IEAGHG Information Paper; 2014-IP4: Recent biomass related developments

During the last few days, a number of interesting headlines related to biomass appeared in the news. As CCS activities are facing a tough climate at the moment, it is nice to see that there is at least some notable progress in the biomass area. The following IP summarises three of these press articles (please refer to the footnotes for a link to the full articles).

Dutch power plant successfully tests torrefied biomass pellets[1]

A consortium consisting of Topell Energy, Essent, Nuon, GDF Suez and ECN has successfully completed large-scale co-firing tests with biomass pellets at Amer power plant in The Netherlands.

The trials demonstrate the feasibility of torrefaction technology, which is a mild form of pyrolysis at 200-320°C and results in a dry biomass product with a higher fuel quality. Combined with densification (i.e. pelletising, briquetting) the technology offers several advantages over conventional wood pellets, especially for combustion applications. In general, torrefied and densified biomass has a higher energy density, more homogenous composition, no biological activity (i.e. rotting) and improved grindability.

During the test campaign in November and December 2013, the project partners applied co-firing shares ranging between 5-25%. In total, they have transported, handled, milled and co-fired around 2,300 tons of torrefied biomass pellets to produce green electricity, without detecting any adverse effects on milling or combustion.

The next steps now are to investigate the suitability of the torrefaction technology for the production of bio-based chemicals/materials and the mobilisation of larger quantities of torrefied biomass pellets.

China approves bio-based aviation fuel for commercial use[2]

On 12th February, the Chinese government approved a bio-based aviation fuel for commercial use. It granted Sinopec, which applied for a certificate in February 2012, the first Chinese certificate of airworthiness for a bio-based jet fuel.

Sinopec and China Eastern Airlines successfully tested the fuel for the first time in April 2013 during an 85-minute flight with an Airbus A320. Sinopec's Zhenhai refinery in eastern Zhejiang province produced the bio-jet fuel, which complies with standards CTSO-2C701 and ASTM D7566-11a, from hydrotreated palm oil and recycled cooking oil feedstock. Key characteristics of the bio-jet fuel are that it is renewable, has fewer impurities and emits lower greenhouse gases than conventional jet fuel.

Sinopec did not detail current or future production plans for the fuel, for now it just plans to expand the range of bio-jet fuel feedstock and develop more cooperation with domestic and foreign airlines to work toward widespread use of the fuel in commercial flights.

[1] http://www.essent.eu/content/about_essent/news/archive/successful_test_with_innovative_renewable_energy_source_at_Amer_power_plant.html
[2] http://www.platts.com/latest-news/agriculture/singapore/china-sinopec-gets-government-certification-for-27924085

Drax considers developing additional US pellet capacity[3]

When releasing financial results for the year 2013, Drax Group recently indicated that it is pursuing options to build 2 million metric tons of additional pellet production capacity, primarily in the US.

Lately, Drax has been investing significant capital to transform itself into a leading generator of renewable energy. CEO Dorothy Thompson stated that important technical progress has been made in the operation of the biomass unit regarding output, efficiency and reliability. She expects that by 2016 at least two additional biomass units are operating. To support the higher capacity, Drax is currently developing solutions to expand port and rail capacities and to secure biomass fuel supply. For 2014, Drax has already secured over 4 million metric tons of biomass and negotiations for additional amounts are on-going. The predominant source for the biomass will be North America. At this time, Drax is developing its own pellet production plants in Louisiana and Mississippi, as the company sees potential to deliver attractive returns and the ability to control the biomass fuel quality.

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[3] http://www.biomassmagazine.com/articles/10025/drax-considers-developing-additional-u-s-pellet-capacity