



Claros™ Process Management

Supporting compliance and operating efficiency has never been so straightforward.



Be Right™

Optimization solutions that minimize risk

The need for sustainable operation and process intensification presents a range of challenges for the modern wastewater treatment facility. Reducing costs while fulfilling ever-stricter discharge requirements, even in the event of sudden load peaks, is key.

Claros Process Management modules from Hach® are designed to deliver process optimization, cost management, compliance consistency, and peace of mind – often without the need for large capital improvements.

► Predictable effluent values

Claros Process Management provides a single source for instrumentation, proven algorithms, feedback mechanisms, and optional control capabilities to help plants achieve process reliability. Application-specific modules enable precise management of BOD/COD, nitrogen, phosphate, and sludge processes for efficiency, stability, and risk avoidance.

► Intelligent decision-making support

In contrast to time- or volume-dependent process adjustments, Claros Process Management modules are load-dependent. They work in real-time to maintain equilibrium, helping plant staff achieve the desired treatment target for each process by delivering optimal amounts of air or chemical.

► Maximum operational reliability

Prognosys™ predictive diagnostics enhance the reliability of Claros Process Management by analyzing measured values and initiating the best optimization strategy. Ensure robust compliance for all effluent values by understanding whether changes in measurements are due to changes in the instrument or the water.

Claros Process Management delivers benefits from day one.

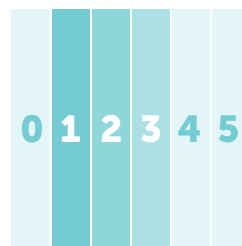
The soaring cost of energy and chemicals, coupled with ever-increasing demand for sustainability, makes conserving resources while maintaining compliance more and more important. Because it's simple to operate and designed to integrate with existing infrastructure, Claros Process Management provides immediate value. But the true power of its comprehensive operational strategies – long-term savings via plant compliance and stability – is unlocked with ongoing use.



Projected Chemical Savings*



Projected Energy Savings*



Projected Years to Return Investment*



Reduced compliance risk



Better asset utilization through interoperability



Full instrument and system support

*Savings vary depending on module, configuration, and operating conditions prior to installation of Claros Process Management.

Manage plant processes 24/7

Stable and efficient plant operation is attainable with Claros Process Management.

Claros Process Management helps manage costs and reduce risks by signaling sudden changes so corrective actions can be taken. Systems use real-time data to continuously monitor actual inflow load and plant performance, and to calculate dynamic set points.

► BOD/COD removal

Proper sludge retention time, nutrient balance and aeration strategies help ensure stable BOD removal and avoid settleability problems.

Input data may include: Flow, TSS, TOC, DO, MLSS

Dynamic set points: dosing rate of external nutrient sources, aeration intensity, sludge retention time, WAS/SAS, flow rate

► Nitrification and/or denitrification

Nitrogen load tends to follow hydraulic load fluctuations throughout each day, but composite samplers conceal the true extent to which actual influent varies. By matching the process to each peak, it's possible to attain a dual benefit: resource conservation and enhanced operational efficiency. For example, optimizing sludge retention time ensures precise blower utilization, which minimizes energy consumption while supporting healthier microbial function.

Input data may include: Flow, $\text{NH}_4\text{-N}$, $\text{NO}_3\text{-N}$, DO, MLSS

Dynamic set points: DO concentrations, aeration intensity, internal recirculation, anoxic time or sludge retention time and volume, WAS/SAS

► Phosphorus removal

Phosphorus load fluctuates outside of diurnal flow patterns and may be introduced from a range of known and unknown sources. Because of its unpredictability, phosphorus management can be notoriously wasteful, as excess chemical is often added to ensure compliance.

Input data may include: Flow, Orthophosphate, Total Phosphorus, TSS

Dynamic set points: precipitant dosing rates plant-wide

► Solids handling

Maintaining consistent thickening, dewatering, and flotation of sludge across time, varying conditions, and multiple operators is key to maximizing gas yield while managing costs associated with polymer, coagulant, and disposal. Although sludge thickening and dewatering is not a compliance issue for municipal wastewater, industrial producers must remain within set legal limit values.

Input data may include: TSS, pH, Feed Flow

Dynamic set points: coagulant and polymer dosing rates

Improve efficiency, eliminate uncertainty

► Get more out of existing infrastructure.

Claros Process Management modules can help access the full treatment capacity of any municipal or industrial wastewater treatment facility, while supporting future extensions that address changing regulatory requirements and environmental needs.

► Solve unique challenges.

Every plant is different, and Claros Process Management systems have been installed in thousands of unique wastewater treatment applications around the globe. With a modular design that enables millions of individual combinations, it fits almost all plant configurations. Standard interfaces allow for smooth integration into existing systems. Commissioning is simple and fast, ensuring reliable project implementation. Operators also benefit from Hach's dedication to innovation and over 80 years of process expertise.

► Count on project management from start to finish.

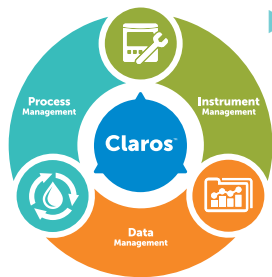
Hach supports planners and system integrators by providing everything from tender documentation and guides for installation and commissioning, to application-specific consulting and customized training sessions.

► Which module is right for you?

In addition to quick implementation, reliable chemical and energy costs, process optimization, and peace of mind, you can expect benefits specific to each Claros Process Management module.

	P-module	N-module	DN-module	N/DN-module	SND-module	DO/MOV-module	C/N/P-module	SRT-module	SZ-module	SD-module	ST-module	DAF-module
Improved compliance on												
COD/BOD						✓	✓	✓				✓
Ammonia as Nitrogen (NH ₄ -N)		✓		✓	✓	✓	✓	✓	✓			
Total Nitrogen (TN)		✓	✓	✓	✓		✓	✓	✓			
Total Phosphorus (P _{tot})	✓						✓	✓				
OPEX reduction on												
Aeration energy		✓	✓	✓	✓	✓		✓	✓			
Precipitant	✓											
External carbon sources			✓									
External nutrient sources							✓					
Polymer/coagulant										✓	✓	✓
Sludge disposal	✓							✓		✓	✓	✓
Optimization objective												
Better operational reliability	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Stabilized processes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reduced energy consumption during aeration		✓	✓	✓	✓	✓	✓		✓	✓		
Maximum solids capture in sludge treatment										✓	✓	✓
Maximum gas yield in anaerobic digestion											✓	✓
Improved alkalinity (acid capacity)	✓	✓	✓	✓	✓							

P-module: phosphate elimination; **N-module:** nitrification; **DN-module:** denitrification; **N/DN-module:** intermittent denitrification; **SND-module:** simultaneous nitrification and denitrification; **DO/MOV-module:** most open valve; **C/N/P-module:** nutrient dosing; **SZ-module:** swing zone control; **SD-module:** sludge dewatering; **ST-module:** sludge thickening; **SRT-module:** sludge retention time; **DAF-module:** dissolved air flotation



► What is Claros?

Hach's Water Intelligence System enables you to seamlessly connect and manage instruments, data, and process – anywhere, anytime. The result is greater confidence in your data and improved efficiencies in your operations.

[Find out more at hach.com/claros](http://hach.com/claros)



► Support that fits

Whether it's routine maintenance and repair, or alerts and visibility, Hach has the right support. Our field service and technical support experts provide the resources you need, when you need it, to ensure your Claros Process Management system always performs at its best.

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