

Heating Plant

Heating Plant FACTS

- The Central Heating Plant consumes 350,000+Dkt of natural gas (enough to heat 3,800 average homes) and generates 300,000,000+ pounds of steam annually.
- The current Heating Plant is the third steam plant on campus. Construction began in 1922 and commissioned on February 20, 1923.
- The original fuel source for the boilers was coal. Circa 1950 the burners were converted to natural gas.
- The Heating Plant operates twenty four hours a day, seven days a week, nine months out of the year and operates 4:30 a.m. to 9:00 p.m., three months a year.
- Twenty four hour operation requires a staff of four qualified operators.
- Heating Plant operations staff is required to hold a First Class Boiler Operations License issued by the state of Montana.
- In 1995, an in-depth structural analysis confirmed the original brick stack could only withstand 25% of the seismic forces required by the Uniform Building Code and the stack was removed to the roof line in 2003.

Picture: MSU Heating Plant
Circa 1923

Function

Montana State University's Central Heating Plant provides steam to the core of the university buildings, approximately 3.08 million square feet. The steam generated by the boilers supplies the necessary heat source for office spaces, teaching and research labs, dormitories, domestic hot water, autoclaves, kitchen steam kettles, and the swimming pool at H&PE.

The inner workings of the heating plant

- The steam generation system in the plant is comprised of three natural gas fired high pressure boilers. Cumulatively, these three boilers are capable of generating 250,000 pounds of steam per hour. The MSU Heating Plant is one of the largest consumers of natural gas in Montana.
- The utility natural gas system's delivery capacity can become constrained during periods of extreme cold weather or temporary outage of system components. MSU's heating plant contains a propane emergency fuel system that fuels the boilers in the event that the natural gas service is disrupted or curtailed. In an emergency, the propane system can fuel the heating plant for about 24 hours.
- The high pressure steam (280 psig) passes through a single stage turbine that extracts energy from the steam while functioning as a pressure reducer. Medium pressure steam (45 psig) exiting the turbine then is distributed throughout the campus via a 1.8 mile utility tunnel.
- Coupled to the steam turbine is a 900 horsepower electrical generator. This generator produces, on an average, 2.7 million kilowatt hours annually equating to 6% of campus electrical needs on a cost basis, or enough electricity to power 3300 average Montana homes.
- An emergency electrical generator resides in the plant. In the event that electrical power is lost to the Heating Plant a diesel fuel generator is started to provide power for the boiler room.
- Three seventy-five horsepower rotary screw compressors provide instrument air for pneumatic campus building controls.



The Heating Plant