PowerHouse Energy powering ahead as it enters commercial phase

Does that fully value the potential of the company's green technology? Well, only time will tell.

Its G3-UHt system transforms rubbish into electricity with no toxic by-products and effectively zero greenhouse gases.

That cash will be used to fund various permit applications for its G3-UHt demonstration unit as well as the first five complete systems.

What is the G3?
PHE's G3-UHt system transforms rubbish into electricity with no toxic by-products and effectively zero greenhouse gases.

At the heart of the gasification unit is a reactor that works oxygen-free at ultra-high temperatures to atomise virtually all household or industrial waste.

What's created is a synthesis gas, or syngas for short, that can be used to generate electricity.

With a little more processing hydrogen can be produced that can then be used to replenish fuel cells. The by-product of all this is an inert substance that can be moulded into bricks or used as ground covering.

Don't confuse this sophisticated recycling system with incineration, which works at far lower temperatures and leaves behind all sorts of toxins - not to mention significant amounts of ash.

The G3 system's de-molecularisation capabilities allow for complete detoxification of waste-streams.

Lots of potential applications
There are all manner of applications for a technology that is able to recover up to 90% of the energy value of a material put through the reactor.

Medical waste is one area where the G3 could make a difference, while there is a burgeoning market in carpets too, apparently.

Around 405,000 tonnes of floor covering is discarded each year in the UK alone with only around a third of it recycled (it is often burned in brick kilns). The remainder ends up in landfill sites.

"Automobile recyclers offer another tremendous opportunity," explains chief executive Keith Allaun.

"There are over 1,300 auto recyclers in the UK and every one sends at least 5% of its residue (mainly synthetic rubber,
dashboards, seats, and other non-recyclables) to the tip. That's tens-of-thousands of tonnes per annum."

In the UK and producing gas
The AIM-listed group shipped its demo G3-UHt unit over from Australia to a site in Chester back in March.

Within a matter of weeks, PowerHouse had completed the first phase of the re-commissioning of the system and had successfully produced the first gas from the unit.

In late July, the green energy provider reported a successful test of its gasification reactor, representing phase 2.

The company said it recorded a maximum peak flow rate of over 50 cubic metres per hour of syngas, having successfully completed the rebuilding and enhancement of the company's G3-UHt gasification reactor.

Since the re-siting of the unit at Thornton in early May, the technical team has enhanced the gas systems, refurbished the feed and steam generation systems, and completely redesigned programmable safety and control systems designed in line with UK Health, Safety, & Environment legislation.

Foot down on the road to commercialisation
Powerhouse said the G3-UHt is now in a position to begin full-scale, and on-going, operation, testing and demonstration at the Thornton site.

Following the successful 24-hour commission testing over the weekend using tyre crumb at the input feedstock, future testing will allow for a thorough analysis of the syngas produced; however, in-line, real-time analysis indicated that the quality of the gas produced met the company's initial quality objectives and there was full combustion of the syngas at the flare.

Now, it would seem that it is full-steam ahead to commercialisation, with a number of industry players due to trek to Chester to see the reactor in action.

"The ability to regularly operate, demonstrate, and test the G3-UHt at Thornton allows us to begin the 25 tonne per day design engineering. The active engagement of the University of Chester faculty, the Ph.D programme we're co-sponsoring in ultra-high temperature gasification, coupled with our talented engineering team and programme leadership ensures that PowerHouse will lead the market in the deployment of distributed waste-to-hydrogen and waste-to-energy solutions," Allaun said.
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