NEWS

# Full-filling

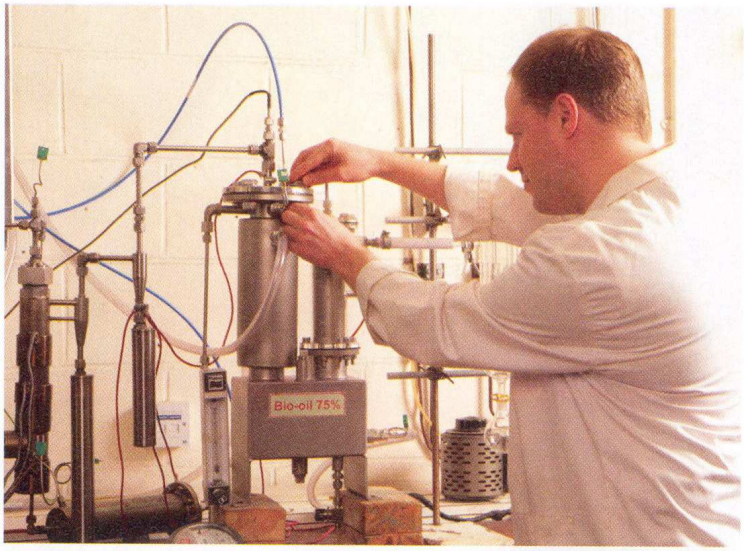
Project investigates the viability of turning landfill waste into liquid to generate energy

ENERGY experts at Aston University have joined forces with UK waste company Biffa to investigate a new method of recovering energy from landfill sites.

Biffa, which operates over 30 of the UK's landfill sites, currently uses gas from these sites to power engines that generate electricity. However, tighter regulations, along with the changing nature of the waste that ends up in these sites, have driven Biffa to investigate more efficient methods of recovering energy from landfill.

The company has therefore teamed up with Aston's Bio-Energy Research Group (BERG) to investigate the potential of pyrolysis, a process that heats organic waste to high temperatures in the absence of oxygen and converts it into gaseous or liquid fuel.

Prof Tony Bridgewater, who heads up the Aston group, said the technique has a distinct advantage over existing methods. 'If you turn waste into a liquid then in principle you can run the engines on liquids. The great beauty is that it can be stored and transported which you can't do with a gas — you can't just close a valve on a landfill site.'




**Pyrolysis heats waste in the absence of oxygen, converting it into liquid fuel**

But while the technique certainly holds promise, one of the chief aims of the four-year project, which is jointly funded by Biffa and the EPSRC, is to find out exactly how effective it is likely to be. 'We don't know yet what the impact is of the contaminants on both the yield and the quality of the oil.

'The whole idea is to find out what can be done using processed waste as a raw material,' said Bridgewater. 'The yield will partly be a function of how much non-organic waste there is in the materials and also what effect that material has on the processing conditions,' he added.

One of the driving factors behind the project is the changing composition of landfill waste. 'People are throwing in less biogenic fraction — things like food, cardboard and paper. The composition also changes over the year because of moisture content and people's eating habits, and from place to place,' said Bridgewater. The diminishing organic and moisture content of this waste is leading to lower rates of waste decay and a decline in landfill gas production.

BERG will now begin testing a number of different waste streams in its own pyrolysis equipment to evaluate the potential of the technique for landfill sites. Bridgewater explained how the equipment will be used: 'We basically want to heat the biogenic materials of a small size as quickly as possible to a carefully controlled temperature of around 500°C, then we rapidly cool the vapours so that the overall processing time is in the order of one or two seconds.'

This will not be the first time pyrolysis has been used for waste disposal. The process is currently utilised at much higher temperatures to reduce the quantity of waste to be disposed and generate vapours that can be burned or used to raise steam for power generation. However, the idea of running it as a fast pyrolysis process for making liquid rather than gases is, said Bridgewater, relatively new.

**Jon Excell**