

# International Conference on Anaerobic Digestion of Waste and Wastewater

## Anaerobic Digestion Asia 2010

11-12 November 2010  
Century Park Hotel, Bangkok, Thailand

### Training Program

#### Anaerobic Digestion of Agricultural & Livestock Farm Waste

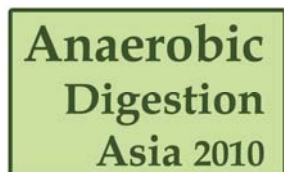
*13 November 2010, Century Park Hotel, Bangkok (09.00 am – 12.00 pm)*

Organized by



#### Water Treatment Academy

A Division of TechnoBiz Communications Co., Ltd  
2521/27, Lardprao Road, Khlongchaokhunsingh,  
Wangthonglang, Bangkok 10900 Thailand  
Tel: +66-2-938 2315 Fax: +66-2-513 1301  
Email: [conference@technobiz-asia.com](mailto:conference@technobiz-asia.com)  
[www.watertreatment-academy.org](http://www.watertreatment-academy.org)



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# TECHNICAL PROGRAM

## 11 November 2010 (Thursday)

09.15 -09.30 Welcome Remarks

### Session 1: Improvement of Biogas Production

09.30 -09.50 **Improving Biogas Production in UASB Reactors by Intermittent Operation**

*Maria Helena Gomes Almeida Nadais, University of Aveiro, Portugal*

09.50 -10.10 **Enhancing UASB Start-up by Chitosan Addition**

*Chantraporn Phalakornkule, King Mongkut's University of Technology North Bangkok, Thailand*

10.10 -10.30 **Pre-treatment Technology to Enhance Biogas Yield**

*Günther Bochmann, Biogas Research & Consulting Group at IFA-Tulln, Austria*

10.30 -11.00 Coffee Break

### Session 2: Case Studies & Experiences of Anaerobic Digestion

11.00 -11.20 **Biogas Production in Agro-based Industries in Thailand: GTZ Experience**

*Sirikul Prasitpianchai, German Technical Cooperation, Thailand*

11.20 -11.40 **Anaerobic Digestion of Molasses Distillery Waste**

*Graham Brown, ADI System Inc., Canada*

11.40 -12.00 **Waste to Energy in a Sewage Treatment Plant (STP) – WABAG Experiences in India & China**

*C Senthilkumar, VA TECH WABAG Ltd, India*

12.00 -12.20 **Anaerobic MBR-Advances in Food Waste Digestion**

*Graham Brown, ADI System Inc., Canada*

12.20 – 13.40 Lunch Break

### Session 3: Biogas Plant Operation

13.40 – 15.00 **Troubleshooting of Biogas Plant Operation - Training**

*Stephen P Etheridge, Biotrix Asia Co. Ltd., Thailand*

*Ulrike E Leroff, Biotrix Asia Co., Ltd., Thailand*

15.00 -15.30 Coffee Break

### Session 4: Innovations in Anaerobic Digestion

15.30 – 15.50 **An innovative high-rate anaerobic treatment of palm oil mill effluent (POME) by the combination system of dissolved air floatation (DAF) and reversible-flow anaerobic baffled reactor (RABR)**

*Daisuke Tanikawa, Tohoku University, Japan*

15.50 – 16.10 **Effective screening of seeding sludge sources for H<sub>2</sub>S removal in biogas**

*Matinee Laokor, King Mongkut's University of Technology Thonburi, Thailand*

- 16.10 – 16.30 **Emergence and absolute dominance of *Aeromonas* during the initial period of anaerobic digestion**  
Changsoo Lee, Nanyang Technological University, Singapore
- 16.30 – 16.50 **Anaerobic treatment of retentates from membrane treatment of paper industry wastewater**  
Christian Locher, Stuttgart University, Germany
- 16.50 – 18.30 Networking Cocktail

## 12 November 2010 (Friday)

### Session 5: Advances in Anaerobic Digestion

- 09.10 -09.30 **Effect of Retention Time on Anaerobically Fermented Fruit and Vegetable Market Wastes for BioHydrogen Production**  
*B.Velmurugan, CLRI - Department of Environmental Technology, India*
- 09.30 -09.50 **Effects on electricity production with adding microalgae in fixed-film and suspended-growth microbial fuel cells**  
*Joseph (Chun-Sheng) Wu, Leader University, Taiwan*
- 09.50 -10.10 **Municipal waste recovery facility with Pyrolysis and Anaerobic Digestion**  
*Larry T Buckle, Organic Energy Corporation Inc., USA*
- 10.10 -10.30 **Atmospheric methane and carbon dioxide emission from conventional anaerobic digester: A case study of community level biogas plant in India**  
*R. S. Khoiyangbam, Indian Agricultural Research Institute, India*
- 10.30 -11.00 Coffee Break

### Session 6: Industrial Wastewater Treatment

- 11.00 -11.20 **Development of appropriate anaerobic treatment technology of molasses wastewater**  
*Takashi Onodera, National Institute for Environmental Studies (NIES), Japan*
- 11.20 -11.40 **Treatment efficiency enhancement for sugarcane molasses distillery wastewater by 2 phases 2 staged UASB**  
*Pairaya Choeisai, Khonkaen University, Thailand*
- 11.40 -12.00 **Bioenergy (Methane) Production/Utilization from Milk Parlor Wastewater-Pilot Plant Study**  
*P. Y. Yang, University of Hawaii, Honolulu, USA*
- 12.00 -12.20 **Performance and microbial community structures of two-stage UASB and DHS System for the treatment of rubber latex wastewater containing high strength sulfate**  
*Takuya Yamashita, Nagaoka University of Technology, Japan*
- 12.20 – 13.40 Lunch Break

