EngineeredSoftware, Inc.

Using PIPE-FLO® to Design New HVAC Chilled Water Systems

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Introduction

After talking with our customers at engineering firms serving the commercial HVAC market, we discovered they use PIPE-FLO® primarily when adding to or troubleshooting existing HVAC piping systems. Much to our surprise, the majority of our customers in this market continue to use their Excel® spreadsheets when designing new systems. We decided to investigate a little further, why these users chose this route.

When asked why they did not use PIPE-FLO on new systems, the most common response was they did not want to enter the entire piping system only to find the most hydraulically remote circuit needed for pump sizing. With a spreadsheet, they only enter the pipelines going to and returning from the most hydraulically remote circuit, eliminating the need to enter all the pipelines in the system.

Once we discovered more about the way these customers were using electronic spreadsheets in determining the head loss for their most hydraulically remote circuit, we came up with a method for using PIPE-FLO to quickly build a model rivaling the simplicity of the spreadsheet method. The remainder of this article describes the process.

Finding the Most Hydraulically Remote Circuit

First, let's review how to calculate the pumping requirements for any circuit in an HVAC chilled water system, and then see if we can simplify the process to find the pumping requirements of the most hydraulically remote circuit. In this article, we will be using the piping system shown in Figure 1.

Figure 1. (follows) This is the example HVAC chilled water system used in this article. To simplify the example we will be concentrating on the secondary loop only. The primary loop has not been included.

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