

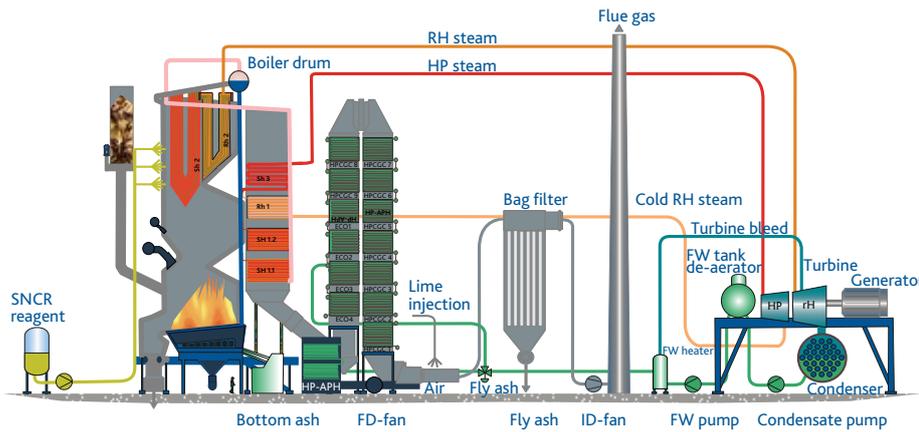


Case stories - BWE Boilers

# CRAMLINGTON RENEWABLE ENERGY PLANT, UK



# CASE STORIES - BWE BOILERS



Estover Energy, John Laing and Green Investment Bank chose a BWE Boiler for the greenfield wood chip fired biomass plant located in Cramlington, UK. Plant capacity is 26 MWe + 6 MWth, the plant has a net plant efficiency of 35.6%. The contract was awarded in November 2014 and was completed in April 2017.

## The plant

The Cramlington Renewable Energy Plant (Cramlington REP) as built for production of electricity for the National Grid and steam for the nearby pharmaceutical companies Merck Sharp & Dohme Ltd. (MSD) and Aesica Pharmaceuticals Ltd. Cramlington REP is a wood chips fired power station that combines the environmental benefits of renewable power generation with more local economic benefits and fuel sourcing.

## The boiler

The BWE Boiler is of the drum type with natural circulation and with reheat. The wood chips feeding system and patented spreader developed by BWSC is optimised to wood chips particle size distribution (PSD) according to EN/ISO 17225-1. The wood chips are conveyed through four parallel sets of dosing silos and spreaders to the boiler, capable of running full load on three sets. The boiler is designed and optimised to operation with corrosive ash caused by wood chips combustion.

## Water-cooled vibrating grate

The water-cooled vibrating grate designed by BWSC ensures homogeneous and stable combustion of untreated biomass and can handle fuels such as straw, wood chips, cotton residuals, olive cakes, etc. The fuel used on Cramlington REP is supplied as chips or logs to the fuel yard and fed in chipped format to the spreader feeders via a buffer silo. The water-cooled vibrating grate is part of the evaporator system of the boiler, and this design ensures the optimal utilisation of the fuel with a minimum of maintenance.

## Fuel mixing

Cramlington REP is built for virgin wood and waste wood firing. With a heat input of up to 78 MJ/s, this is equivalent to an annual consumption of wood chips in the range of 160,000 tons thereby producing 26 MWe, an output equivalent to 50,000 homes. The equivalent CO<sub>2</sub> reduction is close to 180,000 tons per year.

## Boiler scope of supply

BWSC is responsible for design, manufacturing, supply, installation and commissioning of the biomass boiler island including fuel feeding system, bottom ash and auxiliary systems.

### Boiler data

Steam	90 t/h, 140 bar and 540/540°C
Boiler efficiency	91.7% (EN 12952-15)
Heat input	78 MJ/s
Foot print	26.5 m x 32.0 m
Boiler house height (internal)	32 m

