Instructional Hours:	**24 Hours**
PDHs Earned:	**24.0**
CEUs Earned:	**2.4**

CURRICULUM MODULES

- **Introduction to Dynamics:** Newton's Laws and D'Alembert's Principle.
- **Modal Analysis:** Identifying natural frequencies and mode shapes (ID: 298).
- **Harmonic Analysis:** Managing mechanical resonance and periodic forces (ID: 299).
- **Response Spectrum:** Seismic evaluation and earthquake engineering for piping.
- **Time History Analysis:** Simulating water hammer and relief valve transients.
- **Damping & Supports:** Strategic placement of snubbers and viscoelastic dampers.
- **Fatigue Evaluation:** Predicting life-cycles under dynamic loading conditions.

Target Audience: *Senior Stress Engineers, Vibration Specialists, and Mechanical Leads responsible for the structural integrity of piping systems in dynamic environments.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME®
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML514

PIPING ENGINEERING:
LEADERSHIP & MANAGEMENT

A successful industrial project requires more than technical precision; it demands an orchestrator capable of harmonizing the complex interdisciplinary nervous system of project execution. This curriculum defines the transition from senior engineer to strategic lead, focusing on the high-level stewardship required to manage piping scopes within multi-million dollar EPC environments. By mastering resource allocation, interdisciplinary coordination, and risk mitigation, leaders ensure that the project's vital arteries are delivered on time, within budget, and to the highest standards of structural integrity.

MALYOMAR ENGINEERING
www.malyomar.com

STRATEGIC STEWARDSHIP
Project Success Standards

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify the critical leadership roles and responsibilities of a Piping Lead Engineer.
- Master the interdisciplinary coordination required for EPC project success.
- Apply advanced resource management and man-hour estimation techniques.
- Execute strategic risk assessments to prevent schedule and budget overruns.
- Implement quality management systems specifically for piping engineering workflows.

COURSE SPECIFICATION

Total Instructional Hours:	**30 Hours**
PDHs Earned:	**30.0**
CEUs Earned:	**3.0**

CURRICULUM MODULES

- **Project Initiation:** Scope definition and Piping Design Basis (ID: 300).
- **Resource Planning:** Man-hour estimation and staffing strategies (ID: 301).
- **Execution Strategies:** Managing the 3D model lifecycle and deliverables.
- **Interdisciplinary Coordination:** Managing the Civil, Mech, and E&I interfaces.
- **Quality Stewardship:** Implementing IDC and checking procedures (ID: 302).
- **Change Management:** Controlling scope creep and processing TQ/RFIs.
- **Risk & Reporting:** Tracking progress through KPIs and mitigation planning.

Target Audience: *Senior Piping Engineers, Project Engineers, and Technical Managers seeking to master the managerial and leadership dimensions of piping engineering projects.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML515

PLANT LAYOUT:
MULTI-DISCIPLINARY WORKSHOPS

Modern industrial design functions as a complex, interconnected organism where success depends on the flawless synchronization of its vital subsystems. This intensive workshop moves beyond sequential planning to foster a collaborative environment focused on multi-disciplinary interface management. By simulating realistic design reviews and 3D clash detection, professionals learn to harmonize the structural, electrical, and piping frameworks that define facility integrity. This high-level technical dialogue ensures that engineering interfaces remain fluid and error-free, transforming individual discipline efforts into a perfectly integrated, safe, and constructible plant layout.

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify technical responsibilities across multi-disciplinary engineering interfaces.
- Describe advanced clash detection techniques using simulated 3D model environments.
- Apply collaborative design optimization across civil, structural, and electrical teams.
- Execute scenario-based design reviews to ensure constructible plant layout results.
- Implement strategic interface management to mitigate errors in parallel engineering.

COURSE SPECIFICATION

Total Instructional Hours:	**30 Hours**
PDHs Earned:	**30.0**
CEUs Earned:	**3.0**

CURRICULUM MODULES

- **Session 1:** Project Initiation and Process Foundation (ID: 330).
- **Session 2:** Equipment Layout and Preliminary Plot Plan (ID: 331).
- **Session 3:** Strategic Pipe Rack Design and Routing (ID: 332).
- **Session 4:** Piping for Critical Loops and Systems (ID: 333).
- **Session 5:** Multi-Disciplinary Interface Management (ID: 334).
- **Session 6:** Advanced Safety and Operability (HAZOP Input) (ID: 335).
- **Session 7:** Finalizing Documentation and Isometrics (ID: 336).
- **Session 8:** Final 3D Model Review and Project Handover (ID: 337).

