



2nd Workshop on Recirculating Aquaculture Systems

10-11 October 2013 (www.NordicRAS.net)

Aalborg Congress & Culture Centre, Aalborg, Denmark

Workshop program

Oct. 10, 09⁰⁰ – 10⁰⁵, Opening session

Session chair: A.J. Dalsgaard, Technical University of Denmark

Opening and welcome

- A. Bjarklev, President, Technical University of Denmark

Welcome address by the industry

- J. Bregnballe, President, AquaCircle

Opening keynote speakers

- J. Verreth, Wageningen University and Research Centre: Opening note on recirculation
- N. Alsted, BioMar: Changing demands to feed and raw materials for feed for RAS

Oct. 10, 10³⁰ – 12⁰⁰, Session 1a: Water quality and feed

Session chair: P.B. Pedersen, Technical University of Denmark

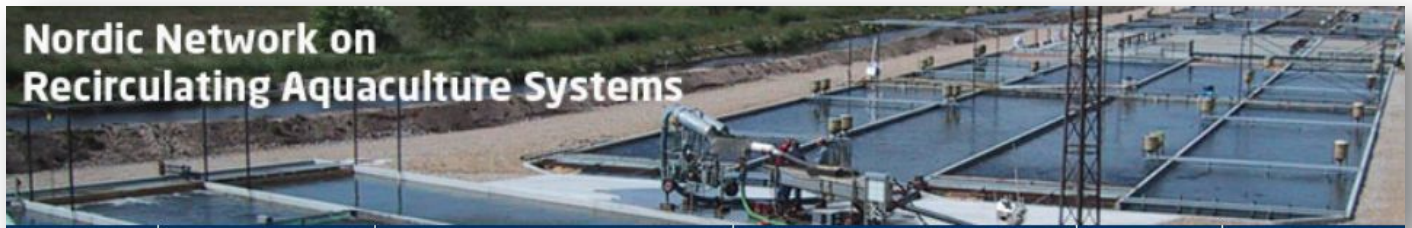
- A.J. Dalsgaard et al. Nitrogen waste load from juvenile rainbow trout (*Oncorhynchus mykiss*)
- A. Meriac et al. Effects of diet composition and ultrasound treatment on particle size distribution and carbon bioavailability in feces of rainbow trout
- K. Ekmann Feed for RAS
- A. Brinker Plant protein substitution of fish meal: Effects on rheology
- A. Kamstra et al. Dietary effects on fecal waste fraction in Atlantic salmon (*Salmo salar*)
- M. Schumann Factors affecting faecal stability in salmonids: a meta-analysis

Main
sponsors



GRUNDFOS





Nordic Network on Recirculating Aquaculture Systems

Oct. 10, 13³⁰ – 15⁴⁵, Session 1b: Water quality and biofiltration

Session chair: A. Brinker, Fisheries Research Station of Baden Württemberg

Keynote speaker: P. Halkjær Nielsen, Aalborg University: New molecular tools reveal microbial composition and function in N-removing water treatment systems

- L.-F. Pedersen et al. Biofilter-specific responses to intense water treatment in RAS
- P. Fernandes et al. Micro screens and micro-particles in replicated recirculating aquaculture systems
- B.F. Terjesen et al. Effects of salinity and exercise on Atlantic salmon postsmolts reared in land-based recirculating aquaculture systems (RAS)
- F. Mathiesen Actual water quality and fish performance in industrial RAS: Results from production of Atlantic salmon in Norway
- S. Summerfelt et al. Effects of alkalinity on (1) carbon dioxide stripping during cascade aeration and (2) ammonia removal and nitrite accumulation within moving bed biofilters
- K.T. Stiller et al. The effect of carbon dioxide accumulation on the growth of juvenile turbot (*Scophthalmus maximus*) cultured in a Recirculating Aquaculture System (RAS)

Oct. 10, 16¹⁵ – 19³⁰, Session 2: Microbiology and harmful substances

Session chair: S. Summerfelt, The Conservation Fund's Freshwater Institute

Keynote speaker: L. Gram, Technical University of Denmark: Probiotics as disease control in aquaculture

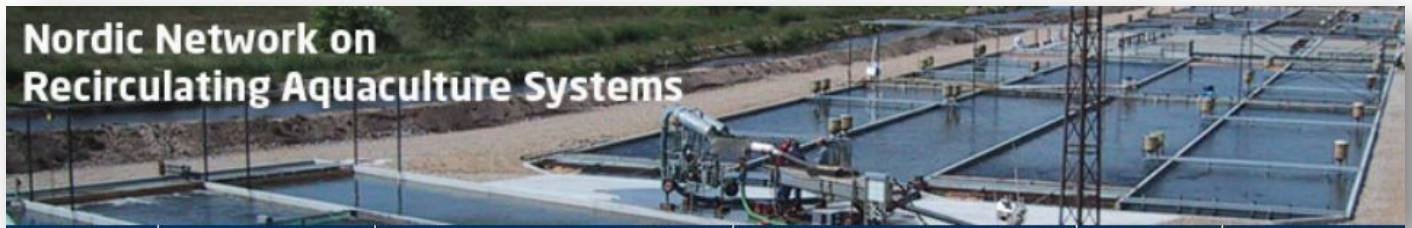
- L. Guttman & J. van Rijn Evidence for the role of sludge digestion in removal of the off-flavor compounds, geosmin and 2-methylisoborneol, from recirculating aquaculture systems
- J. Davidson et al. Depuration systems and techniques to mitigate off-flavor from Atlantic salmon cultured in a commercial scale recirculating aquaculture system
- H. NamKoong et al. Prevention of off-flavours in fish by ultrasonic water treatment
- C. van Bussel et al. The chronic effects of nitrate, ortho-phosphate and trace metals (Fe, Zn, Cu, Co, Mn) on production performance and health of juvenile turbot (*Psetta maxima*)
- P. Andersen HABs (Harmful algal blooms) in RAS
- J.P. Schroeder et al. Ozonation in marine RAS: Effects of residual oxidants on fish health and biofilter performance
- C. Good et al. Studies on hormone accumulation and early maturation of Atlantic salmon *Salmo salar* in freshwater recirculation aquaculture systems
- M. Russel Danish Salmon: A brief overview

