

Review of the Best Available Techniques Reference Document (BREF) for Waste Incineration – What is the Current Status?

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1. Introduction

The Best Available Techniques Reference Documents (BREF) are a central point of technical environmental protection in Europe. This involves connected to the IED a higher liability of the BREF because they are updated regularly. Even their further implementation and monitoring at the national level were laid down precisely [2].

The term *Best Available Techniques (BAT)* in conjunction with Reference Document and their liability is, taking into account the recitals of the IED, one of the central elements of the IED (IPPC amendment).

In order to determine best available techniques and to limit imbalances in the Union as regards the level of emissions from industrial activities, reference documents for best available techniques (**BAT reference documents**) should be drawn up, reviewed and, where necessary, updated through an exchange of information with stakeholders and the key elements of BAT reference documents (**BAT conclusions**) adopted through committee procedure.

The principle targets of IED on BREF are laid down in the following definitions [1]:

Best available techniques means the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing the basis for emission limit values and other permit conditions designed to prevent and, where that is not practicable, to reduce emissions and the impact on the environment as a whole:

(a) **techniques** includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned;

(b) **available techniques** means those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator;

BAT reference document means a document, resulting from the exchange of information organized pursuant to Article 13, drawn up for defined activities and describing, in particular, applied techniques, present emissions and consumption levels, techniques considered for the determination of best available techniques as well as BAT conclusions and any emerging techniques, giving special consideration to the criteria listed in Annex III;

BAT conclusions means a document containing the parts of a **BAT reference document** laying down the conclusions on best available techniques, their description, information to assess their applicability, the emission levels associated with the best available techniques, associated monitoring, associated consumption levels and, where appropriate, relevant site remediation measures;

Emission levels associated with the best available techniques means the range of emission levels obtained under normal operating conditions using a best available technique or a combination of best available techniques, as described in BAT conclusions, expressed as an average over a given period of time, under specified reference conditions.

2. The BREF activities in the wider context of the Industrial Emissions Directive (IED)

The BREFs and their application under the IED are a central point for permits of installations and the operation of the monitoring system. The stated goal is that the permit conditions are based on the best available techniques. The permit should include all measures that are required for a high level of protection for the environment as a whole and is in place to ensure that the facility is operated in accordance with the general principles of the basic obligations of operators.

The BAT process is a key tool to ensure a degree of uniformity across all Member States of the Union and thereby in the EU 28 (27 after BREXIT) of central importance.

3. The current status of the BREF *Waste Incineration*

The activities on the BREF *Waste Incineration* have started since 12th May 2014 as the *Seville Bureau* announced the official launch of the European work on revision of the document.

The following timetable summarizes the main activities since May 2014:

- May 2014 Starting of the activities,
- 19 – 22 January 2015 Kick-off-Meeting in Seville,

- 15 – 16 July 2015 Meeting of subgroup *ash treatment* in Berlin,
- 23 – 24 September 2015 Meeting of subgroup *data collection* in Seville,
- October/November/December 2015 Test of the questionnaires,
- 11th January 2016 sending out of the questionnaires to the Technical Working Group (TWG),
- 3 months for the questionnaires to be filled in with data,
- 15th April 2016 official end of the data delivery on BATIS,
- France and some more late comers were accepted until mid- May 2016,
- First data analysis delivered by EIPPCB on 13th May 2016,
- Detailed data analysis by EIPPCB End of July 2016.

The first results from Waste Incineration questionnaires submitted until May 16, deliver data from almost 300 waste incineration plants located in 15 Member States and Norway, as listed in the Table 1.

Table 1: Member states and number of installations within the data collection

Member States and associated States	Number of installations
Austria	13
Belgium	18
Czech Republic	1
Denmark	7
Finland	8
France*	30
Germany	101
Italy	31
Norway	6
Poland	8
Portugal	7
Spain	18
Sweden	7
Netherlands	6
United Kingdom	26
Total*	287

* France was still submitting data

Regarding the number of furnaces presented in the overview based on the data submitted in the questionnaires are classified in the following categories:

- Grate
- Rotary kiln
- Fluidised bed
- Furnace
- Pyrolysis
- Gasification
- Plasma
- Other.

The following bar chart summarises the coverage of the different waste incineration processes submitted by the Member States.

In May 2016 only one pyrolysis and two gasification plants were part of the data collection and the French plants are not yet included in this chart. The pyrolysis plant in Burgau for which Germany delivered data for the year 2014 was closed for economical reasons at the end of 2015.

Besides the questionnaire for the waste incineration plants there was also a special questionnaire sent out for incinerator bottom ash (IBA) treatment plants.

