



FISHTANKRECIRC

Development of electro-coagulation technique for optimal cleaning efficiency and maximum reuse of water in land based fish farming

The Challenge

Fish production in land-based aquaculture has increased rapidly in recent years. In many land-based fish farms, growth is currently limited by the available supply of freshwater, and the potential for adverse effects of waste water discharge. Recirculation aquaculture systems (RAS) offer a way out of these problems: in these systems, water is re-used after mechanical and biological treatment. Control of water quality is hereby essential to guarantee optimal fish growth and to produce safe, high quality produce for the consumer.

Project Objective

FISHTANKRECIRC, an FP6 Co-operative SME research project, aimed to improve the filtration process in RAS using electro-coagulation techniques and in that way enhance water quality. Electro-coagulation works by altering the electrical charge on suspended particles, resulting in smaller particles binding together to form larger particles. These larger particles are more easily removed from water by sedimentation or filtration units.

Key Points

- Fishtankrecirc developed a novel reactor configuration for an electro coagulator, able to remove the organic particles, phosphates, nitrates, ammonia as well as soluble organics at the rate necessary to increase the water quality and associated growth rates of the fish.

EATiP Thematic Area of Relevance

TA1: Product Quality, Consumer Safety and Health

TA2: Technology and Systems

TA3: Managing the Biological Lifecycle

TA4: Sustainable Feed Production

TA5: Integration with the Environment

TA6: Knowledge Management

TA7: Aquatic Animal Health and Welfare

TA8: Socio-Economics and Management

Key Words

RAS, recirculation, tank, cleaning water reuse, land-based

Project Information

Contract number:

512951

Contract type:

FP6 SME Measures

Duration:

36 months (June 2004 – May 2007)

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Output Highlights

A system was designed consisting of a filtration unit for optimal collection of coarse particles, an electro-coagulation reactor to clean the water from a wide range of pollutants and a vacuum filter for removal of the flocs created by the electro-coagulation unit.

This system was installed in a container and two functional tests were performed on it, one on waste water coming from a fish farm using fresh water, and one on waste water from a farm using salt water. Initial results proved positive.

Next Steps – Suggested Actions/Follow On



SME

- During the functional tests, the consortium gained important knowledge of the system, and found promising results with respect to carbon dioxide removal and formation of flocs. The findings showed that there are still improvements to be made to the system. As the results found during the FishTank-ReCirc project will lay the main foundation for further development, the consortium has not disclosed further details.