

# AFT Mercury 7.0

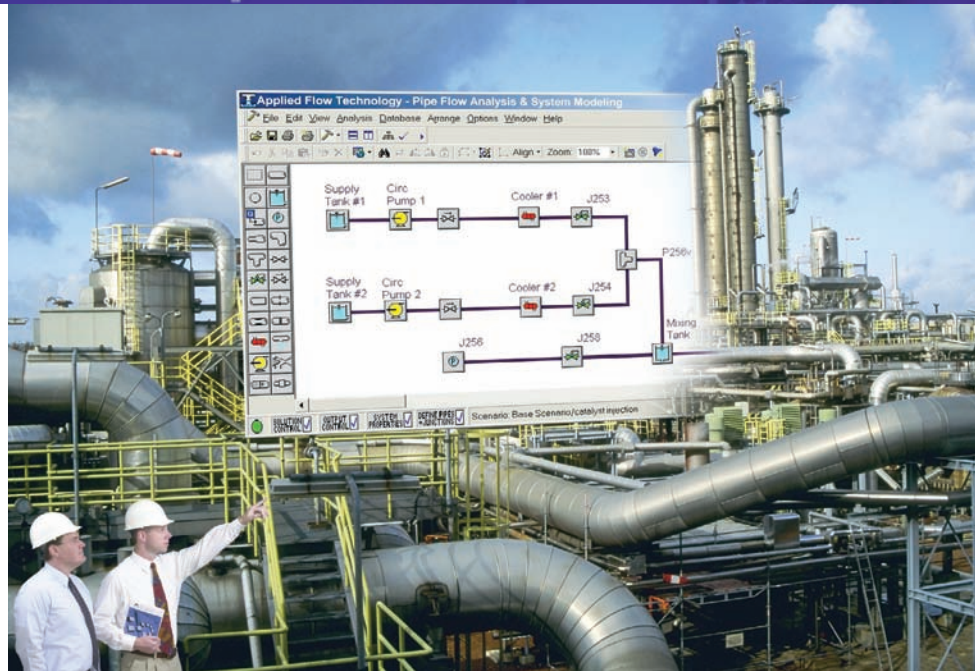
Intelligent Sizing for Incompressible Flow Piping & Ducting Systems

Achieving cost effective designs for your piping and ducting systems requires an intelligent, systems approach. Human intelligence is powerful yet limited. The myriad design tradeoffs in modern piping systems quickly outstrips the human mind's ability to grasp all possibilities. Crucial opportunities to reduce cost fall through the cracks of your demanding schedule. Now these opportunities can be clearly identified with *AFT Mercury*<sup>™</sup>, using IntelliFlow<sup>®</sup> technology. This new technology intelligently sizes piping and ducting systems resulting in significant savings. With comprehensive system modeling capabilities, a flexible graphical interface and an advanced optimization engine, *AFT Mercury* offers a quantum leap improvement to the traditional pipe and duct design process.

## Cost Reduction Through Intelligent System Sizing

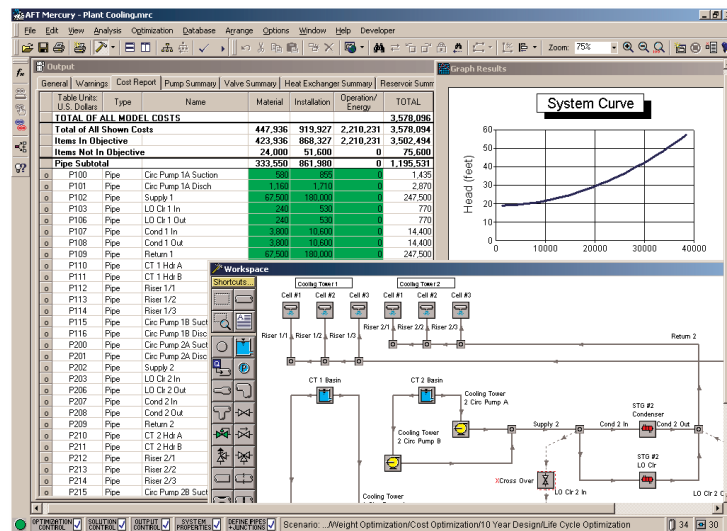
What is intelligent system sizing? Traditional engineering methods are limited in their ability to select pipes, ducts and equipment sizes on a system basis. Even simple systems will have billions of potential size combinations to consider for their various components, far too many to evaluate by traditional methods. In contrast, intelligent system sizing selects all components simultaneously as a unit to identify the lowest cost design. This is the essence of IntelliFlow<sup>®</sup> technology.

With *AFT Mercury*, you specify the design requirements and sizing criteria, which may be to minimize initial or life cycle cost, or parameters such as pipe weight, volume or surface area. Extensive database support allows you to easily add your data for fluids, materials, components and cost. The savings in materials, installation, energy and other costs associated with your piping or ducting system can be dramatic. Traditional methods of system sizing simply can't compare. No matter how good your design methods are, *AFT Mercury* is guaranteed to reduce cost.



