

PLANT PROFILE: Sewage sludge treatment, Northern Ireland

Belfast, Northern Ireland

Sewage sludge treatment



Doosan Lentjes was responsible for the design, construction and commissioning of the mono sludge incinerator in Belfast, Northern Ireland.

DELIVERIES

- Design, construction and commissioning of the plant

CHALLENGES

- Very short construction phase

BENEFITS

- On-time handover to the client
- Compliance with all emissions guidelines
- High plant availability
- Plant ready to recover phosphor

Reliable sewage sludge disposal for more than 20 years

Nowadays, the sludge treatment plant in Belfast is owned by Northern Ireland Water and operated by Veolia Water. For about 20 years, the plant has been reliably treating the sewage sludge of the inhabitants of Belfast and the surrounding area.

Doosan Lentjes' plant design includes a mechanical dewatering system, sludge drying, as well as, a bubbling bed furnace and steam generator. The steam is used to drive a turbine that generates approx. 1 MW of electrical energy and thus enables an auto-thermal operation of the plant.

The concept includes a multistage flue gas cleaning system comprising an electrostatic precipitator, quench scrubber, packed column scrubber, flue gas reheater and an adsorber for cutting out mercury emissions.

Thanks to a very short construction period of only 2.5 years, Doosan Lentjes was able to hand over the plant to the customer within the planned time schedule.

Today, the operator benefits from the mono-combustion, which is the basis for implementing the new legal requirements in respect of phosphor recovery.



Project data:

Client	Water Executive
Location	Belfast, Northern Ireland
Fuels	Sewage sludge, dewatered sewage sludge, screenings from the sewage plant
Total plant capacity (original substance)	54.6 t/h sewage sludge, 4.14 t/h dewatered sewage sludge, 0.12 t/h screenings
DR ⁽¹⁾ -content (at reception)	3.5 % (sewage sludge), 25 % (dewatered sewage sludge), 45% (screenings)
Lower heating value (DS ⁽²⁾ -content)	18,800 kJ/kg, 17,915 kJ/kg, 23,000 kJ/kg
Number of lines	1
Combustion technology	Bubbling bed boiler technology
Boiler type	Steam generator
Steam pressure	45 bar(g)
Steam temperature	360-370°C
Flue gas cleaning	E-Filter, quench scrubber, packed column scrubber, flue gas reheater, adsorber
Energy use	Turbine (max. 1 MW _e)

(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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