

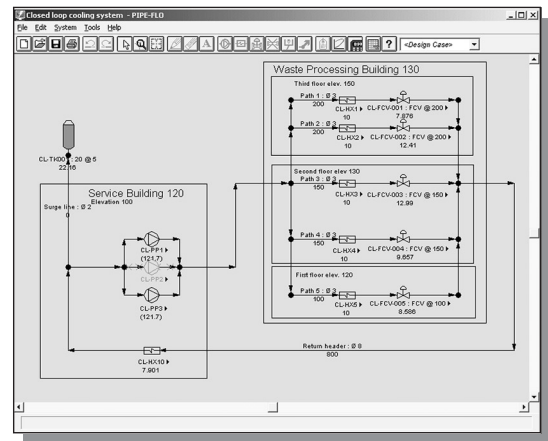
The perfect tool to design, build, operate, and maintain fluid piping systems.

When analyzing a piping system you need a tool to help visualize the interaction of pipelines, pumps, components, and controls throughout the system.

PIPE-FLO Professional provides you a clear picture of the entire system by integrating the following tasks into a single program:

- A piping schematic showing how the system components and pipelines are connected.
- A powerful calculation engine showing system operation.
- Communication tools help share your design with others.
- Access to supporting documents in electronic format.

Now everyone from the boardroom to the plant floor will have an understanding of how the piping system operates along with, all the information needed to design, build, operate, and maintain the system.



Using PIPE-FLO Professional you can:

- Draw a piping system schematic showing all the pumps, components, tanks, control valves and interconnecting pipelines.
- Size the connecting pipelines using electronic pipe, valve, and fluid data tables.
- Select pumps and control valves from manufacturer's Electronic Catalogs, to optimize pump and system operation.
- Calculate how the system operates including pressures and flow rates, Net Positive Suction Head (NPSHa), and annual pumping costs.
- Provide immediate access to supporting documents needed to design, build, operate and maintain the piping system.
- Share the piping system design with others by way of the PIPE-FLO Viewer.

PROGRAM OVERVIEW

Providing a Clear Picture

PIPE-FLO Professional's FLO-Sheet provides you with a familiar flow diagram complete with all the pumps, tanks, components, controls, along with the interconnecting pipelines. You can use your own naming convention with PIPE-FLO, providing a familiar view of the piping system. Point to an item on the FLO-Sheet and the fly-by viewer provides the highlights, to get more detail double-click on the object and PIPE-FLO displays a detailed property sheet.

The FLO-Sheet displays the calculated results, showing you the pressures and flow rates in your system. PIPE-FLO highlights trouble spots in your system such as low NPSHa at the pump suction, system bottlenecks, and improper control valve position.

Integrated System Calculations

PIPE-FLO performs all the calculations needed to size individual pipelines, select and evaluate pumps and control valves, size flow meters and balancing orifices, and perform a full hydraulic network analysis of the entire piping system.

Individual pipelines are sized with user created pipe specifications streamlining the design process. PIPE-FLO looks up the pipe sizes, valve and fitting properties, and fluid properties using engineering data tables on disk. With full control over the engineering data table you can customize the operation of PIPE-FLO to meet your companies standards. The pipe specifications can be saved and used as templates for starting future projects.

PIPE-FLO calculates the design point values needed for pump and control valve selection. Then it can select pumps and control valves from manufacturers electronic catalogs. Once the equipment is selected, it can be placed into the piping system providing you with a clear view of how the piping system operates.

A piping system is called on to operate under a variety of conditions. With PIPE-FLO you can turn pumps on and off, open and close pipelines, change tank levels, and adjust set points for control valves. This operating information can be saved in a lineup with PIPE-FLO calculating how the system operates. This provides you with a clear picture under a variety of expected operating conditions.

Communicate with others

PIPE-FLO incorporates many communication and collaboration tools helping you share the piping system model with other designers, engineers, clients, and equipment vendors, along with the plant operating and maintenance personnel.

PIPE-FLO's design files and pipe specifications serve as templates providing design control for the piping projects. Starting a project using a design file your pipe specifications are immediately available for use. When selecting a pipe specification the pipe material, schedule, sizing rules, and design limits are automatically established. By customizing the pipe, valve, and fluid tables you can further customize PIPE-FLO providing you with total design control.

The calculated results can be viewed within the program, sent to any Windows supported printed or plotter, or e-mailed as PDF files, all from within PIPE-FLO.

You can e-mail a read only version of your piping project to a client, vendor, or associate. They can download the PIPE-FLO Viewer program (from the Engineered Software Website <http://www.eng-software.com>), open the project, then view, and print the calculated results.

Access to Design Information

A tremendous amount of information is needed to design, build, test, operate, and maintain a fluid piping system. FLO-Links provide immediate access to necessary design documents. For example you can create a FLO-Link for a pipeline to display the isometric drawing developed under a CAD program. When you click on the link, the CAD program starts and displays the isometric drawing. The referenced CAD drawing can be located on a Local Area Network, Wide Area Network, or on the Internet.

FLO-Links can start other applications used to operate or maintain your piping system. For example you can create a FLO-Link on a pump and have PIPE-FLO start your maintenance management software and display the maintenance history for the selected pump.

You can create interactive flow diagrams under PIPE-FLO Professional complete with FLO-Links, then save it as a PVS file. The PIPE-FLO Viewer then provides an effective front end to anyone who needs access to information about the piping system or needs to see how that system operates.

Advanced Calculation Method

PIPE-FLO Professional uses the Colebrook-White method when calculating the friction factor in the pipeline, and performs all head loss calculations using the Darcy-Weisbach formula. This method provides accurate results for non-compressible fluids, including most process fluids. The Darcy-Weisbach method also provides satisfactory results for compressible fluids when less than 40% pressure drop occurs in a pipeline.

The program supports all valve and fitting types found in the Crane Technical Paper 410 and allows the addition of custom valves and fittings.

PIPE-FLO automatically configures the lineup for each network calculation by tracing the system loops and setting up the flow and pressure drop equations needed for the calculations. The program calculates the balanced flow rates and pressures in a piping lineup using the simultaneous path adjustment method developed by Dr. Wood of the University of Kentucky. This method uses the Hardy Cross method until the program is close to a solution. It then switches to the linear method to complete the solution.

All pump selection calculations are performed using the method outlined in the *Hydraulic Institute Standards for Centrifugal, Rotary & Reciprocating Pumps*. All calculated values are based on the pump operating data found in the manufacturers supplied pump catalogs.

Control valve sizing is performed using the method outlined in the Instrument Society of America Standard ISA S75.01 *Flow Equations for Sizing Control Valves*.

Flow meter and balance orifice sizing is performed using the method outlined in the American Society of Mechanical Engineers Standard ASME MFC-3M *Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi*.