



REFINERY BENEFITS FROM ELECTRONIC LOGS

Site has achieved better shift changes and improved operating performance

By George Threadgill III, Ergon Refining, and Cory Engel, CapuTech

ERGON REFINING, Inc. (ERI) operates a 26,500-bbl/d facility in Vicksburg, Miss., that is the world's largest producer of naphthenic specialty oils. The site includes two hydrotreaters, atmospheric and vacuum distillation towers, three hydrogen gas plants, a sulfur recovery unit and a propane deasphalting unit.

Unfortunately, shift changes weren't as effective as desired. Missed communications and differing accounts of activities that were provided during problem investigations frequently hampered operations.

The legacy systems used for shift communications were a mixed bag of independent tools. Night orders and the daily write-up were done in e-mail and Word; Excel was used to account for inventory transfers; lab samples were contained in a proprietary database; environmental notifications were recorded in OnBase; and other functions were tracked via paper. This led to a number of issues.

ERI realized it needed a robust, fully auditable system to eliminate these challenges and provide a central point of communication for all relevant staff. So, in the first quarter of 2013, the company started a project to switch to electronic logbooks; it selected Event Log from CapuTech.

The vision for an electronic log involved more than just the process operators and related supervision. ERI desired a tool that the entire organization could use — with various roles utilizing the log in unique ways (Figure 1).

IMPLEMENTATION

Event Log fulfilled ERI's functionality needs and Ca-

puTech's deep domain expertise provided a combination that suited ERI well.

CapuTech handled the implementation in phases. The first phase involved on-site meetings with ERI's operations leadership to develop the functional design. This phase was completed fairly rapidly and allowed CapuTech to gather all the necessary information for the design of the system. Decisions made included the number of logs required and the entry types to be used for each log. With CapuTech's advice, ERI decided on a unique logbook for each of the four work progressions in addition to a supervisor's log. Entry types included safety, environmental, transfers, samples and routine entries, among others. CapuTech built a prototype system and installed it on ERI's hardware.

After a brief evaluation of the prototype and some refinement of the user experience, ERI approved the design and CapuTech completed the implementation. This was followed by installation on ERI's local servers and comprehensive user and administrator training. Total time from start to finish was about six weeks.

Event Log is built around Microsoft SharePoint technology. This allows for a highly customizable web solution with native features for security, scalability and integration with other systems. Examples of this integration include interfaces with the SAP equipment database and OSIsoft PI historian. Each log entry is connected to a functional location that is consistent with the SAP functional location code. The use of functional location codes aids in consistency, searchability and organization of entries. Event Log also allows creating rules for deploying PI tags and calculations to generate automatic

BROAD UTILITY

	Corporate Executives	Corporate Process Safety Manager	Plant Manager	Operations Manager	Area Manager	Shift Supervisor	Plant Engineer	Console Operators	Process Operators
Information Gathering	✓	✓	✓	✓			✓		
Review			✓	✓	✓	✓	✓	✓	
Audit				✓	✓	✓	✓		
Enter Orders				✓	✓	✓	✓		
Enter Rounds					✓	✓			
Input Entries						✓		✓	
Shift Change						✓		✓	
Read Bulletins						✓	✓	✓	✓

Figure 1. People throughout the organization interact with electronic logbooks.

log entry, send e-mails or produce reports.

Detailed shift reports are generated to assist with shift change; various other reports are used for purposes that were not even envisioned originally. Two such examples are transfer management and lab samples. Transfers very recently have been fully integrated with Event Log. Each transfer recorded is initiated and completed within the logbook, and includes a pre-check to determine if the destination vessel for the transfer has enough volume available.

Also recently implemented was a mechanism for tracking lab results that are deemed critical control points. While these results always have been contained in a lab historian, ERI wanted the operators also to track the results in the logbook. This allows the operators to have integrated access to recent samples and to easily visualize the results along with targets and limits for each control point. In

addition, entering these results in the logbook ensures that a regular review of all samples was conducted during shift change. The reports generated from the lab entries in the log have improved transparency with engineers and supervisors, and boosted product-quality consistency.

BENEFITS

ERI made the decision to move to electronic logbooks with several goals in mind. The main drivers were improving shift relief, centralizing communication, consolidating antiquated systems, and increasing transparency to aid auditing. Results have exceeded expectations.

Prior to implementation, operators and shift leads would receive direction and information via several different avenues such as paper and e-mail. This often would result in confusion, missed assignments, inefficient workflow and after-hour calls for clarification. With Event Log, all

this information and functionality now are conveniently situated in the same location used by the operator to record routine entries about a given shift. Traditionally, logbooks have been a one-way communication tool, serving as a historical record of what a shift did on a given day. Event Log has transformed logbooks into a multidirectional tool that's the centralized communication point for all of operations. This streamlining into a single source has reduced errors and frustrations that accompany inefficient communication.

