



## AutoPIPE® Vessel

Comprehensive Software for the Mechanical Design of Pressure Vessels

AutoPIPE Vessel enables fully automatic workflows, including complete global codes and applied loadings for pressure vessels to deliver greater productivity, safer designs, cost-effective manufacturing, and improved project collaboration. AutoPIPE Vessel performs truly optimized pressure vessel design in minutes.

### MAXIMIZE PRODUCTIVITY OF SKILLED ENGINEERING RESOURCES

AutoPIPE Vessel provides the most productive, cost-effective, and accurate designs for the safe operation of pressure vessels under all loading conditions. The software supports numerous regional and global standards including pressure vessel design codes and regional wind and seismic codes. By enabling the use of both new and older design codes, and material standards from any year, it improves flexibility for rerating and revamping of existing equipment. Enabling these design codes and material standards provides the opportunity to design for brownfield and greenfield projects, shortens design time and rework by eliminating guesswork, and reduces training time by providing a single, easy-to-use application for global projects. It ensures confidence in pressure vessel design and improves competitiveness through higher design quality.

### OPTIMIZED AND FLEXIBLE VESSEL DESIGN AND MANUFACTURING

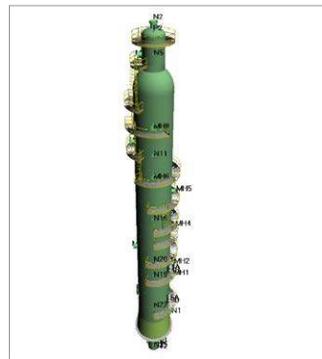
With AutoPIPE Vessel, manufacturers can evaluate options to provide comprehensive, high-quality solutions for all loading and manufacturing scenarios in minutes. Support for manufacturing component details and drawings as well as installation and operating conditions, enables high-quality designs and reduces manual drawing time and rework, improving competitiveness. Fatigue analysis, installation and support-in-place design and analysis, pressure testing, automatic drawing production, and cost estimation are key features.

### FASTER TIME TO PRODUCTION

Comprehensive, flexible modeling and an easy-to-use interface enables designers to find solutions quickly, improves the efficiency of modeling, and increases profitability. This allows manufacturers to improve productivity and delivery time and enables easier, more accurate design and analysis.

### IMPROVED COLLABORATION

AutoPIPE Vessel shares data with plant design software such as AutoPLANT® and PDS and shares nozzle load data with AutoPIPE while automatically producing drawings in all major CAD formats (for example MicroStation® and AutoCAD). Through its superior interoperability, AutoPIPE Vessel ensures greater efficiency in the supply chain and greater alignment with engineering companies. By enabling engineers to collaborate more efficiently, it reduces iterations and errors, enables better quality designs, unifies workflows across a comprehensive set of capabilities, and improves data handover to operations and maintenance.



*Vertical pressure vessel with platforms and staircase.*



*Vessel with limpet coils.*

## SYSTEM REQUIREMENTS

**MINIMUM:** Intel or AMD processor 3.0 GHz or greater, Windows 8 Professional (64 bit) or higher, Windows 10 (64 bit) or higher, Microsoft Office 2013 or higher, 256 MB RAM, 1 GB hard disk, any industry-standard video card that supports OpenGL 3D graphics

**RECOMMENDED:** Adobe Acrobat Reader 10.0 or higher

# AutoPIPE Vessel At-A-Glance

## DESIGN CODES

- ◆ ASME VIII Div. 1 and Div. 2
- ◆ BS PD 5500
- ◆ EN 13445
- ◆ CODAP Div. 1 and Div. 2
- ◆ AD Merkblätter
- ◆ GOST R 52857, 34233
- ◆ GB-150

## OCCASIONAL LOAD CODES

- ◆ ASCE 7
- ◆ ANSI A58.1
- ◆ UBC and IBC
- ◆ EN 1991-1-4 and 1998
- ◆ BS 6399 Part 2 and CP3 Part 2
- ◆ DIN 4149
- ◆ AD-Merkblätter S3/0

- ◆ IS 875 Part 3 and 1893
- ◆ NBR 6123
- ◆ Neige et Vent 65 - Neige 84
- ◆ NBE AE 88
- ◆ DL 235/83
- ◆ NBC Canada
- ◆ GOST R 51273

- ◆ Parasismique PS 92 and PS 69
- ◆ LNEC
- ◆ Turkish Rules
- ◆ NB/T 47041
- ◆ GB 50011

