Appendix 16 Hydrogen Fluoride Variation

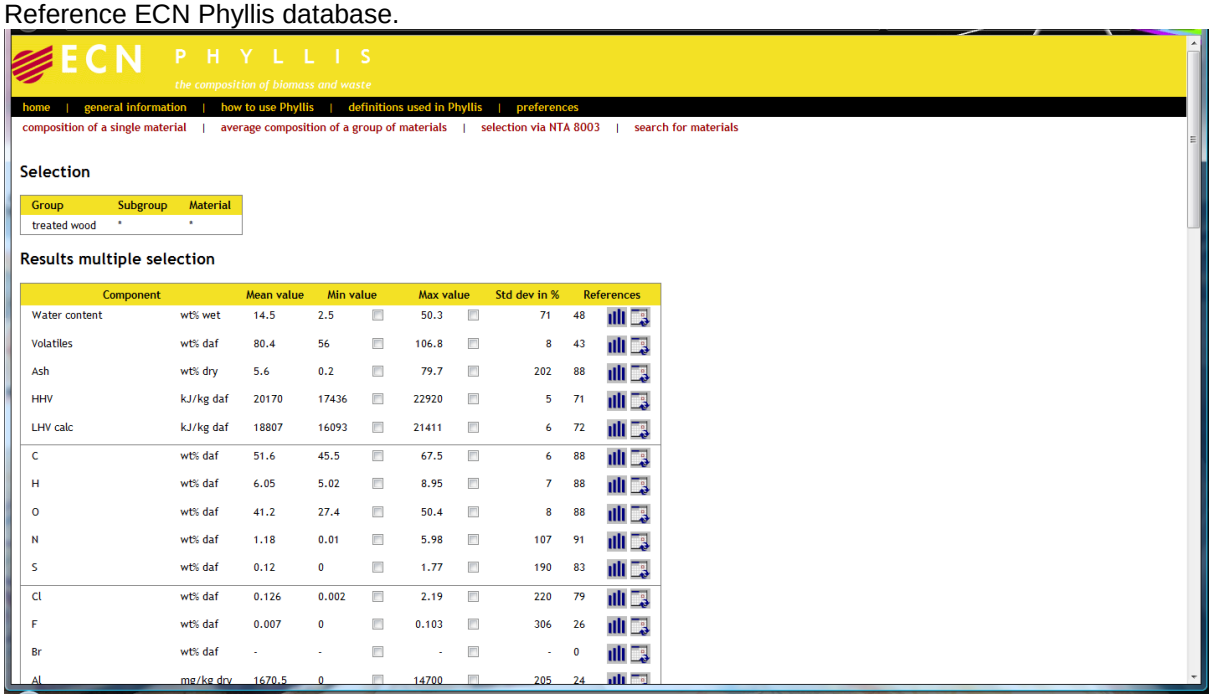
Dartmoor Bio-Power wish to formally confirm our request for an Agency led variation to remove from the permit the requirement for continuous emission monitoring of Hydrogen Fluoride.

This request is in line with the requirement laid down in **Article 10 of the *Directive 2000/76/EC***
"4. The continuous measurement of HF may be omitted if treatment stages for HCl are used which ensure that the emission limit value for HCl is not being exceeded. In this case the emissions of HF shall be subject to periodic measurements as laid down in paragraph 2(c)."

The justification for this is as follows:

- Firstly chlorine and particularly fluorine are low in waste timber:-

Reference ECN Phyllis database.



The levels of chloride and fluoride are low in waste timber and certainly a lot lower than for fossil fuels eg coal which typically has a chloride content of some 0.2-0.5% (ref Handbook coal analysis JG Speight 2005). UK Coal can have up to 1% chloride. (Sheffield University Spears 2005).

- Secondly the chemistry and the scrubbing fitted to the plant

Fluoride is very much more reactive than chloride. Hydrogen fluoride in particular is much more reactive than hydrogen chloride. For this reason it will react much faster with a scrubbing medium than hydrogen chloride. Put simply if hydrogen cloride emitted levels are controlled to permit levels then the emissions of hydrogen fluoride will be similarly if not nore tightly controlled.

The process chemistry means that the gasses pass through a gasification bed which has been dosed with limestone which through the reaction of the heat produced within the gasification process turns into a highly alkaline and active calcium oxide material which actively scrubs any acidic elements within the produced syn gas. Produced syn gas and passes through a scrubber with lime injection reacts under highly alkaline conditions as part of its cleanup and polishing process before being further reacted within the depositied alkaline material upon the surface of the bag filter, a well proven system which is accepted by the EA as BAT for thermal treatment systems. The gas cleanup which which very strongly absorbs chlorine and fluoride materials, especially the acid forms (HCl and HF) to form the corresponding salt eg NaCl and NaF. NaCl is in fact common table salt.

Furthermore The BREF itself states
"The precipitation of fluorides requires a pH range between 8 and 9. [74, TWGComments, 2004]"

Confirming that the use of alkaline scrubbing will control the fluoride.

Monitoring

The emissions from the plant will be controlled by CEMS which are MCERT approved in line with the Environmental Permit including that for hydrogen chloride. The equipment will be supplied by CBISS or other MCERT accredited supplier full details of which will be supplied to the Agency under separate cover.

Summary

In summary, as the timber has a low fluoride concentration, the plant uses a combination of scrubbing systems both in bed and spray drying bag filter to control acid gases including HF and HCl, and the monitoring of HCl is undertaken continuously by an MCERT approved analyser. Then, as the emissions of HCl will be monitored and controlled as described above, we respectfully request Derogation under Article 10 to have the obligation for the continuous monitoring of HF to be removed from the plant Authorisation and to be replaced with the periodic monitoring as laid down in paragraph 2c.

Thank you in anticipation