



Effective Microbiology Monitoring for Perch Breeding at Valperca SA in Switzerland



Percitech, the hatchery of Valperca SA in Chavornay, Switzerland, has almost 30 years of experience in perch breeding and its parent company, Valperca SA, is the largest aquaculture company in Switzerland, as well as one of the first **recirculating aquaculture system (RAS)** perch production facilities in the world.

Fast and reliable microbiological monitoring is necessary to maintain the special conditions required for perch breeding and high end-product quality. Quantitative microbiology data, complemented with other relevant production parameters, form an ideal basis for the monitoring of the recirculating water in the fish tanks and for the growth and wellbeing of the fish.

Percitech installed rqmicro's solution to improve the quality of microbiological surveillance, reduce associated costs and time spent for testing, and to establish an early warning system to prevent outbreaks of disease.

Background

RAS are complex technical infrastructures and maintaining an equilibrium between fish welfare, operating costs and water quality remains challenging. This makes surveillance of water parameters all the more essential where it is particularly crucial to determine bacterial densities.

Before discovering the technology from rqmicro, the quality department at Percitech was not satisfied with the surveillance of bacterial densities in their water circuits. As **Beat von Siebenthal, the Head of R&D at Percitech**,

explains, the previous system was unable to detect the most critical bacteria in RAS.

In their search for an alternative bacteria quantification system, they tested various methods. However, all of



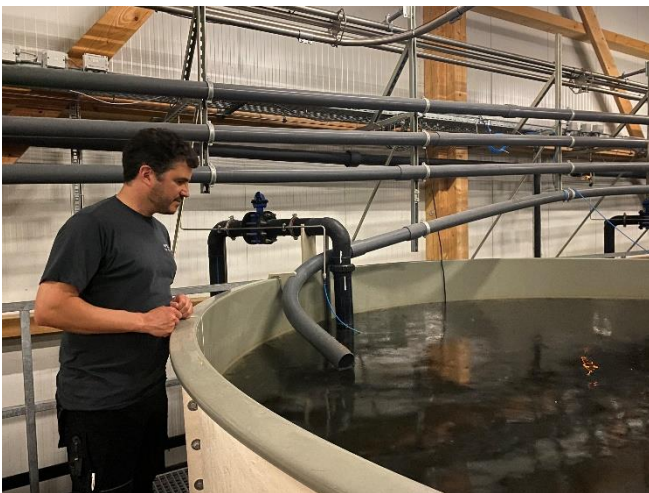
Perch rearing under specific light and temperature conditions.

those systems failed to live up to their expectations because either the results seemed to be inaccurate and inconclusive or the method was simply too expensive and time-consuming. Even if bacterial loads should have increased based on all other production parameters, says Beat von Siebenthal, the previously used tools often failed to confirm this. Due to the unreliable results, none of these systems could provide conclusive guidance in terms of which measures need to be taken.

Surveillance of bacterial densities in RAS

Compared to previously tested systems, the results obtained with rqmicro.COUNT were not only more conclusive but also aligned best with the other production parameters important for fish growth and welfare. In addition to providing them with reliable results, the team at Percitech found the rqmicro solution to be extremely fast and easy to apply.

“By considering all the other production parameters, we can anticipate which circuits should have higher bacterial loads. This could not always be shown with the other systems,” says Beat von Siebenthal. “The system from rqmicro has fulfilled our requirements best so far.”



Daily observation of the behavior of the perch.

Fast results enable immediate intervention

When they first learnt about the rqmicro technology at the Fischforum Schweiz, the team at Percitech requested a product demonstration at their hatchery. The testing rounds in different circuits provided a promising outlook towards the benefits of accurately quantifying viable bacteria.

With rqmicro.COUNT, Percitech can not only distinguish between living and dead cells, but also detect viable but non-culturable cells (VBNC). These cells typically represent a large share of all viable cells yet remain undetected by cultivation-based tests such as the heterotrophic plate count (HPC). In addition to the 1-3 days lag time required for cell cultivation, the prevalence of VBNC is another important factor why RAS operators look for better solutions to monitor water microbiology.

Since the rqmicro.COUNT provides accurate, quantitative results in only 30 minutes, the microbiological state of the water can be monitored almost in real-time, allowing for rapid interventions if required. Detecting bacterial

increases before the fish start showing symptoms is critical to maintain fish welfare and decrease fish mortality, as Beat von Siebenthal explains.



Fish tank at the Percitech hatchery.

“Some bacteria in a system can be opportunistic pathogens that only become problematic when they reach a certain density. Sudden increases in the bacterial load, above the baseline, in a circuit might indicate bacterial problems that may result in an outbreak of a fish disease,” says Beat von Siebenthal.

The high accuracy and reliability of the rqmicro method paired with its easy application and short time to result clearly outperformed all other bacteria quantification systems which they evaluated at Percitech.

rqmicro.COUNT becomes an integral part of the perch breeding process

After having been trained in the application of the rqmicro method, it took the quality department at Percitech only a week to get familiar with the system. Since then, the rqmicro technology has been an integral part of their workflow and greatly facilitated the way how they monitor bacterial densities in their circuits.

Above all, they appreciate the immediate availability of accurate and reliable data that can be easily combined with other parameters monitored on a daily basis.



Taking samples at critical control points (CCP) in the hatchery.

“With rqmicro.COUNT, the total weekly workload for bacterial quantification is reduced by 50% compared to the previous system,” observes Beat von Siebenthal. Consequently, they can promptly react in case of increased bacterial densities and subsequently evaluate their interventions.



Marc Michaud, Head of Quality at Percitech, performs the analysis on rqmicro.COUNT.

Outcome

Percitech’s objective is to establish quantitative thresholds of viable bacteria to which they can respond to, prior to observing clinical signs in the fish. With the implementation of an effective early detection system, they aim to reduce fish mortality and increase fish yield. The solution provided by rqmicro is a good fit for the team at Percitech due to the accurate counts of viable bacteria which help establishing quantitative thresholds as part of an early warning system.

“We gain more reliable results in a shorter amount of time,” concludes Beat von Siebenthal.

Specifically, they observe correlations between cell counts obtained by the rqmicro method and fish mortality as well as between cell counts and amount of feed fed. Furthermore, the rqmicro Cloud Solution makes sharing and analyzing of data much more convenient. The secure online tool also allows them to feed microbiology data into their general aquaculture control tool and data base with which they observe and analyze physical and chemical water parameters, production values, water treatment and feeding.

As a result, the rqmicro system will allow them to improve water quality, increase productivity and satisfy their customers with the highest product quality.



*Beat von Siebenthal,
Head of R&D at Percitech*

Take control of water microbiology

The ability to quantitatively assess the bacterial load at critical control points in RAS water is fundamental to maintain microbiological safety, to assure fish welfare, and to monitor, benchmark and improve the farming process.

With rqmicro.COUNT, RAS operators are able to understand differences between fish basins and circuits and to verify the effectiveness of water treatment processes. Only through quantitative monitoring is it possible to define meaningful and reliable thresholds and to establish corrective actions.

Would you like to know what is affecting your water systems? Get in touch with us and find out how rqmicro.COUNT can help your business.

[Learn more.](#)

Sources

The information in this article was provided in an on-site interview and an online video conference with the R&D and quality departments of Percitech.