

Four Best of the Best awards



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The fifth annual Best Practices Awards competition, judged by the CTOTF Leadership Committee, was characterized by a record number of entries and only one repeat winner in the top category. The program has grown year over year since its introduction; in 2009, entries were received from a dozen plants that had never participated previously

If you don't have at least 10 years of powerplant experience, you may not yet recognize that you are an important part of a great industry—one tasked with keeping the country running, the economy humming. This is an awesome responsibility. It requires personal commitment, hard work, and a continual influx of new ideas to meet expectations.

No individual comes close to having the infinite experience and creative talent needed to build, operate, and maintain the "best" powerplant. Top plants are "made" what they are by the pooling of lessons learned, best practices, resources, and ideas—a process enabled by user groups.

The Best Practices Awards program is one more way for personnel at gas-turbine-based powerplants to share their experiences. The program was launched five years ago by the COMBINED CYCLE Journal, in association with the Combustion Turbine Operations Task Force. Judging is by members of the CTOTF Leadership Committee.

A record number of entries were submitted this year and scores were close in most categories—particular-

ly Management. Mustang Station and East River Generating Station were tied after five of the six judges submitted their scorecards. Mustang prevailed by one point.

The awards program is designed to recognize the valuable contributions made by plant and headquarters staffs in improving the safety and performance of simple-cycle, cogeneration, and combined-cycle facilities. Also, that the top vote-getters in each of the five awards categories—Management, Environmental Stewardship, Design, Safety, and O&M—receive Best of the Best awards; the other finalists, Best Practices.

Proof that no individual, plant, or company has a "lock" on the best ideas was clearly in evidence this year: Klamath Cogeneration Plant, a Best of the Best recipient for the last two years, accepted a Best Practices Award in the safety category. And perennial winner Tenaska Inc's Lindsay Hill and Central Alabama Generating Stations, sister plants managed by Robert Threlkeld, received an O&M Best Practices Award. It was the 15th award for the two plants and the first time Threlkeld did not step to the podium for Best of the Best recognition.

Only TVA repeated among the Best of the Best. That group included the first recipient from outside the US: Mexico's Federal Electric Commission, formerly known as CFE. Also of note was that two plants operated by NAES Corp captured top awards.

The awards presentations were made at CTOTF's Spring Turbine Forum, in Birmingham, during a special luncheon for 100 guests on the first day of the event. Wickey Elmo of Goose Creek Systems Inc, Indian Trail, NC, the CTOTF meeting and group coordinator, planned and hosted the luncheon.

Sponsors of the awards program—CTOTF Super Champions and Champions—were the following: Advanced Turbine Support Inc, The Allied Power Group LLC, Global Controls LLC, Gas Turbine Efficiency, Hy-Pro Filtration, Power Support Inc, Power Systems Mfg LLC, Sulzer Turbo Services, Wood Group Gas Turbine Services, and Young & Franklin Inc.

All entries for the 2009 Best Practices Awards program are profiled in the 1Q/2009 issue and include the challenge accepted by plant and headquarters personnel, the optimal solution, and the results achieved.

Perhaps one or more of these ideas can help make your plant more efficient, safer, etc (access at www.combinedcyclejournal.com/archives.html, click 1Q/2009, click appropriate title on cover). At the end of the entries section, find details on the judging process, a sample scorecard, and instructions on how to enter the 2010 competition (entries due Dec 31, 2009).

go to first-time recipients



Best of the Best recipients

Operation and Maintenance Gallatin Combustion Turbine Plant *Tennessee Valley Authority*

For the initiative taken by plant personnel to significantly improve the availability and starting reliability of legacy peaking gas turbines by replacing the original OEM controls with a low-cost PLC solution. *Accepted by Mark Crisp (photo 1 in montage).*

Safety

Johnson County Generation Facility *Owned by Brazos Electric Cooperative Inc Operated by NAES Corp*

For initiating a partnership with the local fire department to both acquaint emergency service personnel with the plant and provide collaborative training to assure protection of plant personnel and the community. *Accepted by Vince Hawkes, Joe Booth, and Alan Bull (2).*

Management

Mustang Station *Owned by Denver City Associates LP, GS Electric Generating Cooperative Inc, and Yoakum Electric Generating Cooperative Inc Operated by NAES Corp*

For the development and implementation of a Basic Engineering Qualification program focusing on knowl-

edge retention to assure safe, efficient operation and effective response during emergency and abnormal conditions. *Accepted by Alan Bull (3).*

Design

Federal Electric Commission of Mexico *Laboratory Analysis Group*

For the utilization of wireless technology to facilitate thermal-efficiency measurements at CFE's 140 powerplants, thereby enabling more frequent analysis and tuning of generating units to assure continuity of top performance and production.

