



## Bentley PlantFLOW

An Advanced Tool for Steady-state Flow Analysis in Piping Networks

Bentley PlantFLOW is a native Windows program for calculating steady-state, single-phase pressures, flow velocities, temperatures and fluid properties in gas or liquid piping networks that use actual 3D geometry. PlantFLOW allows you to optimize pipe sizes and balance flows, select and position equipment, and evaluate different valve scenarios. PlantFLOW combines object-based graphics technology with advanced analytical capabilities not found in other programs to provide a truly unique tool for pipe flow analysis and design.

### Unique, Object-based Graphical User Interface

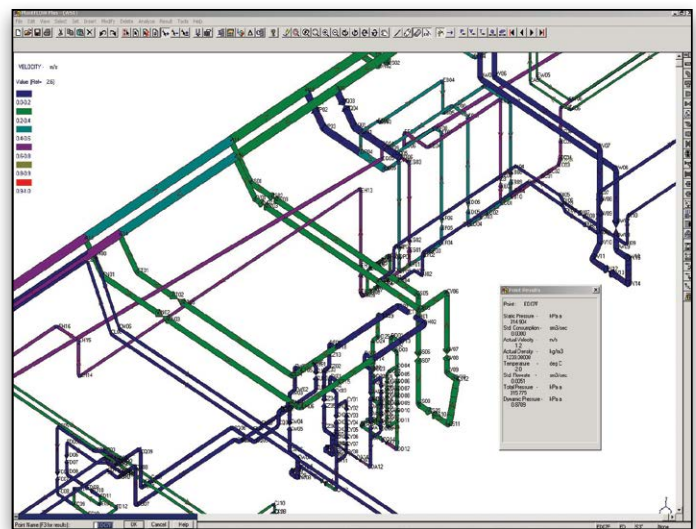
The object-based graphical user interface makes creation and modification of the pipe flow model easy and quick. Point and click directly on the model to insert, modify or delete pipe components and flow parameters. After each operation, the graphical model display is automatically updated for instant visual feedback. Using PlantFLOW's graphical select options, users can insert, delete or modify piping and flow parameters across an entire range of points with one command. Graphical selection of ranges is also used for cut, copy and paste operations. Perform up to 99 undo/redo operations to recover painlessly from mistakes or iterate quickly through different design scenarios.

### Libraries of Components, Loss Models and Fluid Properties

PlantFLOW provides comprehensive and extensible libraries of piping components, loss models for elbows, reducers, tees and sudden contraction/expansion, and for fluid properties such as AGA-8 and Peng-Robinson equations of state for natural gas mixtures, NIST hydrocarbon gas or liquid mixtures, generic liquid and ASME steam tables.

### Thermodynamics Coupled with Flow Equations

Why take chances with fluid mixture properties by assuming ideal gas, "average" constant fluid properties or other simplifications, when fluid properties are actually changing with temperature and pressure throughout



*Model up to 10,000 nodes.*

the system? PlantFLOW uses point-by-point thermodynamic and pressure drop calculations to determine Z-factor and other thermodynamic and transport properties of single or multi-component non-ideal gas or liquid mixtures.

### Graphical Review of Analysis Results

After analyzing a system, you can click on the graphical model to instantly view pressures, flow rates, pressure drops, flow velocities and more. Color-coded results pop-up windows enable the engineer to quickly identify and investigate critical areas without having to review a voluminous amount of batch output data.

### Interfaces with Plant Design CAD Systems

Import 3D plant design CAD models from Bentley AutoPLANT, Bentley PlantSpace, or Intergraph PDS into PlantFLOW to save time and ensure that the flow models and CAD models are identical.

## System Requirements

### Processor:

Pentium® II 400MHz

### Operating System:

Windows® 2nd Edition or SE, NT® 4.0 SP6, 2000 or XP

### Memory:

128MB RAM

### Disk Space:

30 MB (100 MB recommended)

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

### Contact Bentley

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## Bentley PlantFLOW At-A-Glance

### Modeling

- Models can be built and updated using either detailed 3D geometry or a simplified user loss element
- Viewing of model in either single line, double line or solid model and with interactive zoom, pan, and rotate ability
- Graphic point-and-click capability for inserting, modifying, or deleting piping components and flow parameters
- Loss models for orifice plates, valves, straightening vanes, turbine meters, tees, wyes, elbows, strainers, expansions and contractions
- Extensive library of component K-factors based on Crane technical paper 410
- Model can be imported from AutoPLANT, PlantSpace, Intergraph PDS and AutoPIPE

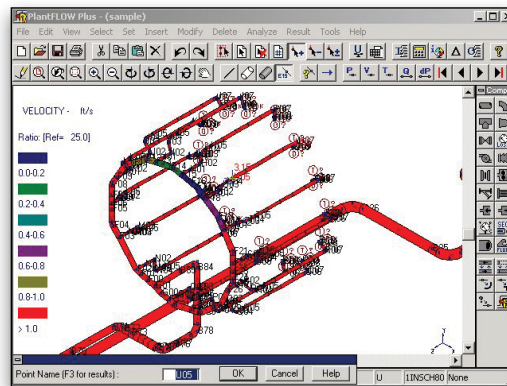
### Analysis

- Automatic calculation of friction factors based on Darcy, Hazen-Williams, AGA, Weymouth, Panhandle A & B pipe friction models
- Variable fluid properties throughout system as a function of pressure and temperature

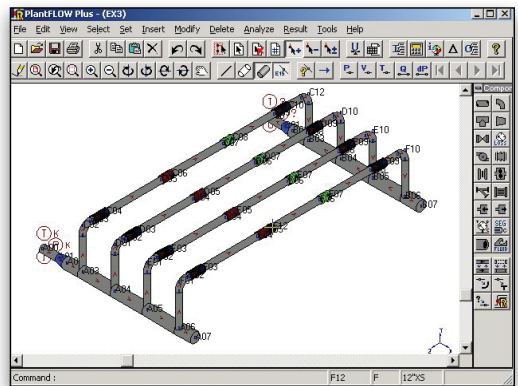
- AGA-8, ASME Steam, Peng-Robinson and NIST thermophysical models for calculation of thermodynamic properties of gas or liquid mixtures
- Automated detection of choked flow with all thermodynamic options; NIST and ASME steam options warn if flashing occurs
- Consideration of pressure changes due to elevation, as well as static and dynamic pressures

### Results

- Graphic viewing of results using color-coded model to highlight points that exceed user-specified criteria; point and click on the model to view results at any point
- Filter results by criteria to output only the results needed
- Automated determination of flow direction for each flow path in the network, and highlighting of points where "negative" flows are detected



*Model complex piping systems and easily check if design velocity is exceeded.*



*Models metering runs easily using copy and paste.*