



# **CHEVRON ORONITE MODERNIZES PROCESS CONTROL WITH A FOCUS ON DIGITAL ACCELERATION.**

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Case Study

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# OVERVIEW

**Chevron Oronite and Honeywell have worked together to address technology obsolescence and the need for improved batch automation and operator effectiveness as they prepare for the future generation of process automation.**

## BACKGROUND

Chevron Oronite, a subsidiary of Chevron Corporation, is a leading developer, manufacturer and marketer of lubricant and fuel additives and chemicals. Its products are designed to help enhance the performance and extend the life of many types of transportation and industrial equipment. The company's operations include one world-class facility in US, France and Singapore, as well as some smaller-scale regional plants.

Chevron Oronite's US based Oak Point plant is located in Belle Chasse, Louisiana, approximately 20 miles south of New Orleans. As the second largest additives plant in the world, it began operation in 1943 to produce diesel engine additives. The plant is comprised of a component manufacturing facility, captive power generation units, utilities, and blending & shipping areas.

## CHALLENGES

Change is not easy for any industrial organization – especially when it comes to process automation. Manufacturers seeking to improve their control performance, maintain IP need a strong vision and strategy, patience and support, and, most of all, ambition. Chevron Oronite, has shown that change must be driven with a vision using bottoms up and top down approach, from management and business leaders to plant operators and field technicians.

Manufacturers must strive to upgrade traditional platforms and infrastructure and deploy scalable solutions. An effective digital transformation strategy is all about maximizing the value from these upgrades and leveraging the volumes of data generated by modern systems.



*Chevron Oronite seeks to manage the lifecycle of its existing automation assets while employing new digital technologies.*

**A well-executed strategy for control system migration delivers significant operational and business benefits through seamless integration of new and existing plant automation assets.**

Over the years, Chevron Oronite's control platform has included a combination of Honeywell TotalPlant™ Solution (TPS) and Experion® PKS systems, Programmable Logic Controllers (PLCs), wireless systems, integration to Enterprise Resource Planning (ERP), and more. The company's strategic outlook on process automation is based on a roadmap for meeting its modernization requirements at its sites in US and Singapore:

- Modernize in a low-risk direction using modular approach
- Ensure a five-year road map is established and has the buy-in of all stakeholders

- Reap early benefits from new technology – adapt some calculated 'high-risk high-return' measures

Chevron Oronite required new ways to manage the lifecycle of its automation assets, and at the same time, employ new digital technologies combined with data-driven insights to transform operations, boost agility and enhance strategic decision-making. Like other industrial organizations, it is dealing with the retirement of experienced personnel and the training of a new generation of workers not familiar with legacy Distributed Control System (DCS) technology.



## SOLUTION

As part of a comprehensive control system modernization effort, Chevron Oronite established a five-year migration plan, undertook one of the first major Honeywell Enhanced High Performance Process Manager (EHPM) implementations in North America. Migration activities have included:

- Retaining Intellectual Property while migrating to Experion PKS
- Deploying EHPMs as peer-to-peer nodes with existing C300 and UOC controllers
- Utilizing Fault Tolerant Ethernet (FTE) technology to retain existing functionality and embedded applications
- Integrating legacy TPS controllers within Experion infrastructure

Chevron Oronite's planning for a multi-year control system modernization program started in 2013. The first phase of the effort – Global User Station (GUS) to Experion conversion, Experion Human-Machine Interface (HMI) and Experion Universal Control Network (EUCN) implementation, and historian upgrades – began in 2014 and ended in 2017.

The second phase of the modernization effort – domain upgrades, virtualization within the Process Control Network (PCN), Experion Local Control Network (ELCN) Bridge and Experion Network Interface Module (ENIM) deployment, EHPM to Experion integration, and advanced solutions implementation (Dynamo Alarm management system, Starlims to Uniformance® PHD interface using Asset Sentinel, operations monitoring, etc.) – started in 2017 is currently nearing completion.

The third phase of the program – migration to Experion Batch and deployment of the ControlEdge™ Unit Operations Controller (UOC), ENIMs, advanced batch visualization, in-batch reporting, etc. – is now in the design stage.

Completion of all migration, modernization and upgrade work across multiple global sites is expected by 2021.

Chevron Oronite is translating its modernization strategy to a digital vision by breaking down efforts into step-by-step deployments with clear value propositions:

- Extend the Experion control environment
- Improve configuration and change management
- Optimize alarm and operations management
- Move laboratory data into the PHD historian for a single source of information for process analysis, quick visibility for operators, etc.
- Improve operator effectiveness and agility through ASM style High performance HMI, ProcOps, advanced reporting, Golden batch etc.

