Final Meeting of the Technical Working Group (TWG) for the review of the BAT reference document for Large Combustion Plants (LCP BREF)

Preliminary draft conclusions – Day 1

Scope (1/10) – BP 1.1.2

- Add a definition of refinery fuel in line with the REF BAT conclusions.

Scope (2/10) – BP 1.1.2

SCOPE

These BAT conclusions concern the following activities specified in Annex I to Directive 2010/75/EU:

- 1.1: Combustion of fuels in installations with a total rated thermal input of 50 MW_{th} or more, only when this activity takes place in combustion plants with a total rated thermal input of 50 MW_{th} or more. (to be revisited)
- 1.4: Gasification of coal or other fuels in installations with a total rated thermal input of 20 MW_{th} or more, only when this activity is directly associated to a combustion process.

Scope (3/10) – BP 1.1.2

SCOPE

These BAT conclusions concern the following activities specified in Annex I to Directive 2010/75/EU: …

- 5.2: Disposal or recovery of waste in waste co-incineration plants for non-hazardous waste with a capacity exceeding 3 tonnes per hour or for hazardous waste with a capacity exceeding 10 tonnes per day, only when this activity takes place in combustion plants covered under 1.1 above. (to be revisited)

In particular, these BAT conclusions cover upstream and downstream activities directly associated to the abovementioned activities including the emission prevention and control techniques applied.

Scope (4/10) – BP 1.1.2

The fuels considered in these BAT conclusions are any solid, liquid and/or gaseous combustible material including:

- solid fuels (e.g. coal, lignite, peat);
- biomass (as defined in Article 3(31) of Directive 2010/75/EU);
- liquid fuels (e.g. heavy fuel oil and gas oil);
- gaseous fuels (e.g. natural gas, hydrogen-containing gas and syngas);
- industry-specific fuels (e.g. by-products from chemical and iron and steel industries);
- waste except for ~~unsorted~~ mixed municipal waste as defined in Article 3(39) and other waste listed in Article 42(2)(a) of Directive 2010/75/EU. (to be revisited)

Scope (5/10) – BP 1.1.2

These BAT conclusions do not address the following:

- ~~combustion of fuels in units with a rated thermal input of less than 15 MW_{th};~~
- gasification of fuels, when not directly associated to the combustion of the resulting syngas;
- gasification of fuels and subsequent combustion of syngas when directly associated to the refining of mineral oil and gas;
- the upstream and downstream activities not directly associated to combustion or gasification activities;
- combustion in process furnaces or heaters;

Scope (6/10) – BP 1.1.2

These BAT conclusions do not address the following: …

- combustion in post-combustion plants;
- flaring;
- combustion in recovery boilers and total reduced sulphur burners within installations for the production of pulp and paper; this is covered by the BAT reference document for the Production of Pulp, Paper and Board;
- combustion of refinery fuels in refineries; this is covered by the BAT reference document for the Refining of Mineral Oil and Gas;

Scope (7/10) – BP 1.1.2

These BAT conclusions do not address the following: …

- disposal or recovery of waste in: (to be revisited)
  - waste incineration plants (as defined in Article 3(40) of Directive 2010/75/EU),
  - waste co-incineration plants where more than 40 % of the resulting heat release comes from hazardous waste, ~~and in~~
  - waste co-incineration plants combusting only wastes, except if these wastes are composed at least partially of biomass as defined in Article 3(31)(b)~~(i) to (iv)~~ of Directive 2010/75/EU;

this is covered by the BAT reference document for Waste Incineration.

Scope (8/10) – BP 1.1.2

For the purpose of these BAT conclusions, the following **definitions** apply:

Term used	Definition
Combustion plant	Any technical apparatus in which fuels are oxidised in order to use the heat thus generated. For the purposes of these BAT conclusions, a combination formed by separate combustion units ~~discharging their flue-gases~~ whose flue-gases are or could be discharged through a common stack shall be considered as a single combustion plant. For calculating the total rated thermal input of such a combination, the capacities of all combustion units concerned, which have a rated thermal input of at least 15 MW, shall be added.

Scope (9/10) – BP 1.1.2

Term used	Definition
Process furnaces or heaters	Process furnaces or heaters are: • combustion plants whose flue-gases are used for the thermal treatment of objects or feed material through a direct contact heating mechanism (e.g. cement and lime kiln, glass furnace, asphalt kiln, drying process, reactor used in the (petro-)chemical industry), or • combustion plants whose radiant and/or conductive heat is transferred to objects or feed material through a solid wall without using an intermediary heat transfer fluid (e.g. coke battery furnace, cowper, furnace or reactor heating a process stream used in the (petro-)chemical industry such as steam cracker furnaces, process heaters used for the regasification in LNG terminals).