Target Audience: *Mid-to-Senior Piping Designers/Engineers, Piping Leads, and Project Engineers seeking to validate their holistic design judgment and readiness for Lead Engineer roles.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML516

PIPING LEAD ENGINEER: CONTRACT TO HANDOVER

The Piping Lead Engineer serves as the central nervous system of any industrial project, ensuring the harmonious integration of engineering deliverables across the entire project lifecycle. This advanced curriculum transitions focus from individual technical calculations to the high-stakes management of multi-million-dollar scopes. By navigating the strategic interface of procurement, cost control, and vendor management, professionals safeguard the project's commercial integrity. From the initial contract award to final mechanical completion, this leadership roadmap provides the expertise needed to drive cross-disciplinary success and ensure seamless facility handover.

MALYOMAR ENGINEERING
www.malyomar.com

PROJECT STEWARDSHIP
Commercial Success Standards

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Establish strategic accountability for all piping deliverables across the EPC lifecycle.
- Implement cost control and material forecasting to manage multi-million-dollar budgets.
- Execute cross-disciplinary risk mitigation during construction and plant handover.
- Apply leadership strategies to manage vendor interfaces and project budget deviations.
- Define the commercial scope from initial contract award to final mechanical completion.

COURSE SPECIFICATION

Total Instructional Hours:	**30 Hours**
PDHs Earned:	**30.0**
CEUs Earned:	**3.0**

CURRICULUM MODULES

- **Project Execution Philosophy:** Types, terms, and leadership roles (ID: 271).
- **Commercial Responsibility:** Budget estimation and man-hour forecasting.
- **Procurement Interface:** Vendor selection, data management, and material control.
- **Project Controls:** Scheduling integration and Critical Path Method (CPM).
- **Interdisciplinary Management:** Navigating Civil, Electrical, and Mechanical interfaces.
- **Construction Support:** Field engineering oversight and mechanical completion.
- **Commissioning & Handover:** Final turnover protocols and facility acceptance.

Target Audience: *Piping engineers with 8+ years of experience transitioning into managerial roles, project leads, and quality personnel in oil, gas, and power plant industries.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD
AUTHORIZED TRAINING PROVIDER

COURSE ID: ML517

ROOT CAUSE ANALYSIS: THE RIGHT TOOL

Industrial quality failures represent the hidden fractures in an organization's structural health, requiring precise diagnostic tools for permanent resolution. This technical curriculum provides a specialized toolkit for Root Cause Analysis (RCA), emphasizing empirical investigations and the selection of the correct methodology for complex quality problems. By integrating the scientific method with the Plan-Do-Check-Act cycle, professionals move beyond surface-level repairs to identify the underlying catalysts of failure. This systematic approach transforms reactive problem-solving into a proactive engine for long-term operational reliability and structural integrity.

MALYOMAR ENGINEERING
www.malyomar.com

SYSTEMIC EXCELLENCE
Diagnostic Stewardship

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify empirical methodologies for investigating complex quality failures.
- Implement the scientific method through systematic Plan-Do-Check-Act cycles.
- Apply the appropriate RCA toolkit for specific industrial investigation scenarios.
- Execute precision tool selection to isolate underlying catalysts of failure.
- Master the role of data-driven analysis in preventing recurrent quality issues.

COURSE SPECIFICATION

Total Instructional Hours:	**20 Hours**
PDHs Earned:	**20.0**
CEUs Earned:	**2.0**

CURRICULUM MODULES

- **Intro to Scientific Method:** PDCA frameworks in Root Cause Analysis (ID: 206).
- **Classic Seven Tools:** Foundation toolkit for technical data visualization (ID: 207).
- **Seven Management Tools:** Strategic tools for complex relationship mapping (ID: 208).
- **Exploratory Data Analysis:** Implementing 8D reporting protocols (ID: 209).
- **Applied Case Study:** Forensic investigation of real-world quality failures (ID: 210).
- **Tool Selection Strategy:** Decision frameworks for specific project scenarios (ID: 211).
- **Remediation Planning:** Transforming findings into sustainable operational excellence.

