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CONSULTATION ON ENERGY SCENARIOS

Summary of Our Response

UCGA is concerned that, in spite of representations made in response to various government consultations, there is still a persistent failure to recognise the huge potential of underground coal gasification, UCG. The OFGEM consultation is guilty of the same omission.

There is strong reason to expect that UCG will become a commercial process for extracting energy from unmineable coal within the next few years. The first provisional licences for UCG have been granted in UK and planning applications are in progress. We contend that the projections of UK energy supplies *must* now anticipate and accommodate UCG as a means of clean energy generation.

Objective of this response

Underground Coal Gasification (UCG) is a technique which is receiving rapidly-increasing attention around the world, as a potential major, clean, competitive source of energy, derived from coal seams which cannot be economically mined. It can be of major relevance in UK, where remaining reserves of mineable coal are measured in hundreds of millions of tons, whereas upwards of 17 ***billion*** tons of onshore coal, and a least double that offshore, have been assessed as being gasifiable in situ.

During 2009, the UCG Partnership (which is now incorporated within the UCG Association - UCGA) submitted responses (a) on 9th June, to the consultation on Carbon Capture Readiness (CCR) and (b) on 18th September, to the consultation on the Development of Clean Coal. Those submissions had the primary objective of raising awareness of the imminence of UCG and, since it was not specifically covered in the CCR and Clean Coal documents, to argue that, at very least, UCG ought not to be disadvantaged by any of these policies.

UCGA entirely agrees with the recognition by the government that the clean use of coal must be a key component in the future energy supplies of UK, especially for power generation, but contends that UCG is potentially the most cost-effective clean coal technology.

Events are moving fast. Since our submissions in 2009:-

- 5 more areas in England and Wales have been licensed by the Coal Authority for UCG, bringing the total to 11;
- The IEA Clean Coal Centre has published a thoroughly-researched report on UCG (Reference 1);
- Several pilot projects (such as Carbon Energy at Bloodwood Creek in Queensland) have made notable progress;
- Numerous UCG projects have been announced around the world.

The key objective of this response, notwithstanding the omission in the policies for CCR, and the Development of Clean Coal, to anticipate and accommodate the commercial development of UCG in the UK, is to emphasise the case for UCG again. It was recognised as a possibility in the report on Energy Security presented by Malcolm Wicks to the Prime Minister in August 2009. 6 months on, the case is even stronger now.

Production of UCG gas

With the recent publication of Ref 1, it is not necessary for the UCG process to be described in detail here. Basically, an unworked seam of coal in the ground is accessed by two drilled wells, into one of which an oxidant is fed, the coal is ignited and part-combusted, and a product gas flows from the other well. **N.B.This is not to be confused with "coal bed methane" (CBM), which only taps the methane occluded in the coal and amounts at best to perhaps 5% of the total energy in the coal seam. UCG will recover about 80% of the energy value of the coal, including the CBM.**

Relevance of UCG

UCG is a coal-based process. For power generation, it is analogous to IGCC, but without the need for mining the coal, and building a gasification plant. The product gas is amenable to carbon capture by **well-established** processes. In the response by DECC to the submissions on the CCR consultation, where UCGP had pointed out that CO2 capture from UCG gas at pressure was advantageous, DECC stated that: ".... this technology, involving physical absorbents, was not explicitly discussed in the guidance because of its ***relatively lower level of maturity*** compared to those capture methods listed in the guidance." This is a totally erroneous contention; physical absorbents were the standard for CO2 removal in ammonia plants for 50 years. In comparison, the processes for post-combustion capture of CO2 from flue gas are only in the pilot stage of development around the world.

Gas turbine technology has developed to the point where a hydrogen-rich gas can be considered as a suitable fuel for a CCGT. Including the cost of carbon capture, it is calculated that low-carbon power from a UCG-fed CCGT could be generated for less than £50/MWh, plus or minus 15 - 20%, which is in the same range as baseload nuclear power, and at least a third cheaper than IGCC, advanced pf coal, or oxyfuel.

There is no cost of coal in this projection of the cost of power from UCG, as the coal belongs to the nation, vested in the Coal Authority. The margin of advantage of generation cost from UCG is the justification for private sector organisations which have begun development work on UCG at sites in UK, without any expectation of subsidy whatsoever. (Contrast this with the inducement of double ROC's being offered to offshore wind projects.) In the longer term, there could be scope for a realistic royalty ("production-related rent") to be paid by an established UCG operation, whereas the remaining coal mines in UK can afford only a token payment for the coal.

Reducing dependence on imported fuel

The scenarios set out by OFGEM all depend, for their fossil fuel supplies – gas or coal – on huge increases in imports. This commitment to an increasing dependence on imported fuels is correctly seen as a threat to both prices and security of supply; it does not mention the serious implications for the balance of payments.

In contrast, UCG offers the possibility of exploiting our enormous unmineable domestic coal resource, to produce a low-carbon, cost-effective alternative fuel for natural gas combined cycle power stations, (CCGT's). UCG is the only viable technique in prospect, to allow access to the huge potential of Britain's coal resource, and the secure energy supply which it represents.

The UCG Association

This response is submitted on behalf of the UCG Association, a company limited by guarantee, which is seeking charitable status as an organisation for the advancement and understanding of UCG. It incorporates the UCG Partnership, a not-for-profit company which was established in December 2005 as a global alliance of knowledge, expertise, training, networking and information to promote awareness and understanding of underground coal gasification, and operates a website at www.ucgp.com.

References

1. Underground Coal Gasification. July 2009. Gordon Couch, IEA Clean Coal Centre, CCC/151 ISBN 978-92-9029-471-9, sales@iea-coal.org

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