Key to the modernization is ensuring that different generations of control systems can run in the same environment with a common, seamless interface for plant operators. Preserving existing intellectual property is a very important aspect of this initiative.

“Early adoption of new technologies comes with risk, but it can offer significant rewards. Chevron Oronite is fostering a culture where Automation, Process, Operations and IT work together as a collaborative team.”

**Nat Muthaiah, Senior Process Control Engineer, Chevron Oronite**

Chevron Oronite is upgrading existing Honeywell High- Performance Process Managers (HPMs) to EHPMs and replacing older C200 controllers with modern C300 technology and adding UOC technology in order to enhance process control performance and address obsolescence. Its objectives are to protect valuable intellectual property; retain control strategies, operator displays, and history/trend information; and minimize disruption to plant operation. Modernization activities have simultaneously addressed traditional LCN and modern Experion FTE, C300 and HPM, and architecture data flow challenges. In addition, the addition of ControlEdge UOC solution will provide

a standalone, class-based, virtualized batch system without the need for a separate batch server.

Virtualization solutions offered a way to preserve and extend investments in decades-old DCS technology. The project team had the flexibility to choose physical or virtual solutions with an eye towards reducing overall system “footprint.” Virtualization also improved availability vs. a physical platform and helped to simplify the control system architecture. The deployment of controllers and traditional LCN Nodes in a virtual environment will be the next major undertaking.

For Chevron Oronite, an important part of the modernization program involved upgrading its current solution for detecting and averting abnormal situations, and implementing effective alarm management aligned with industry standards, using Honeywell DynAMo® alarm and operations management software. This solution helps to address alarm configuration problems, eliminate alarm floods that overwhelm operators, establish an alarm philosophy for the plant and

reduce redundant alarms, and provide operators with a real-time view of the actions needed during an event.

DynAMo's boundary management application alerts of an abnormal situation before an alarm event occurs.

Finally, Chevron Oronite has focused on lifecycle management to optimize its control system infrastructure. The scope of this effort encompasses the Experion control system, along with the ELCN, EUCN and EHPM installations. Migration will ensure a common Experion front-end platform across all control rooms while keeping the back-end on a combination of EHPMs, C300s and ControlEdge UOCs.

## RESULTS

When it comes to accelerating digital transformation, Chevron Oronite plans to better manage the lifecycle of its critical control system assets while providing leadership with enhanced, data-driven decision-making capabilities.

The ongoing migration, modernization and upgrade work is ensuring operations are up to par with current technology; improving operator effectiveness through abnormal situation management, integrated alarm management, automated procedures, etc.; expanding interfaces to the business and third-parties; streamlining data flow from business to DCS; and implementing better analytics.

Chevron Oronite has found that a digital platform for process control can directly improve workflow efficiencies and operator effectiveness. For example, it now has a simple solution to meet change management requirements within its process control environment. This solution makes it easy to determine interactions with the control system; identify when configuration changes were made; and collect and report on system information, configuration

## About Honeywell Migration Solutions

Honeywell has a history of supporting its customers' investments through continuous technology evolution. With our phased migration approach, plants can continue to operate and be supported on legacy equipment, while avoiding changes to physical wiring and intellectual property.

history and performance conditions. Going forward, the Honeywell Trace data collection software will expand the visibility of configurations while automating the documentation of actions taken by plant workers.

### SUMMARY

By being an early adopter, Chevron Oronite has achieved a flexible and adaptable solution for automation technology upgrades. The company's modernization program supports IT/OT convergence to eliminate boundaries between information and operational technologies.

Chevron Oronite has demonstrated that early adoption of new technologies comes with risk, but it can offer significant rewards. Control room operators have gained a future-ready

platform allowing them to stay ahead of the technology curve. This paves the way for continuous evolution and the next step in the company's migration journey – batch upgrade and data-driven visualization with new tools providing first-hand information of what is yet to happen in the process.

Most importantly, Chevron Oronite is fostering a culture where automation, Process and IT work together as a collaborative team to significantly improve business results. There is a proven path to a sustainable future, which allows for technology upgrades while harmonizing new and existing assets, increasing the life expectancy of installed hardware and software, and reducing total cost of ownership with less risk and greater efficiency.

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### For More Information

To learn more about how Honeywell Migration Solutions can improve performance, visit [www.honeywellprocess.com](http://www.honeywellprocess.com) or contact your Honeywell Account Manager.

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