

DURHAM'S ON FIRE

e.RIS Monitored Tags & Optimized Incineration

Empowering operators is the key

As Duffin Creek's current facility managers see it, their job is to empower operators at the plant to make decisions that both contribute to on-going treatment objectives and positively affect the financial bottom line. They spend lots of time fostering teamwork and proactive decision making.

“With manual monitoring, these questions were difficult to answer”

One of Duffin Creek WPCP's major plant processes is incineration. With normal plant operations, sludge is a natural byproduct that needs disposal. Just like a charcoal grill needs lighter fluid to get a fire going, Duffin Creek's incinerators periodically need fuel oil to ensure sludge cake combustion is complete.

The four plant incinerators use a significant amount of fuel oil each year, at a high cost. “How much fuel oil do you anticipate using?” and “Can you cut back?” were frequent questions from the finance department. With manual monitoring, these were difficult questions to answer.

Anticipated Annual Savings

\$120,000

10% Reduction in
Green House Gases (GHG)

In order to improve and disseminate information that was available sporadically through traditional channels, the facility managers decided to leverage the power of e.RIS to optimize the plant's incineration processes.

e.RIS in action

First, facility management determined the precise questions they were trying to answer. Before they began using e.RIS for monitoring, they only knew if their reactors were running. However, this wasn't nearly precise enough. Knowing when the reactor is running autogenously (without additional fuel oil) and when fuel is needed to keep the fire going would be much more exact. None of this information was available on the existing operating engineer SCADA screen. Operators were limited to a snapshot of things like temperature and fuel feed.

“The visualization power of e.RIS shows relationships”

With the visualization power of e.RIS, it was immediately clear that there was a relationship between sludge dryness and fuel oil use. The data showed that the dryness of the sludge cake (ideally 24%) determined the amount of fuel oil the reactor needed to maintain the combustion process within emission regulatory limits. If facility management staff could figure out a way to monitor when the reactor was running self-sufficiently (and when it was not), they could begin to act in the service of efficiency.

Monitored tags were the ideal solution. This feature in e.RIS allows users to create certain conditions for constant observation. When the data meets these conditions, users can be automatically notified. This saves an operator or manager the tedious work of manual monitoring.

Facility management staff worked to determine applicable conditions. They decided that if their autogenous burn percentage was greater than 85 percent, they were satisfied. However, if that rate was less than 85 percent, investigative and corrective action is needed. They further specified this condition to account for the current sludge cake density. The beauty of e.RIS lies in the ability to apply conditions intelligently—the data would only be flagged if it was true for more than two days and would be ignored when the reactors were offline. Facility management staff was clear about one objective: “We want to proactively look at our operations, not just troubleshoot.” With e.RIS, the exact tags, sampling frequencies, and intervals needed for a specific perspective could be chosen.

“The power of e.RIS is huge”

The next step was building customized workflows for each condition. e.RIS emails these workflows to the right people when a flag occurs. Because the tool is built for busy people, notifications are uniquely individual. There is an option to add notifications at any point in the flagging process. An operator wants to be notified on their cell? No problem—both mobile and email notifications are possible.

To assist operators and incineration engineers in returning operations to an autogenous state as expediently as possible, pre-configured troubleshooting methodologies were created and attached to the workflow notifications. The notifications are key. “Notifications are awesome because first thing in the morning you can know if there’s an issue. That lets you get the autogenous burn back on track,” one manager says.



Real-time monitoring for long-term benefits

Easy action with notifications and workflows got Duffin Creek on the path to optimal autogenous burn rate. In addition, with e.RIS, the plant operators and supervisory staff have real-time data at their fingertips. Though, everyone is hungry for more data, some questioned, “What is the actual, tangible benefit?”

Optimizing Duffin Creek’s reactors for autogenous burning has the potential to save the facility significant amounts of money. Prior to Monitored Tags with e.RIS, management had no real way to proactively determine the oil (and money) reactors were burning. Though the SCADA system monitored fuel oil consumption and financial data was available monthly, any efforts to review fuel oil consumption were strictly reactive. Additionally, there was no way to see the process conditions at the time of the fuel oil addition. “Now Duffin Creek WPCP can actually

identify the amount of money we spend operating outside the autogenous zone,” facility managers proudly proclaim. Proactive investigation in e.RIS is already saving money.

One of Durham’s core pillars is sustainability. Day to day at the plant, however, it can be hard to keep this at the forefront of operations. By striving for an 85 percent autogenous burn rate, the Duffin Creek WPCP stands to reduce their greenhouse gas emissions tremendously. Preliminary observations indicate that if this benchmark is consistently met, the facility can reduce CO2 emissions by ten percent. Next, Duffin Creek hopes to explore the potential electricity savings of a consistent state of autogenous operations. Environmental wins both benefit the corporate bottom line and assist in contributing to Durham’s commitment to reducing greenhouse contributions.

A victory for the team

The benefits are clear— and all of this comes from the simple monitoring of two tags in e.RIS. But the financial and environmental benefits don’t even begin to capture the new team unity.

“*Teams operate in unison*”

By identifying a problem and solving it in e.RIS, stationary engineers and operations staff are empowered with the knowledge and skills to work together. Before e.RIS, the dewatering operation team and incineration stationary engineers had limited interaction which was predominately focused on sludge delivery (not quality). When delivery was interrupted, their only communication was a phone call. Now, these teams operate in unison. When the incineration process is being supplemented with

fuel oil, both teams receive notifications in their inbox that foster increased cross team interaction. This improved communication and information sharing encourages and enables the front line staff to identify and implement corrective actions that would normally be in the supervisory realm. An individual’s ability to contribute to the ‘bottom line’ is easily visualized in e.RIS and the team is motivated to reach beyond what was possible before.

