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AFT Impulse 10	AFT Impulse 9	AFT Impulse 8
The Workspace Layers toolset significantly enhances the model building process. Easily update Pipe & Junction size, color, Display Text, visibility, and more from a centralized location.	Multi-scenario graphs can now be plotted with scenarios having different pipe sectioning and time steps	Multi-Scenario Comparison: Data can be compared between multiple scenarios to show changes made
The new Valve Window now clearly distinguishes between different data sources such as User Specified, Characteristic, or Handbook, to understand the available options.	The Library Manager (previously the Database Manager) has been completely revised and now offers a consolidated way to use and customize libraries of fluids, pipe materials, junctions, etc.	Multi-scenario graphing allows easy comparison of results
Retain Partial Transient Output to access and analyze the results up to the point where the simulation was interrupted.	Use the NEW online Help System for centralized documentation and examples from your browser	Multi-level undo and redo on the Workspace
New four-component slurry model for the SSL module captures complex slurry regimes more accurately.	Streamline your setup from the new Analysis Setup menu, a user-friendly workflow condensing multiple model-wide specification windows into 1	Single or multiple transient Force Sets can be defined directly from the Workspace
The Design Alert Manager has been reorganized to improve the process of creating and applying user-defined alerts.	Elbows, Orifices, Venturis and Screens have been added to match AFT Fathom and aide in building models.	New capability to model unsteady friction
Draw on the isometric grid without forcing any particular pipe routing.	Apply the Herschel-Bulkley viscosity model for shear thinning or thickening fluids with a yield stress	New pump four-quadrant curves added
Transient Checkpoints enable you to save the state of a transient simulation at any given point and resume it later from that exact point.	Warnings, errors and Design Alerts shown in the Output are now color coded and organized in a prioritized list for quick review.	Forces can be shown on the Visual Report

Ready to access these new features? Email [info@aft.com](mailto:info@aft.com)

# Full list of New Features you can use in AFT Impulse™ 10

## Significant New Features

- **Workspace Layers** - The Workspace Layers toolset significantly enhances the model building process, providing unparalleled customization options.
- **Transient Checkpoints** - Enable you to save the state of a transient simulation at any given point and resume it later from that exact point.
- **Retain Partial Transient Output** - Access and analyze the results up to the point where the simulation was interrupted, just like regular results.
- **Improved Valve Window** - Clarifies and expands the available valve loss models, and makes it easier to define a valve characteristic, which can be critical for an accurate model.
- **Streamlined Design Alerts** - Allows easier and faster specification of important design limits.

## Notable Features

- **Counterweight Check Valve** - Force Balance Swing Check now allows the inclusion of a counterweight and lever arm.
- **Four-Component Slurries** - Captures complex slurry regimes more accurately.
- **Custom Junction Icons** - Use your own images.
- **Isometric Freeform Drawing** - Draw without forcing any particular pipe routing.
- **New Annotations** - Use shapes and tools to allow flexible markup such as revision numbers or change requests.
- **Set Workspace Print Area** - Show printing page borders on the workspace and customize the printing area.
- **Customize Graph From Workspace Options** - Custom selection of any graph parameter on the Workspace.

## Modeling Additions and Improvements

- **Laminar Corrections Improvements** - Laminar corrections are now off by default, messages indicate if they were applied or are recommend, and output parameters indicate the correction strength.
- **Zero-Length Connector Improvements** - now behave like standard pipes, including selection and graphing tools.
- **Distinguish User and AFT Fluids** - Easily find custom entries.
- **Control Valve Fully Open Cannot Regain Control** - Keeps the control valve in a locked-open position during transients.
- **Simpler Force Definitions** - Difference forces spanning more than 2 pipes no longer require the definition of a group.
- **Specify RPM to Evaluate Pulsation Levels** for, instead of only evaluated worst-case frequencies.
- **API 674 Limitations in PFA Module** - You can now check for violations graphically.

## Add-On Modules

### **SSL Settling Slurry**

The only commercial software solution that can model both non-settling and settling slurry waterhammer effects.

### **PFA Pulsation Frequency Analysis**

Helps identify pipe acoustical frequencies to avoid resonance from excitation, especially in systems with positive displacement pumps.

## Improved Importing

- **Import Bend r/D** - Import with appropriate r/D
- **Import Speed Increase** - Import up to 10x faster
- **Better Defaults and Display** for Imported Models
- **Improved Import of Pipe Material Links**
- **Display CAESAR II Node Names** as junction names.

## Behind the Scenes Improvements

- **Graphing Optimizations** - Provides additional stability now and more capabilities in the future.
- **eLicense Access Improvements** - Improved security and the release of license seats not in use.
- **Output Improvements** - Improvements to backend output code provides additional stability.
- **Timed Recovery File** - Automatically generate a backup of your model to recover unsaved work.

## Output Parameters and Messages

- **Pump RPM Output Parameter** - Report speed in RPM, in addition to percent.
- **Vapor Volume Percent Output Parameter** - Report percentage in addition to the physical vapor volume
- **Deep Laminar Caution** - Simple loss models do not account for exceptionally laminar flow, this new message provides a caution if you enter this range.
- **POR/AOR in Pump Summary** - Shows the values for Preferred and Allowed Operating Ranges.
- **Events Messages in New Format** - Events now show in a clean, collapsible format similar to Warnings.
- **Tank Overflow and Drain Warnings** - Indicates if a Tank has overflowed or drained during the transient.

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