Bigger Isn't Always Better

Christian Reeve, ceo of BioGen Power, believes that small-scale energy from waste plants, treating locally produced waste, offer a long-term sustainable solution

Founded in 2005 BioGen Power is one of the UK's fastest growing and most dynamic renewable energy companies. With a clear focus and robust ambitions, it aims to be a leader within the advanced thermal treatment energy from waste (EfW) sector, developing, building and operating high-tech, small-scale, EfW plants across the UK.

"We have challenging plans to build a very big business and very quickly," says BioGen Power's chairman, James Short. "Our strategy is unique and based on a sustainable and fundable 'merchant' business format. BioGen Power builds plants close to where the waste is produced. We are not about building large 'mass burn' incinerators that require vast quantities of waste to be transported by road, often at a high cost, both financially and environmentally. Rather, our strategy is all about building and operating 'small scale' gasification plants, close to the waste source, allowing each individual area to deal with its own local waste, on its own local doorstep. It green, it's clean, it's cost effective and it's fair!"

BioGen plans to spend around £600m developing its plants over the next few years which, according to Defra, is only a small proportion of the billions of pounds that is going to be needed if we are to change the way in which the UK disposes of its waste. The EU Landfill Directive is driving a very large investment programme directed toward alternative waste disposal, as waste producers and local councils look for alternatives to costly landfill disposal. With rising landfill tax and landfill diversion targets increasing year on year, we believe that there will soon be a stampede to secure waste technologies with a proven track record.

Short adds: "While those responsible for waste disposal are keen to move away from landfill, there is a growing element of caution out there. Many of the alternatives to our proven EfW processes are prototype and are therefore untested in a commercial situation, making them difficult to fund and insure. While our strategy is to focus on commercial and industrial waste, which is normally two to three times the volume of municipal solid waste in a given area, we will, of course, enter into disposal contracts with local authorities within and outside of any PFI process."

Energos is truly a "proven" technology, with six plants fully operational in Norway and Germany, with the oldest having been commissioned in 1997. In February this year, Energos entered into a contract with Hafslund Heat and Infrastructure AS to supply an 80 000 tonne plant to Borregaard Industries Limited, Sarpsborg Chemical plant in Norway. This new plant will compliment the existing Ostfold Energi-owned Energos plant, which has been supplying steam to Borregaard Industries since 2003. The Energos retrofit of Biffa's Isle of Wight EfW plant is also soon to enter into commissioning.

Energos technology was initially designed in Norway, with the idea of developing a cost-effective, small-scale waste disposal solution. The Norwegians already had "mass burn" incinerators, but wanted something that was clean too, with very low emission levels as the plants would be

built near to housing and commerce, a pre-requisite for district heating. Norway's waste is very similar to waste arisings found in the UK. But, with a smaller population than ours, they are far more organised and advanced in dealing with landfill diversion and general waste disposal. The UK has a great deal to gain from looking at Scandinavia in general – the time is now here for the UK to get serious about the environment and to stop burying our waste in the ground.

BioGen Power's Energos technology operates with low emission levels, a result of employing a two-stage system that first gasifies the waste to produce a synthetic gas. The syn gas is then transferred to a second stage chamber where it is oxidised. Because the fuel is a gas, it is much easier to mix with air in an enhanced and controlled environment where the flame temperature can be finely controlled, dioxins are destroyed and NO_x emissions minimised. Unlike larger "mass burn" incinerators, this well controlled process enables a very simple flue gas treatment system to be employed, allowing for the delivery of reliable and stable emissions, well below the limits set by the EU Waste Incineration Directive.

By building merchant plants BioGen Power is able to deliver waste disposal solutions at pace. A typical BioGen EfW plant can be designed, built and fully operational well within three years of site identification, and that includes obtaining planning consent.

While each BioGen EfW plant treats domestic and commercial wastes, it also produces large quantities of renewable energy, both in terms of electricity and steam. Thousands of local homes and businesses will benefit from green and clean electricity, once a plant is fully operational, while certain selected neighbours may further benefit from heat or hot water, sent directly to their properties.

According to Short: "Many people ask us why the UK has not built these plants before now? Well simply, as a nation with low-cost landfill and a past abundance of our own fossil fuels, there was little incentive to do anything else other than to bury our waste in the ground and use our coal, gas and oil supplies to produce cheap electricity."

Left: the Energos plant in Stavanger, above: inside the energy from waste plant

EfW plants can also assist waste disposal companies and councils with their recycling ambitions. With additional waste segregation systems at the front end of a plant, BioGen Power can potentially increase recycling by up to 20 percent, depending on the waste source, with bottles and metals being removed prior to the gasification process.

In August 2007, BioGen Power successfully achieved planning consent to build an 80000 tonne Energos EfW gasification plant in Irvine, North Ayrshire. This will be the UK's first EfW gasification plant of its type and will be built, subject to contract, under joint venture agreement with ENER-G Holdings plc, the owner of the Energos EfW technology. It is hoped that work will commence late 2008 with the plant planned to be fully operational by late 2010. BioGen Power plans to build and operate a further 11 Energos EfW plants across the UK by 2013, with an average waste disposal capacity of 120000 tonnes per year.

In addition to submitting three new planning applications, a number of additional sites have already been acquired, or are in the process of being acquired, in Scotland, the North West and North East of England, South Wales, East Anglia, London and Northern Ireland. By 2013, BioGen plans to dispose of over 1.5m tonnes of residual waste per year, producing some 100MWh of renewable electricity and/or 300MWth of heat.

Waste disposal should be about quality rather than quantity, providing that the former is cost-effective. Our technology addresses landfill diversion cleanly and at an acceptable cost to us all. The idea that "big is beautiful" or even "big is cheaper" is simply not appropriate and is also not the case. Waste needs to be treated locally, near to the area that it arises. The Great British public do not want to drive along our motorways in the future, constantly passing large articulated trucks transporting thousands of tonnes of waste from one county to another, or this city to that city, wasting valuable fossil fuels, increasing the overall disposal cost and cluttering up an already congested road network. After all, if our national recycling numbers are eventually achieved and we reduce the overall volumes of packaging and the like, there will not be a need for large "mass burn" incinerators that need feeding with large quantities of waste. The sensible way forward is to provide every local area with its own technological waste disposal solution, managed and operated locally, providing local jobs and local responsibility. CIWM