Waste-to-energy

24 MW HOOTON PARK RESOURCE RECOVERY CENTRE, UNITED KINGDOM
In November 2018, BWSC was awarded an engineering, procurement and construction (EPC) contract for the waste-to-energy plant, Hooton Bio Power Resource Recovery Centre (Hooton Bio Power) in the UK. The contract also comprises an operation and maintenance (O&M) agreement to operate the facility for 15 years.

The project, which is based on private funding, was awarded by the independent power producer, Hooton Bio Power Limited.

When operational in 2021, the Hooton Bio Power facility will be the first non-subsidised merchant gasification facility in the UK, and it is the first time the UK market will realise a gasification plant of this size.

The technology is based on gasification, using bubbling, fluidised bed technology with a melting furnace, provided by Kobelco Eco Solution (Kobelco), a technology partner based in Japan. The gasification unit is produced by Sarralle Engineering and the boiler by Leroux & Lotz Technologies, under a sub-contract with Kobelco. Kobelco has a strong track record with this technology with more than 20 references.

Waste-to-energy
The mountains of household and other solid waste that end up in landfills present a growing financial and environmental burden for communities worldwide.

In order to address the UK’s waste problems, landfills are taxed, creating a financial environment where a waste-to-energy plant is not dependent on subsidies.

This made the Hooton Bio Power project developed by CoGen bankable.

When the plant is on-grid, it will convert 25 tons of industrial and municipal solid waste per hour into 24 MWe.

The waste will be delivered to the plant on lorries, arriving directly after picking up household waste. The waste will then be weighed and then transported to the receiving bunker, where a crane will transfer the waste to one of two shredders. The shredders will make sure at least 90% of the waste will pass a 300 mm screen test.

From the fuel bunker another crane will move the shredded fuel to one of four fuel conveyers that feed two parallel gasifiers.

The waste will return to the households as power less than 36 hours after waste pick-up.
Ten UK plants in ten years. What a journey!

The 300 MW of capacity is all based on renewable energy. And with operation and maintenance contracts at ten UK plants, we look forward to many more years working with our partners, suppliers and customers.

**Power plants**

<table>
<thead>
<tr>
<th>Plant</th>
<th>Capacity</th>
<th>Type</th>
<th>EPC + O&amp;M</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hooton</td>
<td>24 MWe</td>
<td>waste</td>
<td></td>
<td>2021</td>
</tr>
<tr>
<td>Kent</td>
<td>28 MWe + 6 MWth</td>
<td>virgin/waste wood</td>
<td></td>
<td>2018</td>
</tr>
<tr>
<td>Cramlington</td>
<td>27 MWe + 6 MWth</td>
<td>virgin/waste wood</td>
<td></td>
<td>2018</td>
</tr>
<tr>
<td>Snetterton</td>
<td>44 MWe</td>
<td>straw</td>
<td></td>
<td>2017</td>
</tr>
<tr>
<td>Tilbury</td>
<td>40 MWe</td>
<td>waste wood</td>
<td></td>
<td>2017</td>
</tr>
<tr>
<td>Speyside</td>
<td>12 MWe</td>
<td>virgin wood</td>
<td></td>
<td>2016</td>
</tr>
<tr>
<td>Widnes</td>
<td>20 MWe + 8 MWth</td>
<td>waste wood</td>
<td></td>
<td>2016</td>
</tr>
<tr>
<td>Brigg</td>
<td>40 MWe</td>
<td>straw</td>
<td></td>
<td>2015</td>
</tr>
<tr>
<td>Lisahally</td>
<td>16 MWe + 6 MWth</td>
<td>waste wood</td>
<td></td>
<td>2015</td>
</tr>
<tr>
<td>Sleaford</td>
<td>39 MWe + 1 MWth</td>
<td>straw</td>
<td></td>
<td>2014</td>
</tr>
<tr>
<td>Western Wood</td>
<td>14 MWe</td>
<td>virgin wood</td>
<td></td>
<td>2008</td>
</tr>
</tbody>
</table>

**Operation and maintenance**

Upon completion of the plant, it will be operated and maintained by BWSC for 15 years.

