

# ONGUARD™ *i* CONTROLLER

Advanced chemical feed and control system  
for water and process treatment automation



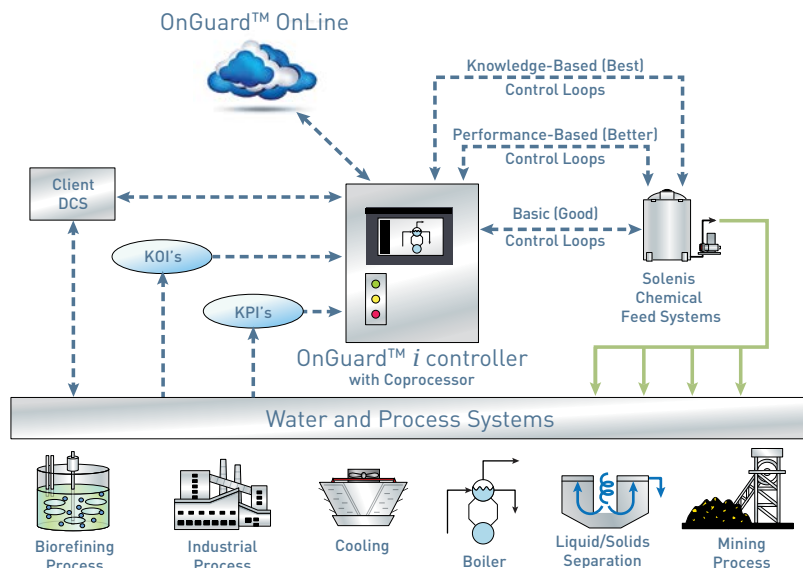
- **Assure** — Maintain peak production with 24/7 monitoring and surveillance
- **Verify** — Validate performance and value from your specialty chemical applications
- **Protect** — Safeguard capital assets while optimizing resources

# OnGuard™ i Controller

Effective automation of water and process chemical applications has proven to increase productivity and system reliability while reducing operating costs. OnGuard i, an intelligent controller from Solenis, provides a full range of capabilities, including performance-based control, making it possible to automate even the most demanding water and process treatment applications.

## Technology Overview

Solenis engineers and software developers have created the first controller specifically for performance-based control of specialty chemical applications. With its unique combination of hardware and proprietary software, the OnGuard i controller stands at the leading edge of water and process treatment automation. When coupled with Solenis' state-of-the-art analyzers and chemical technologies and supported fully by our application experts, the OnGuard i controller can monitor system performance continuously



**OnGuard i controller utilizes proprietary software to drive performance-based specialty chemical feed control for nearly limitless applications.**

and make intelligent adjustments immediately to minimize system upsets. Plant personnel can view the system status remotely and in real-time by connecting directly to the OnGuard i controller, and by using OnGuard OnLine, Solenis' cloud-based data management tool.

## Delivering a New Level of Control

By combining hardware components and proprietary software into one package, the OnGuard i controller enables plant managers and engineers to customize chemical feed and control applications for vital water and process systems. Standard chemical feed algorithms provide basic control, and advanced performance-based algorithms provide enhanced control. A powerful co-processor performs the complex calculations to turn the OnGuard i controller into an intelligent machine capable of implementing the most effective corrective actions.

The OnGuard i controller can be configured to provide customized chemical feed and control for virtually any water or process treatment application. Every automation project requires collaboration between plant personnel and a team of Solenis experts, who recommend key operating indicators (KOIs) and key performance indicators (KPIs) for the specific application. The KOIs and KPIs are transmitted to the OnGuard i controller either directly from individual analyzers or indirectly from the customer's distributed control system (DCS).

