# PlantPAx® MPC

Model Predictive Control Product

Features and Benefits

PlantPAx MPC moves Model Predictive Control into the controller layer providing new opportunities to improve process equipment performance

- Superior control of challenging control problems
- Safely drive process performance closer to constraints
- Increase throughput
- Improve yield
- Reduce costs
- Increase profitability
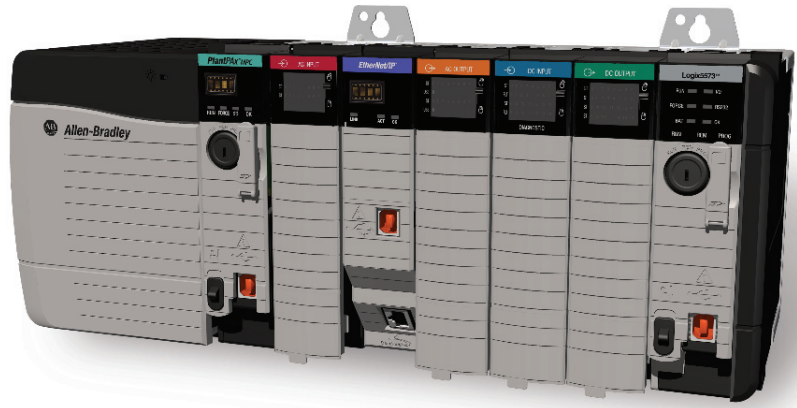
Driving Maximum Performance

For many process control situations, PID control is the time-proven approach that provides excellent control and performance. However, there are a number of situations where PID control is simply not the best choice. Those situations include:

- Long/slow process dynamics
- Significant dead times
- Unstable dynamic responses
- Significant interactions/fighting between control loops
- Dynamic process constraints
- Reliance on infrequent lab measurements for control

PlantPAx® MPC from Rockwell Automation is designed to drive maximum performance in the face of these challenging control situations. For more than 25 years, Model Predictive Control (MPC) has proven its ability to address control problems like these where PID simply does not maximize controller performance. By utilizing more robust process models that account for significant process interactions, PlantPAx MPC stabilizes process variability and enables the control loops to be pushed closer to process constraints while maintaining an acceptable margin of safety.

Even though it is hardware-based, PlantPAx MPC is a full-featured MPC solution capable of handling the most challenging advanced process control problems. It can manage multiple objectives and process loops while assuring that plant constraints are monitored and enforced.

LISTEN.
THINK.
SOLVE.®

Allen-Bradley • Rockwell Software

Rockwell Automation

Monitoring/Tuning

Online Change Monitoring

MPC Builder

Development Cycle

1. Identify Process Parameters
2. Specify Target Measurements and Limits
3. Generate MPC Shell AOI
4. Import and instantiate AOI
5. Download project to Logix
6. Monitor and Tune

Logix5000

Logix5000 Program Download
Dedicated MPC-Module
(Co-Processor)
AOI on Controller

Dynamic and steady-state constraints are monitored, predicted and enforced in a manner never before realized in DCS-based MPC solutions. By embedding MPC into the control layer, PlantPAx MPC simplifies integration with the PlantPAx distributed control system and improves ease-of-use.

The end result is PlantPAx MPC drives maximum performance from plant operations, which results in higher throughput, lower costs and higher profitability.

Proven Technology Embedded in Controller

PlantPAx MPC is a new migration of concepts from the Rockwell Automation® Pavilion8® workstation-based MPC product that has been in industrial use for more than 20 years on hundreds of the most complex and challenging control problems globally. It is optimized for fast execution within the Logix environment and designed for maximum ease-of-use.

Optimized Performance

Model design, development and advanced monitoring are conducted on a PC connected to your Logix chassis. Run-time APC instruction is called and accessed by an add-on instruction (AOI) within a 1756 Logix controller, and is programmable with Rockwell Software Studio5000® software with a dedicated PlantPAx MPC module.

One PlantPAx MPC module can support up to five MPC applications, each with:

- Up to 10 controlled variables (targeted and/or constrained measurements).
- Up to 10 manipulated variables (PID instruction outputs or slave targets adjusted by MPC).
- Up to 10 disturbance variables (inputs that would shift some controlled variables without proactive adjustments on available manipulated variables).
- A predictive horizon of up to 200 controller execution steps.

Easy to Configure and Use

PlantPAx MPC has set a new standard in ease-of-use for advanced process control solutions. Controller configuration and tuning parameters have been enhanced to be more accessible to engineers accustomed to PID control. Faceplates for PlantPAx have been developed within the Rockwell Software® ViewSE product that are very similar to what engineers familiar with PID control have come to expect.

Rockwell Automation has also developed powerful tools that facilitate the use of plant data and step tests to build models, MPC configuration as well as monitor controller performance.

---

www.rockwellautomation.com