Environmental Stewardship

Salt Valley Generating Station *Lincoln Electric System*

For implementing the recommendations of a water-use study that identified multiple effluent and wastewater streams to reroute, retreat, and reuse as part of a conservation effort now producing significant environmental and economic benefits. *Accepted by Brad Hans and Bruce Barnhouse (4).*

Awards for O&M Best Practices

Morgan Energy Center *Calpine Corp*

Accelerometers installed on cooling-tower fan gearboxes continuously monitor vibration, providing data for trending to guide maintenance. Proactive monitoring minimizes the probability of fan failure and reduces

lifetime maintenance costs. *Accepted by Mike Gough, Bill Valagura, and Scott Parker (5).*

Sabine Cogen LP *Operated by Delta Power Services LLC*

Emergency action plan and response to Hurricane Ike incorporated "lessons learned" from previous storms to ensure personnel safety and prevent equipment damage. Result: zero man-hours lost and early return to service. *Accepted by Pete Sessler (6).*

Jasper Generating Station *South Carolina Electric & Gas Co*

Oxygen removal from feedwater using gas-transfer membranes eliminates the need for a scavenger, such as hydrazine, which is known to promote FAC. HRSGs have experienced no corrosion-related tube failures in five years of operation. *Accepted by Don Belle (7).*

Tenaska Lindsay Hill Generating Station *Tenaska Alabama Partners LP*

Atomizing-air heat exchanger tube leaks were eliminated by switching from the as-provided open-cycle cooling water system to the plant's existing propylene glycol cooling-system circuit after expanding its capacity. *Accepted by Robert Threlkeld and Mark McKenzie (8).*

Ceredo Generating Station *American Electric Power Co*

Unit trips on startup and shutdown attributed to sluggish operation of

COMBUSTION TURBINE OPERATIONS TASK FORCE



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compressor bleed valves have been virtually eliminated by installing logic in the DCS to track valve open/close times and to use that data to warn of an impending trip so the problem can be corrected beforehand. *Accepted by Dan George (9).*

Columbia Energy Center *Calpine Corp*

Design and installation of a cation trailer (sodium removal) by O&M staff to improve the quality of condensate returned by plant's thermal host has dramatically reduced blow-down from auxiliary boilers during non-dispatch periods. Annual savings in fuel and water are \$600,000, nearly 20 times the investment cost. *Accepted by Bill Valagura and Shawn Manning (10).*

MEAG Wansley Unit 9 *Owned by Municipal Electric Authority of Georgia* *Operated by GE Contractual Services*

Automating, optimizing, and tuning plant systems to the extent practical reduced unit startup time by 20%, improved starting reliability, and decreased heat rate. CROs are now much better able to manage the overall startup and proactively monitor for possible upset conditions. *Accepted by Keith Feemster and Eddie Mims (11).*

Central de Ciclo Combinado Saltillo *Gas Natural Electricidad Mexico*

Implementation of a pre-start checklist that includes stroking and/or testing of valves, actuators, and auxiliaries critical to GT startup and early operation has improved starting reliability by 20 percentage points; plus, it has eliminated double "Hot Start Disabled" conditions that adversely impact plant availability and waste resources. *Accepted by*

Roberto Hernandez, Juan Diaz, and Rene Villafuerte (12).

Salt Valley Generating Station *Lincoln Electric System*

Oxygen pitting and general corrosion that occurred during shutdowns of this cycling facility were traced to poor design decisions and less-than-ideal layup practices. Better procedures and water chemistry are the cornerstones of an improvement program that has virtually eliminated metal attack and enabled faster dispatch, reducing startup fuel cost. *Accepted by Brad Hans and Bruce Barnhouse (4).*

Rolling Hills Generating LLC *Tenaska Power Fund II*

O&M staff improved plant availability at no cost by providing the ability to latch every event in a relay with a message indicating the triggering event and to record alarms in synchronization, thereby allowing technicians to quickly identify, isolate, and repair failures on the high-voltage system.

