Dynamic solutions for a fluid world™

AFT Fathom™ 12

Incompressible Pipe Flow Analysis & System Modeling Software

AFT Applied Flow Technology

Evaluate New Designs & Improve Your Installed Systems

Tackle your most challenging pipe systems using AFT Fathom, a fluid dynamic simulation software used to calculate pressure drop and flow distribution in liquid and low velocity gas piping and ducting systems.

Capabilities

- Experiment with operating conditions and scenarios
- Easily change system input data, including valve positions, pump operation, control set points, pressures, temperatures and more
- Model a wide range of system components from handbook empirical sources, or input manufacturer data
- Vary your system line-up: open / close pipes and valves, turn pumps on or off, set control valves to fail position
- Specify alerts that automatically highlight output values that are out of range for flow, pressure, velocity, pump best efficiency point and more
- Find pump data from online manufacturer catalogs
- Compile libraries of custom components, pipe materials, and fluids to save time, share common data among your team, and avoid input error
- Address viscosity and frictional effects associated with pumping non-settling slurries and non-Newtonian fluids
- Evaluate codes and industry standards applied in the model
- Calculate the cost of system pipes and components as well as energy cost

Benefits

- Understand the hydraulic behavior of your system and predict how pipes, valves, pumps and other components interact with each other
- Evaluate the performance of new designs and assure all design requirements are met
- Identify and correct operational problems in installed systems
- Produce less costly, more efficient, and more reliable piping systems

Applications

- Pipe sizing
- Pump sizing and selection
- Control valve sizing and selection
- Simulate system operation and component interaction
- Evaluate heat transfer in pipes and heat exchangers
- Troubleshoot existing systems to determine the cause of operational problems

Add-On Modules

GSC

Goal Seek & Control

Varies input parameters that yield desired output values and simulates control functions

XTS

Extended Time Simulation

Models dynamic system behavior and how critical system parameters vary over time

SSL

Settling Slurry

Models the effects of pumping fluids containing settling solids using the Wilson/GIW method

ANS

Automated Network Sizing

Automatically size pipe diameters to meet design requirements and minimize system cost

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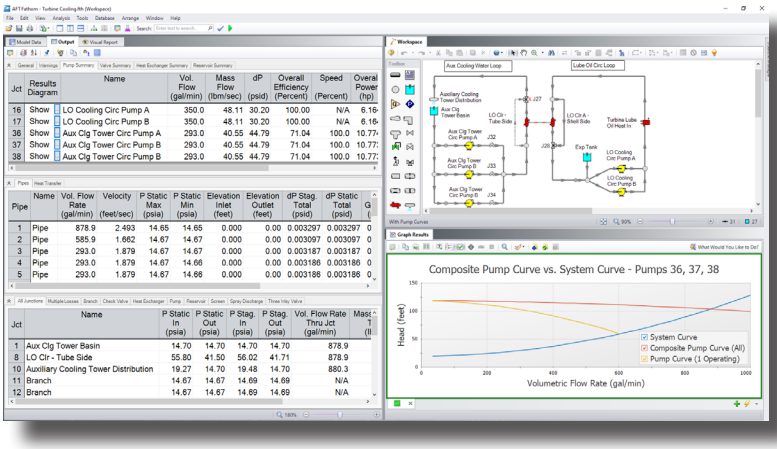
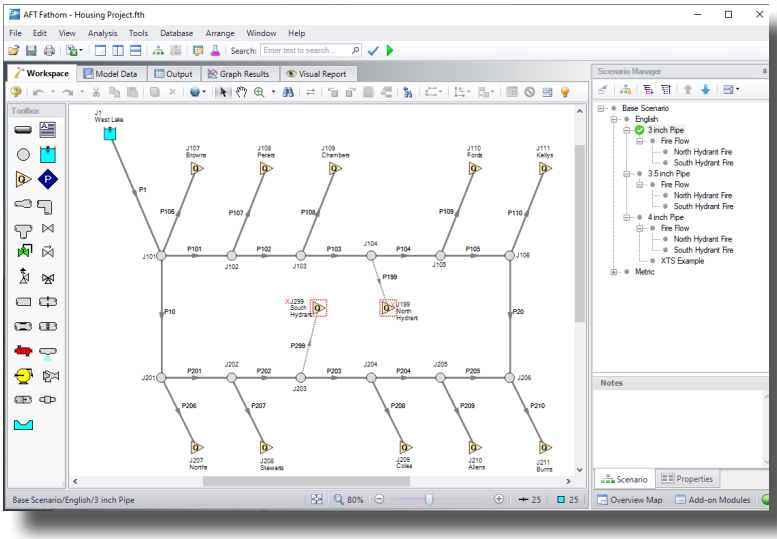
Features

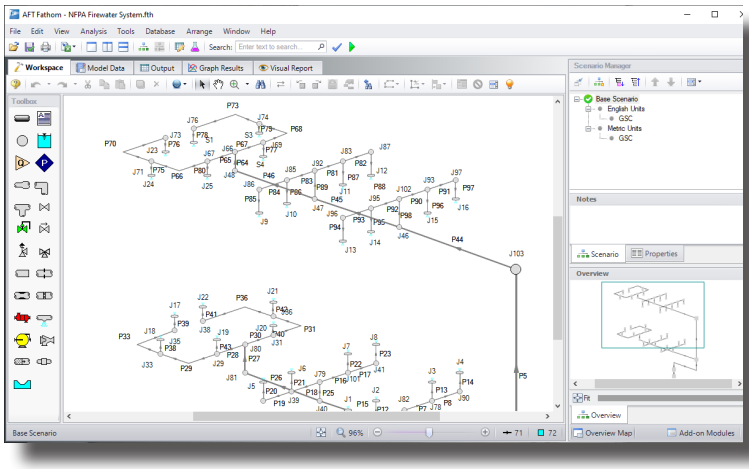
- 2D flow diagram or isometric view interface
- Detailed modeling for centrifugal and positive displacement pumps
- Scenario Manager to track all design variants and operational possibilities in a single model file
- Pump vs. system curve generation including individual and composite head curves and efficiency
- Thermal analysis including piping heat transfer and heat exchanger modeling
- Supports Newtonian and non-Newtonian fluids, including non-settling slurries
- Optional Chempak™ database provides a thermophysical database of nearly 700 fluids



Data Integration

- Import piping layouts and dimensional data from GIS Shapefiles, CAESAR II® Neutral Files, and PCF files from a wide range of sources
- Import and export files in EPANET format
- Robust Excel integration to import and export data





How Does It Work?

AFT Fathom's hydraulic solution engine uses the Newton-Raphson matrix iteration method plus proprietary methods developed by AFT to solve pipe flow and duct flow applications. AFT Fathom uses the Bernoulli Equation and Reynolds Number-based relationships for pipe friction calculation.

Industries

Who Use AFT Software

- Water & Wastewater
- Power Generation
- Aerospace
- Chemical Products
- LNG
- Petroleum & Refined Products
- Pipelines
- District Heating & Cooling
- Mining
- Biotech / Pharmaceutical

More & more!

Nuclear

Verification & Validation

NV&V packages enable the use of AFT Fathom, AFT Arrow or AFT Impulse software in **safety-related applications in the nuclear industry.** These packages assist with the performance of a Commercial Grade Dedication process.

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