



# GasBio

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## Newsletter 1-2011

This first newsletter in the GasBio project gives a brief overview of the project, and focuses on the project workshop arranged in Finland lately as well as recent EERA activities.

### GasBio

GasBio is a Knowledge building project with user involvement (KMB) within the Norwegian Research Councils RENERGI programme. The objective of RENERGI is to develop knowledge and solutions as a basis for ensuring environment-friendly, economically efficient and effective management of the country's energy resources, a highly reliable energy supply and internationally competitive industrial development. The aim of a KMB project is to contribute to long-term industry-oriented researcher training and competence building in Norwegian research communities, within topics that are crucial to the development of business and industry in Norway. GasBio's overall objective is to establish an internationally oriented solid Norwegian competence base within biomass gasification to produce biofuels.

The project is organised in 6 sub-projects (SP). SP1 will focus on the biomass feedstock used for biofuel production. Actual feedstocks are chips from virgin pulpwood, from forest residues, from bark and from different types of waste wood. High temperature entrained flow gasification and moderate temperature fluid bed gasification are both potential gasification concepts for a medium sized FT-liquid BtL plant. This will be investigated in SP2. The building of long term competence in gasification technology must be based on a firm experimental basis. Experimental work and modelling are the objectives of SP3. Models and results obtained through the activities of SP 1, 2 and 3 will be integrated in SP4 and used to examine the overall viability of liquid biofuels production in Norway through a set of selected case studies. The major objectives of SP5 are long-term competence building and strengthening of the education of MSc and PhD students within this field, as well as further enhancing competence through Postdoctoral work. Industrial seminars will contribute to raise the competence level in the industry. The main objectives of SP6 are to participate in key international research forums, to monitor the latest international research and technology developments and to disseminate this information together with the results obtained through this project.

### Project workshop in Finland

The first Steering Committee meeting within GasBio and a project workshop were held 6-7 April in Tampere, Finland. All the partners involved in the project; Metso, Norske Skog, Statoil, NTNU and SINTEF Energy Research, participated in both events.

*Visit to the Metso's facilities*



In the project workshop each of the partners presented their activities, emphasizing and explaining in detail those activities that are relevant for the GasBio project. It is important to highlight the intensive and fruitful discussions during the workshop after each presentation. Plans about a gasification unit at SINTEF Energy Research was also presented. Number of reactors, sizes, feeding technology, materials as well as feasibility and challenges were the main elements in the discussion.

The afternoon was devoted to further discussions and a visit to Metso's facilities in the Tampere region. Metso is intensively involved in the energy and environmental technology field, and has two gasification lines available. One of them produces 50 MW electricity and the other produces 90 MW district heating. Metso is currently building up a 100 MW biomass combustion plant using fluidised bed technology. This plant will be in operation in 2012.

The next workshop will be arranged 9-10 November 2011. The location is discussed but not decided yet. Two workshops were arranged last year, Kick-off meeting was held 5-6 May in Trondheim and a project workshop with a site visit to Güssing gasification facility was arranged on 27-28 October.

## EERA activities

### EERA - European Energy Research Alliance

In 2010, EERA launched the Joint Programme on Bioenergy at the SET Plan Conference in Brussels. The overall objective of the Joint Programme on Bioenergy is to align pre-competitive research activities at EERA institutes to create a technical-scientific basis to accelerate the development of these next-generation biofuels. This will open possibilities for joint technology development. The initial focus on biofuels may in a later stage be broadened to include other topics, such as electricity generation.

The EERA Joint Programme focuses on long-term research topics. It is therefore complementary and can offer support to the European Industrial Bioenergy Initiative, especially on fundamental research issues. Both initiatives have based their programmes on the same bioenergy value chains, paving the way to a smooth collaboration. Many partners are involved in both initiatives, further simplifying collaboration ([www.eera-set.eu](http://www.eera-set.eu)). The EERA Bioenergy Kick-off meeting was held on 18 January in Amsterdam. Four SINTEF members participated in the meeting in order to represent the four platforms defined within EERA. Judit Sandquist from SINTEF Energy Research represented the thermochemical platform, Nils Dyrset from SINTEF Materials and Chemistry represented the sugar platform, Jorunn Skjermo from SINTEF Fisheries and Aquaculture represented the algae platform and Bernd Wittgens from Materials and Chemistry

represented the cross-cutting topics. The outcome of that meeting was that a workshop within the EERA Bioenergy Thermochemical Platform would be arranged in Karlsruhe.

### EERA workshop on gasification in Karlsruhe

Karlsruher Institut für Technologie (KIT) arranged the second workshop within the EERA Bioenergy Thermochemical Platform on biomass gasification, gas cleaning and synthesis, in Karlsruhe 22-23 March 2011. The workshop started with a lab visit at KIT's facilities the morning of the first day. Among others, we were able to explore in detail the lab-scale entrained flow reactor, the hot gas cleaning unit, the construction of a second generation biofuels production plant (pilot-under construction) and the VERENA pilot plant, used for hydrothermal processes such as hydrothermal liquefaction or supercritical gasification. During the afternoon dry and wet biomass gasification were discussed in two parallel sessions. After positive and constructive inputs from the partners, a series of cooperation proposals were defined. The cooperations are due to start this year.

The discussions during the second day focused on gas cleaning and synthesis issues. Similar to the previous day, a certain number of proposals ensuring relevant European cooperations were defined by the partners. The total number of participants during the two days was around 20 members from several institutes as CEA, CIEMAT, Cranfield University, ECN, ENEA, KIT, PSI, Risø DTU and SINTEF. Judit Sandquist and Berta Matas Güell represented SINTEF in this workshop.

## Student at SINTEF Energy Research

Tessa Jansen joined the bioenergy group within SINTEF Energy Research for a period of three months (24 January - 24 April) as an internship student from University of Twente. Tessa has been involved in studies with thermogravimetric analyser (TGA) coupled with Fourier transformed infrared spectroscopy infrared (FTIR) and mass spectroscopy (MS) measurements to examine the influence of heating rate on biomass gasification and char reactivity. The results obtained will result in a GasBio report as an intermediate stage and in a scientific paper in a longer term when the current results are combined together with further experiments.

## GasBio website

The GasBio project website is established, and it will be continuously updated with information about activities and results. Unrestricted publications will be available for download or ordering ([www.sintef.no/GasBio](http://www.sintef.no/GasBio)).

**GasBio** is a Knowledge-building Project with User Involvement (KMB) co-funded by the Norwegian Research Council in the RENERGI-programme. The budget is 25 MNOK, and the duration is 4 years (2010-2014).

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