During the period, on a 24/7 basis, BWSC will ensure optimal plant performance and lifetime, based on our in-depth power plant expertise and extensive operational experience.

The O&M organisation will be hired locally with back-up from power plant specialists located in UK and Denmark.

The on-site organisation will undergo extensive courses and hands-on training, starting approximately half a year prior to taking over the facility.

The purpose is to make the staff fully confident with the procedures and routines of the entire power plant, including fire-fighting, health, safety and environmental issues.

**Power made simple – together with BWSC**

Power production is a complicated matter. That’s why it makes sense to partner with BWSC from start to finish – or draw on our expertise to address a specific issue in your power plant’s lifecycle.

We are project-oriented, specialising in turnkey power plants and energy systems based on biomass, waste-to-energy and hybrid and engine-based solutions. Over the past four decades, we have built more than 180 power plants in 54 countries. So when you are looking for a partner to develop, design, build or operate your power plant, you can count on us to make your idea a reality.

Working with BWSC from the beginning of your project will ensure the best possible solution, where we design the plant together and focus on bankability and a return on your investments.

Because even though power production is a complicated matter, it won’t be for you when you partner with BWSC. We look forward to discussing your project and how we can cooperate.
Waste not, want not
We can no longer afford to simply toss the waste products of our consumer lifestyle into landfills where they decompose and unleash greenhouse gases.

At BWSC, we work closely with our partners to apply the latest boiler technology available, transforming waste into useable energy.

For gasification projects, we work closely with Kobelco Eco Solutions from Japan. For traditional waste incineration projects, we have partnered with Steinmüller Babcock in Germany and other technology leaders.

We carefully select our technology partners to ensure the power plants we deliver provide reliable energy for decades and solid returns for investors.

Hooton Bio Power
Developer:

CoGen
DELIVERING WASTE + ENERGY SOLUTIONS

EPC contractor:

BWSC

Technology:

KOBELCO ECO-SOLUTIONS CO., LTD.

Operation and maintenance:

BWSC

Turnkey EPC

Contract:
Effective contract: ......................................................... October 2018
Handover: ................................................................. July 2021
Scope capacity: .............................................................. 24 MW
Technology: Gasification based on bubbling fluidised bed technology, with melting furnace and a horizontal boiler with vertical economisers
Technology supplier: .................................................. Kobelco Eco Solutions

Technical data:
Boiler supplier: ....................................................... Leroux & Lotz Technologies supplied under a subcontract with Kobelco Eco Solutions
Gasification supplier: ................................................ Sarralle Engineering supplied under a subcontract with Kobelco Eco Solutions
Turbine: ............................................................. MAN Energy Solutions
Type: ................................................................. MARC 6-C05
Generator: ......................................................... ELIN Motoren
Type: ................................................................. HTM211F04
Step-up transformer: ................................................ Koncar
Type: .................. Oil-immersed, ONAF (oil natural, air forced) cooled
Ratio: ................................................................. 11 kV/33 kV
Rated output: ........................................................ 31 MWA
Utility transformers: ................................................ Siemens
Control system: ........................................................ ABB
Type: ................................................................. 800xA
Stack: ................................................................. VL Staal A/S
Height: ................................................................. 80 m
Number: ................................................................. 1 off, with two liners

Civils
Site preparation, roads and utilities:.............. NB Construction Ltd.
Building earth and concrete works:................ Sword
Building cladding: ...................................................... H. McLarnon
Precast concrete elements:............................... Concast
Asphalt paving: ........................................................ NB Construction Ltd.
Building structural steel installation:.............. Caunton

Flue gas treatment: ............................................. Lodge Cottrell
Air cooled condenser: ....................... SPG Dry Cooling (former SPX)