Target Audience: *Engineers, project managers, and quality assurance personnel responsible for the systematic investigation and resolution of industrial quality failures.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

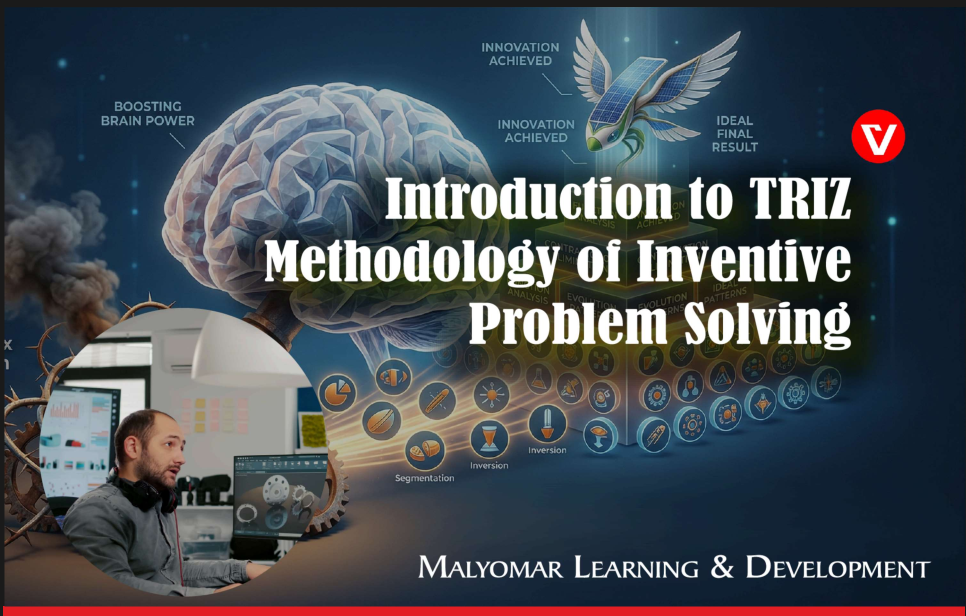
ASME SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML518

TRIZ METHODOLOGY: *INVENTIVE SOLVING*

In the competitive landscape of modern enterprise, the capacity for continuous innovation serves as the essential blueprint for survival and growth. This curriculum explores the TRIZ methodology, a sophisticated framework designed to resolve complex technical contradictions with unprecedented efficiency and creativity. By shifting the focus from accidental discovery to systematic problem-solving, professionals transform the root of every challenge into a strategic asset. Utilizing this structured approach ensures that technical inventions are not just creative outliers but reliable, engineered outcomes that drive long-term business excellence.



MALYOMAR ENGINEERING
We Take care of Value

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Strengthen technical capabilities in solving complex engineering problems effectively.
- Integrate TRIZ methodology with existing industrial problem-solving techniques.
- Identify technical contradictions to drive systematic innovation across projects.
- Apply inventive principles to resolve structural and functional design bottlenecks.

TECHNICAL SPECIFICATIONS

Total Instructional Hours:	**18 Hours**
PDHs Earned:	**18.0**
CEUs Earned:	**1.8**

CURRICULUM MODULES

- **Problem Resolution:** Exploring how we solve problems and historical discovery patterns (ID: 212).
- **TRIZ Fundamentals:** Comprehensive overview of the TRIZ methodology and history (ID: 213).
- **Core Concepts:** Main TRIZ concepts and the nature of technical contradictions (ID: 214).
- **Information Processing:** Managing data flow and technical requirements in TRIZ (ID: 215).
- **The Prep Phase:** Systematic preparations for high-stakes problem solving (ID: 216).
- **TRIZ Instruments:** Mastering heuristics and standard solving instruments (ID: 217).
- **Industrial Case Studies:** Real-world applications and innovation benchmarks (ID: 218).

