

GASTEC at CRE Ltd

I have read with great interest many of the documents concerning the PIU energy review currently on the world wide web. GASTEC at CRE Ltd is unusual in being one of the few hands-on energy consultancies in the UK that actually works with biomass, coal, oil and gas. By way of establishing credentials, we operate www.sedbuk.com - the database detailing the thermal efficiencies of most of the UK's domestic oil and gas boilers on behalf of the Government (as part of the Market Transformation Programme).

May I respectfully suggest that the documents published to date give insufficient weight to the real possibilities for energy reduction by the market transformation program via the more widespread and flexible use of gas? Redressing the balance will require Government-sponsored research leading to the publication of databases designed to provide impartial information about the energy efficiency of equipment. In addition these databases could contain educational programmes to ensure that the general public had received the correct advice from retailers/installers.

Both condensing boilers and micro-CHP (Combined Heat and Power) come into the categories whereby their widespread introduction would bring substantial reductions in energy usage. However, Government policy seems ambivalent, and householders are often ill-advised by installers, who understandably recommend the simplest (or most familiar/lucrative) technology that will keep the customer warm.

We appreciate that you may receive many of these generic submissions so may we rapidly move onto three concrete suggestions (based upon our own extensive experience) for 2010 and beyond?

1. The backbone of energy transmission should be the HP gas distribution net-work.

As the approximate ratio of the cost of energy transportation by gas, electricity and hot water is 1:7:49, the use of gas pipelines for long distance energy transportation is very sensible.

2. Power generation should ideally be as near to the point of use as possible and use decentralised CHP.

On mainland Europe, the Dutch originate about 40% of their electricity from CHP cf 7% in the UK. Client confidentiality makes naming manufacturers impossible at this stage, but we have seen real examples of internal and externally-fired engines and fuel cells over the last 18 months that convince us that micro-CHP (less than ~7kW) is here. Furthermore, capital costs will be much lower than predicted in papers as recently as 1999. Introduction of these types of units could realise a 20% (or greater) reduction in the UK's carbon emissions, particularly from that mass of pre-WWII housing that is very difficult to insulate beyond a certain point.

Around 150 people attended a recent DTI conference on decentralised power generation, but the industry as a whole needs a massive "push" with the type of budget historically reserved for the

large-scale generation of power. This will need to cover not so much the technology (which, as we have indicated, is already advanced) as the "soft" issues of training, installation regulations etc. The conventional power generation industry seems to have been more successful at obtaining government support.

3. Investigation of the possible use of the gas grid in the same way as the electrical grid, with local injection of gaseous fuel.

For example:

- hydrogen (produced [say] from remote wind farms during periods of low power demand)
- methane from biogas digesters
- methane from landfill sites (currently almost a disposal problem)
- gas from coal gasification

It could even be argued that nature has been kind in placing the North Sea coal fields adjacent to the landing point of much North Sea gas. Certainly from the carbon utilisation perspective, coal gasification and point of use of the gas in CHP must have considerably lower carbon emissions than central power generation plant, and distribution of electrical power via the National grid.

It may well be necessary to widen the permitted combustion tolerance of the gas carried within the system, but given due warning this should be quite feasible.

The great majority of UK domestic and commercial properties use gas because it is very clean and very convenient. Customers will pay a substantial premium for this level of service. In our experience, we consider the widespread use of solid biomass (especially in towns) as unlikely on practical grounds, and yet its use must be increased. Similarly, electricity, even from off-shore wind farms, looks unlikely to replace all of these gas fired systems. A more radical view of the potential use of high-pressure gas distribution might address many of these issues.

Our concern is that in view of the retirement of current nuclear capacity, only new nuclear stations or other massive central investment is considered feasible, and yet 1.2 million new domestic boilers are sold each year. If each of these were associated with the production of only 1kW of electrical power, this would represent 1200MW per year, equivalent to 12,000MW over 10 years. We respectfully suggest that these numbers suddenly appear substantial, especially as they are projected to also provide a direct saving to the householder (on his overall energy bill) of £200 to £300/year. The reason for these savings is clear, no longer is the householder paying the electricity generator to "throw away" between 60 and 70% (on a Gross Calorific Value basis) of the original fossil fuel purchased, via their cooling towers and line losses.

We would be very pleased to discuss these ideas with you further. We believe they could make a real contribution to the UK's energy debate, discussions that are often dominated by one particular fuel.

Mark Crowther - General Manager