

Efficient and Reliable Energy Solutions for MU

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Highly reliable and cost effective utilities are essential for the University of Missouri (MU) to achieve its academic, research, and outreach missions. MU's Campus Facilities – Energy Management department focuses on three key areas to help meet that requirement; Production Efficiency and Reliability, Energy Conservation, and Renewable Fuels. This poster presentation shows how MU employs efficient and reliable utility production technologies to meet its energy needs.

Using various combined heat and power (CHP) technologies MU efficiently produces its own steam, electricity, and chilled water to meet the campus energy needs. These CHP technologies are highly efficient and cost effective compared to more conventional power plant technologies. Additionally, the CHP district energy plant provides MU with high utility supply reliability, essential for its research and medical facilities.

Most power plant technologies waste large amounts of thermal energy resulting in low fuel energy utilization with most less than 38% efficient. The MU Power Plant uses highly efficient combined heat and power technologies which improves fuel energy utilization increasing the plant's thermal efficiency to more than 62%. This reduces the amount of fuel energy needed for MU's energy requirements, reducing cost and emissions. Key plant features and benefits include:

- Co-generation steam turbine generators produce electricity from boiler steam before sending the low pressure steam energy to the campus for thermal use.
- Waste exhaust heat is captured from the plant's combustion turbine generators using heat recovery boilers. This steam is also co-generated in the plant's steam turbine generators.
- A balance of dual effect steam absorption chillers and electric centrifugal chillers in MU's district cooling system allows a more cost effective supply of energy during the summer months.
- The CHP district energy concept along with fuel diversity provides MU with a highly reliable and cost stable energy supply that minimizes costs associated with typical energy market swings.
- The high fuel energy utilization of CHP lowers fuel use resulting in emission reductions, including greenhouse gas emission, when compared to separate electric and thermal energy production.
- The US EPA has recognized MU under its CHP Partnership program for effectively using CHP technologies to efficiently meet its energy needs while reducing emissions.