## Leading Edge Pipe Flow Modeling Technology

Built on the advanced flow analysis and system modeling capabilities of *AFT Fathom*<sup>™</sup>, *AFT Mercury* can simulate your piping system in complete detail. Employing a robust solver to solve the governing equations of pipe flow, *AFT Mercury* addresses open and closed loop systems, pump and control valve modeling, heat transfer in pipes and heat exchangers and much more. Multiple system configurations are easily managed within a single model using Scenario Manager, with changes in the base model automatically inherited by alternate design cases. In addition to the built-in library of fluids, fittings and valves, the optional Chempak<sup>™</sup> add-on, a thermophysical database of almost 700 fluids, is available to further expand the envelope of your analysis and design.



Applied Flow Technology  
Dynamic solutions for a fluid world.<sup>™</sup>

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## Advanced Graphical Interface

The power of *AFT Mercury's* intelligent system sizing capabilities is readily accessible through an advanced drag-and-drop interface tightly integrating equipment characteristics, analysis and output with your system's schematic representation.

## New in Version 7.0

- Enhanced Excel™ file import including selected pipe input parameters
- Pump vs. system curve shows operation with multiple combinations of pumps running
- Input graph display for pipe intermediate elevations and valve open percent, Cv and flow area
- Simultaneous display of output parameters with differing units (e.g., flow displayed in gpm and m<sup>3</sup>/hr at the same time)
- Pipe volume available as new output parameter
- Automated orthogonal pipe drawing
- The Cost Report can show results from multiple scenarios

## What is IntelliFlow® and how does it work?

IntelliFlow combines powerful network pipe flow analysis algorithms with state-of-the-art numerical optimization algorithms to intelligently evaluate the complex interaction of system design variables. The system design is repeatedly perturbed and re-analyzed to define the shape of the design space, revealing combinations of design parameters that minimize cost. Design constraints specified by the engineer direct the search in areas that satisfy design requirements such as pressure, velocity and NPSH. Searching continues until an optimum design is found, which is then presented to the user.

## Applications

### Minimizing Initial vs. Life Cycle Cost

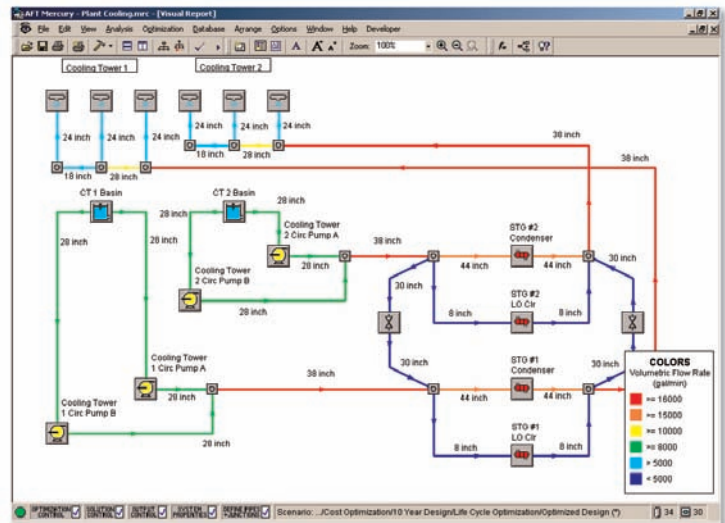
By sizing to minimize initial cost or life cycle cost over any specified duration, *AFT Mercury* provides the power of informed decision making in developing a low cost system design.

### Variable Frequency Drive vs. Control Valve Analysis

The true relative costs of VFDs vs. control valves can only be determined by comparing systems optimally sized for each case, a task quickly done using *AFT Mercury*.

### System Balancing through Intelligent Sizing

*AFT Mercury* can automatically determine line sizes to achieve inherent system flow balance resulting in significant reductions in pumping costs by minimizing throttling losses in flow control devices.



### Size for Minimum Cost Over Multiple Design Cases

Imagine the impact of determining piping, ducting and component sizes to minimize cost while insuring performance requirements are met for one or more off design cases. Or perhaps you need to concurrently size for alternate operating scenarios such as two pump operations in the summer and one pump operation in the winter. Only *AFT Mercury* can automatically determine the lowest cost system for these real world conditions.

### Understand What Really Drives Your Design

Piping and ducting systems typically have to meet a variety of requirements whose complex interaction makes it difficult to see their relative impact. Comparison of optimized results for differing constraints with *AFT Mercury* will clearly show this impact providing you valuable insight into what's driving your system design.

### Optimal Pump Sizing

More than just accurately defining pump head and suction requirements, *AFT Mercury* will automatically determine the most cost effective trade-off between pipe size selection and the resulting impact on pump capacity requirements and cost.

### System Requirements

- Windows 98 and higher or Win 2000 and higher
- 64 MB RAM minimum
- 800 x 600 display minimum
- Stand-alone or network



### For more information contact:

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