## PRESSURE VESSELS

- ◆ Seven international design codes to ASME VIII Division 1 and 2, including ASME code case 2695, GB-150, BS PD 5500, EN 13445, AD Merkblätter, CODAP, GOST R 52857, and GOST 34233
- ◆ Support types:
  - ◆ Vertical support – Skirt, legs, brackets, and intermediate skirt
  - ◆ Horizontal support – Up to 10 saddles
- ◆ Nozzle reinforcement and flange design to all major global standards including EN 13445 Annex G/EN 1591
- ◆ Full fatigue analysis of welded components to ASME VIII, PD 5500, CODAP, ADM, GOST, and EN 13445
- ◆ Vertical vessels on rigid or flexible anchor base, legs or brackets, horizontal vessels with multiple saddles with rigid or spring stiffness
- ◆ Advanced lifting and rigging analysis evaluated every 10 degrees for on-site installation
- ◆ Comprehensive in-situ design, transportation, and installation design tools built in
- ◆ Pressure-testing design analysis covering all on-site environment conditions
- ◆ Wind vortex shedding analysis, blast, and motion load analysis
- ◆ Plate cutting profile drawings
- ◆ Full weld details for nozzles and reinforcement including location of all component welds
- ◆ Flanges (gasket and bolting details and installation)
- ◆ Multichamber (up to three chambers), jacketed vessels, and vessels with external limpet coils
- ◆ Vertical vessels and columns with platforms, ladders, demister pad, and trays
- ◆ Final drawing of the flattening of the shell profile with all nozzles, saddles, reinforcement, packing support, and more, for an accurate check for interference and location of the longitudinal welds along the complete vessel

## GENERAL

- ◆ Comprehensive pressure vessel modeling, including horizontal and vertical vessels, multichamber (up to three chambers), jacketed vessels, model platforms, ladders, demister pads, trays, insulations and design supports, lifting lug, trunnions, apply external loads, and moments
- ◆ Comprehensive import from and export to 3D CAD formats including PDS (3D), MicroStation (2D and 3D), AutoCAD (2D and 3D DWG), AutoPLANT (3D), and SolidWorks (3D), export to IFC file format, export to STAAD Foundation Advanced via iTwin Analytical Modeling (*formerly known as ISM*)

- ◆ U.S. customary and SI units, MKS units (*for input only*)
- ◆ Smart import of sustained, thermal, and occasional nozzle loading from Bentley AutoPIPE
- ◆ Languages: English, German, Spanish, French, Polish, Portuguese, Chinese, Croatian, and Russian (fully customizable dictionary)
- ◆ QA formatted Microsoft Word reports for all designed components and full vessel loading cases, including bending moment diagrams, weld, nozzle, and flange sketches and full design code references
- ◆ All load case combinations (operating, installation, hydrotest, wind, motion, blast, shutdown, seismic, and vortex shedding) is reported for the calculation
- ◆ Machine plate fabrication
- ◆ Plate cutting profiles, optimized welding pattern
- ◆ Interface to NC machines
- ◆ Standard nozzle load tables available
- ◆ Local load analysis to PD 5500 Annex G or G.2.8 Alt. rules, WRC 107/297/537, EN 13445, GOST, Roark
- ◆ Saddle design with Zick analysis to ASME VIII Div 2, PD 5500, CODAP, EN 13445, AD, and GOST
- ◆ Link to NozzlePRO for finite element analysis
- ◆ Comprehensive material databases for ASME, DIN, EN, GB-150, BS, GOST, ASTM, and NF (French) materials
- ◆ Customizable company standards for saddle supports and nozzle loading
- ◆ Multiple codes for occasional loading including wind, vortex shedding, seismic, motion, and blast loading

## OPTIMIZED DESIGN

- ◆ Erected, lifting, operating, test, and shutdown loading conditions evaluated
- ◆ Nozzle reinforcement, flange design, support design, and vessel deflection and rotation
- ◆ Automatic detailed cost estimations (fully customizable in Microsoft Excel)

## AUTOMATIC DRAWING PRODUCTION

- ◆ Automated detailed drawings in seconds
- ◆ Fully dimensioned engineering and manufacturing drawings
- ◆ White space management and configurable drawing sheet layout
- ◆ Customizable data and connection details to meet manufacturer standards
- ◆ Bills of material to meet company standards