

Navajo Refinery Improves Process Performance with Unique Advanced Process Control Solution



“At our refinery we needed a way to obtain definitive reporting on our advanced process controls to confirm that it was working and delivering the benefits we needed. Honeywell was able to provide us with a unique model and serve as our very own ‘in-house APC Engineer’ and provided the needed information to help track progress, model quality and timing for upgrades – all which helped improve performance.”

Wayne Hemby, Systems Specialist, Navajo Artesia Refinery

Benefits

At the Navajo Artesia refinery in Artesia New Mexico, the company needed a partner to help monitor the advanced process control (APC) applications already functioning and identify ways to help improve performance. Rather than investing in an onsite APC engineer, the company chose to find a reliable, professional partner with an expertise in advanced applications that could provide advanced monitoring, diagnostics and sustained benefits for its applications. After a highly successful one week trial, Navajo found that partner in Honeywell with its advanced process control performance management services powered by Profit[®] Expert technology.

Honeywell's Profit Expert technology is the first advanced process control maintenance environment that provides capabilities to allow revival of currently underperforming advanced process control applications, diagnostic tools to react to existing problems and the necessary infrastructure to drive proactive maintenance and opportunity assessment practices.

Honeywell's technology and unique service model helped the Navajo refinery benefit from higher performing applications that deliver and/or exceed expected benefits typically seen only by those companies that have site resident experts. This Honeywell service model does the heavy lifting associated with sustaining benefits of high performing applications and thus frees up time for assessment of higher level optimization opportunities for continued improvement in process performance.

Various benefits experienced at the Navajo Artesia refinery include:

- Established baseline performance for applications in order to understand what areas needed improvement
- Increased process performance significantly by leveraging the power of Profit Controller and Profit Suite, internal advanced control resources and Honeywell remote monitoring services
- Saved time and money with remote monitoring and maintenance validating - no need for onsite APC engineer
- Provided highly reliable and quality information to management for better informed decisions such as justification and planning for needed upgrades
- Improved responsiveness of service and support with secure, reliable offsite monitoring
- Reduced both onsite and other engineer costs with single-point resource



Background

Holly Corporation, headquartered in Dallas, Texas, is an independent petroleum refiner and marketer that produces high value light products such as gasoline, diesel fuel and jet fuel. Holly operates an 85,000 barrels per day (bpd) refinery through its subsidiaries called the Navajo refinery located in Artesia, New Mexico, and a 26,000 bpd refinery in Woods Cross, Utah.

The Navajo refinery is located on a 561 acre site and is a fully integrated refinery with crude distillation, vacuum distillation, FCC, ROSE (solvent deasphalter), HF alkylation, catalytic reforming, hydrodesulfurization, isomerization, sulfur recovery and product blending units. Other supporting infrastructure includes approximately 1.8 million barrels of feedstock and product tankage at the site, maintenance shops, warehouses and office buildings. The operating units at the Artesia facility include newly constructed units, older units that have been relocated from other facilities and upgraded and re-erected in Artesia, and units that have been operating as part of the Artesia facility (with periodic major maintenance) for many years, in some very limited cases since before 1970.

Challenges

At the Navajo Artesia refinery, the company needed a partner to help monitor the APC applications already functioning and identify ways to help improve performance. Because the refinery does not have an in-house APC engineer on site, they needed to find the right partner mixing both product and service expertise.

The most prominent cause of benefits loss with advanced process control applications is model degradation *and* improper initial design (key variables missing). However, instrumentation inaccuracy or failure, regulatory loop or valve problems, associated equipment problems, or process modifications may also impact an APC application's ability to generate its true potential benefits. The end result with any of these issues is a loss of confidence by operators/unit operations – the application is then turned off or run in such a constrained mode that it effectively renders the application useless.

Like many process companies, Navajo struggled to maintain benefits with their resource limitations. They recognized that more resources were required to maintain and monitor their APC technology, and report on benefits.