***Target Audience:** Engineers, designers, and quality professionals interested in solving complex engineering problems and developing high-level systematic creativity within their organizations.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML519

DESALINATION PROJECT: COST ESTIMATING & MANAGEMENT

Seawater desalination represents the critical future of global water security, yet its widespread implementation remains constrained by high operational expenditures. This technical curriculum provides essential engineering guidelines for the rigorous assessment of construction and maintenance costs. By integrating state-of-the-art management technologies with practical optimization strategies, professionals navigate the financial complexities of desalination projects. This strategic approach ensures that vital water infrastructure remains fiscally viable, transforming significant capital investments into sustainable, long-term assets for industrial and municipal growth.

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Establish a robust technical background in global seawater desalination projects.
- Enhance precision in construction, operation, and maintenance cost estimation.
- Apply advanced optimization methods to maximize project fiscal efficiency.
- Describe technical approaches for managing multi-million-dollar water infrastructure.
- Implement state-of-the-art equipment to reduce long-term operational expenditures.

COURSE SPECIFICATION

Total Instructional Hours:	**30 Hours**
PDHs Earned:	**30.0**
CEUs Earned:	**3.0**

CURRICULUM MODULES

TOPIC 1: Project Cost Overview and Factors
Analysis of ID: 219 and ID: 220.

TOPIC 2: Cost Estimates – Types and Accuracy
Methodologies defined in ID: 221.

TOPIC 3: Capital and O&M Cost Breakdown
Comprehensive review of ID: 222 and ID: 223.

TOPIC 4: Water Production and Implementation
Operational lifecycle from ID: 224 and ID: 225.

TOPIC 5: Cost Management and Case Studies
Practical application of ID: 226 and ID: 227.

Target Audience: *Project planners, designers, water utility professionals, equipment developers, and O&M specialists responsible for the economic viability of desalination infrastructure.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML520

WIND ENERGY FOUNDATION: INDUSTRIAL MASTERY

As global society navigates the vital transition from fossil fuels, renewable energy emerges as the essential respiratory system of a sustainable future. This technical curriculum provides a sophisticated overview of wind energy, bridging the gap between academic research and industrial execution. By analyzing the structural integrity of turbines from both mechanical and civil engineering perspectives, professionals secure the foundation of carbon-free power generation. This strategic inquiry ensures that modern energy infrastructure remains resilient, efficient, and capable of meeting the urgent demands of a decarbonized global economy.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Establish a sophisticated technical background in global renewable energy systems.
- Identify critical mechanical and civil design criteria for wind turbine infrastructure.
- Apply advanced engineering principles to optimize wind energy production and efficiency.
- Describe industrial perspectives for transitioning from fossil fuels to clean power.
- Execute structural analysis protocols for large-scale wind turbine site development.

COURSE SPECIFICATION

Total Instructional Hours:	**30 Hours**
PDHs Earned:	**30.0**
CEUs Earned:	**3.0**

CURRICULUM MODULES

TOPIC 1: Wind Resource Potential and Estimation
Resource mapping defined in ID: 228, 229, 230.

TOPIC 2: Global Potential and German R&D Models
Benchmark research from ID: 231 and 232.

TOPIC 3: Turbine Technologies and Aerodynamics
Core mechanical principles (ID: 233, 234, 235).

TOPIC 4: Vertical Axis and Multielement Airfoils
Specialized rotor design (ID: 236, 237).

TOPIC 5: Civil Engineering and SSI Analysis
Foundation and site integrity (ID: 238, 239).

TOPIC 6: Case studies: Industrial Scale Wind Farms
Execution benchmarks from ID: 240.

Target Audience: *Engineers, managers and quality personnel involved in the renewable energy field seeking a deep technical understanding of wind turbine infrastructure.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML521

ENERGY MANAGEMENT: EFFICIENCY FOR PROCESS PLANT

In the competitive landscape of the global economy, energy sustainability functions as the vital fuel for industrial longevity and structural success. Beyond environmental responsibility, success hinges on the disciplined utilization of secure and affordable energy sources within complex process environments. This technical curriculum explores the integration of systems analysis and continuous improvement frameworks to optimize energy efficiency. By mastering the synergy between management oversight and technical expertise, organizations transform energy consumption from a variable cost into a strategic pillar of sustainable growth and long-term competitiveness.

