KEMPER
WATER CONTROL SYSTEMS

Comparing the benefits of the Kemper Flow-Splitter to a traditional return/balancing valve design, for in-room circulation

To provide in-room circulation for hot water and effectively reduce non-circulating pipe lengths (eg., in compliance with IECC code 404.5.1), a loop configuration into a room is generally required. This can be accomplished with either a Flow-Splitter or with a return pipe and balancing valve (Fig 1.1).

In many cases, significant material cost savings and energy savings will be achieved using the Flow-Splitter, along with a reduction in installation and maintenance costs.

Utilizing Flow-Splitters can eliminate the problematic and costly challenges associated with balancing multiple, low-flow loops while eliminating the cost of lengthy return piping.

The Flow-Splitter can lead to significant cost savings in many common building design applications.

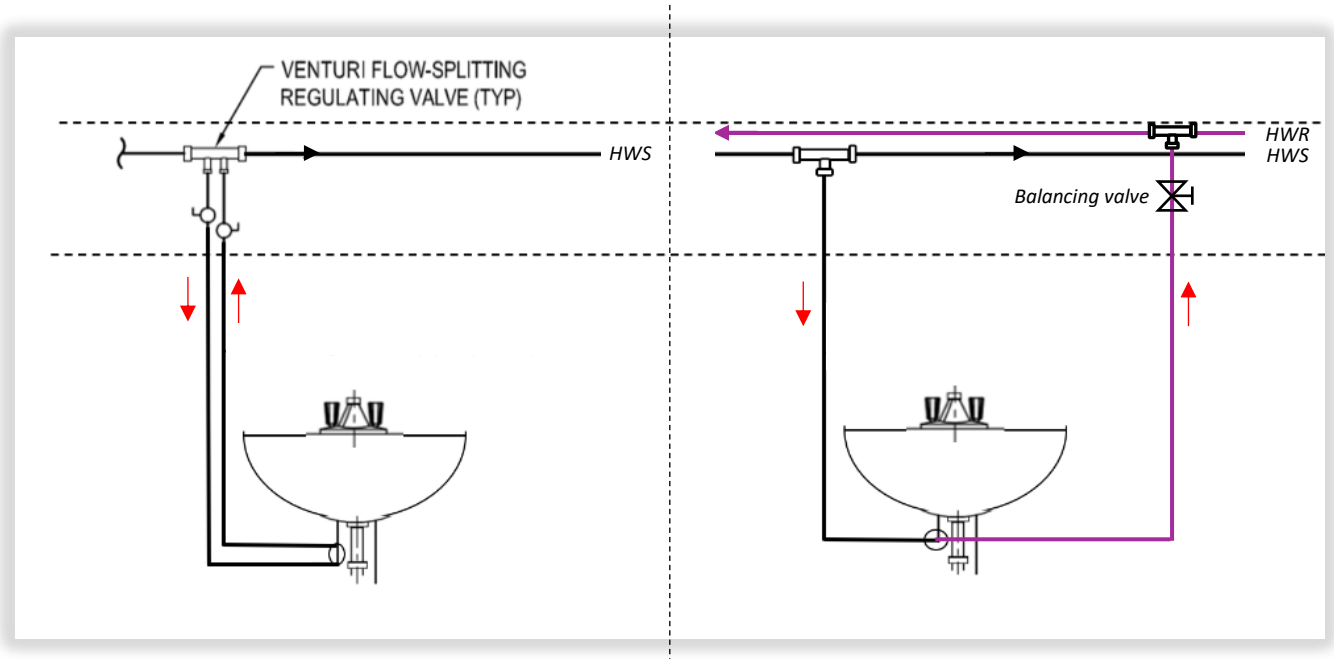

Fig 1.1

Cost implications

- *Cost of Flow-Splitter*

Cost implications

- *Cost of balancing valve*
- *Cost of ongoing balancing valve adjustments*
- *Cost of additional pipe connections*
- *Cost of return piping*
- *Cost of lost energy due to increased piping*

Flow-Splitters can also compliment and be incorporated effectively into a traditional, 3-pipe design layout.

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The benefits of using the Kemper Flow-Splitter within a traditional return/balancing valve design, for in-room circulation

Example: The pipe routing detailed below (Fig. 1.2) shows a traditional design with CWS, HWS and HWR running in parallel throughout the building.