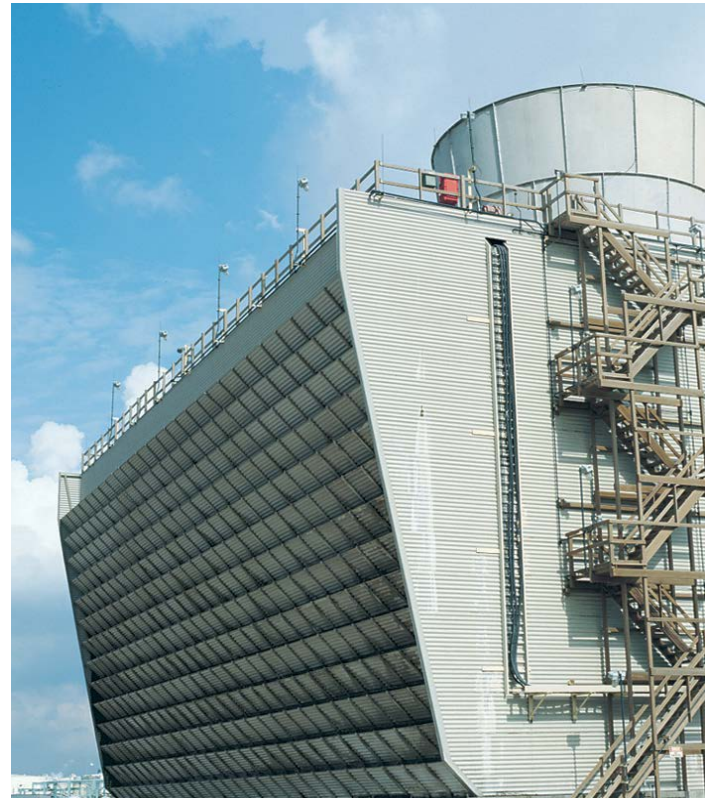
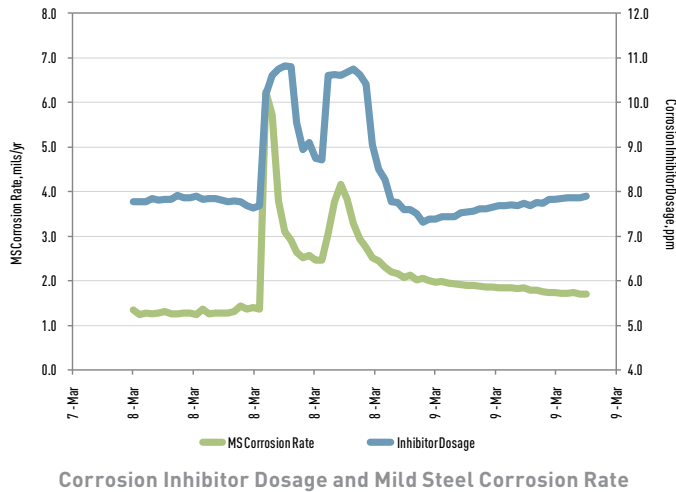
SYSTEM TYPE	TYPICAL KEY PERFORMANCE INDICATORS (KPI)	TYPICAL KEY OPERATING INDICATORS (KOI)
Boiler	corrosion rate, deposit weight density	pH, Cond, ORP, dissolved oxygen (DO), hardness, phosphate, molybdate, sodium, total organic carbon, flow rate
Cooling (Open Recirculating)	corrosion rate, fouling factor	Fluorescence, pH, Cond, ORP, FAC, total available chlorine, turbidity, hardness, corrosion inhibitor, dispersant, flow rate, temperature
Influent Clarification	turbidity, color	turbidity, color, pH, oxidation reduction potential (ORP), free available chlorine (FAC), streaming current, flow rate
Reverse Osmosis	permeate flow rate, normalized recovery, rejection percentage	pH, specific conductivity (Cond), ORP, FAC, hardness, flow rate, temperature, pressure
Wastewater	total suspended solids, chemical oxygen demand, biochemical oxygen demand	pH, DO, oxygen uptake rate, specific oxygen uptake rate, mixed liquor suspended solids, ammonia, phosphorous, (stirred) sludge volume index, pH, temperature

OnGuard i controller provides automation of chemical feed and control based on installed KOIs and KPIs.