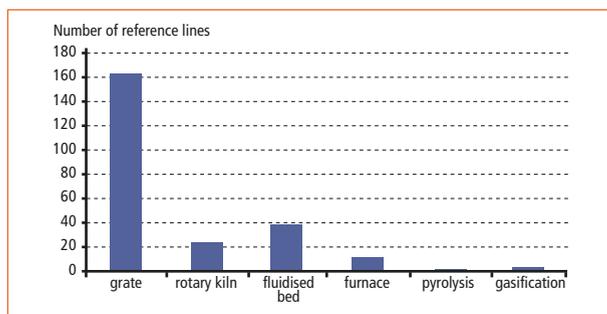


Figure 1:

Different waste incineration processes used within the EU member states

Table 2: Waste incinerator bottom ash treatment plants

Member States	Number of installations
Austria	1
Belgium	1
Denmark	3
Germany	14
Italy	1
France*	4
Portugal	2
Spain	1
Sweden	3
Netherlands	3
United Kingdom	1

Table 3: Techniques for the treatment of waste incinerator bottom ash

Techniques for the treatment waste incinerator bottom ash	Number of installations
Ferromagnetic separation	30
Eddy current separation	29
Screening / Sieving	27
Manual sorting	22
Wind sifter/air/-aerulic separation	22
Induction all-metal separation	7
Ballistic separation	7
Crushing / Grinding	4
Density separation (wet)	3
Near-Infrared Separation	1
Optical separation other than NIS	1
Sink-float separation	1
Density separation (dry)	1
Electrostatic separation	0
X-ray sorting	0

For the IBA- treatment plants 34 questionnaires (11 of these IBA treatment plants are within a waste incineration plant) have been received from 11 Member States. The following two tables give an overview about the information which was delivered by the Member States on this topic.

The last table describes more in details which techniques are used in 30 waste incinerator bottom ash treatment plants excluding the French* plants for the reason of a lack of time. Each of the types of treatment techniques were covered by the questionnaire.

As can be seen from the tables a large number of Waste Incineration questionnaires corresponding to around 350 reference lines have been submitted by 15 Member States and Norway.

This data is providing an excellent basis for a precise data analysis that will be necessary to derive sound fact-based BAT conclusions and BAT-AE(P)Ls.

As many interested parties still expect that in a BAT Reference Document they will find all relevant information for setting permit conditions, the collected data have to be handled very carefully. Therefore, a huge number of TWG members have expressed interest in a workshop on the evaluation of data collected through the questionnaires. And the intention is to have such an exchange as soon as possible.

This exchange should not only focus on the validity of the collected data and how it will be shown in the BREF, but also on how the data can be processed (e.g. the linking of daily environmental performance levels to the detailed information collected on a half-hourly basis) and which indicators/parameters, as reported in the questionnaires, play a crucial role in determining the performance of the techniques applied by Waste Incineration plants under the scope of the IED.

4. Conclusion and outlook

It is anticipated that the review of the BREFs will have a certain impact on exiting waste incineration plants in Europe.

Additional measures in terms of monitored parameters and thereby applicable measuring methods should not be ruled out.

A central point of discussion is also the general air pollution control strategies, resulting in conjunction with the NO_x and mercury emissions.

A preliminary look at the first evaluations of the data collection is not yet enough to identify whether and what limits could arise for the plant operator through a revision of the BAT conclusions. A first trend is likely to be determined after the completion of the first draft.

A summary of the forward planning is listed as follows:

- End-July to end-September 2016: main period for TWG members to provide feedback on the revision of questionnaires
- November 2016: workshop/webinar/consultation on the data collected through questionnaires
- First quarter of 2017 (at the earliest): Draft 1 of the revised WI BREF shared with the TWG for comments.

5. References

- [1] Directive 2010/75 EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (Recast) (ABl. L 334, 17.12.2010)
- [2] Verordnung zur Umsetzung der Richtlinie über Industrieemissionen, zur Änderung der Verordnung zur Begrenzung der Emissionen flüchtiger organischer Verbindungen beim Umfüllen oder Lagern von Ottokraftstoffen, Kraftstoffgemischen oder Rohbenzin sowie zur Änderung der Verordnung zur Begrenzung der Kohlenwasserstoffemissionen bei der Betankung von Kraftfahrzeugen (Bundesgesetzblatt Teil I, 2013, Nr. 21, S. 1021)

Bibliografische Information der Deutschen Nationalbibliothek

Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://dnb.dnb.de> abrufbar

Thomé-Kozmiensky, K. J.; Thiel, S. (Eds.): **Waste Management, Volume 6**
– Waste-to-Energy –

ISBN 978-3-944310-29-9 TK Verlag Karl Thomé-Kozmiensky

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Publisher: TK Verlag Karl Thomé-Kozmiensky • Neuruppin 2016

Editorial office: Professor Dr.-Ing. habil. Dr. h. c. Karl J. Thomé-Kozmiensky,

Dr.-Ing. Stephanie Thiel, M. Sc. Elisabeth Thomé-Kozmiensky, Janin Burbott-Seidel und
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Layout: Sandra Peters, Anne Kuhlo, Janin Burbott-Seidel, Claudia Naumann-Deppe,

Ginette Teske, Gabi Spiegel und Cordula Müller

Printing: Universal Medien GmbH, Munich

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