

Biffa Press Release

18/11/2009

Biffa selects another technology partner – this time its gasification!

Following recent announcements from Biffa that it had selected technology providers in the form of Von Roll Inova, the Swiss based energy from waste technology provider, Ros Roca; the Spanish based anaerobic digestion plant supplier, and then most recently Stadler, the German materials processing and recycling equipment provider, it has now formed a strategic partnership with KIV, the Slovenian company that specialises in biomass boilers and gasification technology.

KIV is not well known in the UK, having traded only in its home country, Croatia, Germany and the Netherlands. The company was identified as part of Biffa's world wide review of waste management technology providers and the company's desire to introduce a gasification system into the UK from a company who shared Biffa's rigorous process engineering and management principles.

Once identified as a possible supplier of technology to the company, a rigorous process of review commenced, including in depth discussions between the 2 company's engineering teams. This approach involved extensive use of 6 sigma statistical tools - Failure Mode Effect Analysis (FMEA) and the deployment of a Lean Manufacturing approach to ensure robust plant operations.

So what is different about KIV's technology compared with current incumbents in the UK?

The company was formed in 1947 in Vranksko, Slovenia, and was initially based on the development and supply of fossil fuelled boilers. The company then progressed to the development of biomass boilers and as demand for higher output and higher performance units increased, this became the focus of the business. The company now has 30 years experience with this technology, which incorporates advanced systems for fuel handling, air cooled step grates and ash handling.

In the early 1990's the company began the development of gasification; a process based on 5 years of intensive research and development through the operation of a number of pilot plants. The focus here was on close coupled gasification; syngas (methane, hydrogen and carbon monoxide) production followed by oxidation with controlled tertiary air. Further development has moved this to a single module process design incorporating the two process chambers, making the units smaller and reducing costs. The end product is technology which meets the requirements of the Waste Incineration Directive and can be deemed "recovery" under the Waste Framework Directive.

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Biffa are also confident that the plant constitutes “best available technology” through the achievement of low emissions, an optimised gasifier design, and flue gas recirculation. Subject to fuel quality, the plant is expected to be defined as “advanced gasification” achieving syn gas of $>4.0\text{MJ}/\text{Nm}^3$. Operating plant has also been equipped with flue gas filtration that virtually eliminates particulates, an important advancement for combustion technologies.

So what about reference plants for this technology? Well KIV have built over 330 biomass and WID compliant energy from waste gasifier systems. A significant number are used in district heating schemes but of the larger energy from waste plants, these operate on a wide range of fuel sources including; soft car parts, mixed factory waste, paper mill sludge, MSW, RDF and sewage sludge. The wide range of fuel sources is complemented by the wide range of fuel energy values, ranging between 8.0 and 24MJ/kg. Plants are based on multiples of single line capacities of 12.5, 15.0, 18.0, 21.0 and 25.0MWth (45 to 90GJ) input capacity.

One of the most recently constructed plants (see image) is located in Slovenia’s third largest city, Celje. With support from the EU for ‘showcase’ waste treatment facilities, KIV were selected to supply an energy from waste plant as part of an MBT/ EfW system that could be replicated across a number of small cities. The combined plant, operational since November 2008, serves a population of 240,000 and the “heat led” KIV gasifier receives 30,000 tonnes per annum of refuse derived fuel (from the MBT process) and 6,000 tonnes per annum of sewage sludge. The thermal input capacity is 18MWth, producing 15MWth of steam used to generate 2.1MWe of power and the remaining 13MWth converted to hot water for the city’s district heating scheme. A similar sized plant configured for power generation would produce 4.2MWe gross.



Energy from Waste Plant, Celje, Slovenia

Biffa and KIV, together with MW Zander; the company’s chosen civils and engineering contractor, are now in discussion with a number of local authorities regarding the deployment of this technology and are also considering the development of merchant facilities.

Further press information from

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