EngineeredSoftware, Inc.

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Enclosed is a Program Bulletin released by Engineered Software, Inc. regarding the PIPE-FLO Professional and Flow of Fluids software. The Program Bulletin is as an addendum to the Part 21 CAR 006 submitted by the Applied Analysis Corp. The ACC CAR 006 was submitted on 9/23/2008, log no. 2008-18-00 and event no. ML082760159.

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Bulletin #: 003-09   Date: 3.4.09   Program Affected: PIPE-FLO Professional, Flow of Fluids

Subject: Fluid Zone Pressure May Affect Manually Set Control Valve Results   Category: 2   Approved By: RWL

Background

In isolated scenarios when fluid zone pressures are not correctly specified, PIPE-FLO® may return inaccurate calculated results for throttled control valves that are set to a manual position. The affected control valve results include flow rate, differential pressure, and Qmax. This in turn may affect the results status such that the valve returns a choking error when it is in fact not choking.

In the PIPE-FLO Professional and Flow of Fluids 2007 maintenance releases (version number 10.01) and subsequent program releases, the issue has been addressed with an improved control valve calculation method. The new method will allow for more variability between the specified fluid zone pressure and the calculated control valve inlet pressure. However, for all program versions, we still recommend that fluid zone pressures are appropriately specified when using control valves set to a manual position.

Note: To check the version number, select **About PIPE-FLO** from the **Help** menu. The program version number is given on the second line under **Additional Files**.

Condition

The issue only occurs when _all_ of the following conditions are met:

- The control valve is defined with manually entered or catalog imported Cv data.

- The control valve is set to **Manual set position** under **Lineup Settings** in the control valve dialog**.**

- The specified pressure of the fluid zone assigned to the inlet pipeline of the control valve is significantly less than the valve's calculated inlet pressure.

Workaround

For incompressible (liquid) systems in which _all_ of the above conditions are met, one must ensure the specified fluid zone pressure of the inlet pipeline is greater than the calculated control valve inlet pressure of the worst case lineup (i.e., the lineup in which the valve is at its highest inlet pressure).

Note: Another possible workaround that does not require adjusting fluid zone pressures is to set the control valve to an **Automatic set value** by specifying the desired flow rate or pressure rather than specifying a **Manual set position**.

For compressible systems, it is always necessary to specify fluid zone pressures that are near calculated pressures for any given device or pipeline. This principle is an extension of the Darcy-Weisbach equation limits for compressible fluids. The details of which are given in the program manuals and the concept is exemplified in the program tutorials. Following this principle shall ensure that fluid zone pressures are properly specified for accurate control valve calculations.