ALGAL BIOENERGY SPECIAL INTEREST GROUP

Algae as a tool in Ecosystem Services

Microalgae to Aviation Biofuels

24th November 2015, Holiday Inn Birmingham Airport

Event Report

Algae as a tool in ecosystem services: Microalgae to aviation biofuels

Tuesday 24th November 2015

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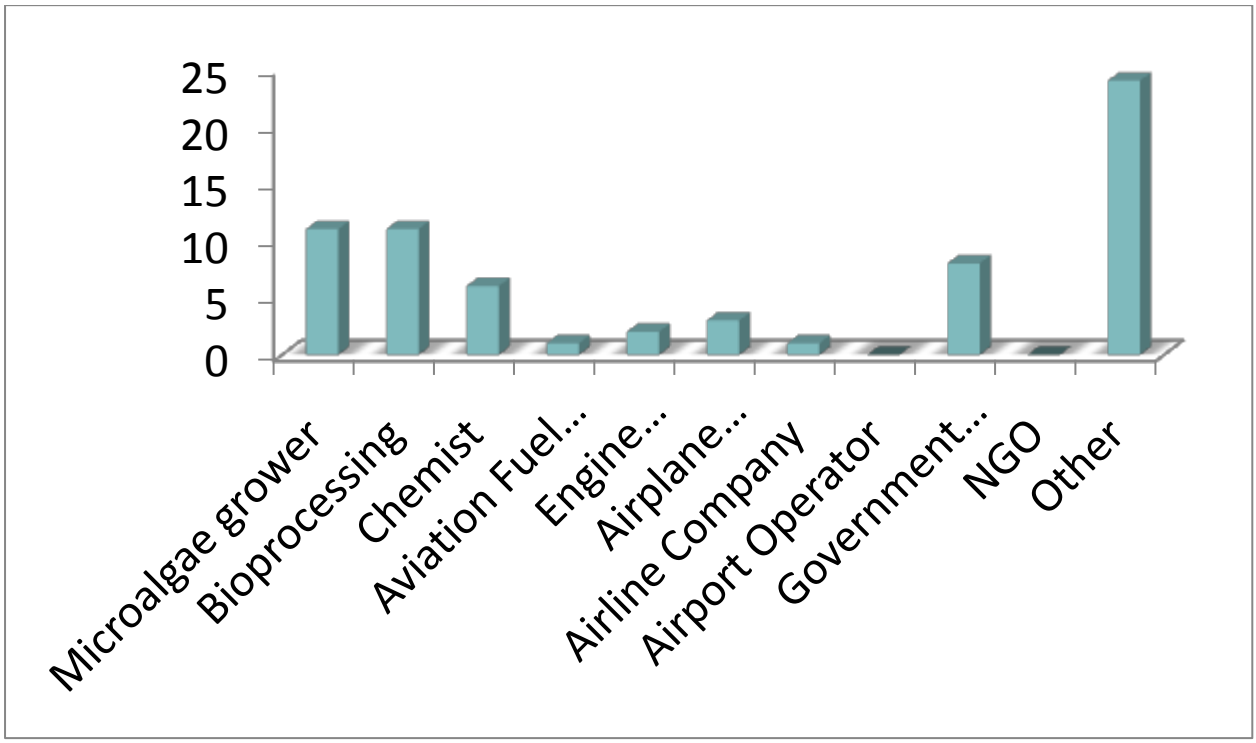
Workshop highlights

- Incentivisation scheme required for development of aviation biofuels in similar way to road transport schemes
- More investment required for pilot and demonstration scale facilities
- Support for SMEs
- A more cohesive supply chain is required
- When developing a new aviation fuel, ensure airplane manufacturers are involved
- More government support
- Microalgae/biofuel blend between 10 and 50% is required (Drop in)
- All new fuels need to be certified
- Techno-economics of microalgae to jet fuel has polarised community
- TUI Group & Airbus building microalgae pilot plants
- Key drivers for SAF: Price, security of supply and sustainability
- Microalgae part of the solution and not a silver bullet
- Need positive investment landscape
- Big oil companies are still interested in biofuels – E.g. EXXON Mobile run the ASTM certification process

Algae as a tool in ecosystem services: Microalgae to aviation biofuels aimed to bring together the whole supply chain from microalgae growers, to fuel developers, to airline companies to understand the opportunities and challenges to developing this technology in the UK.

