Modelling Industrial Wastewater Treatment Processes with the ASM Models: What Works, What Doesn't, and What's Missing?

This workshop will investigate the strengths and weaknesses of the traditional activated sludge model (ASM) structure when applying the models to industrial wastewater treatment. The presentations and discussions will focus on approaches that can be employed to overcome various industry-specific deficiencies.

Expected discussions and results

How will the workshop go about answering the posed question?

This workshop brings together individuals with experience modelling wastewater treatment from a wide range of industries, such as mining, food processing, chemical/petrochemical and energy sectors. Speakers will discuss industry-specific issues and hurdles that have to be overcome to apply modelling technology effectively, and encourage audience participation and discussion around these issues.

Typical issues to be discussed include:

- Data gathering, processing and reconciliation – getting a good, representative dataset
- The challenges of industrial wastewater characterization
- ASM model mechanisms – what important processes are missing?
- ASM model calibration – what parameters are typically adjusted, and how do we determine what those values should be?
- Success stories – case studies and experiences

The attendees in the workshop session will be encouraged to share their experiences as well. A breakout session in the afternoon will allow attendees to work in industry-specific groups to collect and summarize the most important aspects of modelling that particular type of wastewater. The breakout groups will report their summaries back to the workshop as a whole.

A group discussion at the end of the workshop will focus on identifying common themes presented during the day. Workshop presenters and attendees will synthesize the information gathered into a set of industry-specific guidelines for wastewater data collection, influent characterization, model customization and calibration.

Who will be presenting in the workshop, and how will they contribute to the discussions?

The proposed speakers for the workshop are as follows:

Session	Speaker	Topic
1	Spencer Snowling, Hydromantis ESS, Inc. Workshop Organizer	Workshop Introduction and Background: How Applicable are the Traditional ASM Models to Various Industrial Wastewaters?
2	Janet Goodfellow, Geosyntec Consultants	The Challenges of Industrial Wastewater Characterization. Unique aspects of sampling and data reconciliation.
3	Kim Helleshøj Sørensen, WABAG Water Technology Ltd.	Improving Process Understanding of the Effluent Treatment Plant of a Petrochemical Industry by Modelling
4	Güçlü Insel, Istanbul Technical University	Fingerprinting biodegradation characteristics of industrial wastewaters using respirometry based modeling
5	Christophe Amiel Veolia Water	A better knowledge on the typical fractionation is the key for industrial wastewater industry modelling

After the initial introduction to introduce the themes and objectives of the workshop, the workshop will lead off with a general discussion of the challenges of industrial wastewater characterization, data collection and reconciliation. Several speakers will present throughout the day, followed by the audience participation, breakout groups and final group discussion.

How will you summarize results for larger WWTmod group?

Upon completion of the workshop, the co-chairs will summarize the conclusions of the breakout session groups, and prepare a short presentation for the larger WWTMod group the following morning. The presentation will cover:

- Introduction to workshop themes and objectives
- Background of how and why industrial wastewater is a unique
- Short summary of the workshop presenters' conclusions
- Presentation of the industry-specific breakout groups' conclusions

What are plans for workshop subject after WWTmod? i.e. white paper, publications, other?

After the conclusion of WWTMod2016 conference, the information gathered from the presenters, attendees and others will be summarized in a white paper. The goal of this document will be to establish an industry-specific set of recommendations and guidelines for applying activated sludge models. The guidelines will address issues such as sampling, data management, model selection, and calibration.

Workshop set-up

The workshop will be organized as a series of four 30-minute presentations by individuals with a wide range of industrial modelling experiences (two presentations in the morning, and two in the afternoon). These presentations will be supplemented by short presentations from the workshop attendees, who will be encouraged to share their experiences as well. In the afternoon, the entire group (chairs, presenters and attendees) will split up into industry-specific groups to discuss and summarize relevant issues. The group will then come back together again to present their results in a final group discussion.

Chair/Co-chair

Spencer Snowling (Hydromantis ESS, Inc., Hamilton, Ontario, Canada)
Janet Goodfellow (Geosyntec Consultants, Guelph, Ontario, Canada)

Speakers

Janet Goodfellow (Geosyntec Consultants, Guelph, Ontario, Canada)
Kim Helleshøj Sørensen (WABAG Water Technology Ltd., Paris, France)
Christophe Amiel (Veolia Water, Saint Maurice, France)
Güçlü Insel (Istanbul Technical University, Istanbul, Turkey)

Target Participants

This workshop will be of interest to consultants, researchers and plant managers/operators of industrial wastewater treatment systems, or of municipal systems that receive significant industrial wastewater inputs.

Programme Agenda

Time	Topic	Presenter/Moderator
09:45 - 10:15	**Workshop Introduction and Background:** How Applicable are the Traditional ASM Models to Various Industrial Wastewaters?	Spencer Snowling
10:15 - 10:45	**Presentation #1:** The Challenges of Industrial Wastewater Characterization: Unique Aspects of Sampling and Data Reconciliation	Janet Goodfellow
10:45 - 11:15	Coffee break	
11:15 - 11:45	**Presentation #2:** Improving Process Understanding of the Effluent Treatment Plant of a Petrochemical Industry by Modelling	Kim Helleshøj Sørensen
11:45 - 12:00	**Short pres. #1:** Audience Participation	Audience Member #1
12:00 - 12:15	**Short pres. #2:** Audience Participation	Audience Member #2
12:15 - 12:30	**Short pres. #3:** Audience Participation	Audience Member #3
12:30 - 12:45	**Short pres. #4:** Audience Participation	Audience Member #4
12:45 - 13:45	Lunch break	
13:45 - 14:15	**Presentation #3:** Fingerprinting Biodegradation Characteristics of Industrial Wastewaters Using Respirometry-Based Modeling	Güçlü Insel
14:15 - 14:45	**Presentation #4:** A better knowledge on the typical fractionation is the key for industrial wastewater industry modelling	Christophe Amiel
14:45 - 15:15	**Breakout Session:** Industry-Specific Group Discussions to Identify Most Important Issues and Approaches	Breakout Groups
15:15 - 15:45	Coffee break	
15:45 - 16:30	**Summary Reports from the Breakout Sessions**	Breakout Groups
16:30 - 17:15	Workshop Wrap-Up and Proposed White Paper Outline	All Participants