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Fluid Flow Software vs. Spreadsheets for Piping System Design & Analysis

The traditional approach for sizing pipelines in fluid piping systems is done using spreadsheet programs such as Microsoft[®] Excel[®]. Spreadsheets provide a platform for organizing data and performing the single pipeline calculations for pipeline friction loss. If done correctly, spreadsheets can save time when performing single pipeline headloss calculations.

However, in order to sustain a competitive advantage in today's marketplace, it is critical that you consider new technology that provides a total system view of the piping system. A clear picture can be better obtained by incorporating the following features into a single fluid flow program:

- Visualization - using a piping schematic to show how the various items are connected.
- Calculations – integrating all fluid flow calculations into a single program.
- Communications – maintaining design control, and sharing results with members of the design team and clients.
- Access – providing access to electronic documents used to design, build, operate, and maintain fluid piping systems.

These features, along with a robust network calculation engine, provide a clearer picture of the piping system. This White Paper explores many of the advantages that fluid flow software such as Engineered Software's PIPE-FLO[®] has over spreadsheets for the

design, analysis, and troubleshooting of fluid piping systems.

Visualization of the Piping System

Fluid piping systems are made of pumps, tanks, components, controls, and interconnecting pipelines. A piping schematic drawing shows how the items in the system are connected. Piping schematic drawings, process flow diagrams or Piping & Instrument Drawings (P&ID) are often created with CAD software and become the primary design documents of the piping system. These drawings provide a system overview and are used for the life of the plant.

When calculating the pipeline headloss with a spreadsheet program, the names of the individual pipelines and the design data are taken off the CAD drawing and manually entered into the spreadsheet's columns and rows. This provides a satisfactory method to organize data and eliminates the need to re-enter the pipeline information each time single pipeline calculations are performed. However, the spreadsheet's row and column format does little to show how the pipelines are connected into a fluid piping system.

PIPE-FLO utilizes a piping schematic drawing interface (the FLO-Sheet) as the primary user interface. The piping schematic is created using PIPE-FLO's drawing tools, by inserting objects onto the FLO-Sheet and then entering the details for each object. For example when entering a pump on the FLO-Sheet, the pump's unique name is entered, along with the elevation and operating characteristics.

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