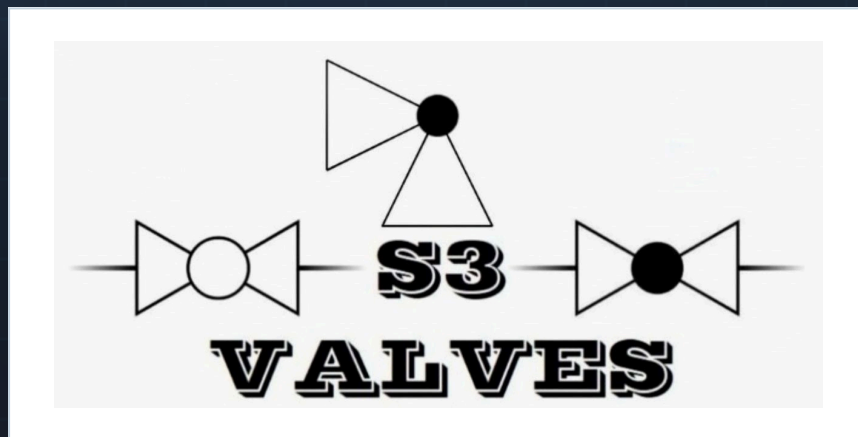


FLOW CONTROL INSTRUMENTS AND EQUIPMENTS



PRECISION FLOW & CONTROL SOLUTIONS

Engineered for Reliability. Built for Industry.

OIL &
GAS

CHEMICAL

PHARMACEUTICAL

WATER
TREATMENT

POWER

PROCESS
INDUSTRIES

DESIGN & SYSTEM ANALYSIS

First, we turn your requirement into an engineered design. We create equipment models, piping layouts, fabricated structures, and integrated engineering data before money is spent on production.

EQUIPMENT DESIGN



Engineering robust, efficient and safe equipment tailored to your process and operational needs.

- Pressure vessels & storage tanks
- Heat exchangers & process equipment
- Custom skids & packaged units
- Piping & nozzle engineering
- Code compliance (ASME, API, TEMA, etc.)
- 3D modeling & detailed documentation
- Stress analysis & optimization
- Manufacturability & cost-effective solutions

SAFE & RELIABLE
Designed for safety and long-term reliability.

OPTIMIZED DESIGN
Enhanced performance with optimized engineering.

CODE COMPLIANT
Built in accordance with global industry standards.

COST EFFICIENT
Cost-effective solutions without compromising quality.

EQUIPMENT DESIGN

PIPELINES & PIPING SYSTEMS



Design, analyze and optimize complete pipeline and piping systems with precision, safety and reliability.

- INTELLIGENT DESIGN**
3D modeling and parametric design for complex routing and layouts.
- STRESS & LOAD ANALYSIS**
Evaluate stresses, loads and flexibility to ensure code compliance.
- ISOMETRIC & DOCUMENTATION**
Generate accurate isometric drawings, BOMs and fabrication deliverables.
- OPTIMIZED PERFORMANCE**
Improve efficiency, minimize pressure drop and reduce life-cycle costs.

OIL & GAS

PETROCHEMICAL


WATER TREATMENT

POWER PLANTS

MARINE & OFFSHORE

PIPELINES & PIPING SYSTEMS

FABRICATED STRUCTURES



Engineering safe, efficient and economical fabricated structures built to exacting standards.

- STRUCTURAL STEEL DESIGN**
High-performance structural steel designs for industrial applications as per global codes.
- DETAILED 3D MODELING**
Accurate 3D models with connections, plates, stiffeners and assemblies for seamless fabrication.
- CONNECTION DESIGN**
Design of welded, bolted and base plate connections for strength and constructability.
- DRAWINGS & DOCUMENTATION**
Comprehensive shop drawings, I&M drawings, BOMs and material lists for fabrication and erection.
- SAFETY & COMPLIANCE**
Designed to meet international standards with a focus on safety, reliability and durability.

INDUSTRIAL APPLICATIONS
Platforms, pipe racks, towers, frames, walkways, ladders and custom structures.

OPTIMIZED & COST-EFFECTIVE
Optimized designs for cost, material utilization and ease of fabrication.

EASY FABRICATION & ERECTION
Designs that ensure ease of fabrication, transportation and on-site erection.

BUILT TO LAST
Durable, robust and reliable structures engineered for long-term performance.

