



## AutoPIPE® Vessel *Powered by Microprotol*

### Comprehensive Software for Vessel Design

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

#### Integrated Modeling and Documentation Workflows

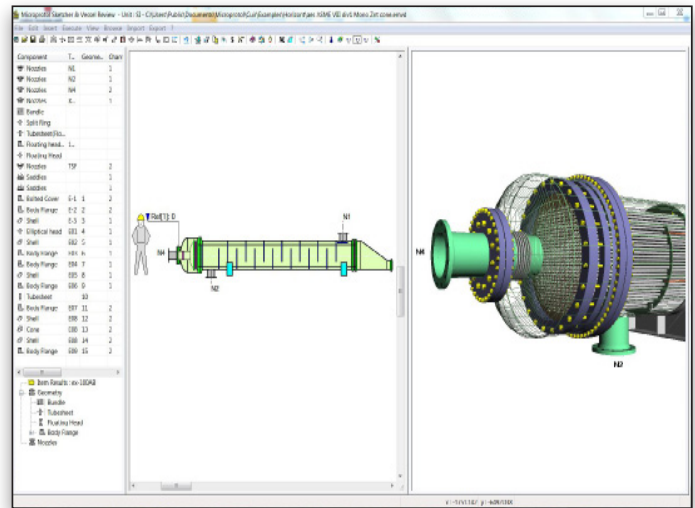
The CONNECT Edition provides a common environment for comprehensive project delivery and connects users, projects, and your enterprise. With the CONNECT Edition, you now have a personal portal to access learning, communities, and project information. With the new project portal, your project teams can review project details and status, and gain visibility into project performance. With the CONNECT Edition, your project team may also wish to take advantage of the new ProjectWise® Connection Services including Project Performance Dashboards and Issues Resolution.

#### Maximize Productivity of Skilled Engineering Resources

AutoPIPE Vessel provides the most productive, cost-effective, and accurate designs for the safe operation of vessels under all loading conditions. The software supports numerous regional and global standards including pressure vessel design codes and regional wind, seismic, wave, and blast loading codes. By enabling use of both new and older (going back to 1988) design codes, and material standards from any year, it improves flexibility for re-rating and revamping of existing vessels. This provides the opportunity to design for both 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 vessel design, and improves competitiveness through higher design quality.

#### Optimized and Flexible Vessel Design and Manufacturing

With AutoPIPE Vessel powered by Microprotol, 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.



*Kettle floating head heat exchanger with eccentric cone.*

#### 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 powered by Microprotol imports thermal design data from HTRI, Aspen, Prosim, and Honeywell software to automate heat exchanger model creation. It 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 (e.g. MicroStation® and AutoCAD). Through its superior interoperability, AutoPIPE Vessel powered by Microprotol ensures greater efficiency in 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.

## System Requirements

### Processor

Pentium III or higher

### Operating System

Windows 7 Professional (32- or 64-bit), Windows 8 or 8.1 (32- or 64-bit), Windows 10 (32- or 64-bit)

### Software

Microsoft Office 2003 or higher  
Adobe Acrobat Reader 7.0 or higher

### Memory

256 MB RAM

### Hard Disk

1GB

### Video Graphics Card

Any industry-standard video card that supports OpenGL 3D graphics

**Find out about Bentley at: [www.bentley.com](http://www.bentley.com)**

### Contact Bentley

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Outside the US +1 610-458-5000

### Global Office Listings

[www.bentley.com/contact](http://www.bentley.com/contact)

## Vessel, HE, Tank, Boiler, & Air Cooler design codes:

- ASME VIII Div. 1 & Div. 2
- BS PD 5500
- EN 13445
- CODAP Div. 1 & Div. 2
- AD Merkblatter
- GOST R 52857
- API 650 & 661
- NF E32, E101 to E105
- GB-150

## Occasional Load Codes:

- ASCE 7
- ANSI A58.1
- UBC & IBC
- EN 1991-1-4 & 1998
- BS 6399 Part 2 & CP3 Part 2
- DIN 4149
- AD-Merkblatter S3/0
- IS 875 Part 3 & 1893
- NBR 6123
- Neige et Vent 65 - Neige 84
- NBE AE 88
- DL 235/83
- NBC Canada
- GOST R 51273
- Parasismique PS 92 & PS 69
- LNEC
- Turkish Rules