# OnGuard *i* controller offers intelligent performance-based control for water and process treatment

## Case I: Performance-based Control

A Solenis customer uses the OnGuard™ *i* controller, configured with performance-based algorithms, to deliver accurate tracking of cooling water mild steel corrosion based on programmed KPIs. Plant operators are assured of complete corrosion inhibition at the most effective dose rate, keeping short- and long-term costs under control.



## Case II: Knowledge-based Control

A pulp mill in the southern U.S. looking to automate its boiler water treatment program chose Solenis' OnGuard *i* controller. The expected benefits were improved recovery boiler reliability through improved chemistry control and improved operator efficiency.

Prior to implementation of the OnGuard program, pulp mill operators were able to obtain good pH/PO<sub>4</sub> control using a 100% manual chemical feed and control program (see Figure 1). After implementation, the OnGuard *i* control system "learned" from its observations of the system and from the responses to its corrective actions. Using this artificial intelligence, the OnGuard *i* determined and implemented the most effective corrective actions during normal operations as well as upset conditions. As a result, the OnGuard *i* control system was able to meet, and exceed, the customer's expectations by delivering extremely accurate and precise control of the recovery boiler water chemistry with a significant improvement over manual chemical feed and control (see Figure 2).

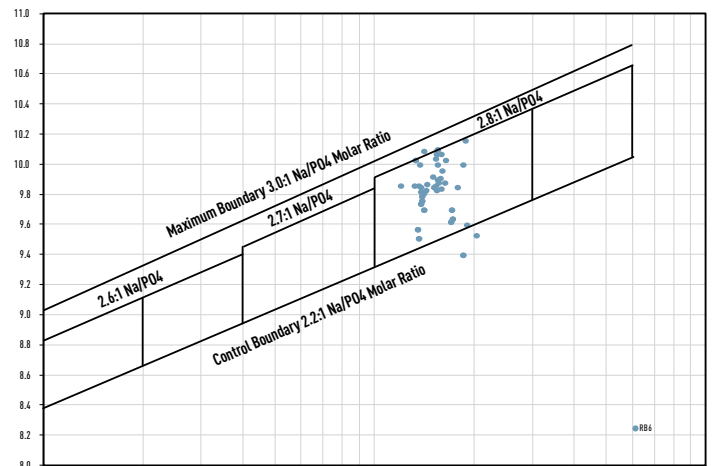


Fig 1. pH/PO<sub>4</sub> control before installation of OnGuard *i* controller

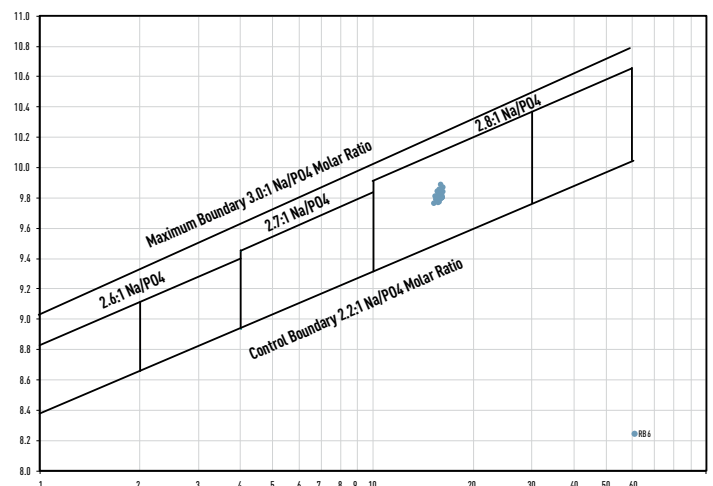


Fig. 2 pH/PO<sub>4</sub> control after installation of OnGuard *i* controller





# Solenis

## Strong Bonds. Trusted Solutions.

Solenis supplies specialty chemicals for water-intensive industries, including the pulp and paper, oil and gas, chemical processing, mining, biorefining and power markets. Whether you want to increase production, develop new products, reduce costs or simply do more with less, we can help. With our innovative technologies, passionate people and unrivaled experience, Solenis is ready to deliver the solutions you need.

To learn more, contact your technical sales representative or visit us online.

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