PASS/START-PROF
Training Agenda

passuite.com

PSRE (Piping System Research & Engineering Co.) offers a complete solution for engineering of Piping Systems and related equipment including engineering consulting and the PASS Software. By bringing its experience from many engineering projects into the PASS software tools and combining this embedded intelligence with powerful capabilities and unsurpassed usability, PSRE makes piping and equipment analysis practical for every engineer and designer while reducing the time, effort, and cost to perform the analysis.

PASS/START-PROF Training Agenda

PASS/START-PROF provides comprehensive pipe stress, flexibility, stability, and fatigue strength analysis with related sizing calculations according to international and national codes and standards. First introduced in 1965, PASS/START-PROF combines a highly efficient solver, powerful analysis features, a user friendly GUI, an intuitive 3D graphical pre/post-processor, and a detailed help system with embedded intelligence from generations of piping design experts.

TRAINING DURATION: 4 DAYS

Day 1.   Basic Training and Advanced Training. Theory lectures and live demonstration of software for each topic

Day 2.   Basic Training and Advanced Training. Theory lectures and live demonstration of software for each topic

Day 3.   Basic Training and Advanced Training. Theory lectures and live demonstration of software for each topic

Day 4.   Full Day Workshop. All attenders will create their own piping system model in PASS/START-PROF, interpret the analysis results and improve piping system so satisfy code requirements

The training is extended for an additional day if studying of Russian standards is required.

TRAINING SCHEDULE

10:00 AM	Training start time
11:30 AM — 11:45 AM	Break
01:00 PM — 02:00 PM	Lunch Break
03:30 PM — 03:45 PM	Break
05:00 PM	Training end time

Training agenda can be modified based on attendees' needs and requirements.

PASS/START-PROF Pipe Stress Analysis Basic Training Agenda

PART 1. OVERVIEW

- Available codes
- Configurations
- Modules: Piping, START-ELEMENTS

PART 2. CREATING PIPING MODEL

- How to Create New Project. Project Settings
- 3D Navigation (Scaling, Panning, Rotating, View Selection, 3D, Transparent)
- Adjusting User Interface. Dockable Result Windows. Using Filters and Sorting
- How to Add Pipe Elements. Coordinate Systems
- How to Insert U-shape Pipe Loop
- How to Add Anchors. Allowable Loads
- How to Add Bends
- How to Add Node on the Pipe, Bend, and Edges of the Tee, Valve, Reducer
- How to Add Sliding (Resting) Supports. Adding Multiple Supports
- How to Add a Tee
- How to Add a Reducer
- How to Add a Valve
- How to Add a Flange Pair
- How to Work with Load Cases. Operation Mode Editor
- How to Add Wind, Ice and Snow Loads
- How to Add Seismic Loads
- How to Add Occasional Forces. Slug Flow, Water Hammer, Relief Valve Thrust Force
- How to Change Properties in Several Pipes or Elements
- How to Work with Project Tree
- How to Add Guide Support

- How to Add Line Stop
- How to Create Special Support Types. Non-Standard Restraint
- How to Copy Piping Segment
- How to Rotate Piping Segment
- How to Mirror Piping Segment
- How to Add Expansion Joints
- How to Associate Global Coordinates to a Node. Working with Several Piping Segments
- Pipe Element List Window
- How to Use More Accurate SIF's and k-factors from ASME B31J

PART 3. ANALYSIS RESULTS

- Deformed Shape Animation
- Stress Table
- Support Loads Table
- Displacements Table
- Support Loads and Displacements Table
- Internal Forces Table
- Flange Leakage Table
- Buckling Analysis Table

PART 4. SPECIAL TOOLS

- How to Change Units
- How to Renumber Nodes
- How to Measure Distance Between Nodes
- How to Measure Angle Between Pipes
- How to Find a Node
- How to Remove Unnecessary Nodes
- How to Add Name for Node, Element or Pipe
- How to Customize Graphics and User Interface
- How to Create List of Fittings, Pipes, Supports
- How to Transfer Spring Properties

PART 5. DATABASES

- Material Database
- Insulation Database

- Expansion Joint Database
- Pipe, Bend, Tee, Reducers Database

PART 6. SPRING SELECTION

- Variable Springs Database
- Constant Springs Database
- How to Add Variable Spring Hangers and Supports
- Variable Spring Hangers and Supports Selection Table
- Constant Spring Hangers and Supports Selection Table
- How to Transfer Spring Properties