"We did not have the manpower to do this internally, but we still needed a secure, reliable and real alternative to hiring someone or training an in-house member of our staff," said Wayne Hemby,

Systems Specialist, Navajo Artesia refinery. "We wanted not only an expert in APC but also one that could do it remotely and offer us a much needed service."

Solution

The company chose to find a reliable professional services partner with an expertise in advanced applications that could provide monitoring, diagnostics and sustained benefits for its software. The Navajo Artesia refinery chose to look at a pilot trial from Honeywell as part of an APC upgrade project. In less than a week, the refinery knew this was the system and service it needed.

The objective of Honeywell's complete APC performance management solution offering is to help clients maximize the return on their investment in APC. This offering is designed to not only manage and sustain performance of APC in order to avoid loss, but also strive to identify and implement opportunities to increase benefits. This is a *collaborative* approach that leverages innovative technology, the customer's process knowledge and Honeywell's advanced process control expertise to provide the desired outcome. It empowers customers to harvest the benefits of APC when all of the necessary manpower and skill-sets are not present at the site (or within the company) itself.

In the case of the Navajo refinery, Honeywell monitors the advanced process control applications already in place and is able to access the data from the refinery via a secure web connection which allows Honeywell to collect the data needed to perform a detailed analysis on the process. Then with Profit Expert technology, Honeywell experts generate Key Performance Indicators (KPIs) and diagnostics on how the controllers are performing on three major units at the refinery. From this information, Honeywell's process control experts create a weekly report for the Navajo refinery that identifies problem areas, such as when model relationships are starting to break down and where the application performance is degrading. The report provides clear direction to the on-site Navajo Refining engineers on the changes required to optimize controller performance.

"We wanted a detailed analysis of our process data and a way to identify any breakdowns or problem areas before they occurred but we couldn't have someone onsite," continued Hemby. "Honeywell provided a 100 percent secure and safe way to collect, review and analyze data and then send back a detailed report on how things were running, problem spots identified and what their recommendations were – we had our own process expert who never even set foot in our building."

To ensure optimal APC benefits were achieved at the Navajo refinery, Honeywell followed a five phase approach in its APC performance management solution:

Phase 1 – Honeywell “**Identified the losses**” of existing controllers by examining applications and assessing their performance using Honeywell’s APC attainment formula. This allowed Honeywell to establish a measurable and trackable performance metric.

Phase 2 – Honeywell “**Evaluated site bandwidth / capabilities to prevent losses**” by performing a Job Task Analysis of site resources. Phase 2 allowed Honeywell to establish the base level of on-site support necessary for successful execution.

Phase 3 – Honeywell asked the question “**Is the loss worth capturing?**” for each application by quantifying the benefits loss and potential opportunity, identifying the quick-hit opportunities, and assessing the skill level and availability of site resources to implement the quick-hits.

Phase 4 – Honeywell “**Reduced the losses by closing the gap and keeping it closed**”. Honeywell augmented site resources as necessary, by assigning a highly skilled individual to serve as the APC performance specialist.

Phase 5 – Honeywell “**Identified new opportunities**” for improving benefits and put a plan in place to implement them. Whether these opportunities are simple modifications to existing application, addressing workflow issues, altering existing applications, or adding new applications, the APC specialist is on the look out for these opportunities on a routine basis and

More Information

For more information on Honeywell’s APC performance management solution including Profit Expert, please visit our website www.honeywell.com/ps, or contact your Honeywell account manager.

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interface with facility personnel to construct a plan.

“We were so satisfied with our results and so impressed with the professionalism and dedication of Honeywell’s staff,” said Hemby. “They worked diligently to solve our issues and deliver the results we needed – even those that were outside the traditional scope of work.”

Honeywell’s field-proven advanced process control performance management program is flexible enough to accommodate any facility irrespective of the level of sophistication and resources. Traditional maintenance programs have a goal of sustaining benefits and Honeywell’s takes application maintenance to the next level by striving to not just sustain benefits, but identify opportunities to improve benefits.

Concluded Hemby, “Our team is so impressed with the detailed reports and sustained process performance that Honeywell’s APC reports are now a requirement for any APC work delivered to the plant. That’s what I call success.”