AutoPIPE® Vessel Heat Exchanger

Comprehensive Software for the Mechanical Design of Shell and Tube Heat Exchangers

AutoPIPE Vessel Heat Exchanger enables fully automatic workflows, including complete global codes and applied loadings for heat exchangers, to deliver greater productivity, safer designs, and cost-effective manufacturing, as well as to improve project collaboration. AutoPIPE Vessel Heat Exchanger performs truly optimized heat exchanger design in minutes.

### MAXIMIZE PRODUCTIVITY OF SKILLED ENGINEERING RESOURCES

AutoPIPE Vessel Heat Exchanger provides the most productive, cost-effective, and accurate designs for the safe operation of heat exchangers under all loading conditions. The application 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 established design codes as well as material standards from any year, it improves flexibility for re-rating 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 heat exchanger design and improves competitiveness through higher design quality.

### OPTIMIZED AND FLEXIBLE VESSEL DESIGN AND MANUFACTURING

With AutoPIPE Vessel Heat Exchanger, manufacturers can evaluate options to provide comprehensive, high-quality solutions for all loading and manufacturing scenarios in minutes. The software supports manufacturing component details and drawings, as well as installation and operating conditions. AutoPIPE Vessel Heat Exchanger enables high-quality designs and reduces manual drawing time and rework to improve 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 enable designers to find solutions quickly, improve the efficiency of modeling, and increase profitability. The application's capabilities allow manufacturers to increase productivity and accelerate delivery time, while enabling easier and more accurate design and analysis.
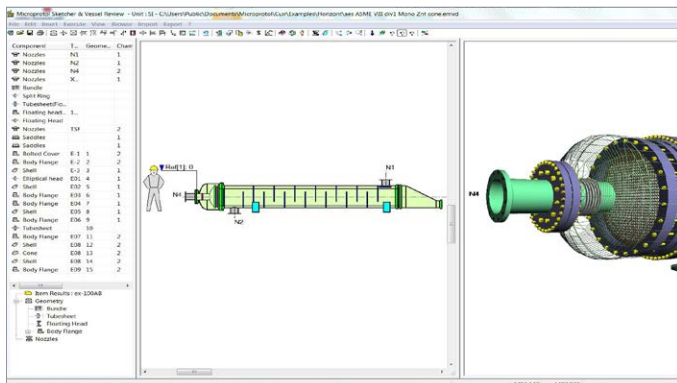
Kettle type floating head heat exchanger with eccentric cone
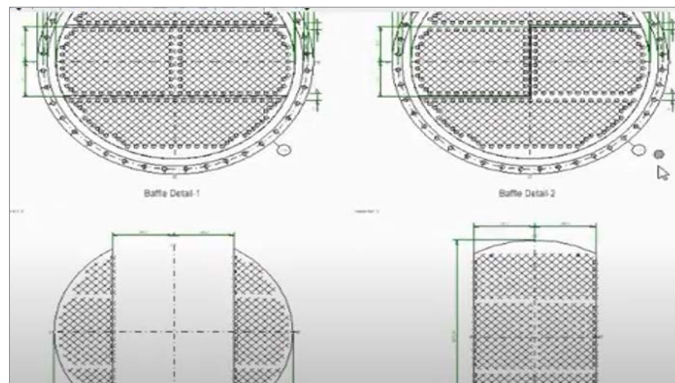
Heat exchanger tube bundle detail drawing

AutoPIPE Vessel Heat Exchanger 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, 151

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

HEAT EXCHANGERS

- Support types:
  - Vertical support – Skirt, legs, brackets, and intermediate skirt
  - Horizontal support – Up to 10 saddles
- 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
- Perform seismic, wind load, wind vortex shedding, blast, and motion load analysis
- 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), tube sheets, bundles, tie rods, sealing strips, and support plates fully detailed and ready for fabrication
- Design flanged expansion joints based on TEMA eighth and ninth standards. Design expansion joint using finite element analysis (FEA) in accordance with the TEMA standard
- 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 shell and tube heat exchanger modeling, including tube bundles, supports, insulations, lifting lug, trunnions, insulation, 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
- U.S. customary and SI units, MKS units (for input only)
- Smart import of sustained, thermal, and occasional nozzle loading from Bentley's AutoPIPE
- Languages: English, German, Spanish, French, Polish, Portuguese, Chinese, Croatian, and Russian (fully customizable dictionary)
- 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, blast, shutdown, seismic, and vortex shedding) are reported for the calculation
- Plate cutting profiles
- 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
- Link to NozzlePRO for finite element analysis

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