

# MEMO

Job **TNG Energy from Waste Facility, Eastern Creek,  
Differences between quoted design Ash outputs and operational ash outputs**  
Date **2016-10-24**  
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## **Differences between quoted design Ash outputs and operational ash outputs**

### **Introduction**

TNG have been asked to provide an explanation for the differences between quoted design ash outputs and operational ash outputs from the reference facilities.

### **Factors influencing bottom ash quantity of EfW plants**

The design of an EfW plant is based on the waste amount, the waste composition and the calorific value (CV) of the waste.

An important aspect of the waste composition is the ash content which is made up of the ash of combustible fuel (ash of wood, paper, etc.) as well as inert materials like metal, glass, stone, sand etc.

Depending on the nature of the waste the ash content varies. Even different waste streams with identical CV can have a variation of the ash content. The CV is mainly influenced by the relation between combustible, water and inert. A waste with high water but low ash content can have the same CV as a waste with high ash and low water content.

As a result there can be a certain variation (usually +/- 3-5% points) of the ash in real operation compared to the design value even if a plant is running at its designed throughput capacity.

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## Ash outputs

Facility/Location	LHV @ LPN MJ/kg	Design t/a	Fuel mix	bottom ash (wet) t/a	bottom ash Quantity (wet) %	Bottom Ash Dry %	
						Operation	Design
TNG	12.3	4 x 276'250	C&I, C&D	293'166	26.5%	-	21.49%
Grossräschen	12.5	1 x 246'000	C&I, C&D	68'729	27.9%	22.4%	18.8%
Knapsack	11-17	2 x 150'000	C&I, C&D	81'000	27.0%	21.6%	19.0%
Ferrybridge	8.5	2 x 256'500	C&I, C&D, some MSW, wood	57'830	11.3%	9.0%	12.8%
Riverside	9.6	3 x 195'000	MSW, C&I	146'250	25.0%	20.0%	19.7%
TIRME Mallorca	10	2 x 208'000	MSW, C&I, C&D, Hospital waste, sewage sludge, tyres	92'350	22.2%	17.8%	20.0%

The above table shows updated the design and operational values of several EfW plants. The operation and design bottom ash quantities are all within a variation range of 3-4%.

The ash quantities in case of TIRME Mallorca have been derived from the Environmental Master plan (design) and information received from the operator (operation). The data given in earlier memos was data from the initial design fuel and the reference sheet of the supplier which were obviously outdated.