Technical Service Department
Technical Service Bulletin
1-800-432-8373
HeatPump Water Heater w/ Recirculation

A return circulation pipe is sometimes provided in a hot-water system where it is desirable to have hot water available continuously at the fixtures.

A smaller pipe with an inline pump is connected to a point close to the most distant fixture and to a point close to the hot water heater. The pump can run continuously or intermittent circulating enough water to keep the temperature drop in the pipeline during low or no consumption within an acceptable limit.

Return circulation in your home is great at providing hot water to your fixtures quickly and reducing the amount of cold water going down the drain while you wait, but hot water is constantly flowing through your pipes. If your pipes are not insulated or insulated well, then your pipes will transmit the heat to the surrounding areas of your home. The more heat energy lost, the more your water heater has to work to maintain the heat in the pipes.

The Rheem HeatPump water heater uses proprietary software to ensure the water heater operates at peak efficiency. This water heater uses an algorithm to determine when the unit should begin a heating cycle. A typical heating cycle is caused due to a sudden drop in temperature in the bottom of the tank when hot water is being used since the incoming water temperature is much cooler than the water in the tank. Due to software program on this water heater, considerations must be made when installing a heat pump water heater in conjunction with a home recirculation system as the inlet water temperature may not be cool enough to activate a heating cycle.

Due to the wide variety of applications and the variability in installation and performance of these systems, Rheem cannot and does not specifically recommend the Rheem HeatPump water heater for use with recirculation systems. We can provide the following guidance that you can use to determine if the Rheem HeatPump water heater will perform in your specific application:

If your recirculation system or pump is designed to help provide hot water to sinks, showers, etc. that are far away from the water heater and does not present a significant continuous heating load, the Rheem HeatPump water heater can generally be used as long as the incoming water temperature to the Rheem HeatPump water heater remains less than 15ºF below the thermostat setting and not exceeding 120ºF and you have it set for High Demand mode or Electric only mode. Heat Pump only mode may also work in this configuration, but you may have to experiment with your application. Energy Saver mode will not perform well with recirculation systems due to fact that is takes about a 25ºF drop in tank temperature to activate in this mode.

Depending on conditions associated with the specific application, anticipated energy savings from the Rheem HeatPump water heater could be significantly impacted. Using this in a recirculation loop may cause the unit to run excessively. The heat pump portion of the water heater only produces about 1500 watts of energy in the best of conditions (high heat and high humidity conditions) and may not be able to keep up with the demand.