

ONGUARD™ MONITORING AND CONTROL SYSTEMS

A comprehensive platform for water and process system assurance



- **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™ monitoring and control systems

Assure. Verify. Protect.

Every day, sensors and analyzers across your plant generate terabytes of data about process flows, pH, temperature, conductivity, chemical feed rates and more. But as a famous astronomer once said, "Data is not information, information is not knowledge, and knowledge is not understanding." To convert all of that data into powerful business insights, you need a comprehensive technology platform that provides measurable verification of your chemical program, as well as comprehensive data management.

OnGuard™ monitoring and control systems are that platform. Solenis' OnGuard™ technologies, which include proprietary sensors and analyzers, controllers and our online monitoring and data management service, provides complete assurance that your treatment programs are performing optimally 24/7, 365 days per year. When coupled with Solenis' superior chemistry your operation maximizes profitability by reducing water and energy costs, minimizing unexpected downtime and providing longterm asset protection.

Turning Data into Decisions

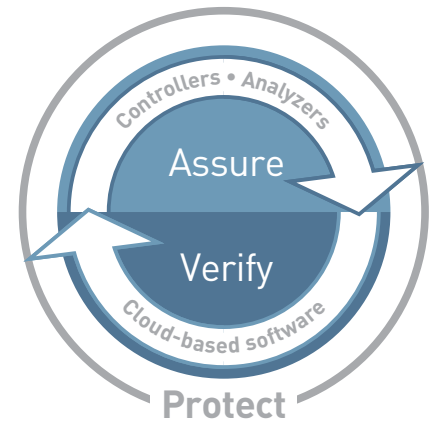
The OnGuard platform incorporates innovative hardware and software solutions that transforms system and process data into robust business intelligence. Think of it as a window into your data value chain, that enables a snapshot of the overall health and efficiency of your plant systems. These insights permit informed decisions under challenging process conditions. OnGuard seamlessly integrates four distinct functions:

Data Acquisition — Deploying a best-in-class specialty chemical program from Solenis with OnGuard™ monitoring and control assures results by constantly monitoring the pulse of your water or process program. The system responds to system corrosion, fouling, pH, oxidation-reduction potential (ORP) or other conditions accurately and consistently.

Data Response — The OnGuard portfolio offers a range of controllers that use proprietary algorithms to respond to data inputs from the OnGuard sensors and analyzers. These include knowledge-based controllers (KBC), which incorporate a library of programmed responses to known system upsets, and performance-based controllers (PBC), which use advanced

sensor technology to measure program performance and provide feedback or feed forward control options to maintain desired conditions.

Data Management — OnGuard™ OnLine data management service is a secure cloud based service that automatically collects process and performance data. It uses statistical process and quality control tools to display the data and drive program optimization. Plant personnel access these tools through the OnGuard OnLine website, where customized dashboards present a snapshot of system performance variables and robust reporting capabilities. Alert and alarm features provide automatic and rapid notification of system upsets or exceptions, allowing rapid, expert response 24 hours a day, 7 days a week.



Data Inference — Solenis' use of Envoy* data mining and inference software works in concert with the OnGuard portfolio to help customers optimize their process, troubleshoot problems and improve quality and production. Solenis technical sales representatives use the Envoy tool to extract data from multiple, disparate sources while its advanced data mining and analysis capabilities evaluate hundreds of variables quickly and easily.

The OnGuard Portfolio

OnGuard™ monitoring and control encompasses a variety of technologies designed to provide 24/7 monitoring and surveillance of your water treatment process and applications. OnGuard systems can run stand-alone or as part of a fully integrated solution.

PRODUCT	DESCRIPTION	APPLICATIONS			AVAILABILITY
		Boiler Water	Cooling Water	Process	
CONTROLLERS					
OnGuard™ i	Controls chemical feed based on key performance indicators and utilizes pre-programmed algorithms to anticipate system upsets and to implement knowledge-based corrective actions. Provides extraordinary processing power via touch screen and Internet access for the most advanced performance-based control. Capable of controlling multiple systems.	•	•	•	Global
OnGuard™ P	Utilizes proprietary algorithms that combine traditional mass balance calculations with performance-based trim.	•	•	•	Global
OnGuard™ B	The OnGuard B Controller includes two sensor inputs for Cooling Water, Boiler, pH/ORP applications.	•	•	•	Global
ANALYZERS					
OnGuard™ 3S	Utilizes patented ultrasound technology to detect scale deposition at level as low as 5 micrometers in self-scaling systems.			•	Global
OnGuard™ 3H ¹	Utilizes patented ultrasound technology with flow control and heated surface to detect scale as low as 5 micrometers. Proprietary software simulates actual heat exchanger conditions.		•	•	Global
OnGuard™ 3B ¹	Utilizes patented ultrasound technology to detect biofouling, enabling direct chemical feed adjustment for complete biofouling control.		•	•	Global
OnGuard™ XD	Online Process analyzer that provides real time monitoring of microbiological programs allowing for feedback control and quick response to upsets.			•	North America
CONTROL SYSTEMS					
OnGuard™ Tracker	Measures chemical levels and controls chemical feed, ensuring levels remain within specified limits.		•		Global
OnGuard™ 2-plus	Real-time simulation of conditions in critical heat exchangers provides actual system fouling and corrosion rates enabling performance-based control of chemical feed.		•		Global
DATA MANAGEMENT SERVICE					
OnGuard™ OnLine	Cloud-based monitoring service securely provides remote, automated monitoring of key operating and performance indicators along with data management and storage for water treatment and process applications.	•	•	•	Global
DATA MANAGEMENT SOFTWARE					
OnGuard OnTrax™ data management software	PC-based data logging and statistical process control software stores, organizes and analyzes critical operational data for process and water treatment applications.	•	•	•	Global

OnGuard™ product line also includes standard, microprocessor-based, menu driven water treatment controllers for boilers, condensate systems, cooling systems and cooling towers. These controllers provide automated control of conductivity, pH and ORP.

¹ Controller can be combined with an analyzer to construct a complete control system.



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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