

### Proposed Cork Facility Theoretical Calculation (Revised)

Total waste treated	240,000	Tonnes
Total electricity produced	161,622	MWh

	Type of energy	Unit	Tonne	NCV (kJ/kg)	Energy (MWh)
1.1	Adjusted amount incinerated waste		240,000	9,500	633,333
1.2	Amount sewage sludge		-	-	-
1.3	Amount used activated carbon		-	-	-
<b>2</b>	<b>E<sub>w</sub> Energy input of waste</b>	<b>MWh</b>			<b>633,333</b>
2.1 + 2.2	Ef: Light fuel oil used for startup / keeping temperature	tonne	194	42,000	2,268
2.3	Ef: Natural gas used		-	-	-
<b>3</b>	<b>Ef: Energy input by imported energy with steam</b>	<b>MWh</b>			<b>2,268</b>
3.1	Ei: Light fuel oil used for startup / shutdown	tonne	194	42,000	2,268
3.2	Ei: Natural gas used		-	-	-
3.3	Ei: imported electricity (multiplied with equivalence factor 2.6)		-	-	-
3.4	Ei: imported heat		-	-	-
<b>4</b>	<b>Ei: Energy input by imported energy without steam</b>	<b>MWh</b>			<b>2,268</b>
4.1	Ep: Adjusted electricity produced and internally used for incineration process	MWh	19,710	-	161,622
4.2	Ep: electricity delivered to a third party	MWh	141,912	-	-
<b>5</b>	<b>Ep: Electricity produced</b>	<b>MWh</b>	<b>161,622.00</b>		<b>161,622.00</b>
5.1 + 5.2	Ep: Heat exported	MWh	-	-	-
<b>6</b>	<b>Ep: Heat exported</b>	<b>MWh</b>			<b>-</b>
6.1 to 6.3	Ep: heat used internally for steam driven pumps, backflow, heating flue gas, liquid APC residues		-	-	-
6.4	Ep: for soot blowing without backflow		-	-	-
6.5 to 6.7	Ep: for heating buildings, deaeration, NH4OH injection		-	-	-
<b>7</b>	<b>Ep: Heat used internally</b>	<b>MWh</b>			<b>-</b>
	<b>Ep</b>	<b>MWh</b>			<b>420,217</b>
	<b>R1</b>				<b>0.674</b>
	<b>R1 with Climate Correction</b>				<b>0.719</b>

#### Assumptions

Availability	90%
MWe Produced	20.5 MWe
CV of waste	9.5 MJ/kg
Internal use	2.5 MWe
Export of elec	18 MWe

NOTE: There is no allowance in these figures for curtailment and hence the calculation is conservative in the estimation of the R1

$$\text{Energy efficiency} = \frac{E_p - (E_f + E_i)}{0.97 * (E_w + E_f)}$$

In which:

*E<sub>p</sub>* means annual energy produced as heat or electricity. It is calculated with energy in the form of electricity being multiplied by 2.6 and heat produced for commercial use multiplied by 1.1 (GJ/year)

*E<sub>f</sub>* means annual energy input to the system from fuels contributing to the production of steam (GJ/year)

*E<sub>w</sub>* means annual energy contained in the treated waste calculated using the net calorific value of the waste (GJ/year)

*E<sub>i</sub>* means annual energy imported excluding *E<sub>w</sub>* and *E<sub>f</sub>* (GJ/year)

*0.97* is a factor accounting for energy losses due to bottom ash and radiation

In addition, Annex II of the WFD highlights that this formula shall be applied in accordance with the Reference Document on Best Available Techniques for Waste Incineration (BREF WI).