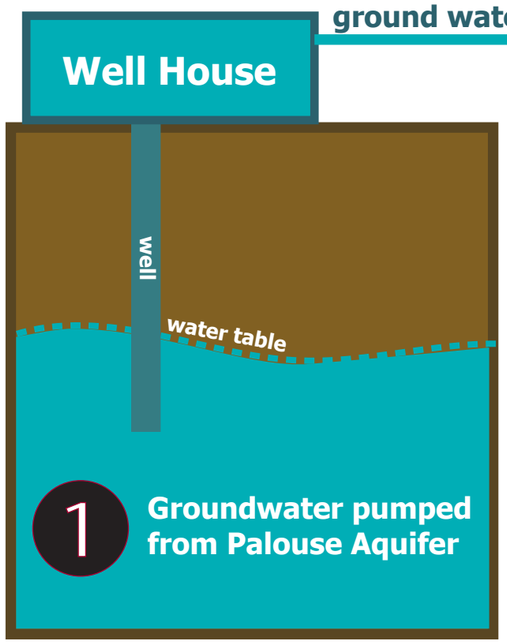
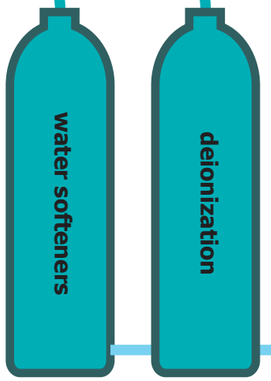
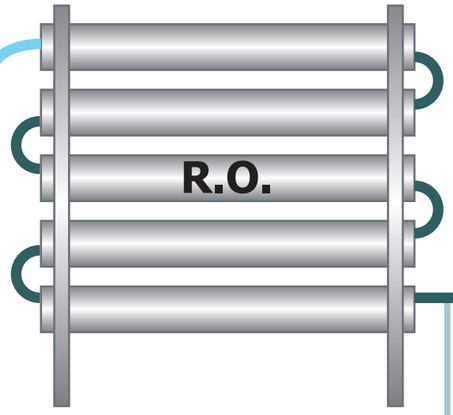
HOW DOES STEAM HEAT BUILDINGS AT WSU?

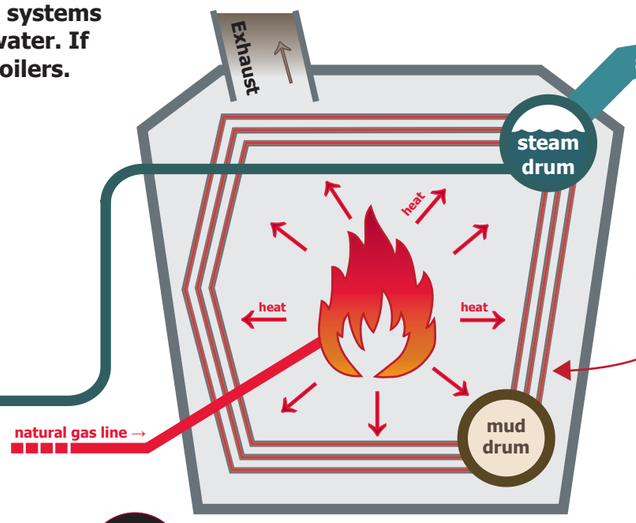
Water softeners, deionization, and reverse-osmosis systems are used to purify the highly-mineralized ground water. If not purified, these minerals will build up in the boilers.



ground water to steam plant →







steam → steam →

Combustion in the center of the boiler heats copper pipes filled with water to boiling temperature. The hot water makes its way to the water drum, and steam escapes from the top.

1 Groundwater pumped from Palouse Aquifer

2 Water softener and deionization

3 Reverse-Osmosis system

4 Water tube boiler produces steam

5 Generated steam travels via tunnel piping to buildings.

WSU has approximately 7.5 miles of underground tunnels that transport utilities like steam, chilled water, and often run below sidewalks which helps keep snow and ice at bay.

