

Multifamily Facility Management Services

SHW RECIRCULATION LOOP TEMPERATURE CONTROL

Description:

In buildings with a central service hot water (SHW) system, a major factor in energy use is the presence of a return piping system, common in apartment buildings of 40 units or more and in some small commercial buildings. In this system, hot water is constantly recirculated through a supply loop so that it is readily available at taps, preventing a long wait for the water to be drawn from the water heater to remote parts of the building (ASHRAE 1991). Usually uninsulated, this supply loop can be a large source of heat loss.

One tactic to reduce recirculation pipe loss is to insulate the loop. While appropriate in new construction, this is impractical as a retrofit since recirculating lines in existing buildings are usually inaccessible. Another strategy is to reduce supply temperatures to the minimum acceptable. Depending on peak demand, however, permanent reductions may not always be possible. SHW use shows very strong hourly fluctuations. As a result, a better way to reduce loop loss is to reduce supply loop and tank temperatures during times of light demand.

Savings for this retrofit are expected from several sources including reducing heat loss from the loop itself, reducing demand for fixed volume uses (like dishwashers and washing machines), and improving the seasonal efficiency of the hot water heater itself by reducing off-cycle and jacket losses. At the same time, this strategy keeps plenty of hot water continuously available, avoiding potential complaints from building occupants. One field study found savings for this retrofit to range from 8 to 17%, with an average payback of two years.

How to Implement:

Controls that provide automatic temperature adjustment of SHW heater and loop temperature range from mechanical timers with fixed set-up and setback temperatures and times to advanced electronic controls with internal memory that can “learn” patterns of SHW use, anticipate demand, and adjust the temperature setting accordingly. A qualified contractor, familiar with these types of controls, should be able to recommend which control is best suited for a particular building and its SHW system.

It is recommended that the owner obtain at least two bids from qualified contractors before selecting the contractor who will complete the retrofit. In addition, it is strongly urged that the contractor include, as part of the installation package, a monitoring service for a brief period

after installation to ensure that the control is operating properly and setting back temperatures at appropriate times.