

Trane Pipe Designer

An in-depth look...

Product details March 2001

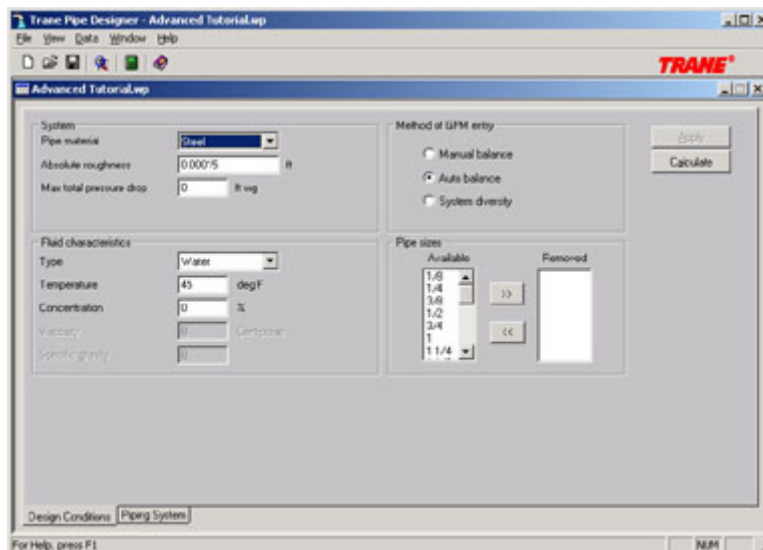
Introduction

Trane Pipe Designer is a design and analysis tool that streamlines the pipe design process. The program determines required pipe sizes, finds the critical path for proper pump sizing, and calculates pressure drops through valves/fittings or from elevation changes. Legs can be open or closed to atmospheric pressure and can be constructed of steel, copper, or PVC pipe, circulating virtually any non-compressible fluid of known viscosity and specific gravity. Customizable cost entries let you generate a complete bill of materials including the required volume of fluid needed for the system. Trane Pipe Designer also accurately models existing systems by allowing the specification of pipe sizes in each leg of the system. Detailed reports provide the information needed to fully analyze and troubleshoot the calculation results.

The program is formatted in a very simple to navigate tab format using the popular Windows platform. There are two tabs in the program, the Design Conditions tab and the Piping System tab.

Design conditions tab

The design tab of Trane Pipe Designer provides the ability to specify changes that affect the entire piping system. This tab includes inputs such as pipe material, roughness, maximum total pressure drop of the system, method to define fluid flow, and a section for removing standard sizes from the simulation. It also includes entries for specifying the fluid characteristics.



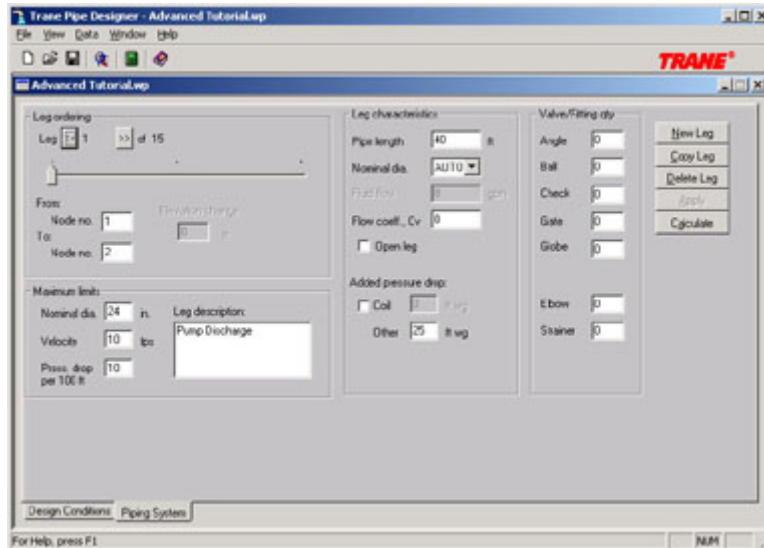
Open vs. closed legs

Specifying a leg as "open" tells the program that this leg is open to atmospheric pressure and eliminates dynamic losses in that section of pipe. It also makes the elevation field available to account for elevation differences.

Note: All flow in a system must return to the "Home leg" regardless if the system contains open legs or not. The home leg is considered to be the first leg in the simulation. Partial piping systems can be modeled by making the last leg "open", entering 0 for an elevation difference, and connecting it back to the home leg.

Piping system tab

The piping system tab is where the main data entry of Trane Pipe Designer resides. Piping system legs and characteristics are defined on this tab including the connection node numbers, valves and fitting inputs, GPM, coil specifications, elevation differences, and individual leg modeling constraints.



Valves and fitting entries

Valves and fittings can be entered into the program in either of two methods. The first method is to enter the quantity of the valves or fittings. The program then uses a generic lookup table to determine the amount of equivalent feet of pipe to be added to the length that is already input, based on the flow and size of the pipe leg. The second method involves entering a Cv value for the valves or fittings. For multiple valves and fittings on a single leg, simply add the Cv values together and then input them. When a Cv value is entered, the program calculates the loss, not the equivalent feet of pipe. Cv values can be used in conjunction with valve/fitting quantities, however, be careful not to double account for the same fitting.

Custom pipe costs

Trane Pipe Designer also gives the user the ability to customize the costs of pipe, valves, and fittings. This allows the program to provide an accurate cost estimate for the system being modeled. The program also estimates the amount of fluid required in the system and the amount of insulation that is required.

Output reports

Eight different reports provide detailed information about all aspects of the piping system. They include project summary, leg summary, pressure details, path information, tee information, bill of materials, and entered values reports. The critical path and any open legs are clearly marked for ease of analysis.