

# Simple Piping Systems

The Simple Pipe System is a design strategy called LoadMatch® by Taco, Inc. Some have called it a “Single Pipe System,” but that is a misnomer. That term is more accurately associated with an old steam system piping strategy rarely employed today. The Simple Pipe System is really not that much different from a conventional primary/secondary piping scheme.

## The Simple Pipe System Explained

With a Simple Pipe System, imagine taking that primary loop in the mechanical room and stretching it to the perimeter of the building. Then, install a small circulating pump at each terminal coil as a secondary loop. This simplified example illustrates a number of advantages.

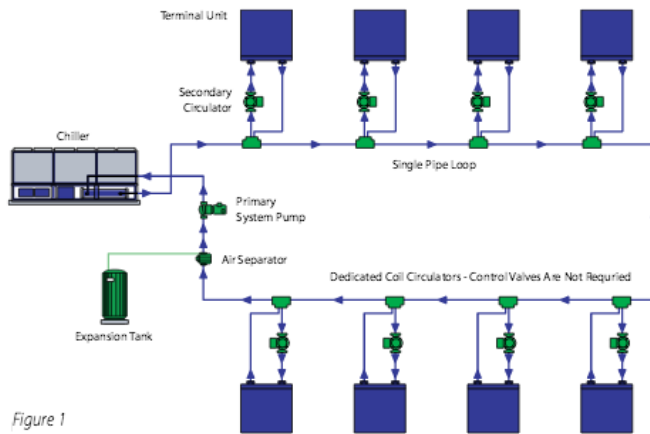


Figure 1

Image courtesy Taco, Inc.

## What is a primary/secondary piping system?

In a primary/secondary system:

- The primary loop is typically a relatively short constant flow piping loop serving the major equipment (such as a chiller or boiler) and located in the same room as that equipment.
- The secondary loop is dedicated to distribution throughout the building and usually varies its flow based on demand through two to three zones throughout the building. Best practice is to pipe this loop to the air handling units and terminal coils via a reverse-return configuration. It requires varying pipe sizes and flow control devices throughout the system to ensure proper balancing.

## Primary Loop

- Your primary loop around the building may be just one pipe size, simplifying installation.
- It may be constant flow or variable flow and controlled by system  $\Delta T$ , depending on your equipment capability and requirements.
- The larger primary loop gives your chiller or boiler a larger connected volume, which may reduce on/off cycling.
- Removing the AHU/Terminal Coils and associated valves and piping from the primary pump's head loss requirement may significantly reduce the primary pump's horsepower.

## Secondary Loops

- Your secondary loops are now localized to each coil.
- Small, fractional horsepower circulator pumps are utilized in lieu of control valves. They are robust, easy to service, sized for the coil load and may be constant or variable speed (as with an on/off or modulating control valve).
- The circulator (variable speed or on/off) is controlled the same way as a control valve (on/off or modulating). The circulator ensures positive pressure and turbulent flow in the coil for better heat transfer and requires no balancing. Essentially, it pumps to match the load of the coil.



## Benefits of the Simple Piping System

- For the installing contractor, it means a simpler, less labor-intensive installation, easier system flushing, balancing, start-up and commissioning.
- For the design engineer, with the use of the design software developed for this system, it means a simplified layout, simpler control strategy, lower energy and quicker design output, allowing more time to be spent making engineering decisions than on more tedious design tasks.
- For the building owner, it means reduced operating cost (overall pumping horsepower reduced 25-50%) and cost of ownership (up to 30% Life Cycle Cost reduction), reduced installation cost (up to 40% less piping and may save 10% or more on the entire mechanical contract) and a more comfortable system for the building occupants.

## Summary

In summary, the Simple Pipe System can make hydronic system installation cost much more competitive with air-side and VRF systems. It reduces energy, is easier to design, install and maintain and is more effective at delivering indoor environmental comfort to the occupants.

It almost sounds too good to be true, doesn't it? Admittedly, this strategy is not suitable for every building layout. Visit Taco or call your local Hoffman Hydronics representative for more information and to see if a Simple Pipe System is right for your next project.

