WASTE MARKET WATCH:
EfW Operational Performance

Commentary

The latest data released by the Environment Agency (EA) together with specific FoI requests by Tolvik shows that in 2009, the 21 operational municipal energy from waste (EfW) facilities in England and Wales processed 3.59Mt of waste – about 10% up on the 2008 figure. Nearly all those reporting indicated MSW feedstock above 90%.

A more detailed analysis by Tolvik of the data shows that average availability, based on reported operational hours, of these EfWs in 2009 was 83.3% - lower than the 85.5% reported in 2008 and lower than the availability figure of 90-92% generally quoted by operators. Only five EfWs reported availability above the 90% level.

Tolvik has also analysed power generation data; whilst the data set is incomplete, it would seem to suggest that on average incinerators are exporting lower than the circa 450kWh of electricity per tonne of feedstock recorded in 2008 and, more notably, lower than the figure used to support most new EfW projects.

Data Set

The data in this note has been prepared from various web sources including annual returns of operators to the EA as required under the Waste Incineration Directive (WID).

The facilities considered in this briefing note are:

Installation	Tonnage Incinerated in 2008	Tonnage Incinerated in 2009	Approx Date Commissioned
Dudley	93,300	93,445	1998
Wolverhampton	107,231	109,991	1998
Kirklees	87,003	136,000	2002
Marchwood	190,711	188,244	2006
Portsmouth	201,569	196,797	2006
Chineham	94,972	101,754	2003
Sheffield	140,000	219,976	2006
Bolton	95,754	84,939	2000
Grimsby	54,744	53,728	2003
Nottingham	158,459	116,444	1971
SELCHP	421,648	395,641	1994
Coventry	241,733	245,187	1975
Stoke	162,145	181,339	1998
Tees Valley	204,327	256,609	1998
Tyseley	359,129	342,048	1996
Allington	n/a	384,784	2008
Edmonton	521,246	383,153	1970

The following sites were excluded from the analysis: the 2.5kpta Isles of Scilly facility; the Isle of Wight and Neath Port Talbot facilities (both have a long history of operational challenges) and Lakeside EfW (which was commissioned in 2009) and for which there is an incomplete 2009 data set.

There is significant diversity in the scale, age, technology and configuration of current EfW facilities in England and Wales. Therefore, whilst this briefing note makes comparisons between the operational performance of various facilities, it would be inappropriate to draw firm conclusions without a more detailed analysis.

Availability

For those EfWs for which 2009 reports are in the public domain, all but one, Tyseley reported the annual plant availability in terms of hours.

Availability for the year ranged from a low of just under 45% at Neath Port Talbot (not shown), to 94% reported at Veolia's Chineham and Portsmouth facilities. The average availability for all EfWs was 83.3%. Major engineering works were reported for both Nottingham and Tees Valley in 2009 and this is reflected in their lower availability than 2008.

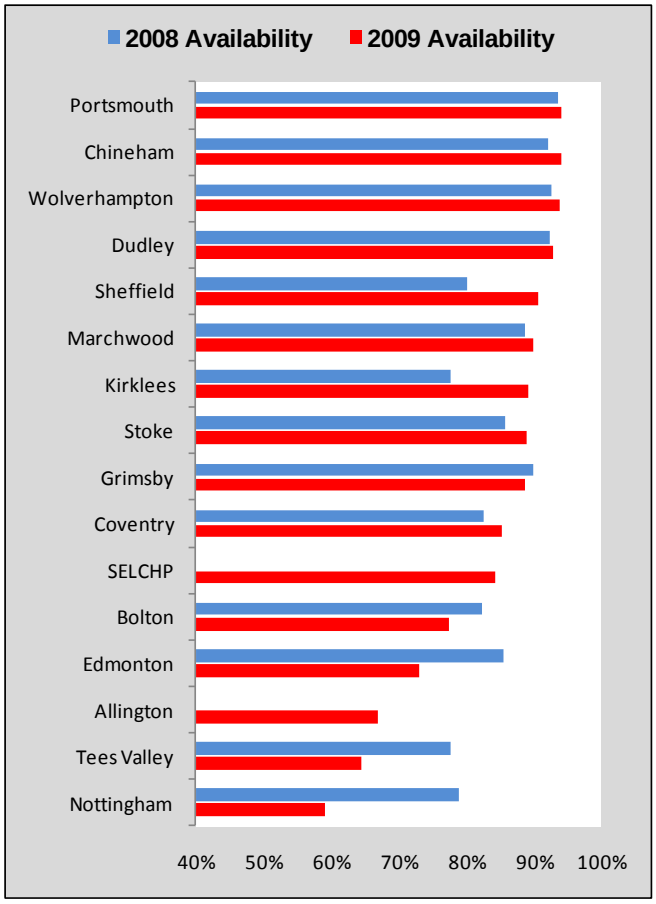

Figure 1 – Source: Annual Reports/Tolvik Analysis

Feedstock Sources

For all the analysed EfWs, MSW was the principle feedstock, with a number of plants reporting over 98% of processed waste being MSW. Any spare capacity from the 'anchor' municipal client(s) appears to have been taken up by other local authorities eager to meet their Landfill Allowance targets and it is understood, benefitting from relatively low gate fees when compared to landfill. No facilities reported a shortfall in feedstock in 2009.

