

PLANT PROFILE: Sewage sludge treatment, UK

Beckton, United Kingdom

Sewage sludge treatment

Doosan Lentjes was responsible for the design, construction and commissioning of the two sister facilities in Crossness and Beckton, located in London, UK. Both plants incinerate sewage sludge in mono operation modes in two fluidized bed boilers.

DELIVERABLES

- Design, construction and commissioning of the plants Crossness & Beckton

CHALLENGES

- Maximum consideration of local suppliers

BENEFITS

- Compliance with all emissions and sewage sludge disposal requirements
- On-time handover to the client
- High plant availability
- Plant ready to recover phosphor

Reliable sewage sludge disposal in Greater London area

The two sister plants Beckton and Crossness in London are owned by Thames Water. Crossness has two, Beckton has three incineration lines. Both plants treat the sewage sludge of about four million inhabitants on an area of about 550 km².

The plant concept applied by Doosan Lentjes comprises a mechanical dewatering system and a bubbling bed furnace. The heat generated during the combustion process is used in a waste heat boiler. The steam generated drives a turbine that can produce about 5 MW of electrical energy

and thus enables an output beyond the electrical operation of the plant.

The multi-stage flue gas cleaning system comprises: A cyclone, a Circoclean® reactor, a baghouse filter, a quench and packed column scrubbers, as well as, a flue gas reheater.

The plant is ready to implement the new guidelines in the field of sewage sludge treatment: In a further process step, phosphor can be recovered from the ash separated from the flue gas.

Project data

| | |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Client | Thames Water Beckton STW |
| Location | London, UK |
| Fuel | Sewage sludge |
| Total plant capacity (original substance) | 270-450 t/h |
| DR⁽¹⁾ content (at reception) | 3-5 % |
| Lower heating value (DS⁽²⁾-content) | 18,900 kJ/kg |
| Number of lines | 3 |
| Combustion technology | Bubbling bed boiler technology |
| Boiler type | Steam generator |
| Steam pressure | 42 bar(a) |
| Steam temperature | 400°C |
| Flue gas cleaning | Cyclone, Circoclean® reactor, baghouse filter, quench scrubber, packed column scrubber, flue gas reheater |
| Energy use | Turbine (11.5 MW _{el}) |

- (1) DR: Dry residue
(2) DS: Dry substance



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Doosan Lentjes is a global provider of processes and technologies for energy production from both sustainable and conventional fuels. Our specific areas of expertise include circulating fluidised bed boilers, key technology for the generation of energy from waste and sewage sludge, as well as, flue gas cleaning systems. We have been pioneering energy solutions for 90 years and convert millions of tonnes of waste into valuable energy each year.

Doosan Lentjes is part of a powerful combination of companies united under the Doosan Group to deliver complementary technologies, skills and value to customers the world over.

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