

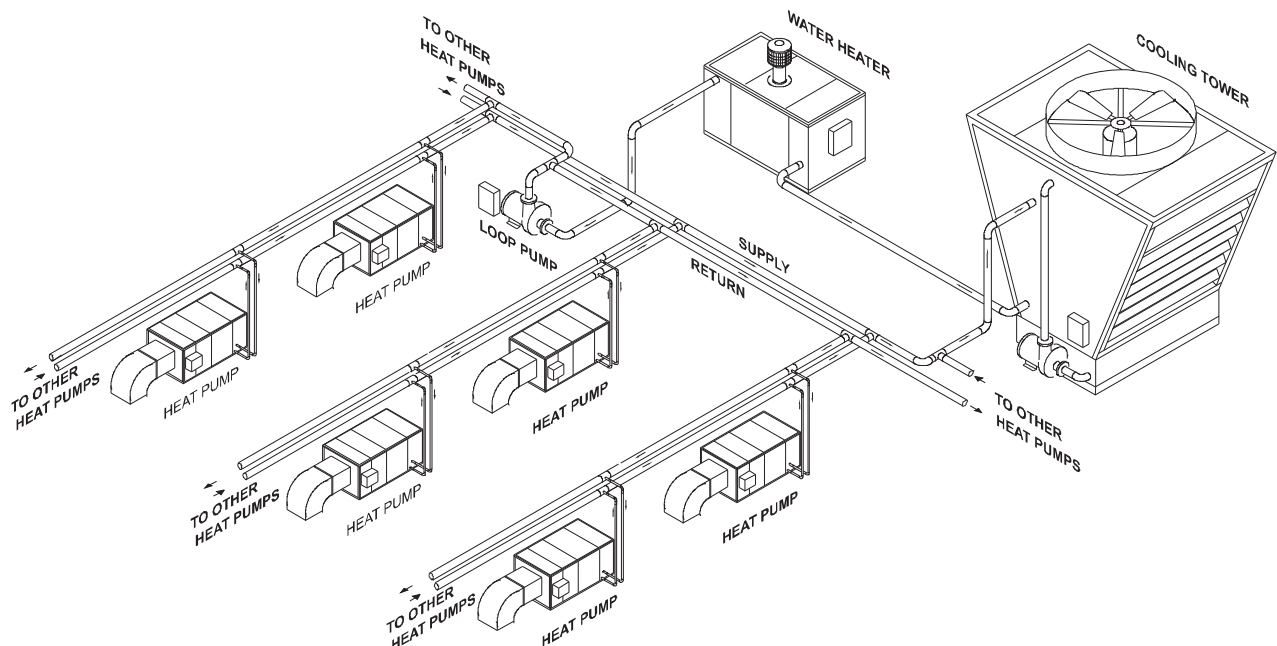
Figure 1-1: Typical Water Source Heat Pump

During the cooling mode, the tube-in-tube heat exchanger functions as a condenser and the coil as an evaporator. In heating mode, the tube-in-tube heat exchanger functions as an evaporator and the coil as a condenser. A reversing valve is installed in the refrigerant circuit permitting changeover from heating to cooling, and vice versa. The condenser and evaporator tubes are designed to accept hot and cold refrigerant liquid or gas.

Water Source Heat Pump Systems

The water source heat pump system is, by definition, a heat recovery system. It is best applied to buildings that have simultaneous cooling and heating loads. This is the case during winter months when the interior zones of a typical building require cooling while the exterior zones require heating. When a water source heat pump system is used, the heat rejected by the cooling units is used to warm the zones calling for heat. A water heater is generally used for adding heat to the condensing water during peak heating periods, if necessary. The system also utilizes a water cooling tower to reject the heat energy from the condenser water loop during periods of high cooling demand.

Water source heat pump units can be suspended in the ceiling plenum, floor mounted behind walls or placed directly in the occupied space as a console unit. There are also rooftop and unit ventilator type water source heat pumps.

**Figure 1-2: Typical Water Source Heat Pump System**

Water source heat pump systems generally cost less to install than central built-up systems. They offer individual zone control with the added flexibility of being able to