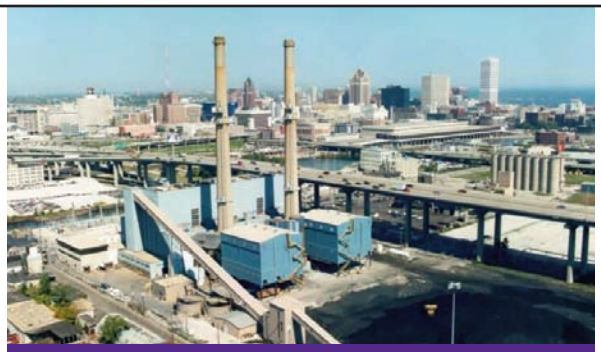
Emerson's Smart Technologies Sustain Plant Reliability and Save Money at We Energies

RESULTS

- Saved up to $250,000 per year by identifying valves leaking steam and taking action to stop the leaks
- More efficient steam production through better soot removal
- Improved performance of control valves for greater reliability



APPLICATION

Critical control valves in a 40-year-old power plant are continually monitored, evaluated, and maintained using advanced technologies to assure continued performance despite their age and condition.

CUSTOMER

We Energies serves more than 1.1 million electric customers in Wisconsin and Michigan's Upper Peninsula and more than one million natural gas customers in Wisconsin. The company, a subsidiary of Wisconsin Energy Corporation, also provides steam to about 500 customers in downtown Milwaukee. Steam is produced in four coal-fired boilers at the Valley Power Plant, which has the distinction of being the largest utility-owned co-generation facility in the country. Each of the two power generating units has a pair of boilers as well as a single extraction steam turbine-generator capable of producing 140 megawatts of electricity.

CHALLENGE

The Valley Power Plant has a strong need for reliability because the loss of steam generating capability would leave much of downtown Milwaukee without heat. Each pair of boilers is capable of producing about 1.3 million pounds of steam per hour at a pressure of 1,550 psi. Peak extraction steam production for city heating has exceeded one million pounds per hour. But, there is no backup for steam beyond the four boilers.

Maintenance personnel are constantly challenged by the age and condition of much of the auxiliary equipment in this plant. Valves from a variety of manufacturers must continue to perform despite chronic operating and maintenance problems.

"The AMS Device Manager predictive maintenance software accesses diagnostics generated by smart field instruments and makes that information easy to use. This generally pays for itself through improved operation and cost avoidance."

Todd Gordon
Instrument Technician Leader

AMS Suite

For more information:
www.assetweb.com

EMERSON
Process Management

SOLUTION

To ensure reliability, We Energies has invested in electronics and asset optimization technologies capable of early identification of potential problems, so they can be corrected without incident. This saves on maintenance costs as well. The installation of smart, microprocessor-based instrumentation began in the mid-1980s, and the old analog controls were replaced with a "WDPF" distributed control system (DCS) in the early 1990s. This resulted in greater measurement accuracy, easier calibration, repeatability, and higher reliability.

Reliability increased further in the late 1990s with the arrival of the first smart FIELDVUE® digital valve controllers (DVC) mounted on old control valves to become more responsive with reduced variability. These devices have performed above expectations by providing actual valve position feedback and warning of potential problems.

The most significant addition was the online installation of Emerson's AMS® Suite: Intelligent Device Manager predictive maintenance software in late 2005. AMS Device Manager communicates with both HART® and FOUNDATION™ fieldbus smart devices via multiplexers interfaced with the existing DCS, giving staff technicians a consolidated view of the operating condition of smart DVCs from a single location. Initially, a network of 12 critical valves in Unit #2 was established, eliminating the need for personnel to go to six different locations to check out valves. This not only saved time, it was also instrumental in identifying problems with those important valves.

For example, plant personnel suspected that the sootblower system control valves – one on each boiler – were leaking steam but could not prove it. Only after DVCs were mounted near each valve did the technicians learn the true extent of the loss – thousands of pounds of steam per hour. The loss was estimated at $200,000 to $250,000 per year. By early 2008, two of the valves had been replaced and were controlling the sootblower system efficiently and well within their control range.

The control valve network in Unit #2 proved to be so beneficial in saving time and money that the AMS Device Manager network was later expanded to include 12 identical valves with DVCs on Unit #1 as well as a few smart field transmitters.

"We now have FIELDVUE DVCs on the toughest applications in this plant, including the valves controlling desuperheating spraywater, boiler feedwater, dearator inlets, and the soot blowers. They helped identify soot blower valve leaks that were losing as much as $250,000 worth of steam per year. These losses were eliminated through a combination of corrective actions."

Todd Gordon
Instrument Technician Leader

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