In 2009/10 local authorities in England and Wales reported 3.64Mt of MSW being incinerated; whilst this is actually marginally greater than the total tonnage processed at EfWs it also includes specific streams, eg SRF and wood, processed at other WID compliant facilities.

Feedstock CV

Only at the three MES operated facilities (Stoke, Dudley and Wolverhampton) is a detailed analysis of the CV of the feedstock included in the 2009 annual report. These plants reported CVs in the range of 8.28MJ/Kg to 8.38MJ/Kg – values comparable with those reported in 2008. Stoke attributed a minor variation in calorific value due to the expansion of local authority recycling schemes, which are progressively removing greater quantities of both high, low or zero CV wastes, such as paper, plastic, green and organic kitchen waste, bottles and tins.

Nottingham, Sheffield and Tees Valley facilities reported an average CV ranging from 8.5MJ/Kg to 10MJ/Kg.

Outputs

Of the 17 facilities analysed, 13 reported Incinerator Bottom Ash (IBA) tonnages of between 18% and 22.0% of total waste throughput. The exceptions were Tees Valley (25%, but note metal recovery was not reported separately), Marchwood (23%), Grimsby (17%) and Allington (10%).

Over three quarters of facilities reported that the IBA was recycled, whilst for the rest, where it was landfilled in 2009, nearly all the annual reports pointed to plans to move to IBA recovery.

Similarly, for Air Pollution Control (APC) Residues, the figures reported were all in the range of 2.3 to 4.3% of waste feed except Allington (at 10.7%). 16 facilities out of 17 reported ultimate landfill disposal, and all but four detailed that pre-treatment was carried out prior to landfilling. Tyseley indicated that APC Residues from its operations were sent to hazardous underground storage.

Reported metal recovery figures varied between 1.1% and 3.3%.

Power Production

Of all the key operational data provided, information on power production and export was of most variable quality and data from some facilities was insufficient for them to be included in the analysis. Edmonton and Notttingham provided no 2009 power data. A meaningful comparison of heat export (where applicable) was not possible from the data provided.

Figure 2 shows in blue the data for those EfWs explicitly reporting their export figures, Marchwood was reportedly the most electrically efficient at 564kWh/t of feedstock whilst Allington was the lowest.

Parasitic loads i.e. power taken by the EfW for its own operation were reported by 4 facilities and ranged between 13.5% and 21.2% with an average of 16.3%.

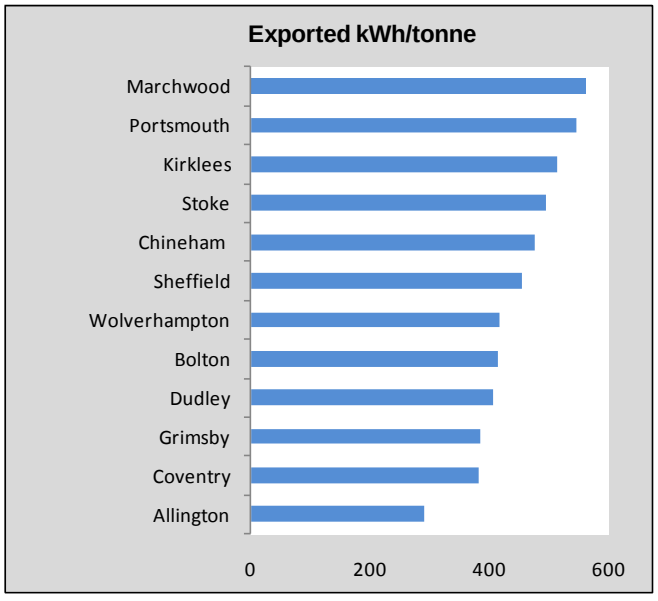

Figure 2 – Source: Annual Reports/Tolvik Analysis

Using the data in Figure 2, the average across all the EfWs was 446kWh/t of waste feed – this is a relatively low figure when compared with the assumptions used to support new projects. However it should be noted that few of the older facilities were specified to maximise power production to the extent now common for new facilities.

Tolvik

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