Awards for Safety Best Practices

Klamath Cogeneration Plant *Iberdrola Renewable Energies*

Fan ductwork modifications and the installation of removable handrails on top of 501F enclosures have effectively eliminated fall hazards and increased the safety and speed of duct removal for engine maintenance. *Accepted by Bruce Willard (13).*

Redhawk Power Plant *Arizona Public Service Co*

ZLD-system flush valves were re-engineered to operate remotely, thereby eliminating operator burn hazards associated with plugged lines. No recordable injuries have been report-

ed since the retrofit was completed. *Accepted by Scott Takinen (14).*

Rolling Hills Generating LLC *Tenaska Power Fund II*

All employees are required to complete the plant's advanced safety training program—a comprehensive four-day course consisting of classroom, hands-on, and practical instruction. OSHA requirements are often exceeded. There have been no recordable incidents since the program was implemented.

MEAG Wansley Unit 9 *Owned by Municipal Electric Authority of Georgia* *Operated by GE Contractual Services*

Installation of remote oil-sample lines to each cooling-tower gearbox allows plant personnel to effectively and efficiently collect oil samples without the risk of injury and in less time than previously possible. *Accepted by Keith Feemster and Eddie Mims (11).*

Tenaska Virginia Generating Station *Tenaska Virginia Partners LP*

Plant's employee-driven safety culture generates ongoing enthusiasm and results. The safety program was invigorated by establishing goals and promoting a safety-first environment. A continuous improvement effort targeted successfully post-outage reviews, near-miss reporting, and more rigorous evaluation of routine activities.

Whiting Clean Energy *Owned by BP* *Operated by GE Contractual Services*

Use of a lockout/tagout device to hold cooling-tower fan blades in place during maintenance activities ensures safety of plant technicians.



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Awards for Management Best Practices

7EA Fleet

Tennessee Valley Authority

Coke build-up was experienced in dual-fuel units after shutdowns on oil, especially in primary nozzles. Plant-level testing and analysis proved that operating the atomizing-air booster compressor after fuel-oil runs reduces coke buildup, thereby increasing starting reliability, availability, and power output. *Accepted by Mark Crisp (1).*

Johnson County Generation Facility

Owned by Brazos Electric

Cooperative Inc

Operated by NAES Corp

Plant staff developed a method to quickly and reliably collect and store time-stamped data from outside instrumentation using a custom bar-code system and weather-resistant labels. Trending of the data has improved plant reliability and availability. *Accepted by Vince Hawkes, Joe Booth, and Alan Bull (2).*

East River Generating Station

Consolidated Edison Company of New York Inc

Plant's high-fidelity simulator is credited with dramatically reducing the timeline for commissioning operations. The custom-designed tool for training and development and software verification, benefits plant operations daily. Zero trips caused by operator error have been recorded since commissioning. *Accepted by Bill Kessler (15).*

Empire Energy Center

Empire District Electric Co

The plant's electronic database now contains more than 14,000 drawings, most previously available in



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hard copy only. Software allows easy access for viewing, printing, and updating. One result is faster repairs, which contributes to higher availability. *Accepted by Dale Jasumback (16).*

Empire Energy Center

Empire District Electric Co

O&M procedures and tasks performed by plant staff are tracked, updated, and retained in an easily accessible electronic database. Ready availability of this information allows technicians to perform most repairs, calibrations, etc, at any hour and in an expert manner without calling out support personnel. *Accepted by Dale Jasumback (16).*

Awards for Design Best Practices

Redhawk Power Plant

Arizona Public Service Co

Elimination of forced outages caused by failures of potential transformers was achieved by retiring the affected transformers and repurposing distribution transformers, located in a more forgiving environment, to provide the line-side voltage signal to the generator breakers for synchronizing with the grid. *Accepted by Mike Adams (17).*

Wolf Hills Energy LLC

Owned by Tenaska Power Fund

Operated by NAES Corp

Plant staff designed and installed, for only \$7000, a lead/acid flooded-cell battery containment system in existing space to provide a more reliable backup power supply than was offered by the original VRLA technology. *Accepted by Rich Evans, Les Chase, and Alan Bull (18).*

Awards for Environmental Stewardship Best Practices

Whiting Clean Energy

Owned by BP

Operated by GE Contractual Services

Replacement of the plant's existing CO₂-based fire-suppression system with an environmentally friendly water-mist solution reduces operating costs, minimizes equipment damage, and eliminates risks to both personnel and the environment.

Faribault Energy Park

Minnesota Municipal Power Agency

Taking the initiative to inform and educate the plant's host community of the environmental benefits of this technologically advanced combined-cycle facility before, during, and after construction has enhanced the ever-valuable working relationship between the parties.