Management and environmental improvement of recirculating aquaculture systems (38815) - DTU Orbit (05/03/2018)

The aim of this project was to identify new applicable measures and management strategies to optimize trout production in recirculating aquaculture systems (RAS), in particular the model trout farms. Model trout farms have gained lots of positive attention since their recent launch, as the rearing concept allows increased production, increased water reuse, and decreased nutrient discharge with obvious advantages for the natural fish fauna. Currently, model fish farms have generally experienced a certain fish mortality related to pathogens and suboptimal water quality. Scopes for improvement have been identified in terms of more focus on chemical and (micro-)biological water quality.

The project included four interrelated work packages:
1) Biological filtration (stable, optimal nitrification, nitrite accumulation issues, biofilter kinetics and management)
2) Denitrification: self-contained, operational end-of-pipe solution to reduce N-total from model trout farms
3) Water disinfection and sanitation: evaluation of UV systems disinfection efficacy, resulting water quality and test of easy degradable disinfectants to replace formalin
4) Gas saturation: consequences and effects of N super saturation and total gas pressure on fish performance in RAS.

Each WP addressed specific issues of concern based on current scientific knowledge and practical experience in dialogue with the aquaculture industry. The investigations included bench and pilot scale experiments conducted under controlled conditions at the research facilities at the Section for Aquaculture, DTU Aqua, Hirtshals. The project also included monitoring campaigns and experiments on commercial model trout farms in collaboration with stakeholders.

The project was coordinated by DTU Aqua.

The project was funded by the Danish Ministry of Food, Agriculture and Fisheries and the European Fisheries Fund (EFF).

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Section for Aquaculture
Danish Aquaculture Organisation
UltraAqua
Model fish farmers
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