Traditional logbooks have required engineers, supervisors, managers and others to thumb through paper books, scanned records or network documents to review previous activities or historical events. In the past three years, ERI has logged over 125,000 entries, completed over 82,000 rounds and orders, and posted over 1,300 daily bulletins. With the electronic logbooks, the information is available from any network computer. This enables all stakeholders from senior management to contract engineers to have a real-time window into the events on shift, to audit entries, or to view and search historical information. Daily reports now go out each shift to

RELATED CONTENT ON CHEMICALPROCESSING.COM

"CP eHandbook: Tackle Refining Industry Challenges," <https://goo.gl/LD1RYo>

"Refinery Tackles Water Issues," <https://goo.gl/bhSjum>

"Refinery Pumps Up Energy Savings," <https://goo.gl/EDXXkL>

"Effective Shift Handover is No Accident," <https://goo.gl/gCakp1>

stakeholders of a given area, effectively giving them the ability to review or audit from anywhere with internet access.

One of the most impactful benefits likely is the improvement in shift relief. The inherent tools in Event Log require the oncoming operator to acknowledge previous entries. Operators and supervisors can flag items that need to be communicated across multiple shifts; these items require acknowledgement every shift change until the flag is removed. Indication and notification are available if shift relief isn't completed properly. The logbook keeps records of who has acknowledged entries at shift relief. A checklist provides a reminder about information that should be recorded and communicated.

Shortly after implementing Event Log, ERI participated in an audit endorsed by American Fuel & Petroleum Manufacturers, an industry trade association. The auditor considered the tools provided by CapuTech to be the best in class in facilitating effective shift relief. Of course, these tools are just one piece of the puzzle in facilitating good shift relief — but they provide a solid foundation that can be built upon to improve the shift-relief function.

These are a few examples of the powerful benefits ERI has realized from implementing Event Log. ERI continues to find ways to solve real plant issues by utilizing the electronic log.

WHAT'S NEXT?

ERI always is looking for ways to improve operating performance — and currently is investigating several new ideas and solutions to remaining and emerging issues.

Now, console operators and shift supervisors utilize the electronic logbooks but process operators still rely on a paper system. ERI aims to transition the operators to Event Log as well. This move will improve visibility of activities and aid in the shift-relief process with these operators.

ERI also plans to further enhance shift relief at the console level by automatically including information on control blocks not in native state as well as on shelved or inhibited alarms. This is a mainstay of a documented shift-relief program but forcing such information to the electronic log will increase visibility and transparency.

Thanks to Event Log, ERI has dramatically improved the old processes that relied heavily on several different tools — centralizing them into an electronic logbook while also centralizing and streamlining communication for the operations group. The innovation and support of CapuTech should enable ERI to continue to improve and increase the use of this tool. ●

GEORGE THREADGILL III is operations manager at Ergon Refining, Inc., Vicksburg, Miss. **CORY ENGEL**, P.E., is president of CapuTech, Inc., Houston. E-mail them at George.Threadgill@ergon.com and cory.engel@caputech.com.

Superior check valves should . .

- Save space
- Arrive on time
- Withstand rigorous conditions
- Check-All® the above



A superior check valve does all the right things. By offering a wide selection of spring settings and seat materials, Check-All® spring loaded check valves are assembled to your exact needs, ensuring absolute precision and reliability. They work like they should. That's what makes Check-All® the only choice. Plus, **most lead times are less than one week.** All the better!

Get me a **Check-All®**.



Manufactured in
West Des Moines, Iowa, USA

• 515-224-2301 • www.checkall.com • sales@checkall.com

WWW.CHEMICALPROCESSING.COM

CHEMICAL PROCESSING

LEADERSHIP | EXPERTISE | INNOVATION

CUSTOM REPRINTS

Use reprints to maximize your marketing initiatives and strengthen your brand's value.

REPRINTS ARE IDEAL FOR:

- New Product Announcements
- Sales Aid For Your Field Force
- PR Materials & Media Kits
- Direct Mail Enclosures
- Customer & Prospect Communications/Presentations
- Trade Shows/Promotional Events
- Conferences & Speaking Engagements
- Recruitment & Training Packages

For additional information, please contact Foster Printing Service, the official reprint provider for Chemical Processing.

Call 866.879.9144 or
sales@fosterprinting.com

F O S T E R
PRINTING SERVICE