

ENERGY from WASTE

Atop a windswept hillside in rural Oxfordshire, England, sits a lone Scania-powered generator set. Running entirely on gas reclaimed from a landfill site, it will keep an entire street of homes powered for up to ten years.



Story and photo: Phil Sampson

"The Scania engines we operate meet all the challenges we throw at them," says Steve Hartley, Project Manager, Renewable Power Systems.

For the past quarter of a century, power generation from landfill sites has been gathering momentum in Great Britain. Typically, the process forms part of the land reclamation process; old sites are capped with clay, both for landscaping purposes and to trap the methane evolved from the waste below. This gas is then tapped and used to fuel generators, which feed power into the national grid. Eventually, the gas supply is exhausted, thereby rendering the site safe and suitable for other uses.

Today, the majority of old landfill sites in the UK have been developed in this way, which has created a niche for built-for-purpose gensets. One company taking full advantage of the opportunity is Renewable Power Systems Limited, which currently has some 50 generating projects under way. With powerplants working in remote environments under harsh operating conditions, reliability and durability are the watchwords for the company.

"Landfill gas contains a lot of nitrogen and carbon dioxide, which leads to a lazy burn and hotter exhaust temperatures than would be seen on a natural gas engine," explains Renewable Power Systems

Project Manager, Steve Hartley. "Not only do we require engines capable of withstanding this, we also need them to be able to run 24/7 with the minimum of maintenance as many of our sites are in remote, unmanned locations.

Excellent reliability

"The Scania engines we operate meet all the challenges we throw at them. We first came to Scania when we were looking for an engine in the 150-200kW range. Separate cylinder heads, which I knew Scania offered, are essential when running on gas as they are much stronger. I visited hauliers and was told that Scania's reliability was excellent too; I remember hearing stories of engines that had run for a million miles without any major problems!"

Renewable Power Systems' 12-litre units were provided by Scania's engine distributor in the Netherlands, Sandfirden Technics, which developed a Scania gas engine range together with Scania in 2003. Since then, these engines have been sold worldwide through Scania's own dealer network.

"The performance of the engines is outstanding,"

confirms Steve Hartley. "Our oldest unit has now been running for 12,500 hours – that's the equivalent of 750,000 kilometres at 65 kilometres/hour – and in that time, the only mechanical component we have changed is the radiator fan bearing!"

"In terms of maintenance, our routine is to top up the lube oil once a week. The oil life is 500-600 hours and the spark plugs last 1,500 hours. Quality is assured by regular endoscope tests, which to date have shown no valve regression or excessive cylinder liner wear. The engines run continually between our site visits and we are achieving 98 percent availability."

In operation, the 415V generated by Renewable Power System's Scania gensets is transformed to 11,000V before being transferred into the national grid. "The output translates to 136.7kW per hour run," says Steve Hartley.

"Given that the average British home consumes approximately 1kW per hour, that means each of our Scania-powered units is producing sufficient power from to run a village of 130-140 houses. And all from waste gas – I like to think that's quite an impressive achievement."