MALYOMAR ENGINEERING
We Take care of Value

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify core energy management principles and techniques for process industries.
- Describe international standards and regulatory frameworks relevant to Energy Management.
- Implement systems analysis tools to enhance energy utilization and efficiency.
- Apply continuous improvement methodologies to optimize industrial resource allocation.
- Execute strategic management protocols to ensure long-term energy sustainability.

COURSE SPECIFICATION

Total Instructional Hours:	**20 Hours**
PDHs Earned:	**20.0**
CEUs Earned:	**2.0**

CURRICULUM MODULES

TOPIC 1: Energy Auditing Fundamentals
Core methodologies for identifying systemic energy waste.

TOPIC 2: Efficiency Strategies for Process Systems
Technical interventions for rotating and thermal equipment.

TOPIC 3: ISO 50001 Regulatory Framework
Integrating international management standards into facility DNA.

TOPIC 4: Data Analysis for Resource Optimization
Utilizing performance indicators to track efficiency gains.

TOPIC 5: Continuous Improvement in Energy Management
Applying PDCA cycles to organizational energy consumption.

Target Audience: *Facility managers, energy auditors, sustainability specialists, and industrial engineers responsible for optimizing resource utilization in process plants.*

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD
AUTHORIZED TRAINING PROVIDER

COURSE ID: ML522

WHAT WENT WRONG: PROCESS PLANT DISASTERS

The establishment of modern engineering codes is written in the aftermath of industrial failure, where every accident serves as a vital signal for system correction. This course navigates the historical anatomy of process plant disasters, examining the fatal vulnerabilities within layout and design. By analyzing these technical scars as wealth to be organized and applied, professionals adapt their design provisions to prevent recurrence. This forensic journey ensures that the living systems of industrial production remain resilient against the zero-tolerance reality of operational safety.

MALYOMAR ENGINEERING
www.malyomar.com

INDUSTRIAL INTEGRITY
Zero-Tolerance Standards

MALYOMAR ENGINEERING
We Take care of Value

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify critical safety vulnerabilities through the forensic analysis of process plant disasters.
- Describe the historical evolution of ASME Codes as a response to industrial failure cases.
- Apply documented lessons learned to adapt and optimize modern plant layout design provisions.
- Execute strategic protocols for organizing and utilizing smart databases of engineering failures.
- Establish a zero-tolerance professional mindset for managing technical risks in industrial sites.

UNIT SPECIFICATIONS

Total Instructional Hours:	**20 Hours**
PDHs Earned:	**20.0**
CEUs Earned:	**2.0**

Target Audience: *Engineers, managers, quality personnel, and safety personnel involved in the design, operation, and maintenance of petrochemical and power plants.*

CURRICULUM MODULES

TOPIC 1: USER FRIENDLY & INHERENTLY SAFER DESIGN
Analysis of ID: 248 and ID: 249.

TOPIC 2: PRESSURE TEST HAZARDS & HAZOP PITFALLS
Critical review of ID: 250 and ID: 251.

TOPIC 3: MAINTENANCE ISOLATION & MODIFICATIONS
Procedures for ID: 252 and ID: 253.

TOPIC 4: STRUCTURAL INTEGRITY: SUPPORTS & WATER HAMMER
Case Histories of ID: 254 and ID: 256.

TOPIC 5: RELIEF DISCHARGES & ORGANIZATIONAL CHANGE
Structural safety logic (ID: 255, 258).

TOPIC 6: CASE STUDIES & FINAL FORENSIC REVIEW
Comprehensive examination of ID: 259.

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD
AUTHORIZED TRAINING PROVIDER

COURSE ID: ML523

STEPPING INTO PIPING ENGINEERING - COMPONENTS

Understanding the individual building blocks of a process plant is the foundational prerequisite for any career in industrial piping design and analysis. This high-intensity masterclass provides a comprehensive deep-dive into the "Anatomy of the Artery"—pipes, fittings, flanges, and valves. By mastering the geometric standards, manufacturing methods, and mechanical interfaces of these critical components, professionals bridge the gap between academic theory and field execution. This strategic framework ensures that trainees can identify, specify, and validate the essential hardware that sustains high-pressure industrial organisms in a zero-tolerance world.

MALYOMAR ENGINEERING
We Take care of Value

TECHNICAL SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Identify and classify all major piping components used in process and power industries.
- Master sizing conventions (NPS/DN) and thickness designations (Schedules).
- Differentiate between seamless and welded manufacturing methods for pressure service.
- Specify flange types, facings, and pressure-temperature ratings for code compliance.
- Understand valve functionality and basic selection criteria for flow control.

