



Example Retrocommissioning Measure: Opening Throttled Discharge Valves

Facility

This 21-story building, constructed in 1997, is located in Oregon and contains 589,000 gross square feet of mostly office occupancy. The HVAC system includes six large air handlers, 400 variable air volume terminal units, five boilers, three chillers, and three cooling towers.

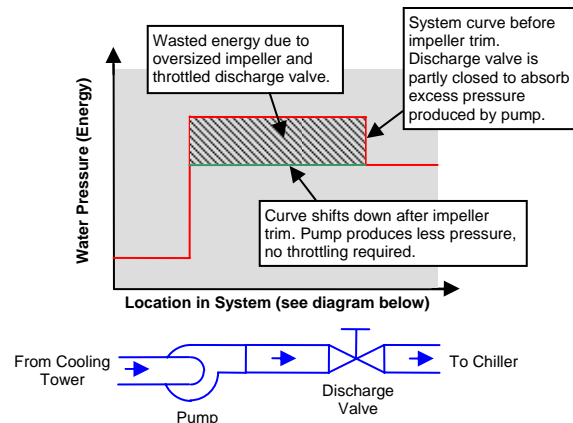
Investigation Finding

The RCx investigation revealed that the discharge valves for the nine condenser water pumps were all set at approximately 50% closed. This indicated that the pumps, ranging from 10 HP to 40 HP, were oversized and could generate more pressure than the system actually requires.

When the facility's condenser water system was originally tested and balanced, each pump's discharge valve was gradually throttled down until its design flow rate was achieved. This method of flow control consumes more energy than using properly sized pump impellers and open discharge valves. As part of this RCx measure, pump tests were conducted to determine the impeller size necessary for achieving design flow with the discharge valves 100% open.

Implemented Measure

The impellers for all of the condenser water pumps were trimmed to the appropriate diameter, and the discharge valves were opened. Total condenser pump power was reduced by 38% as a result of reducing the pressure drop across the discharge valves.



Results

Estimated annual electric savings	\$7,519	103,053 kWh
Implementation cost	\$6,240	
Simple payback	0.8 years	