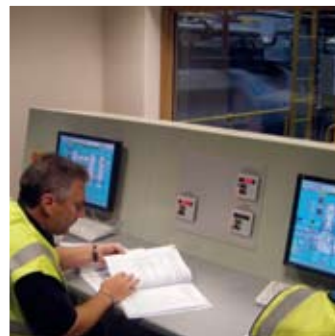


# Case Study

## 4.5 MWe Refuse Derived Fuel to Energy Plant

This 4.5 MWe Biomass Power Plant is one of the turnkey products of Biomass Power. The plant has a capacity of 24 MW thermal and rated at 4.5 MWe producing 35,476MWh of green electricity per year, 100% of which is exported to the grid. The fuel used is segregated biomass from a commercial and industrial waste collection business. The fuel is produced by removing some of the recyclable material such as metals, aggregates and plastics. This produces light fraction material which has a rich biomass content. The renewable energy power station saves around 12,400tonnes of carbon per year.



The plant is owned and operated by a local waste collection company, who has a successful and proven track record in this sector. A feasibility study of the project began in 2005, and in January 2007 the contract was awarded. The Biomass Power team completed the design, build and commissioning of the power plant in 2009.

The process is well proven and robust. A heavy duty moving floor feeds fuel into the heavy duty reciprocating step grate via a finitely controlled metering device. The grate gasifies the fuel to produce a volatile gas. These volatile gases are then combusted at above 850°C for more than two seconds to ensure complete combustion.

Once the gasification and then secondary combustion process is completed the hot gas is exchanged via a fire tube steam boiler into 400°C steam, at a pressure of 41 Barg.

This is then used to produce high efficiency electricity in a vacuum condensing turbine. Once the hot gases

are released from the boiler at low temperature they go through a treatment process of dust filtering and dosing of neutralising agents such as active carbon and lime based products. The flue gas emissions are monitored constantly ensuring compliance with the waste incineration directive.

A SCADA (Supervisory Control And Data Acquisition) system is employed to significantly enhance the plant control and maximise the performance. This highly automated control minimises staffing levels to only two at all times.

The project was financed by private funds and banks. As well as being eligible for green energy subsidies, the plant also saves tipping charges and creates diversification from landfill. The plant was fully supported locally due to its environmental credentials and the reduction of local lorry movements that the system achieved.