



February 2010

We Energies' generating system



COAL

Oak Creek Power Plant

*The most thermally efficient
generating power plant
in Wisconsin.*



Location:

This plant occupies more than 400 acres of land on the shore of Lake Michigan, 20 miles south of Milwaukee.

Type of Plant:

Coal-based, base-load (typically operating 24 hours a day).

Initial Cost:

\$246 million

Number of Active Generating Units:

4 steam turbines

Year in Service (South Plant):

Unit 5: 1959

Unit 7: 1965

Unit 6: 1961

Unit 8: 1967

Generating Capacity:

Unit 5: 261 megawatts

Unit 6: 264 megawatts

Unit 7: 298 megawatts

Unit 8: 312 megawatts*

* Unit 8 is Oak Creek's largest turbine-generator unit, measuring 125 ft. long, 28 ft. wide, 31 ft. high and weighing 1,600 tons. The entire turbine and generator are bolted together in one long shaft system. Units 5, 6 and 7 each have two parallel shaft systems with two separate generators.

Total Net Generating Capacity:

1,135 megawatts

Oak Creek Power Plant

Voltage:

Generator: 18,000
Step-Up Transformer: 138,000 (Unit 5)
230,000 (Unit 6,7,8)

Fuel:

Pulverized coal; natural gas for boiler start-up.

Coal Handling:

Transportation: Unit train (135 coal cars per train)
Storage: Indoor: 55,000 tons
Outdoor (inactive): 475,000 tons
Preparation: 16 pulverizers crush coal at 33 tons per hour each

Average Coal Use:

5,000-10,000 tons daily (depending on system demands)

Boilers:

(Units 5-8); One per turbine generator.
Height: 18 stories (Unit 8)
Furnace temperature: 2,500 degrees Fahrenheit
Steam temperature: 1,050 degrees Fahrenheit
Steam pressure: 2,400 pounds per square inch

Ash Handling:

More than 99 percent of fly ash is removed by electrostatic precipitators. Bottom ash is removed by a hydraulic removal system.

Chimney:

One for every two boilers. The southern-most chimney, Oak Creek's largest, is 550 ft. tall.

Cooling System:

800,000 gallons of water from Lake Michigan are used every minute to convert the exhaust steam from the turbine back into water for reuse. The water is returned to the lake.

Control Room:

All major functions in the plant are controlled by operators with computer support to continuously monitor and report on pressures, temperatures, flow rates, etc. In addition, the computer aids in start-up, shutdown, makes load adjustments during operation and records information for future reference.