PIPE RACKS & SUPPORTS

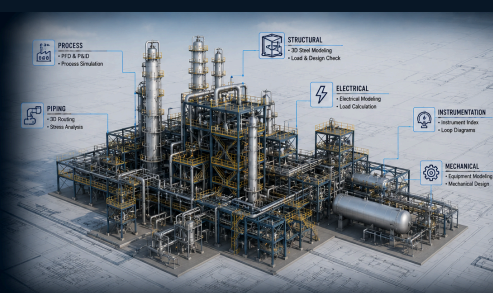
INDUSTRIAL PLATFORMS

STRUCTURAL FRAMES

WALKWAYS & ACCESS STRUCTURES

FABRICATED STRUCTURES

INTEGRATED ENGINEERING



End-to-end engineering solutions that integrate disciplines, processes and data for seamless project execution from concept to commissioning.

- MULTI-DISCIPLINE ENGINEERING**
Integration of process, mechanical, piping, structural, electrical and instrumentation disciplines in a unified environment.
- COLLABORATIVE WORKFLOW**
Real-time data sharing and collaboration across teams and locations for better coordination and decision-making.
- DATA & DOCUMENT MANAGEMENT**
Centralized data management, version control and traceability for accurate and up-to-date project information.
- DESIGN INTEGRITY & COMPLIANCE**
Ensure code compliance, standard adherence and quality through automated checks and validation tools.
- PROJECT EFFICIENCY**
Reduce engineering time, minimize errors and optimize resources to deliver projects on time and within budget.

ONE INTEGRATED PLATFORM
Unified solution for all engineering disciplines and project data.

BETTER COLLABORATION
Improve communication and reduce rework across teams.

FASTER PROJECT DELIVERY
Streamlined workflows and automated processes reduce project timelines.

HIGHER QUALITY & ACCURACY
Rigorous checks and ensure design integrity.

COST OPTIMIZATION
Optimize resources and reduce overall project costs.

INTEGRATED ENGINEERING

CHOOSE SCOPE

Start with design and analysis, simulation, manufacturing guidance, or the complete end-to-end path.

DESIGN OUTPUTS

3D models, routed pipes and tubes, assemblies, drawings, BOMs, costing support, and documentation.

ENGINEERING LOGIC

Design intent, code awareness, coordination, and manufacturing-ready detail in one workflow.

SIMULATION & VALIDATION

Then, we prove the design before it reaches the shop floor. Simulation helps reduce risk, improve performance, and confirm whether the product can survive real operating conditions.

1. PIPELINE STRESS ANALYSIS

PURPOSE
Evaluate stresses and displacements in piping systems under operating conditions.

KEY OUTPUTS

- Von Mises Stress Distribution
- Displacement Plot
- Supports & Loads

ANALYSIS DETAILS

Analysis Type	Linear Static
Code	ASME Section VIII, Div. 1
Design Pressure	1.6 MPa (g)
Design Temperature	150 °C
Material	SA-516 Gr. 70
Element Type	Shell (Quadrilateral)
No. of Elements	128,650
No. of Nodes	142,700

DESIGN VERIFICATION Min. Factor of Safety (FOS) (ASME Section VIII, Div. 1 Compliance) **2.35** ✓

STRESS DISTRIBUTION (VON MISES) Maximum stress occurs at nozzle to shell junction.

DISPLACEMENT (MM) Maximum displacement: 2.87 mm

FACTOR OF SAFETY (FOS) Minimum FOS: 2.35 (> 1.5 OK)

DESIGN CHECK SUMMARY All design checks passed as per ASME Code requirements.

TYPICAL APPLICATIONS

- Oil & Gas Pipelines
- Process Piping Systems
- Marine & Offshore Pipelines
- Power Plant Piping

BENEFITS

- Ensure Safety & Reliability: Validate design against code and operating loads.
- Optimize Design: Identify critical areas and optimize thickness/weights.
- Reduce Cost & Risk: Minimize over-design and avoid costly failures.
- Code Compliance: Ensure compliance with international standards.
- Better Performance: Enhance equipment life and operational efficiency.

PIPELINE STRESS ANALYSIS

2. EQUIPMENT DESIGN SIMULATION (PRESSURE VESSEL)

PURPOSE
Verify structural integrity and performance of pressure vessel under internal pressure and operating conditions.