However, in certain areas the HWS branches away from the 3-pipe configuration, connects to fixtures/rooms via Kemper Flow-Splitters (yellow dots) and then loops back to the HWR in the corridor via a balancing valve (orange dot).

Water flowing through short loops maintains much of its energy and experiences very little drop in temperature. Because negligible heat is lost throughout the loops, extremely low HWR flow rates are required for proper balancing. This scenario creates a challenge related to the limitations of balancing valve technology resulting in higher flow rates which leads to warmer water being returned to the heater. This condition, along with the ongoing challenges of low-flow balancing, adds to the inefficiencies and operating costs of a building hot-water system featuring in-room circulation.

In reference to the hydraulic principles described above, the use of a Flow-Splitter can increase system efficiency and reduce balancing anomalies by returning the flow from the loop back to the HWS (instead of the HWR). The stored energy continues downstream rather than being routed back to the heater via lengthy return piping and temperamental balancing valves. This innovative design concept can lead to significant installation, material, and operating cost reductions.

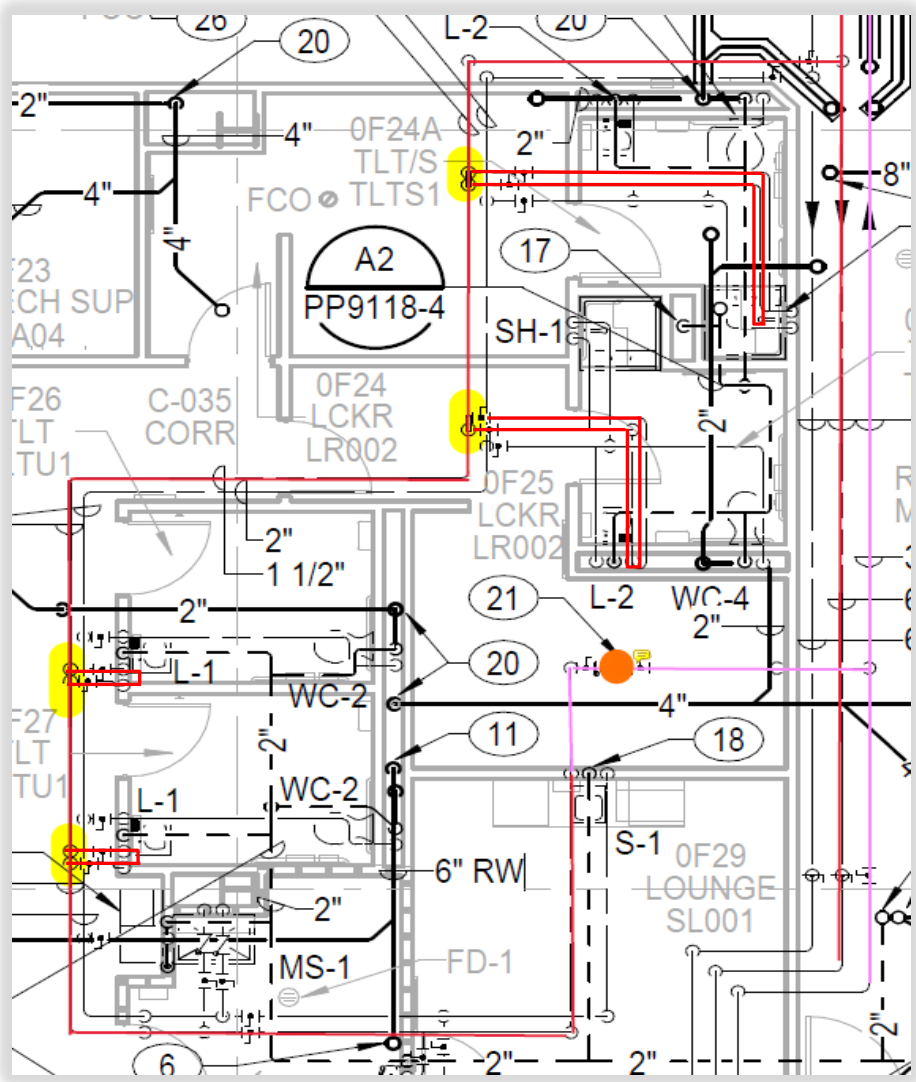

Fig. 1.2