

CASE STUDY



Chevron Employs APC Best Practices to Get Controllers Online Faster After Unit Turnarounds



“There are significant benefits that are left on the table by not getting the controller back into service quickly.”

- Dennis Cima, Sr. APC Engineer, Chevron Products Company



Sustainability features of aspenONE® APC applications help Chevron reduce the time and effort for controller revamps and saves thousands of dollars in the process.

Chevron is one of the world's largest integrated energy companies. Headquartered in San Ramon, California, it conducts business in more than 100 countries, and is engaged in every aspect of the crude oil and natural gas industry.

Chevron's APC engineers are chartered to improve unit operating margins by maintaining and maximizing APC applications. Quickly returning a controller to service after a turnaround—during which maintenance, modification, overhaul, inspection, testing, and replacement of process materials and equipment all may occur—is often difficult without significant controller rework. Chevron addresses these challenges by taking advantage of innovative sustainability tools, methodologies, and techniques to reduce the effort required to refit controllers and improve performance.

CUSTOMER PROFILE - Chevron Products Company - Refining

CHALLENGE

Rapidly return APC controllers to service after unit turnarounds.

SOLUTION

aspenONE APC applications with sustainability features to maintain greater controller performance

BENEFITS

- Reduces the time and effort required to build and maintain controller models
- Guarantees operations within constraints during testing
- Helps maintain safe unit operations before and after revamp
- Saves thousands of dollars for each day the controller would have been offline

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The annual benefits from APC on major units in refineries range from \$2.5M to \$6M per year. Each day a controller is offline can result in the loss of thousands of dollars. Utilizing the latest solutions for controller sustainability, Chevron saves time and money during revamps, while ensuring optimum performance.

ADDRESSING ISSUES OF CONTROLLER REVAMPS

Unit modifications during turnaround can significantly alter behavior, requiring APC applications to have a model that matches this behavior. Only after modifications are complete can engineers start to collect new process data for building control models. Traditionally, control engineers manage the plant step tests required to gather data for modeling, which requires coordination with plant operators to ensure the validity and integrity of the data.

Once the data is collected, it must be “cleaned” to remove inevitable anomalies. Afterwards, the engineer creates the model and evaluates its accuracy—a manual, iterative process that consumes significant time to revamp the controller. With so many controllers to support and a scarcity of engineering resources, companies like Chevron face a growing challenge in maintaining APC applications.

SAVING TIME WITH NEW APC SUSTAINABILITY FEATURES

To overcome these issues, Chevron looked to aspenONE APC and sustainability features such as automated step testing whereby the software that implements the test is configured as a controller, ensuring that no constraints are violated during the test period. By manipulating multiple variables at once, automated step testing helps Chevron reduce the time required for monitoring the testing, while alleviating the burden on engineers and plant operators who conduct the tests.

Benefits of APC in Refineries		
	Typical Refinery	250 MBPD Refinery
Major process units	9	
Sub-controllers	-60	
Manipulated variables	-320	
Estimated benefits	\$0.25-\$0.50/bbl	
Aspen DMCplus uptime	100%	
Annual benefits		\$23-\$55 mm/yr
Per major unit		\$2.5-\$6.0 mm/yr

With these tools at its disposal, Chevron not only reduces the time to develop models for control, but also ensures that controllers get back online more quickly. Other features of aspenONE APC that help maintain controller performance include:

- **Detection:** Provides real-time feedback to identify changes in performance and includes KPIs that represent a best practice in monitoring.
- **Diagnostics:** Drills down KPI trees to enable rapid isolation of root causes; specific areas of the models exhibiting mismatch are identified.
- **Correction:** Adaptive Modeling augments testing by implementing rules for cleaning data and identifying new models.

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