PART 7. IMPORT AND EXPORT

- How to Import Model From CAESAR II
- How to Import Model from PCF File
- How to Import and Export Model to PDMS
- How to Import and Export data to Neutral Format
- How to Export Report to MS WORD
- How to Export Table to MS EXCEL
- How to Export Image

PART 8. CREATING BURIED PIPING MODEL

- How to Add Soil for Underground Pipe
- Soils Database
- How to Add Water for Submerged Pipes
- Restrained and Unrestrained Pipes

PART 9. CREATING FRP/GRP/GRE PIPING MODEL

- How to Create FRP/GRP/GRE Piping Project
- How to Modify FRP/GRP/GRE Material Database
- How to Check FRP/GRP/GRE Piping Stresses

PART 10. CREATING HDPE, PP, PVC PIPING MODEL

- How to Create Plastic Piping Project
- How to Modify Plastic Material Database
- How to Check Plastic Piping Stresses

PASS/START-PROF Pipe Stress Analysis Advanced Training Agenda

PART 1. THEORY BEHIND THE PIPING STRESS CALCULATION

- Detailed information on PASS/Start-Prof Project Settings
- What is Ambient Temperature
- Restraint Types. Standard Restraints Models. Nonlinear Restraints
- Pressure Thrust, Pressure Elongation, Bourdon Effect
- Tee Model in PASS/START-PROF. Code Issue in ASME B31.3
- Bend Model in PASS/START-PROF. Bend Wall Thickness and Flexibility Issue
- Buried Piping Analysis Theory. Restrained and Unrestrained Pipes
- Considering Creep Effect in High Temperature Piping Systems
- Variable and Constant Spring Selection Theory
- What is the Cold State of Piping
- How to Avoid Zero Anchor Loads

PART 2. EQUIPMENT MODELING TECHNIQUES

- Modeling of Pressure Vessels, Heat Exchangers Modelling. Vertical and Horizontal. Adding Nozzle Local and Global Flexibility using Nozzle-FEM Software or WRC 107/297. Adding Nozzle Movements Caused by Vessel Temperature Expansion. Checking Nozzle Allowable Loads and Stresses
- Modeling of Vertical Columns
- Modeling of Pumps, Compressors, and Turbines
- Modeling of Inline Pumps, Filters, and 2, 3, 4-way Valves With Drive
- Modeling of Flanges, Leakage Check
- Modeling of Storage Tanks
- Modelling of Fired Heaters
- Modeling of Air Coolers
- Modeling Non-Standard Tees with D/t>100 using Nozzle-FEM Software
- Modeling of Axial Expansion Joint

- Modeling of Lateral Expansion Joints
- Modeling of Hinged and Gimbal Expansion Joint
- Modeling of Pressure Balanced Expansion Joint
- Modeling of Metal Hose
- Modelling of Trunnions

PART 3. ANALYSIS RESULTS INTERPRETATION

- Wall Thickness Check Against Internal Pressure Load
- What is Axial, Bending, Torsion Stresses and Equivalent Stresses
- What is Stress Intensification Factors
- Flexibility and Stiffness Matrix Method of Beam Model Analysis
- Sustained Stress Check by Codes. Code Issues
- Occasional Stress Check by Codes
- Expansion Stress Check by Codes. Code Issues
- How to Use Support Loads Table
- How to Use Displacements Table
- How to Use Internal Forces Table
- How to Use Flange Leakage Table
- How to Use Buckling Analysis Table

PART 4. SPECIAL MODELING TECHNIQUES AND THE MOST FREQUENT MISTAKES

- Boundary Conditions and Piping Continuation Unknown
- Modelling of Modular Design Piping
- Modelling Connection to Existing Piping Network
- Modelling of Cold-Spring
- Modeling of Tall Pipe Risers
- Modelling of Water Hammer Loads
- Modelling of Slug Flow Loads
- Modelling of Relief Valve Thrust Forces
- Modeling of Thermal Bowing

PART 5. MODEL DESIGN IMPROVEMENT

- How to Reduce Sustained Stresses
- How to Reduce Expansion Stresses
- How to Reduce Nozzle Loads