Main
sponsors



GRUNDFOS





Nordic Network on Recirculating Aquaculture Systems

Oct. 11, 08³⁰ – 10³⁰, Session 3: End-of-pipe treatment

Session chair: J. van Rijn, The Hebrew University of Jerusalem

Keynote speaker: O. Lahav, Technion: A new physico-chemical approach for efficient and cost effective fresh-water RAS operation

- P. Chingombe et al. Nitrogen removal from recirculation water and waste sludge in a marine RAS via partial denitrification and anammox
- K. Suhr et al. Reducing waste discharge from RAS: Yield of volatile fatty acids from anaerobic sludge digestion by batch or fed-batch methodology, and biomethane potential of the sludge
- B. Hald Olsen Examples of sludge thickening methods from the industry
- A. Müller-Belecke & U. Spranger Design of the "self-cleaning inherent gas denitrification-reactor" and its application in a RAS for pike perch (*Sander lucioperca*) production
- A. Bergheim et al. Water consumption and waste load in flow-through and recirculating systems for Atlantic smolt production
- J. Bregnballe Containerized RAS solution for flexible and easy installation in aquaculture production systems

Oct. 11, 10⁵⁵ – 11⁵⁵: Pecha Kucha

Session chair: L.-F. Pedersen, Technical University of Denmark

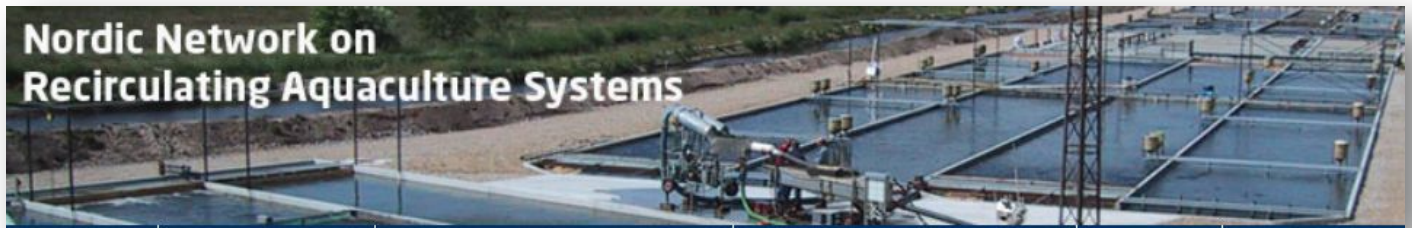
- T. Cavrois & L.-F. Pedersen Biofilter nitrification performance in replicated RAS at different salinities
- A. Drengstig et al. Quantification of respiration and excretion rates in European Lobster (*H. gammarus*)
- P. Prat & B.G. Plósz Dynamic model for a fish tank in recirculating aquaculture systems
- M.V.T. Thuy et al. Recirculating aquaculture system for high density production of the calanoid copepod *Acartia tonsa* (Dana)
- P.M. Jepsen et al. Recent advances within intensive recirculated aquaculture system cultivation of the calanoid copepod *Acartia tonsa* (Dana)
- R. Thorarinsdottir Aquaponics based on geothermal energy

Main
sponsors



GRUNDFOS





Nordic Network on Recirculating Aquaculture Systems

Oct. 11, 13²⁵ – 15⁰⁰, Session 4: System design and operation

Session chair: H. Thorarensen, Holar University College

Keynote speaker: J. Colt, Northwest Fisheries Science Center: Aquaculture unit processes and production systems: performance measures, analysis, and evaluation

- S. Summerfelt et al. Processes to improve energy efficiency during low-lift pumping and aeration of recirculating water in circular tank systems
- M. Z. Jensen Pumps for recirculation
- T. Kiuru New web-based program and online water quality monitoring system for RAS farms
- J. Kolarevic et al. Rearing density in combination with water temperature affect Atlantic salmon smolt welfare and performance during intensive production in recirculating aquaculture system (RAS)
- P.V. Skov et al. Nutrient digestibility and growth in rainbow trout (*Oncorhynchus mykiss*) are impaired by short term exposure to moderate excess total gas pressure from nitrogen supersaturation
- O. Garay Future development of RAS in commercial farming
- NordicRAS Goodbye and see you next time

ORGANIZERS



NordicRAS

MAIN SPONSORS



OTHER SPONSORS

Billund Aquaculture
AKVA group