RECIRCULATING AQUACULTURE SYSTEMS (RAS) & AQUAPONICS TECHNOLOGY WORKSHOPS

TEMASEK LIFESCIENCES LABORATORY

NEWLY EXPANDED! 2017 Dates: 10-11 October (RAS) | 12-13 October (Aquaponics)







Topics that will be covered during the RAS portion of the workshop:

AN INTRODUCTION TO RECIRCULATING SYSTEMS
- Defining recirculating systems
- RAS compared to other production options
- Reasons to use recirculating technology

CRITICAL CONSIDERATIONS BEFORE DESIGNING RECIRCULATING SYSTEMS
- Impact of feed on growth, metabolism and water quality
- Critical water quality parameters
- Tank hydraulics
- Solids waste generation
- Dissolved nutrient generation
- Oxygen uptake
- Disease control

COMPONENT OPTIONS FOR USE IN RECIRCULATING PRODUCTION SYSTEMS
- Solids removal
- Nutrient removal
- Dissolved gas addition and removal
- Heating and cooling of air and water

DEVELOPING AN APPROPRIATE DESIGN FOR YOUR AQUACULTURE APPLICATION
- An introduction to the mass balance design approach
- Examples from around the USA and Europe

THE MANAGEMENT OF RECIRCULATING SYSTEMS
- Monitoring and control
- Daily operations
- Harvesting and fish transfer methods
- Emergency systems and procedures

WASTE MANAGEMENT ISSUES
- Waste Generation
- Waste Treatment Options
- Waste Disposal

ECONOMIC CONSIDERATIONS IN CREATING, EVALUATING AND OPERATING RECIRCULATING SYSTEMS
- Capital investment costs
- Variable costs
- Fixed costs

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For more information about educational courses offered by Pentair Aquatic Eco-Systems, please email PAES.General@Pentair.com.

Web: PentairAES.com
Email: PAES.General@Pentair.com

2395 Apopka Blvd., Apopka, FL 32703

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Topics that will be covered during the Aquaponics portion of the workshop:

- **AQUAPONIC THEORY, SYSTEM TYPES AND APPROACHES**
- **AQUAPONICS SYSTEM DESIGN AND CONSTRUCTION**
- **CROP PROTECTION, ENVIRONMENT AND LIGHT**
- **WATER QUALITY AND TESTING**
- **PLANT PRODUCTION AND PROPAGATION**
- **MANAGEMENT AND ECONOMIC REALITIES**
- **GUIDELINES FOR AQUAPONICS**
- **UNIVERSITY OF THE VIRGIN ISLANDS' AQUAPONICS SYSTEM**
- **ALTERNATIVE SOLIDS FILTRATION FOR WARMWATER RAFT AQUAPONIC SYSTEMS**
- **PLANT PRODUCTION WITH DISCHARGED EFFLUENTS**
- **PEST IDENTIFICATION AND CONTROL**
- **FOOD SAFETY CONSIDERATIONS**

Testimonials from Workshop Attendee:
"The staff and presenters were top notch. They were all extremely friendly and more than willing to help at any time. I would attend another [Pentair] AES workshop without hesitation."

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ABOUT THE RAS WORKSHOP

Aquaculture, as a business, seems to be able to capture the imagination of a wide variety of individuals worldwide. Recirculating aquaculture technology (systems that recondition and re-use water) is the latest sector in aquaculture to have attracted attention and considerable venture capital. This workshop is designed for a broad audience. We will seek to provide non-biased, research-based information to those that are interested in, or those using recirculating aquaculture fish production systems. The information presented comes either from the first-hand research results and experiences of the presenters or those of collaborators or colleagues around the world. Workshop registration includes a technical workbook, memory stick with applicable resource materials.

ABOUT THE AQUAPONICS WORKSHOP

The Commercial Aquaponics Workshop is designed to introduce participants to the technicalities and engineering requirements of integration and hydroponic plant cropping whilst heavily relying on and integrating with the recirculating aquaculture section to deliver the realities of fish keeping and production using correct and established engineering principles.

ABOUT THE PRESENTERS



Dr. Tom Losordo is formerly the Principal Scientist and Chief Engineer for Pentair Aquatic Eco-Systems. Dr. Losordo has earned a Bachelor degree in Biology and a Masters degree and Ph.D. in Agricultural Engineering. Involved in aquaculture for 41 years, Dr. Losordo has extensive experience in the research, development, design, and implementation of recirculating aquaculture systems worldwide. Formerly with the Department of Biological and Agricultural Engineering at North Carolina State University, Dr. Losordo headed the program of applied research and demonstration known as the North Carolina Fish Barn. Dr. Losordo also provided aquacultural engineering support to citizens of North Carolina and beyond through the North Carolina Cooperative Extension Service.



Mr. Dennis DeLong is Manager of Customer Advocacy with Pentair Aquatic Eco-Systems. Mr. DeLong has earned a Bachelor degree in Biology and a Master of Science degree in Management. He has been involved in both commercial aquaculture activities and research and development for 39 years. Prior to joining Pentair in July 2011, Mr. DeLong managed the research and demonstration activities within the North Carolina State University Fish Barn program. He provided extension assistance in aquaculture to citizens and agri-businesses in North Carolina for 20 years, including the design, construction, and operation of RAS facilities.



Dr. Wilson Lennard is a PhD graduate from RMIT University in Melbourne, Australia with 15 years of practical commercial aquaponics experience and knowledge. He is skilled in research and engineering and has experience in associated aquatic disciplines. His professional scientific career spans more than 25 years.



Dr. Jason Danaher is a PhD graduate of Auburn University, with Bachelor and Master Degrees from State University of New York, and Kentucky State University. He worked at the University of the Virgin Islands, and evaluated methods to use discharged effluent in aquaponics for his doctoral work. Dr. Danaher provides technical support to clients and to the PAES engineering team for aquaponics system design.

WHEN

RAS Presentations:
10 & 11 October, 2017
Aquaponics Presentations:
12 & 13 October, 2017

WHERE

Temasek Life Sciences Laboratory Ltd.
1 Research Link
National University of Singapore
Singapore 117604

YOU MAY REGISTER AND ATTEND EITHER THE RAS SESSIONS, THE AQUAPONICS SESSIONS, OR BOTH SESSIONS WITH A DISCOUNT

REGULAR REGISTRATION*

RAS only:	S$480
Aquaponics only:	S$480
RAS + Aquaponics:	S$800

SUBSIDIZED RATE* (Students, Singapore Farmers, Gov't Officials)

RAS only:	S$250
Aquaponics only:	S$250
RAS + Aquaponics:	S$500

*Includes morning and afternoon breaks, lunch each day, and course materials. A workshop notebook containing a copy of the presentation slides will be provided for each participant. Access to a number of spreadsheets and publications will be provided.

RESERVATIONS

Reservations are essential and only accepted with payment in full. Participation is limited to the first 100 paid registrants.

Register online at:
http://register.tll.org.sg/ras-event-2017/

For additional information or any questions, please contact:
dennis.delong@pentair.com