UNIT SPECIFICATIONS

Total Instructional Hours:	**12 Hours**
PDHs Earned:	**12.0**
CEUs Earned:	**1.2**

Target Audience: *Junior engineers, drafting personnel, mechanical graduates, and technical procurement specialists seeking a practical understanding of industrial piping hardware.*

CURRICULUM MODULES

TOPIC 1: PIPES & TUBULARS

Sizing standards, Schedules, and manufacturing (Seamless vs ERW/SAW).

TOPIC 2: THE FITTINGS GRID

Elbows, Tees, Reducers, and Caps. BW, SW, and Threaded connections.

TOPIC 3: MECHANICAL FLANGES

Types (WN, SO, BL), Facings (RF, RTJ), and Pressure Classes (150# to 2500#).

TOPIC 4: GASKETS & BOLTING

Maintaining joint integrity: Non-metallic vs Spiral Wound technologies.

TOPIC 5: VALVE FUNDAMENTALS

Isolation (Gate/Ball), Regulation (Globe), and Prevention (Check) types.

TOPIC 6: MATERIAL CODES (ASTM/ASME)

Intro to Carbon Steel (A106/A105) and Stainless Steel (A312/A182) standards.

Upon completion, participants receive an official certificate from MALYOMAR.

MALYOMAR ENGINEERING
We Take care of Value

ASME
SETTING THE STANDARD

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML530

PROCESS PLANT LAYOUT: LEVEL-III STRATEGIC MASTERY

Leading the layout function for major capital projects requires a strategic mastery of the industrial organism's complex spatial architecture. This expert-level curriculum moves beyond execution to focus on risk analysis and cost optimization through the lens of Value Engineering. By integrating modularization strategies and brownfield constraints, senior leads harmonize multi-disciplinary interfaces while validating design integrity through stress analysis feedback. This high-level roadmap provides the decision frameworks necessary to mitigate technical risks, ensuring projects achieve an optimal Total Cost of Ownership and absolute global compliance.

MALYOMAR ENGINEERING
www.malyomar.com

INDUSTRIAL ARCHITECTURE
Strategic Execution Standards

MALYOMAR ENGINEERING
We Take care of Value

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Implement a comprehensive Basis of Design to drive project-wide standardization.
- Execute complex risk analysis and HAZOP protocols to validate final design integrity.
- Apply modularization and brownfield integration strategies to optimize project delivery.
- Manage multi-disciplinary interfaces to achieve an optimal Total Cost of Ownership.
- Integrate stress analysis feedback to secure structural safety and code compliance.

UNIT SPECIFICATIONS

Total Instructional Hours:	36 Hours
PDHs Earned:	36.0
CEUs Earned:	3.6

Target Audience: *Lead Piping Engineers, Piping Design Managers, Senior Project Engineers, and Engineering Managers responsible for the technical and economic outcome of major industrial projects.*

CURRICULUM MODULES

TOPIC 1: STRATEGIC LAYOUT LEADERSHIP

Establishing the Basis of Design (BOD) and standards (ID: 311).

TOPIC 2: BROWNFIELD & REVAMP STRATEGY

Advanced layout for existing facility integration (ID: 312).

TOPIC 3: VALUE ENGINEERING (VE)

Cost optimization and functional performance metrics (ID: 313).

TOPIC 4: PIPE RACK & INTERDISCIPLINARY LOADS

Strategy for global infrastructure load management (ID: 314).

TOPIC 5: MODULARIZATION & HEAVY LIFT

Constructability evaluation and module logistics (ID: 315).

TOPIC 6: ADVANCED SAFETY & RISK

HAZOP interface and stress analysis validation (ID: 317, 318).

Upon completion, participants receive an official certificate from MALYOMAR.

