

Real-Time Control System Optimises Phosphorus Removal in the Dairy Industry

Problem

Typically, milk contains 1 gram of phosphorus (P) per liter. Production changes, cleanings, and product losses contribute to fluctuating phosphorus concentrations. Plants typically overdose precipitants to stay within compliance; however, overdosing leads to excessive costs and does not guarantee compliance when load peaks occur.

Solution

Hach® RTC-P optimises chemical dosing for phosphorous removal based on real-time phosphorus measurements and adjusts automatically for phosphorous load peaks. Hach onsite technicians and remote monitoring support assist operators, ensuring optimal RTC-P performance.

Benefits

Guaranteed real-time control of P-removal leads to more process stability, ensured compliance and less operator intervention. Optimised and easily adjustable chemical dosing (due to site conditions or environmental regulation changes) lead to 20% to 60% cost savings and reduced sludge.

What is RTC-P?

Since 1947, Hach has helped facilities in dairy applications meet the highest quality standards through water analysis and treatment. Hach's RTC-P is an off-the-shelf Real-Time Phosphorus Control solution designed with one goal: help operators and managers analyse and treat phosphorus as efficiently as possible.

Imagine if your facility had resources to continuously measure a single parameter such as phosphorus. With frequent enough measurements, chemical dosing would always match true phosphorus levels, even at load peaks, making regulatory compliance an afterthought. That's the power of Hach's RTC-P solution: knowing your phosphorous levels are continuously within set limits, while reducing chemical dosage and sludge production.

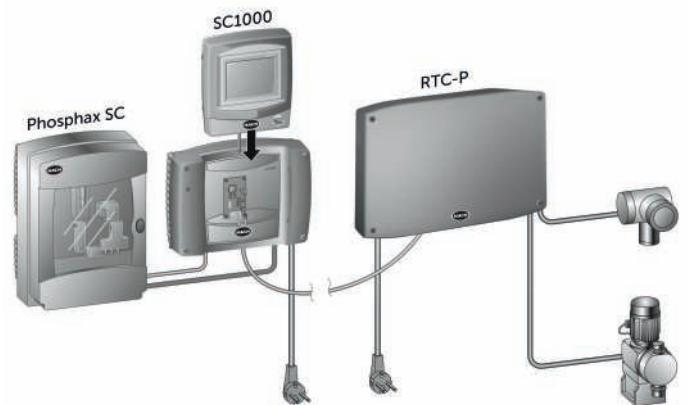


Figure 1: RTC-P solution

How Does RTC-P Work?

RTC-P accurately measures influent phosphorus levels in real time and adjusts precipitant doses automatically to keep phosphorus levels under compliance. No grab samples, no manual tests, no manual dosing changes, and no guesswork lead to less operator intervention and full automation. Real-time analysis and control allow dairy WWTPs to ensure regulatory compliance while optimising chemical dosing that lowers chemical treatment volumes. This creates significant savings on chemicals, reduces physiochemical sludge, increases facility production, and most importantly ensures regulatory compliance.

Putting RTC-P to the Test

At a cheese processing facility, RTC-P allowed the operators and plant managers to confidently achieve compliance with the effluent limits under varying load conditions, while reducing chemical dosing costs.

This plant produces high amounts of phosphorus output which has to be removed to achieve the regulated total phosphorus limit of 1.0 mg/L. Before implementing the RTC-P, chemical dosing was adjusted manually and the plant was continually at risk of breaching limits, with effluent phosphate values sometimes peaking at 4 mg/L.

The RTC-P was installed in July 2015 and the facility was able to keep phosphorus levels under compliance due to the increased process stability (see Figure 2).

Figure 3 illustrates the economic benefits. Ferric dosing was reduced by an average of 33% while maintaining compliant effluent levels. This resulted in savings of £1,200 per month for the facility.

A Complete Solution

RTC-P customers receive onsite and remote monitoring support from Hach specialists, keeping operations running smoothly.

The RTC-P can be paired with Hach's Prognosis predictive diagnostic system to ensure compliance by preventing unexpected instrumentation emergencies. Pairing RTC-P with Prognosis allows facilities to manage phosphorus removal regardless of flow fluctuations, load peaks, or instrumentation issues.

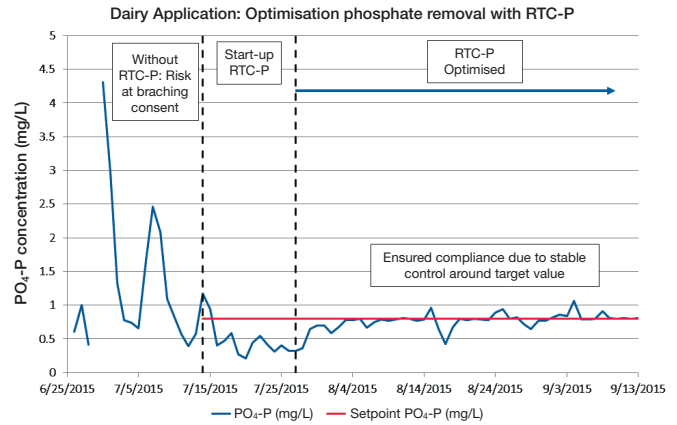


Figure 2: RTC-P optimising phosphate removal

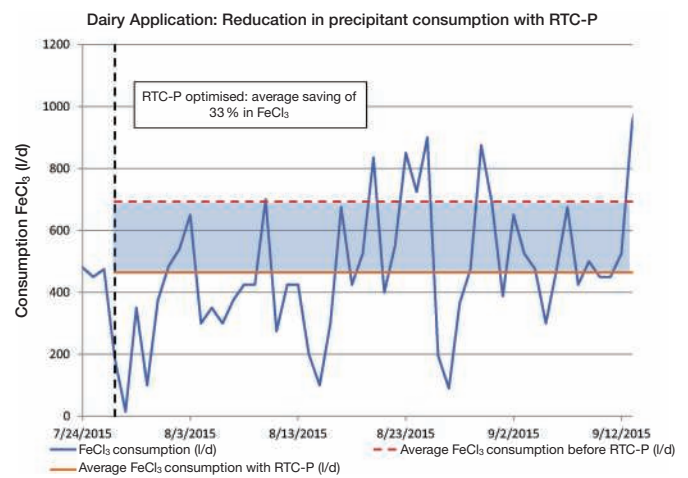


Figure 3: Precipitant consumption with RTC-P

RTC-P Solution Summary

Compliance

- Stay below P-effluent limits
- Easily adjustable parameters for regulatory or site changes

Optimization

- Increased process stability
- Reduced manual intervention
- Reduced chemical dosing
- Reduced sludge production

Value

- Chemical savings of 20–60%
- Off-the-shelf: Easily implemented and modified

Contact Hach

Contact Hach to learn more about how RTC-P or Prognosis can help your dairy facility. See contact information on www.hach.com