KEY OUTPUTS

- Stress Distribution (Von Mises)
- Displacement
- Strain
- Factor of Safety
- Design Verification

ANALYSIS DETAILS

Analysis Type	Linear Static
Code	ASME Section VIII, Div. 1
Design Pressure	1.6 MPa (g)
Design Temperature	150 °C
Material	SA-516 Gr. 70
Element Type	Shell (Quadrilateral)
No. of Elements	128,650
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FACTOR OF SAFETY (FOS) Minimum FOS: 2.35 (> 1.5 OK)

DESIGN CHECK SUMMARY All design checks passed as per ASME Code requirements.

TYPICAL APPLICATIONS

- Process Industry
- Oil & Gas
- Petrochemical
- Power Generation
- Pharmaceutical

BENEFITS

- Ensure Safety & Reliability: Validate design against code and operating loads.
- Optimize Design: Identify critical areas and optimize thickness/weights.
- Reduce Cost & Risk: Minimize over-design and avoid costly failures.
- Code Compliance: Ensure compliance with international standards.
- Better Performance: Enhance equipment life and operational efficiency.

EQUIPMENT DESIGN SIMULATION

3. STRUCTURAL ANALYSIS SIMULATION (FABRICATED STRUCTURE)

PURPOSE
Evaluate strength, stability and serviceability of fabricated structures under applied loads and operating conditions.

KEY OUTPUTS

- Stress Distribution (Von Mises)
- Displacement
- Support Reactions
- Utilization / Unity Check
- Design Verification

ANALYSIS TYPE

- Linear Static Analysis
- Load Combination (ASCE / ASCE)
- Steel Code Check (ASCE 360)

ANALYSIS DETAILS

Structure Type	Fabricated Steel Platform
Element Type	Beam / Shell Elements
Load Cases	Dead, Live, Wind, Equipment
No. of Elements	245,800
No. of Nodes	312,450
Code	ASCE 360-16
Design Method	Allowable Stress Design (ASD)

Load Case: 1.2D + 1.6L + 0.5W

STRESS DISTRIBUTION (VON MISES) Max. Stress: 236 MPa

DISPLACEMENT (BEZELANT) Max. Displacement: 5.42 mm

SUPPORT REACTIONS

FX (kN)	FY (kN)	FZ (kN)
-12.6	8.4	1523.7

UTILIZATION / UNITY CHECK Max. Unity: 0.82 ✓ OK

BENEFITS

- Ensure Structural Safety: Verify strength and stability against all critical load cases.
- Optimized Design: Identify critical areas and optimize material usage.
- Code Compliance: Complies with applicable international design codes.
- Cost & Time Savings: Reduce rework through accurate and reliable analysis.
- Reliable Performance: Enhance durability and operational reliability.

STRUCTURAL ANALYSIS SIMULATION

4. SIMULATION-DRIVEN ENGINEERING (ACCURATE ANALYSIS, OPTIMIZED DESIGN, RELIABLE PERFORMANCE)

PURPOSE
Leverage advanced simulation technologies to predict real-world performance, minimize risks, and optimize design across disciplines.

KEY BENEFITS

- Improve Design Accuracy: Predict performance early in the design phase.
- Reduce Risk & Uncertainty: Identify potential issues and mitigate failures.
- Optimize Cost & Resources: Reduce over-design and prototype requirements.
- Faster Time to Market: Accelerate approvals and project execution.
- Ensure Compliance: Meet industry codes and regulatory standards.

1. CFD ANALYSIS - FLOW & PRESSURE

APPLICATIONS

- Pressure Drop & Flow Distribution
- Pump Sizing & System Optimization
- Mixing Analysis
- Cavitation Prediction

2. STRUCTURAL ANALYSIS - STRESS & DISPLACEMENT

APPLICATIONS

- Strength & Stability Evaluation
- Fatigue & Life Assessment
- Support & Load Analysis
- Code Compliance Verification

3. THERMAL ANALYSIS - TEMPERATURE DISTRIBUTION

APPLICATIONS

- Heat Transfer Analysis
- Insulation Design
- Thermal Stress Evaluation
- Equipment Performance

4. DYNAMIC ANALYSIS - VIBRATION & RESPONSE

APPLICATIONS

- Vibration Analysis
- Seismic & Wind Response
- Equipment Dynamics
- Support Optimization

SIMULATION WORKFLOW

1. Define Requirements & Objectives
2. Build 3D Model & Geometry
3. Setup Physics & Boundary Conditions
4. Run Simulation & Solve
5. Analyze Results & Validate
6. Optimize Design & Iterate

REAL-WORLD IMPACT

- Enhanced Safety: Predict failure modes and ensure safe operation.
- Cost Savings: Optimize material usage and reduce rework.
- Improved Reliability: Increase equipment life and uptime.
- Sustainable Design: Support energy efficiency and environmental goals.
- Better Decision Making: Data-driven insights for confident decisions.