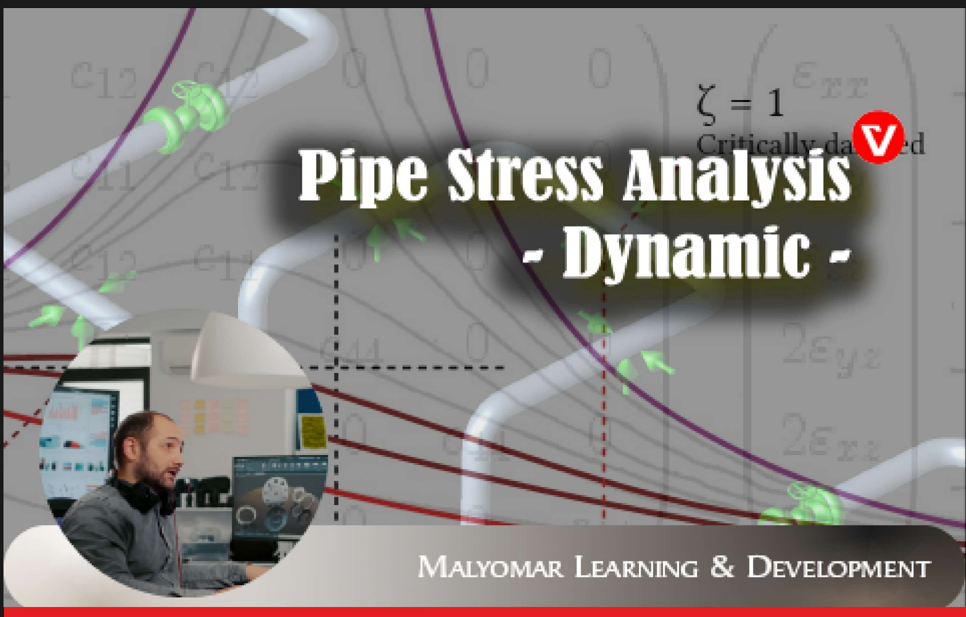
MALYOMAR ENGINEERING
We Take care of Value

AUTHORIZED TRAINING PROVIDER

COURSE ID: ML531

PIPE STRESS ANALYSIS: DYNAMIC

In the high-stakes environment of industrial production, piping systems function as the vital circulatory system that must withstand extreme mechanical and thermal volatility. This advanced curriculum transitions from foundational stress analysis to the complex management of non-linear behaviors, dynamic loads, and fatigue evaluation. By bridging the gap between standard code compliance and expert-level structural optimization, professionals ensure that these critical engineering vessels maintain absolute integrity under the most rigorous operational cycles. This strategic immersion provides the analytical depth necessary to mitigate catastrophic failure and ensure long-term facility resilience.



MALYOMAR ENGINEERING
We Take care of Value

COURSE SYLLABUS

REVISION 2026.15

LEARNING OBJECTIVES

- Master advanced stress analysis techniques for non-linear piping behaviors and complex loads.
- Evaluate fatigue and structural longevity under cyclic thermal and mechanical stresses.
- Apply sophisticated modeling protocols for specialized piping components and restraints.
- Execute high-level engineering judgments to optimize system flexibility and support density.
- Identify critical failure modes in high-temperature and high-pressure piping environments.

UNIT SPECIFICATIONS

Total Instructional Hours:	30 Hours
PDHs Earned:	30.0
CEUs Earned:	3.0

Target Audience: *Senior Piping Stress Engineers, Mechanical Lead Engineers, and structural integrity specialists responsible for high-pressure and high-temperature industrial systems.*

CURRICULUM MODULES

TOPIC 1: NON-LINEAR BOUNDARY CONDITIONS
Modeling friction, gaps, and sophisticated support logic.

TOPIC 2: ADVANCED FATIGUE ASSESSMENT
Evaluation of structural longevity under thermal cycling.

TOPIC 3: DYNAMIC LOAD MANAGEMENT
Analyzing transient forces and vibration impacts.

TOPIC 4: SPECIALIZED COMPONENTS MODELING
Expansion joints, bellows, and non-standard restraints.

TOPIC 5: STRUCTURAL SYSTEM OPTIMIZATION
Optimizing flexibility and minimizing equipment reactions.

TOPIC 6: ENGINEERING DECISION FRAMEWORKS
Syllabus Integrated Workshop (ID: 371, 837).

Upon completion, participants receive an official certificate from ASME.

ACHIEVE YOUR WORKFORCE DEVELOPMENT GOALS

Contact: info@malyomar.com

Visit: www.malyomar.com