



ENERGY CONTROL & DESIGN, Inc
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Heart of the Valley Metropolitan Sewage District

Solids Building PK Boiler #3 Operation & AHU-1M serving Administration Building

Boiler #3 is designed to operate as the lead boiler when the outside air temperature is above 55 degrees. Boiler #3 is a condensing boiler and can operate below 150°F degrees supply water temperature which allows for greater turndown and energy savings. Boilers #1 and #2 are non-condensing boilers which cannot operate below 140°F degrees water temperature. If the boilers were to operate at this temperature, they would be subject to adverse impacts thus an alarm is generated if the hot water temperature is below 140°F and the boilers are enabled.

The hot water temperature setpoint and boilers operate based on an outside air temperature reset. When the outside air temperature is 80°F, the hot water temperature setpoint is 140°F. When the outside air temperature is 0°F the hot water temperature setpoint is 195°F. During the summer months when the outside air temperature is warmer, there is not as much heating load on the building. Based on the reset schedule we can satisfy the needs of the building by operating the condensing boiler, PX Boiler #3. However in the winter months when there is more heating load/demand on the building, the BAS will stage on whatever boilers are necessary to meet the hot water setpoint determine by the outside air reset.

The heating system operates for hot water reheat as the temperature loads in the Administration building fluctuate. AHU-1M discharge air setpoint is based on outside air temperature. At 80°F outside air temperature, the discharge air setpoint for AHU-1M is 50°F and at 20°F or less outside air temperature, the discharge air setpoint is 65°F. Air handling unit AHU-1M delivers supply air to the VAV's in the Administration Building. Because this is a variable volume system it utilizes both air flow and discharge air temperature from the VAVs in the space to achieve the desired space temperature. Based on people, equipment, and other heat producing load factors some spaces may not need any reheat to stay at setpoint and other may require some. Because of this hot water reheat is needed all year round. If reheat was not available rooms would sub cool and not be at temperature setpoint selected by the occupants.