

CASE STORY

Stable Wastewater Compliance in Norwegian RAS facility

Alumichem helped a Norwegian RAS facility achieve reliable wastewater treatment and regulatory compliance under highly variable startup conditions.

Introduction

A Norwegian RAS facility for hatchery and smolt production required a wastewater treatment solution capable of meeting strict environmental discharge limits from day one. During startup, the facility operated significantly below design capacity, creating a need for a flexible and stable treatment system that could handle highly variable operating conditions while remaining compliant.

The Challenge

Operating a RAS facility meant all wastewater had to be treated before discharge, with no possibility of marine dilution. The facility therefore had to comply with strict environmental limits for TSS, TOC, phosphorus, and total nitrogen from the very first day of operation.

The project was further complicated by startup conditions operating far below design capacity and by highly variable hydraulic and organic loads during biomass ramp-up. This created a risk of unstable treatment performance and made reliable compliance during commissioning critical.

Alumichem's Solution

Alumichem was involved early in the project and developed a wastewater treatment strategy specifically adapted for RAS operation. The solution combined solid-liquid separation and treatment of overflow streams to reduce organic matter and nitrogen.

To ensure stable performance across varying loads, the system was designed with a modular setup of drum thickeners and flocculation tanks. This allowed only the required treatment units to operate during startup, ensuring stable hydraulics, proper retention time, and accurate chemical dosing even at low flow rates.

Alumichem also provided commissioning support, operator training, and ongoing optimization of dosing and operational routines.

Solution & Results

- Stable wastewater treatment from first startup
- Continuous compliance with discharge limits for TOC, phosphorus, and total nitrogen
- Reliable operation at low startup capacity
- Flexible modular system design
- Stable performance at 20–30% of design capacity, due to a flexible system design
- Reduced regulatory risk during commissioning
- Scalable solution for future expansion
- Ongoing optimization support from Alumichem specialists



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Results

The facility achieved stable and compliant wastewater treatment from first startup and has maintained continuous compliance with discharge limits for TOC, phosphorus, and total nitrogen. The modular system design ensured stable operation even at only 20–30% of design capacity, while providing the flexibility needed during commissioning and biomass ramp-up.

The solution also reduced regulatory risk and created a scalable foundation for future production expansion. During a nationwide regulatory review of Norwegian land-based aquaculture facilities, the customer's site was identified as compliant.



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