Claros
Process Management

Securing compliance and operating efficiency has never been so straightforward.

HACH®

Be Right™

Optimisation solutions that minimise risk

The need for efficient operation and process optimisation 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 very important.

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

▶ **User-selectable effluent values**

Claros Process Management provides a single source for instrumentation, proven control algorithms with feedback mechanisms, and a large range of optional capabilities to help plants achieve process reliability. Application-specific modules enable precise management of BOD/COD, nitrogen and phosphate removal, as well as sludge treatment 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 constantly monitoring the measured values and initiating the best optimisation strategy. Ensure robust compliance for all effluent values by understanding whether changes in measurements are due to changes in the instrument or the water.

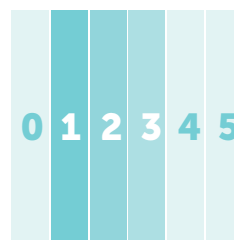## Claros Process Management delivers benefits from day one.

Significant costs for 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.

10-60%

Projected Chemical Savings*

10-50%

Projected Energy Savings*

0 1 2 3 4 5

Projected Years to Return Investment*

Reduces compliance risk

Creates process harmony

Includes 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 identifying and automatically taking corrective action when changes occur in your water. 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, Dissolved Oxygen (DO), MLSS, NH_4, PO_4

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, applying a DO set point according to the NH_4-N load ensures precise blower utilisation, which minimises energy consumption. Plus, adjusting the sludge retention time according to temperature ensures stable nitrification.

Input data may include: Flow, NH_4-N, NO_3-N, DO, MLSS

Dynamic set points: DO concentrations, aeration intensity (time and volume), 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, causing additional precipitation sludge to be dewatered and disposed of at a high cost.

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

Dynamic set points: precipitant dosing rates plant-wide

▶ Solids handling

Maintaining stable sludge thickening, dewatering and flotation processes at all times, at varying inflow conditions, and with multiple operators is key to maximising gas yield while managing costs associated with sludge disposal, polymer and coagulant.

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 customised training sessions.

▶ Which module is right for you?

In addition to quick implementation, reliable chemical and energy costs, process optimisation, 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 souces							✓					
Polymer/coagulant										✓	✓	✓
Sludge disposal	✓									✓	✓	✓
Optimisation objective												
Better operational reliability; stabilised 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

▶ 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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