← steam ← steam ← steam ← steam ← steam ← steam ← steam ←

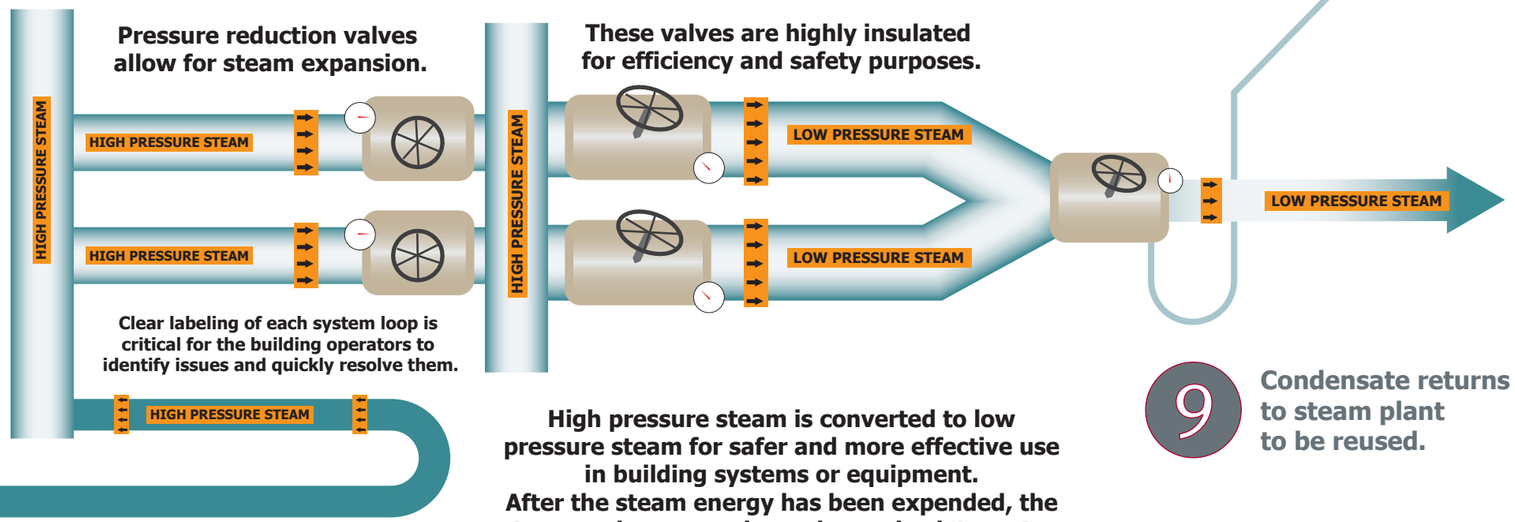
6 High pressure (100psi) to Low pressure (60psi) steam conversion
(In mechanical rooms of buildings)

7 Low pressure steam is delivered to building systems.

8 Steam used to heat, humidify, and sanitize in building equipment.

Pressure reduction valves allow for steam expansion.

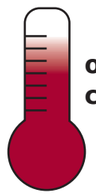
These valves are highly insulated for efficiency and safety purposes.



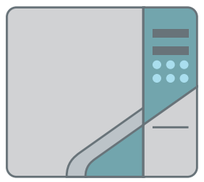
Clear labeling of each system loop is critical for the building operators to identify issues and quickly resolve them.

High pressure steam is converted to low pressure steam for safer and more effective use in building systems or equipment.
After the steam energy has been expended, the steam undergoes a phase change back to water, called condensate, that is cycled back to the steam plant and recycled in the system.

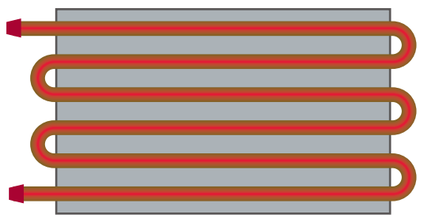
9 Condensate returns to steam plant to be reused.



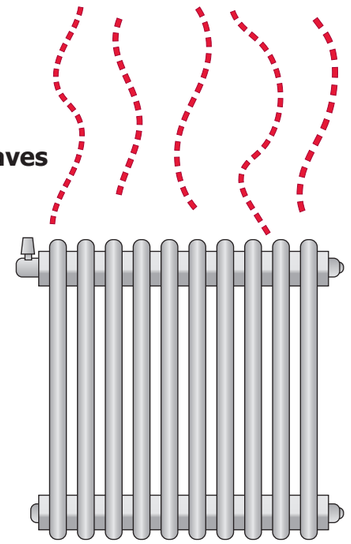
occupant comfort



steam autoclaves



steam heat coils for space heating



steam radiators

This project is sponsored by Facilities Services and delivered by the Integrated Design + Construction Lab

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