### Session 7: Biogas Conversion & CDM

- 13.40 -14.00 **Selection Criteria of Biogas Engine for Anaerobic Digesters**  
*Ruprecht Lattermann, MWM Asia Pacific Pte. Ltd., Singapore*
- 14.00 -14.20 **Biogas Vs Carbon Trading – CDM Opportunities and Challenges in Kenya**  
*Jecinta Wairimu Mwirigi, Egerton University, Kenya*
- 14.20 – 15.00 **Discussion “Technical Challenges of Anaerobic Digestion”**
- 15.00 -16.00 Coffee Break & Networking

# Training Program

## Anaerobic Digestion of Agricultural & Livestock Farm Waste

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(09.00 am to 12.00 pm)

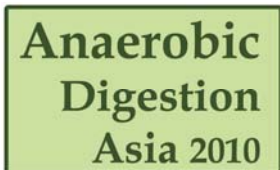
### Program Content

- 1. Anaerobic Digestion Fundamentals**
- 2. Biogas Production potential of various feedstocks**
  - Biomethane potentials or BMP's
  - Biocalorimetry as a rapid pretest
  - Potential to produce hydrogen
- 3. Feedstock preparation for anaerobic digestion**
  - Mechanical methods
  - Chemical and other methods including pH, free radicals, and gamma radiation
- 4. Design and operation of anaerobic digesters**
  - Complete mix
  - Plug Flow
  - Fixed Film
  - Anaerobic contact
  - Sequencing batch
  - Upflow anaerobic sludge blanket
  - The induced bed reactor anaerobic (IBR) digester
- 5. Biogas processing and uses**
  - Alternatives for biogas conditioning to remove  $H_2S$ ,  $H_2O$ ,  $CO_2$  and  $NH_3$ 
    - (a) Iron sponge, water absorption, and cooling to remove water
    - (b) Zeolite
  - Alternatives for cleaned biogas
    - (a) On-site heat and power (electricity)
    - (b) Compressed biogas for automotive fuel
    - (c) Putting gas into the pipeline
    - (d) Synthetic diesel
- 6. Discussion Topics**
  - Concerns about the "business side" of agricultural waste management.
  - What might be changed to apply technology to Asia compared to US or Europe?
  - What are some feedstocks unique to Asia?
  - How to deal with refractory organic materials?

**Instructor:** Prof. Conley Hansen, Utah State University, USA



Dr. Conly Hansen received B.S. (1971) and M.S. (1973) engineering degrees from Utah State University and a Ph.D. (1980) from Ohio State University in agricultural engineering. Dr. Hansen is a professor and Director of the Center of Excellence in Profitable Uses of Agricultural Byproducts at Utah State University. His research centers on finding ways to manage and utilize low value agricultural production and process. For 20 years Dr. Hansen has lead his field in researching and engineering anaerobic digesters.



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## Registration Form

*(Kindly fill all the info in ENGLISH only)*

We would like to register for the following Programs

Program	Event Date	Registration Fee for Participants	
		Before 15 Oct'10	After 15 Oct'10
<input type="checkbox"/> Anaerobic Digestion Asia 2010	11-12 Nov' 2010	7,500 Baht	8,500 Baht
<input type="checkbox"/> Training – AD of Agricultural & Livestock Farm Wastes	13 Nov' 2010	2,000 Baht	3,000 Baht
<input type="checkbox"/> Both Programs	11-13 Nov 2010	9,000 Baht	11,000 Baht

Company Name .....

Address .....

Tel..... Fax..... Email.....

Contact Person ..... Tel..... Email .....

**Participant Names:**

Participant 1 ..... Position ..... Email.....

Participant 2 ..... Position ..... Email.....

Participant 3 ..... Position ..... Email.....

Participant 4 ..... Position ..... Email.....

*Remark: Payment is required with registration. The above fee applies for delegates from Thailand only. VAT 7% applies on the above fees. The registration fee includes conference documentation, lunch and refreshments. **Group Registration:** If 3 or more delegates register from the same organization, 10% discount will be offered on the registration fee. If 5 delegates register from the same organization, 6<sup>th</sup> person participation is FREE.*

**Payment Method**

Bank Transfer to      *Bank Name: Bangkok Bank: A/C No: 177-0-70727-9; A/C Name : TechnoBiz Communications Co., Ltd., Branch : Ratchada-Latprao Road branch, Bangkok (Swift Code: BKKBTHBK) (Kindly make payment for all bank charges)*

Credit Card       Visa       Master      (5% bank fee applies for credit card processing)

Card Number ..... Cardholder Name .....

Card Expiry Date ..... Last 3 digits on Signature Panel.....

Signature of Cardholder ..... Date.....

**Please send completely filled registration form to**

*Water Treatment Academy, TechnoBiz Communications Co., Ltd.  
2521/27, Lardprao Road, Khlongchaokhunsingha, Wangthonglang, Bangkok 10310 Thailand  
Tel: 66-2-938 2315 Fax: 02-513 1301 Mobile: 081-988 6874 Email: conference@watertreatment-academy.org  
Web: www.watertreatment-academy.org      Contact Person : Khun Sirinthip, Program Coordinator*