Air Fuel Synthesis Ltd

www.airfuelsynthesis.com

OFGEM

Via email to:

project.discovery@ofgem.gov.uk

Unit 4 Zephyr House
Calleva Park
Aldermaston
Berks
RG7 8JN
Tel: 01189815662
Mobile: 07836680224
Email: David.Benton@airfuelsynthesis.com

Our ref: R&D/9/09/DB

Date 18 November 2009

Dear Sir

Response to Ofgem and Project Discovery

Air Fuel Synthesis Ltd wish to make you aware of their project for the production of synthetic hydrocarbon transport fuels by the process we call air fuel synthesis (AFS).
An outline of how the AFS process works is given on our website: www.airfuelsynthesis.com.

The feedstocks for AFS fuels are:
1) carbon dioxide captured from the atmosphere,
2) hydrogen from the electrolysis of water
3) electricity to drive the CO_2 capture and electrolysis processes.

As the CO_2 and H_2 are freely available in unlimited amounts, AFS provides a way for electricity to be a precursor for liquid transport fuels; a new concept that will have a significant impact on the security of supply situation for transport fuels in the UK in the near future and on the quantities of electricity that the UK will need. The way that electricity is generated and available will be crucial to the AFS concept. Hence, the scenarios outlined in Project Discovery for electricity generation will impact on the way AFS might develop and *vice versa.*

AFS is dependent on large amounts of electricity; 1.6MW of power are required to make 1 tonne/day of AFS fuel. The use of renewable electricity, whether from wind, PV or marine devices, is particularly attractive to drive AFS fuel production as it offers a carbon neutral route to transport (especially aviation) that is in keeping with HMG's aims.

To meet all the fuel needs of the UK, AFS will require power levels at least equal to that of the existing grid.

- To meet 50% of the 2020 UK renewable transport fuel targets (2Mtonne/y) will require 3.2GWe
- To provide for 20% of the UK's aviation fuel will require 3.8GWe
- Allowing for a 20% uptake of electric and PIHB vehicles by 2030 requires 50GWe

These additional electricity needs will have to be planned into future requirements of the UK as early as possible. It will be paramount to ensure there is no competition for electricity supplies during the coming years between AFS and the 'normal' grid electricity supplies.

Therefore, we would recommend that you consider within Project Discovery the provision of large amounts of carbon-free electricity for purposes other than electricity use as is presently understood. One way to do this might be to define the maximum amount of electricity that each type of generating plant could generate were all the resources of the UK fully developed.

While the transport sector may not be an OFGEM concern, the many advantages of AFS fuels from the economic, environmental and security of supply aspects are likely to make AFS a major consumer of electricity. Project Discovery provides the opportunity to put down a marker that grid-sized power levels will be required outside of current usages of electricity.

Yours Faithfully

David Benton PhD
Director, Research and Development
Air Fuel Synthesis Ltd

Cc: Prof A Marmont, Chairman
Mr P Harrison, CEO
Mr R Monkhouse, Director
Dr J Barton, Director