AFT xStream™ *2*

Steam and Gas Transient Analysis Software

AFT
Applied Flow Technology

Simulate and Solve Your Challenging Steam and Gas Transient Problems

AFT xStream is a powerful fluid dynamic simulation tool for high-speed, acoustic transients that occur in steam and gas piping systems. Uncertainty in design and operations costs money and time. Now you can accurately simulate how your steam and gas systems will respond to potentially disruptive or harmful events.

Capabilities

- Accurately simulate high-speed transients in steam and gas piping systems including choked flow conditions
- Easily change system input data including transient valve positions, compressor operation, control set points, pressures, temperatures and more
- Calculate transient unbalanced forces and define force sets as location pairs or single points
- Predict transient supply pressures, temperatures and flows to operating gas compressors and turbines when one trips offline
- Simulate tank blowdowns and charging, and determine the time to reach desired pressures
- Consider transient heat transfer in piping walls and tanks, including thermal capacitance
- Specify initial tank conditions or determine automatically from steady-state results
- Consider transient heat rate and changes in volume for a finite tank
- Predict transient pressures and flows due to heat exchanger tube ruptures
- Initiate transients based on time or triggered by a parameter criterion

Benefits

- Increase uptime by understanding how an unexpected transient event will impact pressure, temperature and flow delivery to critical equipment
- Reduce expensive overdesign resulting from analytical uncertainty
- Improve safety by evaluating all system shut down scenarios
- Validate that required flow can be delivered with certainty
- Visualize the dynamic response and interaction of pressure waves

Applications

- Ensure pressure, temperature and flow extremes are within design allowables
- Determine imbalanced pipe forces for sizing structural supports
- Troubleshoot existing systems to determine the cause of operational problems

XSTREAM ADD-ON MODULE
Use this software extension tool for enhanced functionality.

Pulsation Frequency Analysis
Helps identify pipe acoustical frequencies to avoid resonance from excitation, especially in systems with reciprocating compressors.

Features

- Built-in steady-state solver to automatically initialize system before the transient

- Automatic pipe sectioning based on steady-state acoustic velocities

- Compound transient event logic to model complex control sequences

- Scenario Manager to track all design variants and operational possibilities in a single model file

- Integrated graphing and reporting

- Animation tools for visual interpretation of complex transient interactions

- Generates force imbalance files that can be automatically read into CAESAR II®, ROHR2, AutoPIPE and TRIFLEX® pipe stress dynamic models

- Built-in libraries of fluids (including NIST REFPROP and ASME Steam Tables) and fittings which can be extended and customized

- Define component mixtures using the built-in NIST REFPROP and Chempak™ add-on thermophysical databases, totaling over 600 unique fluids

- 2D flow diagram or isometric view interface
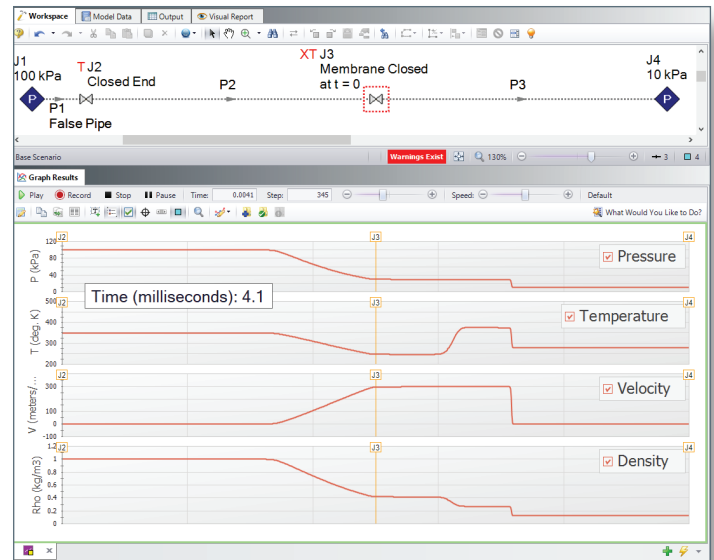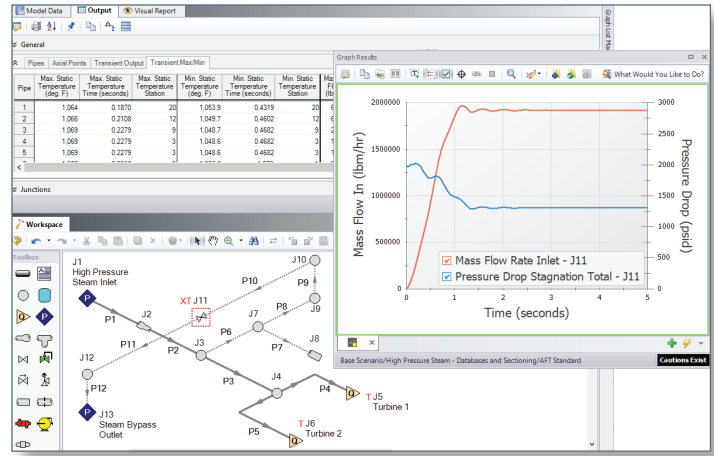
Data Integration

- Import piping layouts and dimensional data from GIS Shapefiles, CAESAR II® Neutral Files, and PCF files from a wide range of sources

- Robust Excel integration to import and export data

How does it work?

AFT xStream™ incorporates a highly accurate steady-state solver which provides seamless transfer of initial conditions to the transient analysis. Steady-state solutions are determined using a modified Newton-Raphson matrix iteration plus proprietary methods developed by AFT. A specialized Method of Characteristics is used to solve the transient mass, momentum and energy equations of pipe flow.

World Class Support

Your software includes one free year of product upgrades and technical support. Additionally, AFT offers a variety of training for all levels of knowledge.

Training Seminars
This classroom style setting accelerates your skills and teaches you how to be an AFT analysis and simulation expert.

Free Webinars
Hosted webinars talk about products and solutions-based uses. Recorded webinars are located on our website.

Expert Assistance
Have more projects than you can handle or need expert analysis? Extend your team with our Flow Expert Package.

Tips & Tricks
Each month, an AFT engineer gives newsletter readers a new tip and trick to keep you up to date.