Just over 70 delegates from across the supply chain registered to attend the event and on the day provided constructive discussion and input (see Figure below).



The day started with a presentation from **Michelle Carter (Knowledge Transfer Network Ltd)** on the role algae can play in Ecosystem Services and in particular how they can provide a service to the aviation industry in helping to address their CO_2 reduction targets.

The following three presentations set the scene and offered delegates some insight into the rationale for the event.

Keith Bushell, Airbus OL & Sustainable Aviation presented on the Sustainable Aviation UK Aviation Fuels Road Map where microalgae HEFA technology is identified as being commercially viable 2030-2040. **Xavier Dommange** then presented on a report he developed whilst at Airbus Innovations Milestones to Microalgae Aviation Biofuels. Xavier suggests focusing R&D time and investment on five microalgae strains for jet fuel production.

A message consistently communicated by the aviation and aerospace representatives is the need for the right policies to be in place in terms of incentivisation schemes in a similar way to road transport (RTFO); investment into pilot and demonstration scale facilities; greater

connectivity and cohesion along the supply chain; developing sustainable biofuels, and; ensuring security of supply.

Aaron Berry, Head of Low Carbon Fuels Strategy, Dept. for Transport presented on the measures government is making – following discussion with Sustainable Aviation – on proposed incentivisation schemes under the Renewable Transport Fuels Obligation (RTFO) scheme.

The second session of the workshop focused on the challenges and opportunities towards developing microalgae biofuel.

Richard Mills, Boeing reiterated the need for a level playing field with the vehicle industry to support low carbon transport. Although an aircraft manufacturer, Boeing is committed to ensuring involvement in the development of new sustainable aviation fuels as they could have a detrimental impact on the design and resilience of the plane. One Boeing plane has flown on microalgae fuel, is a member of the ABO and is involved in microalgae projects. That said, Richard is yet to see any convincing economic data – algae is yet to be competitive as a fuel.

Richard's presentation can be found here.

Maria Barbosa, AlgaeParc, Wageningen University is working with TUI Group on microalgae jet fuel and are building a pilot scale facility at Bonair, Caribbean. The objective is to take a biorefinery approach and produce fuels, chemicals, aquafeed and food. Maria's presentation looked at the techno-economic viability of algae jet fuel by consideraing a range of variables: labour costs, light variation, taxes, cultivation system and inputs.

Chris Lewis is a visiting professor at Sheffield University following retirement from Rolls Royce and is an aviation fuels expert. Chris presented on the regulatory framework for aviation fuel, important information if developing a microalgae based jet fuel.

James Hygate, Green Fuels Research has developed a feedstock agnostic technology to generate a variety of fuels including jetfuel. The company is a Royal Warrant holder, the car used in the Royal Wedding was ran on their biofuel. James offered an interesting insight in his presentation on the challenges of scaling up production, particularly in the UK where funding for this activity is difficult to secure.

The final set of presentations were five-minute pitches:

Andrew Spicer, Algenuity
Marco Lizzul, Varicon Aqua Solutions Ltd
Ian Watson University of Glasgow
David Punchard, Avespa
Svein Dahl, MicroA AS
Philip Kenny, Swansea University

The programme for the day can be found here

What next?
Innovate UK is keen to understand how to support the industry develop sustainable aviation fuels (SAF) broadly – including microalgae. It is looking at current funding schemes and identifying where the gaps are.
The Knowledge Transfer Network is exploring the possibility of developing a working group to look at the milestones identified in Airbus Innovations report on microalgae aviation fuels to understand where we should be focusing our efforts and investment in the UK.
If you have any comments or suggestions on microalgae or SAF generally, please contact Michelle Carter michelle.carter@ktn-uk.org