

## Summer school program 2017

### **Monday August 14<sup>th</sup>**

11.00–11.30 Introduction

Information about the course and on Energiforsk. Brief presentation of the participants.

11.30–12.30 LUNCH

#### Session 1: Introduction

12.30–13.10 Facing climate change – Which are the options to act?, Filip Johnsson, Chalmers

13.10–13.50 Sustainability of biogas production, Henrik Wenzel, SDU

13.50–14.30 Biogas from by-products from the forest industry, Karin Granström, KAU

14.30–15.00 COFFEE BREAK

#### Session 2: The role of gas in the energy system

15.00–15.45 Current production of biogas in Scandinavia, Bruno Sander Nielsen, Danish Agriculture & Food Council

15.45–16.30 System aspects related to the future role of the gas system, Marie Münster, DTU

17.00–18.00 Interviews: Deep interview of your colleague and preparation for presentation of him/her Tuesday afternoon

18.00 DINNER

### **Tuesday August 15<sup>th</sup>**

#### Session 3: Gasification

8.30–9.15 Gasification of waste, Tobias Richards, HiB

9.15–10.15 Gasification of biomass, Martin Seemann, Chalmers

10.15–10.45 COFFEE BREAK

10.45–11.45 Gasification of biomass, process concepts, Henrik Kusar, KTH

12.00–13.00 LUNCH

#### Session 4: Anaerobic digestion

13.00–13.45 Anaerobic digestion, process overview, Anna Schnürer, SLU

13.45–14.30 Anaerobic digestion, microbiology, Anna Schnürer, SLU

14.30–15.00 COFFEE BREAK

#### Session 5: Ongoing research

15.00–16.30 Presentation of the participants

18.00 DINNER

### **Wednesday August 16<sup>th</sup>**

8.45 Departure Vara Folkhögskola

9.30 Technical visit Vårgårda Herrljunga Biogas (host: Per-Olof Rosén, Vårgårda Herrljunga Biogas)

11.30 Departure and lunch

13.00 Technical visit Gobigas (host: Ingemar Gunnarsson, Göteborg Energi)

15.00 Technical visit Gasendal (host: Jan Karlsson, Göteborg Energi)

16.30 Departure to Vara Folkhögskola

18.30 DINNER

### **Thursday August 17<sup>th</sup>**

#### Session 6: Biogas upgrading and gas quality

08.30–9.15 Biogas upgrading, Åke Nordberg, SLU

9.15–10.00 Gas quality, Jean Schweizer, DGC

10.00–10.30 COFFEE BREAK

#### Session 7: Gas motors

10.30–11.15 Internal combustion engines for gaseous fuels, Per Tunestål, LU

11.15–12.00 Gas turbines and combined cycles for flexible power production, Magnus Genrup, LU

12.00–13.00 LUNCH

#### Session 8: Implementation of gas projects

13.00–13.45 Gas regulation, Poul Erik Morthorst, DTU

13.45–14.30 Challenges with working locally to improve the biogas market, Marie Mattsson, HH

14.30–15.00 COFFEE BREAK

15.00–16.30 Interactive activity

18.00 DINNER

### **Friday August 18<sup>th</sup>**

#### Session 9: Power-to-gas and smart grids

08.30–9.15 Power-to-gas, an overview, speaker to be determined

9.15–10.00 Catalytic and biological methanation – do not waste valuable CO<sub>2</sub>, Lars Ditlev Mørck Ottosen, AU

10.00–10.30 COFFEE BREAK

10.30–11.15 Resource-efficiency assessment of feedstocks for biogas production – a multi-criteria approach, Jonas Ammenberg, LiU

11.15–12.00 Life-cycle assessment and uncertainty analysis of biogas production, Roozbeh Feiz, LiU

12.00–13.00 LUNCH

13.00–14.00 Key-note: Morten Gyllenborg, Nature Energy

14:00–15:00 Evaluation

### **Sponsors:**

Energigas Sverige, EON, Dansk Gasteknisk Center DGC and Aarhus University AU, Chalmers, Halmstad University HH, Högskolan i Borås HiB, Karlstad university KaU, Lund university LU, Linköping university LiU, Royal Institute of Technology KTH, Swedish University of Agricultural Sciences SLU, Technical University of Denmark DTU and University of Southern Denmark SDU.