

BEST PRACTICES AWARDS

the softener from service when necessary. It also reduces environmental impact by not bypassing service water to the evaporative pond during low service-water flow conditions to the softener.

Accelerated hot starts

Tenaska Central Alabama Generating Station

Tenaska Alabama Partners II LP

Challenge. Daily cycling requires a significant amount of startup fuel usage, which adversely affects our customer's daily profit margin. Contractual startup times are usually conservative and can be optimized to maximize revenue.

Solution. Working with other company plants, the operators developed an optimized startup timeline that minimizes startup fuel usage. Our customer requested that plant personnel work on minimizing startup fuel to help its bottom line.

Another company plant was successful in minimizing startup time and its associated fuel consumption, and our customer asked if similar steps could be taken at our plant. Our lead control room operator discussed accelerated hot-start procedures with his counterpart at the other plant and visited the plant to observe an accelerated hot start. New accelerated hot-start procedures and a new startup timeline were developed and tested in June 2006 and were used for all hot starts during that peak season.

Keys to shortening times included:

- Ramping at the last minute.

Tenaska Central Alabama Generating Station

885-MW, gas-fired, 3 × 1 combined cycle located in Billingsley, Ala

Plant Manager: Robert Threlkeld

Key project participants:

Cecil Boatwright, Operations Manager

Brian Pillittere, Plant Engineer

Alan Foether, Lead Control Room Operator



Central Alabama

- Starting units later.
- "Bottling-up" units tightly upon shutdown.
- Keeping steam lines warm.
- Giving specific timelines and feedback to operators for consistency among shifts.

Results. Hot startup times were reduced by an average of 30 minutes. The accelerated hot-start program saved the customer more than \$430,000 in fuel cost during the 2006 peak season. Approximately \$7000 in startup fuel was saved per hot start and similar savings were achieved at the company's other plants.

Root cause analysis: Our quest for reliability, optimization, reduced emissions, and safety

The University of Michigan Central Power Plant

Challenge. A specific recurrence of events resulted in several outages to our heat-recovery steam generator (HRSG) which, in turn, caused

the gas turbine (GT) to trip. For each trip, the alarm would display a boiler malfunction.

Solution. To resolve this issue, and others involving accidents and outages, an Accident Investigation Committee and an Outage Investigation Committee were created to implement use of root cause analysis (RCA). These committees looked at various root causes—including physical, human, and management system (latent). The purpose and goal of the two committees were to create an accident-free and equipment-reliable workplace. Plant personnel received RCA training from Reliability Center Inc, Hopewell, Va. This included 24 hours of RCA methods, software application, and hands-on training.

In the case of the HRSG/GT, the Outage Investigation Committee successfully instituted RCA strategies by first analyzing each of the known trips that could trigger the alarm:

- Low water in the boiler.
- Low scanner air pressure.
- Low damper seal-air pressure.
- Louver damper open.
- Guillotine damper closed.
- Low engine exhaust pressure.

Results. By troubleshooting each of the six areas individually, plant personnel identified low water level as the reason for the HRSG trips. There are three separate means for triggering a low-water trip: (1) the DCS, (2) the water column with electrodes, and (3) a separate float-type device. The last was the culprit in this case. The float-assembly seal that the float arm ran through started leaking, causing



University of Michigan

The University of Michigan Central Power Plant

44.5-MW, gas-fired, combined-cycle cogeneration facility located in Ann Arbor, Mich

Plant Manager: Richard Wickboldt

Key project participants:

- Mike Pepper, Operations Superintendent
- Bill Weakley, Results Engineer
- Mike Bennetti, Maintenance Supervisor
- Pam Barker, OSEH
- Mark Barker, Senior Shift Engineer
- Fred Hilberer, Senior Engineer
- George Gooch, Assistant Chief Engineer
- Bill Peters, Instrumentation Supervisor
- Jim Watterson, Operations Supervisor
- Ron Nichols, Senior Shift Engineer
- Mark Sundling, Shift Engineer
- Tio Fallen, Graduate Student

the magnetic switch to trip from water exposure.

The Outage Investigation Committee successfully instituted the RCA strategies to resolve the recurrence of issues involved with the HRSG/GT. These strategies resulted in a thorough understanding of the system and components, discovery of the system failure that caused the outages, implementation of the committees' recommendation (no more outages to date), and the development of an ideal training tool for plant personnel.

was a difficult task and after researching companies, taking quotes, and analyzing the cost, there was no way



11. Conex boxes left over from construction were "married" with a common roof and standard garage-door access

we could accomplish the project within our budget.

Solution. The plant had two conex boxes left over from construction, so we decided to put some of our equipment into them. When doing this, plant personnel came up with the idea of putting a roof over the conex boxes, creating a makeshift storage area. The roof was constructed for \$12,000 and included a garage door (Fig 11). A building permit was not required and no additional taxes are paid on the construction.

The new and improved conex

Dominion Armstrong Energy

Dominion Energy Inc

Challenge. More space was needed to store equipment, and the obvious answer was to have a building constructed. It became apparent that this

Dominion Armstrong Energy

600-MW, gas-fired, simple-cycle plant located in Shelocta, Pa

Plant manager: Matthew Denver

Key project participants:

- Jim Mandella, Peter Margliotti, Joe Harrilla, Wes Crawford, Ed Garlitz
- Dexter Cox



Dominion