



**Eni Develops New APC Application
and Achieves Significant Benefits —
All within Six Weeks**

Global energy company uses innovative Adaptive Process Control from AspenTech to pilot new application, optimize performance, and reduce maintenance time and effort.

6 weeks
to amass major process improvements, compared to 2-3 months with traditional methods

CHALLENGE

Reduce time and effort to develop new APC applications while minimizing the disruption to operations.

SOLUTION

Adaptive Process Control technology from AspenTech accelerates new controller development.

BENEFITS

- Generates operational benefits much earlier than traditional project methodologies
- Optimizes performance even during background testing
- Builds new applications from scratch; no need for heavy plant testing

As one of the largest integrated energy companies in the world, Eni operates in the sectors of oil and gas exploration & production, international gas transportation and marketing, power generation, refining and marketing, and chemicals and oilfield services. This global leader is active in 90 countries and has more than 78,000 employees.

With a commitment to sustainable development, Eni is constantly exploring new technologies that can enhance performance, reduce costs and improve energy efficiency. Such was the case at its Livorno, Italy refinery where operators were looking for a new approach to develop better APC applications without disrupting the day-to-day operations and maintenance of the plant.

While the Adaptive Process Control technology from AspenTech was originally developed with the goal of reducing the maintenance burden for existing Aspen DMCplus® applications, it soon became apparent to Eni that the technology could also be used to build a new controller and evaluate the benefits of the application — with minimal interruptions to daily activities.

Unlike traditional APC controller development, Eni was able to see significant benefits early on in the process. Within six weeks of beginning the project, the new controller already resulted in a 20% improvement in performance.

A Breakthrough in APC Maintenance

Eni's initial introduction to Adaptive Process Control focused on the technology's ability to monitor and correct model issues as a built-in, continuous process. By minimizing MV movement while active process constraints (active CVs) are kept close to limits, Adaptive Process Control enables the controller to maintain process stability while at the same time it performs very small perturbation tests to generate closed-loop data. Improved model ID allows Eni to use significant amounts of closed loop data.

While Eni's team at the Livorno plant was impressed by the ability to robustly control the plant, even in the presence of significant model mismatch, they were more intrigued by the potential to use Adaptive Process Control to build and deploy a new application from scratch in a very short timeframe.



Putting Controller Development to the Test

Eni quickly initiated a pilot project to build, configure, and deploy an Advanced Process Controller, following these key phases:

- Pre-test: PID loops are re-tuned, instrumentation reviewed and a preliminary design of the application is drawn
- Plant test: unit testing is performed to generate good quality data
- Modeling: the model of the unit is identified
- Commissioning: the controller is deployed online and then fine-tuned with Adaptive Process Control

Traditionally, an APC application is able to bring benefits only at the last phase of the project, after the model has been perfected, which could take place months from the beginning of the project. Moreover, the plant test phase can be “expensive” since the plant is driven far from its optimum point where off-spec production can occur.

As Eni discovered, Adaptive Process Control technology can drive more efficient implementation methodologies that get to commissioning faster, resulting in accrued benefits much sooner than traditional approaches. With Adaptive Process Control, it is not necessary to spend several weeks or months in the initial phases collecting data and perfecting the model, because testing and model improvement occurs in the background while the controller is simultaneously optimizing online.

Operational Benefits in Less Time

After only six weeks, Eni was able to get the new application online and running, stepping the unit and generating benefits. Eni realized 20% of achievable benefits during that period.

As the Eni team can attest, this new technology is dramatically changing the way in which new APC applications are created, generating benefits immediately and eliminating the cost and inconvenience related to disruptive plant testing.

AspenTech is a leading software supplier for optimizing asset performance. Our products thrive in complex, industrial environments where it is critical to optimize the asset design, operation and maintenance lifecycle. AspenTech uniquely combines decades of process modeling expertise with machine learning. Our purpose-built software platform automates knowledge work and builds sustainable competitive advantage by delivering high returns over the entire asset lifecycle. As a result, companies in capital-intensive industries can maximize uptime and push the limits of performance, running their assets faster, safer, longer and greener.

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