SIMULATION-DRIVEN ENGINEERING

ANALYSIS SCOPE

Structural, thermal, fatigue, buckling, pressure vessel, topology, dynamic, and CFD studies.

KEY OUTPUTS

Stress distribution, displacement, support reactions, FOS, load checks, and design verification.

PROJECT BENEFIT

See risk earlier, improve the design faster, and enter manufacturing with stronger confidence.

MANUFACTURING SUPPORT

Finally, we can manufacture what we design and validate. The same team that understands the design intent can help turn it into a finished industrial product.

END-TO-END SOLUTIONS: DESIGN • ANALYZE • SIMULATE • MANUFACTURE
 • From Concept to Commissioning – We Deliver.

1 DESIGN	2 ANALYSIS	3 SIMULATION	4 MANUFACTURING
 <p>Intelligent & Detail-Oriented Design</p> <ul style="list-style-type: none"> Process, Piping & Equipment Design 3D Modeling & Detailing (PDS / E3D) GA, Layouts, Isometrics & Drawings Code Compliance & Design Standards Interdisciplinary Coordination <p>3D MODELING, ENGINEERING DRAWINGS, DATA & DOCUMENTATION</p>	 <p>Accurate & Reliable Engineering Analysis</p> <ul style="list-style-type: none"> Piping Stress Analysis (Static / Dynamic) Equipment Design & Verification Structural Analysis (Static / Dynamic) Fatigue, Buckling & Load Evaluation Code Check (ASME, API, AISC, etc.) <p>PIPING STRESS ANALYSIS, EQUIPMENT ANALYSIS, STRUCTURAL ANALYSIS</p>	 <p>Predict Performance. Optimize Design.</p> <ul style="list-style-type: none"> CFD – Flow, Pressure & Heat Transfer Thermal Analysis Dynamic / Transient Analysis Vibration & Response Analysis Design Optimization & What-if Studies <p>CFD SIMULATION, THERMAL SIMULATION, DYNAMIC SIMULATION</p>	 <p>Quality Manufacturing. On-Time Delivery.</p> <ul style="list-style-type: none"> Skid & Module Fabrication Piping Fabrication & Spooling Pressure Vessel & Tank Fabrication Structural Steel Fabrication QA/QC, NDT & Surface Treatment <p>FABRICATION, QUALITY ASSURANCE, DELIVERY & SUPPORT</p>

One Integrated Approach | Better Performance | Reduced Risk & Cost | Trusted Partner, End to End

MANUFACTURING CAPABILITIES

MANUFACTURING

			
PRESSURE VESSELS	PROCESS SKIDS	PIPING SYSTEMS	MODULAR STRUCTURES

PRESSURE VESSELS



MANUFACTURE

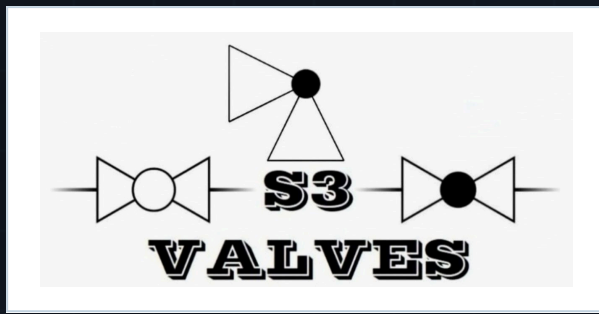
Designed parts, assemblies, pressure vessels, process skids, routed systems, and valve assemblies.

FABRICATION

DFM-ready components, pipe spooling, structural fabrication, electrical routing, and modular builds.

END-TO-END

Bring us the requirement. We can support a single stage or coordinate design, simulation, and manufacturing together.



FLOW & CONTROL SOLUTIONS

PHONE

9822795225
7887516306

EMAIL

sales@s3valves.in

FACTORY ADDRESS

I-8, Plot No. K-3, Near Nakshatra Hotel, Udyog Bhavan No. 2, Anand Nagar, MIDC Ambernath - 421506.



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CONTROLLING FLOW WITH ENGINEERING EXCELLENCE.