## AutoPIPE Vessel At-A-Glance

### Heat Exchangers

- Designed to TEMA, CODAP, PD 5500, EN 13445, GOST, and ASME UHX
- Plate cutting profiles drawings
- Full weld details for nozzles and reinforcement including location of all component welds
- Flanges (gasket and bolting details and installation), baffles (six types), tubesheets, bundles, tie-rods, sealing strips, and support plates fully detailed ready for fabrication
- Metal bellows expansion joints designed to ASME, EJMA, CODAP, EN, and AD standards
- 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
- Modeling interface and editing tools to optimize and configure the tube and baffle layout, as well as standard types including: floating head shell and tube (single and multi-pass); U-bend; double fixed tubesheet types; all shell types (E, F, G, H, J, K, X); all TEMA front and rear end types (not P type) but including L, M, N, and D type (reversed flange); custom types under user agreement; and air coolers (forced and induced draft)
- Integration with thermal design simulation software including Aspen Tech Tasc, HTRI Xchanger, Prosim EXCH, and Honeywell UniSim

### Pressure Vessels

- Pressure vessel types: reactor on skirt, limped coil, column or vertical vessel on support brackets or legs or skirt, horizontal vessel on saddle, double jacket, or boiler
- Six international vessel design codes to ASME VIII Division 1 & 2, including ASME code case 2695, GB-150, BS PD 5500, EN 13445, AD Merkblatter, CODAP, and GOST R 52857 dating as far back as 1988
- Jacket design to ASME VIII Appendix 9, PD 5500, CODAP and GOST
- Nozzle reinforcement and flange design to all major global standards including EN 13345 Annex G
- Full fatigue analysis of welded components to ASME VIII, PD 5500, CODAP, ADM, GOST and EN 13445
- Multiple guided column supports with stiffness
- Vertical vessels on rigid or flexible anchor base, legs or brackets, horizontal vessels with multiple saddles with rigid or spring stiffness
- Comprehensive lifting and rigging analysis evaluated every 10 degrees for onsite installation
- Comprehensive in-situ design, transportation and installation design tools built-in
- Pressure testing design analysis covering all onsite environment conditions

### Tanks

- Integrated API 650 tank module (including API 620 nozzle reinforcement) complete with detailed drawings
- Same modeling interface and material database as for pressure vessels
- QA reporting and detailed drawings including roof support similar to those for pressure vessels
- Optimization of the tank diameter and height from the requested volume
- Automatic generation of rafter and girder structural courses
- Full design in one run

### Other Design Options

- AP 661 for air cooler design and manufacture
- French NF E 32 Boiler Design

### General

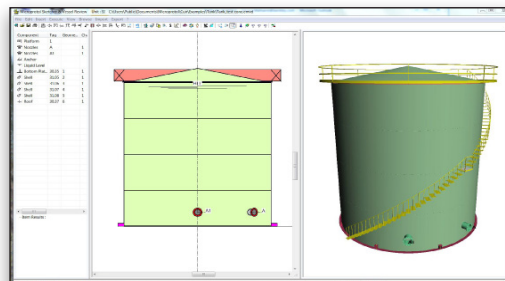
- Comprehensive vessel, piping, and structural components including trays, packing, stiffening rings, platforms, saddles, legs, brackets, bellows, lifting lugs and trunnions, internal lining, insulation, piping loads, and pipe coils
- Comprehensive import from and export to 3D CAD formats including PDS (3D), MicroStation (2D and 3D), AutoCAD (2D and 3D DWG), AutoPLANT (3D), and Solidworks (3D)
- U.S. customary and SI units
- Smart import of sustained, thermal, and occasional 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
- Governing load case (operating, installation, hydrotest, wind, or seismic) is reported for the calculation of each component thickness
- 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, 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, seismic, wave, and blast loading

### Optimized Design

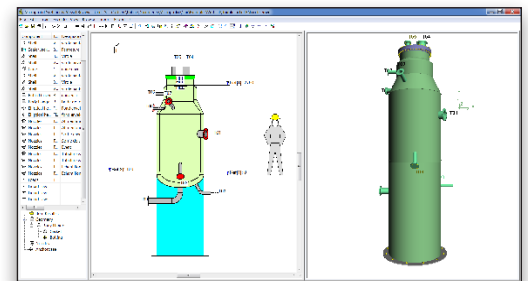
- Erected, lifting, operating, test, and shutdown loading conditions evaluated
- Nozzle reinforcement, flange design, support design, and vessel deflection and rotation
- Automatic detailed cost estimations (fully customizable in Excel)

### 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
- Bill of materials to meet company standard



Small storage tank with self-supported conical roof.



Double jacket vessel with skirt support.

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