Power Production personnel are responsible for operating and maintaining the Manitowoc Public Utilities power plant, as well as the combustion turbine/generator located at the Custer Street Energy Center north of the I-Tech Industrial Park.

The power plant is operated 24/7 and is capable of burning coal, petroleum coke, biomass, and natural gas. Plant personnel handle fuel procurement and supply, and operate and maintain the boilers and generators. The generators equipment is capable of producing 106 MW (megawatts) gross.

Steam is also produced at the plant and consumed by the district heat and steam customers. Special emphasis is given to continuously monitor air emissions.

Plant operators are in constant communication with the Mid-Continental Independent System Operator to dispatch generation to meet demand to the statewide electrical grid, with whom we partner . Plant operators also answer after-hours outage and emergency calls.

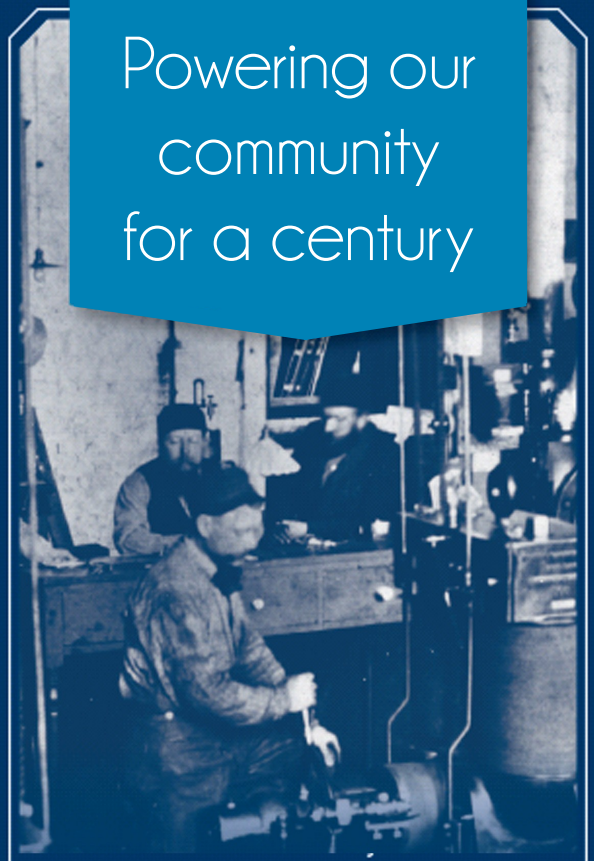
Celebrating 100 Years
1914 MPU 2014
Manitowoc Public Utilities

Manitowoc Public Utilities
Power Plant
701 Columbus Street
Manitowoc, WI 54220

Manitowoc Public Utilities'

Power Production

Powering our community for a century



100 Years of Service
1914 MPU 2014
Manitowoc Public Utilities

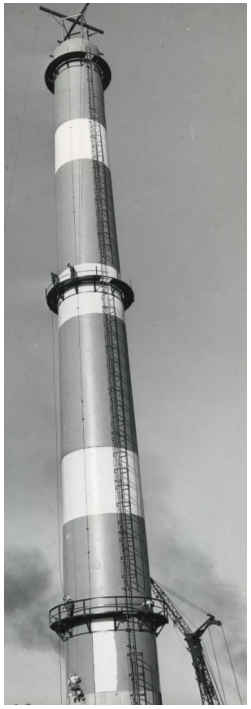
Renewable Biomass Fuels

MPU filed plans and specifications with the WDNR and was issued an Air Pollution Control Construction Permit on April 16, 2012. The permit authorized MPU to combust up to 100% renewable biomass fuels in Unit 8 and Unit 9.

Renewable biomass fuels can be anything from trees, paper pellets, lumber, cardboard, corn stalks, seeds, grain hulls, and grasses. MPU is also permitted to burn utility poles, railroad ties and construction and demolition waste to the extent that such waste is from a renewable resource.

Clean Air Act

The Clean Air Act requires a MACT standard for existing sources of air pollution must be no less stringent than "the average emission limitation achieved by the best performing 12% of the existing sources" for which EPA has emission information.



EPA filed Information Collection Request For National Emission Standards For Hazardous Air Pollutants (NESHAP) For Coal– and Oil-Fired Electric Utility Steam Generating Units with MPU.

The request required MPU to complete extensive stack testing of over 100 pollutants at a cost of around $100,000. This data was submitted to EPA for evaluation and Unit 9 was determined to be one of the 12% best performing existing sources for some emissions for units firing petroleum coke which is also known as solid oil.

Unit 8

In 1991, the 20 megawatt fluidized-bed boiler "Unit 8" was fired for the first time. From January to August 2014, Unit 8 has produced gross megawatts of 56,477.

Listed below is what Unit 8 burned, in tons, from January to August 2014.

	Unit 8
Pet Coke	10,267
Coal	2,586
Paper	16,130
Charcoal	1,800
Limestone	4,800
Ash	4,967

Unit 9

In 2006, The "Unit 9" addition to the power plant was completed consisting of a 63 megawatt generator and fluidized–bed boiler. From January to August 2014, Unit 9 has produced gross megawatts of 99,919.

Listed below is what Unit 9 burned, in tons, from January to August 2014.

	Unit 9
Pet Coke	27,020
Coal	6,893
Paper	7,920
Charcoal	1,015
Limestone	14,625
Ash	14,423

Fuel Blends

MPU blends fuels for one main reason.

If MPU burned 100% petcoke with limestone, for sulfur capture, the chemistry in the loop seal area is such that it makes agglomerations which plug the loop seals and can pancake the furnace bed solid. We need to have inert material to separate the particles to prevent blockage. The inert material can be sand, or fuel and/or paper for the ash content.

MPU chose to use coal and paper because they have a btu value. Sand works to prevent blockage but it adds no heat value and every pound of sand becomes another pound of ash to pay for disposal.

Blend	Unit 8	Unit 9
Paper	52%	18%
Coal/ Charcoal	14%	19%
Pet Coke	33%	64%

Higher Paper Percent

The addition of a higher paper percent reduces the overall sulfur content of the fuel, thus reducing both ash and limestone.

Every pound of limestone equates to another pound of ash to pay for disposal.

	Unit 8	Unit 9
Ash % of Fuel	16%	34%
Limestone % of Fuel	16%	34%
Paper	52%	18%