



Asian Institute of Technology (AIT) announces

## ***SUSTAINABLE ASIAN AQUACULTURE SERIES – 3***

### **Recirculating Aquaculture Systems (RAS) DESIGN, ENGINEERING, OPERATION AND MANAGEMENT**

18 – 22 September 2017

AIT Conference Centre, Bangkok, Thailand

Asian Institute of Technology (AIT) is a premier research University in Thailand established in 1959. Third in the Sustainable Asian Aquaculture Training Series organized by AIT's Aquaculture and Aquatic Resources Management (AARM), this Workshop provides a detailed practical knowledge of the design, operation and management of Recirculating Aquaculture Systems (RAS). You must attend this event if you are:

- *An aquaculture enthusiast who would love learning new techniques and practices;*
- *A practicing business owner or novice with a passion for new ventures in aquaculture (fish and shrimp);*
- *A technical staff, and your boss wants you to get updated with the best in the industry;*
- *A Farm technician who can justifiably argue for a career promotion by learning new technologies;*
- *A Researcher who believes getting practical field information is key to your future;*
- *An official of the Departments of Fisheries in governments from Americas to the Asia Pacific region;*
- *An Administrator in government or an Activist of NGO with interest in resource efficient aquaculture;*
- *An enterprising student who wish to l the next big thing in sustainable aquaculture.*

#### **RESOURCE PERSONS**



##### **James Ebeling, Ph. D.**

*Dr. James Ebeling obtained a Ph.D. in Biological Resources Engineering from the University of Maryland, College Park, Maryland, where he worked on the kinetics of biofilters operating in aquaculture systems. Currently James is a semiretired aquaculture engineer, with experience spanning over thirty years, written an engineering text book on recirculating aquaculture system design (3rd edition just came out) with Dr. Michael Timmons from Cornell University (The Yellow Book), taught numerous workshops and short course (21 and counting) and designed both small scale (Boutique) and large scale commercial aquaculture systems. His background in aquaculture engineering comes from both theoretical and in the real world applications, having designed and constructed research facilities in Hawaii, Ohio, Maryland, and Louisiana. He is currently working with several high schools to design, construct and assist in management of small teaching aquaponics systems.*



##### **Vorathep Muthuwan, D.Tech. Sc.**

*Vorathep Muthuwan obtained a Doctor of Technical Science (Aquaculture) degree from the Asian Institute of Technology, Thailand in 1998. His core competencies include: Concept design and management of Public Aquariums, marine ornamental fish and invertebrate culture, water quality and management in aquaculture and Recirculating Aquaculture System Design. He is currently serving as the Deputy Director, Institute of Marine Science, Burapha University, Thailand. The Marine Science Research Unit at the Institute of Marine Science conducts research in four different areas as Marine Environment, Marine Biodiversity, Marine Aquaculture, and Marine Biotechnology. The Marine Aquarium at this Center is composed of indoor tanks and aquaria of different size and capacities to contain seawater ranged from half a ton to 1,000 tons. It is one of the biggest recirculating facilities for research and conservation of marine fish in Thailand.*

Register before: 31 July 2017

## Course Contents

### Dr. James Ebeling

- ✓ *Overview of RAS Systems Engineering*
- ✓ *Engineering Design – Mass balance Loading and Growth*
- ✓ *Water Quality*
- ✓ *Culture Tank Design*
- ✓ *Solids capture*
- ✓ *Waste Treatment and Effluent Management*
- ✓ *Circulation/Pipe Flow and Pumps*
- ✓ *Biofiltration/Denitrification*
- ✓ *Gas Transfer – Oxygen/CO<sub>2</sub>*
- ✓ *A design example*
- ✓ *Biosecurity and Fish Health*
- ✓ *Economics and Risk Assessment*
- ✓ *Group Task: Design of a Grow-out System*

### Vorathep Muthuwan, D.Tech. Sc.

- ✓ *Recirculating system of a display tank at the Bangsaen aquarium, Thailand – a case study of 1,000,000 liter display tank*
- ✓ *Design criteria and its components*
- ✓ *Construction*
- ✓ *System management*
- ✓ *Advantages and disadvantages*
- ✓ *Using seaweed biofilter in a recirculating system for corals and marine ornamental fishes*
- ✓ *Design criteria and its components*
- ✓ *System management*
- ✓ *Advantages and disadvantages*

**Course Duration: 5 working days from 18 – 22 September 2017**

**Course Venue: AIT, Pathum Thani; and Burapha University, Bangsaen, Thailand.**

**Training Cost: 1500 US\$/person (all inclusive)**

(Payable to ‘Asian Institute of Technology’ before **31 July 2017**. Bank details will be provided to interested participants). Please register early, as the slots will be filled on a first-in, first served basis.

#### **This fee covers:**

- Course fee and training kit
- Lunch, and two coffee breaks every day, and
- Local transportation for field visits.

**Field visit to the Marine RAS facility in Thailand**

Please note that the Course Fee does not cover any international travelling, visa fees, personal travelling, accommodation, phone calls, medical or insurance charges, contingencies, or any other personal costs and miscellaneous expenses. Please arrange sufficient additional funds for all such expenses. AIT has a 3-star campus hotel where accommodation can be booked. Please contact [reservation@vpservice.co.th](mailto:reservation@vpservice.co.th) for booking accommodation at AIT campus, the training venue.

### **Contact Information**

**Dr. Krishna R. Salin**  
**Course Director**

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School of Environment, Resources and Development (SERD)

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