

# AFT Fathom™ 13

Incompressible Pipe Flow Analysis  
& System Modeling Software



## 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/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

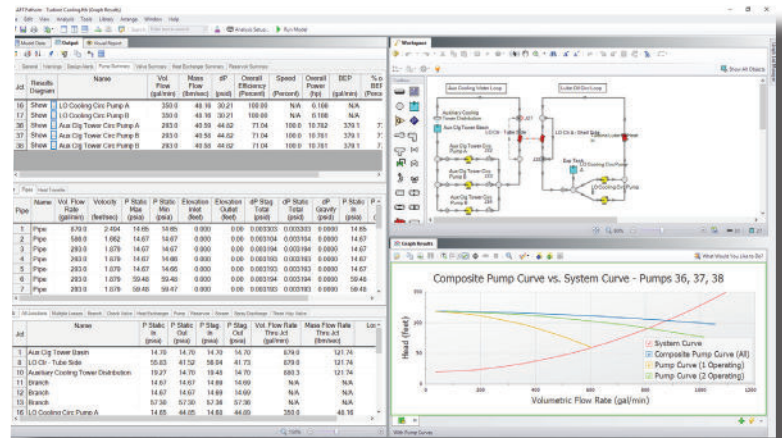
**ANS**

#### Automated Network Sizing

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

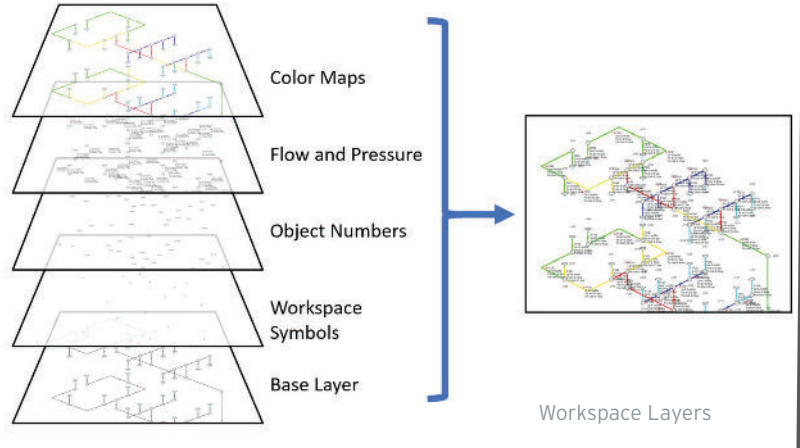
# Features

- 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

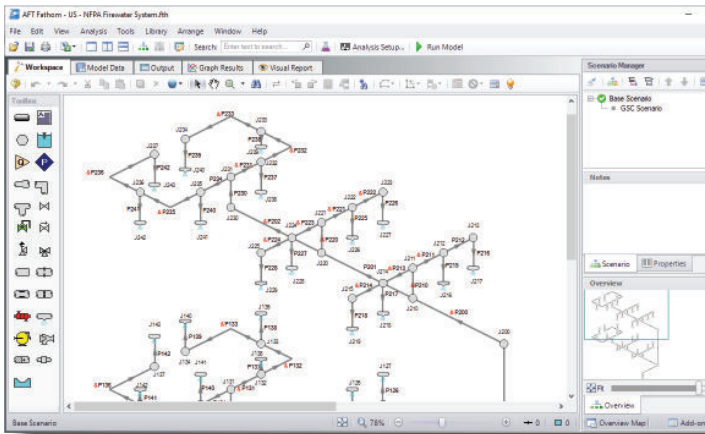


# Data Integration

- 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



"AFT Fathom", "Applied Flow Technology", "Dynamic solutions for a fluid world" and the AFT logo are trademarks of Applied Flow Technology Corporation. "Chempak" is a trademark of Madison Technical Software Inc. CAESAR II is third-party products owned and trademarked by an individual corporation.



# 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.