Jamestown Board of Public Utilities

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Fall, 2017

Piping Hot, *an Online Newsletter for BPU District Heating Customers*

Fall Is A Good Time to Prepare Your District Heating System for Winter

With Fall here, it is important to think about how to prepare your District Heating system for winter. You'll want to have a warm building in the cold months ahead!

First on your list should be a "check-up" for your heat exchanger to assure that you will have plenty of heat to warm your building again this year.

Calcium build-up on a heat exchanger can cause a lack of efficient heat for your facility.

How does calcium build-up occur?

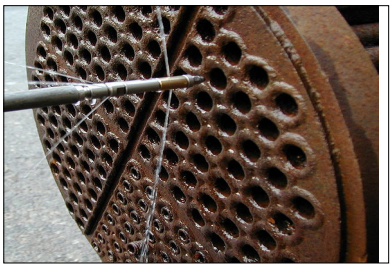
The hot primary water coming to your building from the Power Plant is calcium-free. The secondary water, however, that circulates in the customer building usually comes from domestic tap water that may contain fairly high levels of calcium that is dissolved in the water.

The water flowing from the Power Plant to our customers ranges from 200-250 degrees Fahrenheit. As the heated water flows through your exchanger, it leaves its heat in your system.

The water returning to the Power Plant should be no more than 170 degrees Fahrenheit.

When incoming and outcoming water in your facility is at those temperatures, you know that your system is working properly.

Should you notice, instead, that



your heat exchanger is returning water to the Power Plant at or above 190 degrees Fahrenheit, you probably have calcium in your heat exchanger. The calcium can clog your heat exchanger, preventing enough of the hot water to enter your system to heat your building.

If this happens to you, you may need to call a plumber to clean the heat exchanger.

Once your heat exchanger is cleaned, the result will be warmer, more comfortable rooms in your facility.

How to avoid calcium build-up?

Repair any water leakage occurring in your building. Even the water lost through a "harmless" drip in the basement needs to be replaced. This small amount of make-up water builds up over time and will severely degrade the performance of a heat exchanger.

Heat exchangers used for domestic water should be cleaned annually. Other heat exchangers should be scheduled for cleaning every five years.

Also, you may consider installation of a water softening unit in your building to prevent calcium build-up.

The entire District Heating system will work better if each customer's system works well.

Do you find a higher than normal rate of corrosion in your heat exchanger?

This corrosion could be caused by a slight electromagnetic charge that occurs when water flows between metal plates inside the heat exchanger.

This charge may be dissipated by adding a simple copper ground wire. This wire can greatly reduce corrosion and extend the life of the heat exchanger.

If you have problems with your heating system, please contact Jim Butler at the BPU at 661-1621 weekdays between 8 a.m. — 4:30 p.m. You may also reach him by e-mail: jbutler @jamestownbpu.com.

Jim is available for questions or to schedule a facility visit to verify any problems you may be having. Jim also is available to speak with maintenance staff, to give them a short class about how to operate a district heating system. Appointments may be made by contacting Jim directly at the BPU.

District Heating System Continues as One of Five Divisions in the BPU

In spring, 2017, the BPU began the removal of four electrostatic precipitators from the roof of the Samuel A. Carlson Generating Station (Power Plant) as well as the removal of coal boilers numbers 11 and 12. This equipment represents the disposal of outdated, obsolete coal-burning equipment from the plant. The project is expected to be completed by November, 2017.

Although coal is no longer utilized as a fuel to warm the water for our District Heating system, you may be assured that newer BPU equipment is used to operate our District Heating system.

First, a small building housing a hot water generator was constructed behind the power plant to provide a "back-up" source of heated water for the entire District Heating system. Also, the LM6000 General Electric Gas Turbine that generates electricity in place of the coal boilers can be run in a manner that allows excess waste heat created from electrical production to be used to warm our District Heating water.

In addition, two other coal boilers were converted to burn natural gas. One of these two former coal boilers is equipped to run with both gas and fuel oil.

In summary, we have several new methods of powering our District Heating system even though the original coal production of electricity in our Power Plant is gone.

Are You Familiar with District Heating Terms?

MMBTU — Unit of heat measurement equal to 1,000,000 British Thermal Units.

Fuel Adjustment Charge — The cost of "fuel" to provide heat, this is a blended rate based on the cost of heat from all the different heat sources.

Monthly Meter Charge — Equals the cost of the meter divided by the 10-year life expectancy of the meter.

Basic Service Charge —This is to cover the cost of the service connection, billing and meter reading.

Primary Water — Heated water pumped out of the Power Plant that is used to provide heat to customers.

Secondary Water — Water used in the customer's system to heat the building.

Make-up water - Water used to refill customer's system, typically due to leaks in the system.

In frigid weather, District Heating Pipes are not affected in the same way as water pipes which tend to break in cold temperatures. That is why we normally experience fewer outages in the heating system in winter, as compared to the more common water main breaks that occur.

Water pipes are made of cast iron or ductile iron which is inflexible and can break more easily under the pressure of ground shifting around the water lines in the cold. District heating pipes, in contrast, are made of steel which is more flexible and less likely to break. District Heating lines also are insulated to maintain the hot water that flows to customers. The warmer water flowing through the lines also helps protect them, as does the bed of sand in which the pipes are buried. Most leaks in District Heating result from water outside the pipe corroding the steel, unlike water lines that break when cold temperatures shift the ground around the brittle water lines.