

# New power source is rubbish

Start-up aims to tackle two green issues at a time, writes Sarah Butler

**T**he rubbish on the conveyor belt didn't look special. A lone plimsoll, bits of chipboard, a picnic basket. But a few days after it made its way through the waste plant at Avonmouth, near Bristol, it was on a boat to the Netherlands, to be used as fuel to light and heat homes.

The Dutch figured out long ago that waste could be a valuable source of energy. If New Earth Solutions has its way, Britain will soon catch up.

The start-up, in Verwood, Dorset, plans to build one of the first of a new

generation of energy-from-waste plants based on pyrolysis. The technology uses extreme temperatures in an oxygen-starved environment to break down waste into gas and solid leftovers. It hopes to open its first plant in 2013, next door to the waste sorting facility it runs in Avonmouth.

Hilary Stone of Imperial College, London, who has consulted on a number of what are known as gasification projects, estimates that in a few years there will be about 20 plants producing at least 150MW of electricity — enough for 150,000 homes.

At present, there is just one full-scale gasification plant operating in Britain. A converted incinerator on the Isle of Wight generates up to 2MW of electricity by reprocessing 25,000 tonnes of waste every year.

It's no surprise that companies are keen on the new technology. The government is offering them double the financial incentive of hydro-electric, or onshore wind, making these systems potentially highly lucrative.

Last month, Air Products, a specialist in gas equipment and services, secured planning permission to build a gasification plant near Billingham, on Teesside, which alone would produce 49MW of electricity a year from about 300,000 tonnes of waste.

Gasification is not new. It was used by the Victorians to make gas from

coal, but modern systems can turn just about anything found in a bin bag into precious fuel.

The surge in projects such as New Earth's — there are 28 with planning approval — is led by local councils and businesses looking for new ways to handle non-recyclable waste.

In a pyrolysis system, waste is heated to more than 800C in an oxygen-free environment so it does not burn, but "thermally cracks" to form a variety of gases including methane, hydrogen and carbon monoxide.

The material that isn't vaporised, known as char, falls to the bottom of the boiler. In the New Earth system, the char is reheated with a small amount of oxygen present, a process called gasification.

The gases produced by both proc-

esses are collected into a mixture known as syngas — synthetic gas.

Syngas can be used to power a turbine to make electricity. It is also possible to clean the gas so it can be fed directly into the national grid, or used for natural gas-powered cars.

Gary Hopkins of Bristol city council, which fought off plans for an incinerator but approved the New Earth plan, said: "Pyrolysis and gasification technologies have many variations, but here it is completely clean and very efficient." He added that the scheme will cost the council less than half that of an incinerator.

Others are not convinced and say the focus should be on cutting and recycling waste. They see plants such as New Earth's as just another way to avoid achieving a real reduction in rubbish.