Scope (10/10) – BP 1.1.2

Term used	Definition
Process furnaces or heaters	… As a consequence of the application of good energy recovery practices, some of the process heaters / furnaces may have an associated steam / electricity generation system. This is considered to be an integral design feature of the process heater / furnace that cannot be considered in isolation

Subtraction of the measurement uncertainty (1/2) – BP 1.1.4

- Delete the sentence in the BAT conclusions on the subtraction of the measurement uncertainty.
- Clarify in Chapter 3 and in the Chapter on Concluding remarks of the BREF that raw data without subtraction of the measurement uncertainty were used for the analysis and the setting of BAT.
- Add information to the BREF on the averaged uncertainty assigned to measured results from European combustion plants, derived from data collected at plant level.

Subtraction of the measurement uncertainty (2/2) – BP 1.1.4

Emission levels associated with the best available techniques (BAT-AELs) for emissions to air

…

Emission levels associated with the best available techniques (BAT-AELs) for emissions to air given in these BAT conclusions refer to concentrations, expressed …

…

- ~~without subtraction of uncertainty.~~

Averaging periods for continuous monitoring (1/1) – BP 1.1.1

- Consider setting both daily and yearly average BAT-AELs for emissions to air.
- ~~For plants operated in peak- or emergency-load mode, only set daily average BAT-AELs for existing plants.~~
- Include in an annex to the BREF the tool proposed by NL ~~in order to facilitate the work of those Member States that choose to use different averaging periods in permitting compared to those used in the BREF~~.

Load factors, load modes and limited lifetime (1/3) – BP 1.1.3

Equivalent Full Load factor (EFL)

- Assess case by case the need to address the influence of load factors in the fuel-specific BAT conclusions, e.g. via footnotes to the BAT-AEPLs or by adding information under the applicability of techniques.

Load factors, load modes and limited lifetime (2/3) – BP 1.1.3

Load modes

- Assess case by case, for each plant category, the need to address the influence of load modes in the fuel-specific BAT conclusions, e.g. via footnotes to the BAT-AEPLs or by adding information under the applicability of techniques.
- ~~Limit the applicability of the BAT conclusions on energy efficiency and the BAT-AEELs to plants operated in mid-merit or baseload modes.~~
- Revisit the definitions of plants operated in peak- and emergency-load modes.

Load factors, load modes and limited lifetime (3/3) – BP 1.1.3

Limited lifetime

- Do not set general BAT conclusions and BAT-AEPLs depending on the expected plant lifetime.

Monitoring of emissions to air and water (1/2) – BP 1.2.1.1 & 1.2.1.2

BAT 3 ter. BAT is to monitor emissions to air with at least the frequency given below and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

Substance/ Parameter	Fuel/ Process	Combustion plant total rated thermal input	Standard(s) (1)	Minimum monitoring frequency (2)	Monitoring associated with
…	…	…	…	…	…

(1) Generic EN standards for continuous measurements are EN 15267-1, EN 15267-2, EN 15267-3, and EN 14181. EN standards for periodic measurements are given in the table.

(2) The monitoring frequency does not apply where operation would be for the sole purpose of performing an emission measurement.

Monitoring of emissions to air and water (2/2) – BP 1.2.1.1 & 1.2.1.2

BAT 3 quater. BAT is to monitor emissions to water from flue-gas treatment with at least the frequency given below and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

Substance/ Parameter	Standard(s)	Minimum monitoring frequency	Monitoring associated with
…	…	…	…

Type of conclusions on CO emissions (1/1) – BP 1.1.6

- Keep BAT conclusions on CO.
- Set yearly average indicative emission levels for CO as a general approach, but do not exclude *a priori* the possibility of setting BAT-AELs when justified.
- ~~Do not set daily average BAT-AELs for CO.~~

General BAT conclusions

BAT 4 bis in Revised Draft 1

Emissions of ammonia to air (1/5) – BP 1.3.3.2.1, 1.4.3.2.6, 1.5.1.2.2.4, 1.5.2.2.3.4, 1.5.3.2.3, 1.6.6.1.1, 1.6.6.2.1, 1.7.4, 1.9.3.2

- Add in the concluding remarks that further emission data should be collected, in particular for engines.
- The decision on the BAT-AEL for ammonia was not supported by EEB, EL, Eurelectric, Euromot, CAN Europe.

General BAT conclusions

BAT 4 bis in Revised Draft 1

Emissions of ammonia to air (2/5) – BP 1.3.3.2.1, 1.4.3.2.6, 1.5.1.2.2.4, 1.5.2.2.3.4, 1.5.3.2.3, 1.6.6.1.1, 1.6.6.2.1, 1.7.4, 1.9.3.2

BAT 4 bis. In order to reduce emissions of ammonia to air from the use of selective catalytic reduction (SCR) and/or selective non-catalytic reduction (SNCR) for the abatement of NO_X emissions, BAT is to optimise the design and/or operation of SCR and/or SNCR (e.g. optimised and homogeneous distribution of the reagent/NO_X ratio, optimum size of the reagent drops~~, stable operating conditions~~).

Emissions of ammonia to air (3/5) – BP 1.3.3.2.1, 1.4.3.2.6, 1.5.1.2.2.4, 1.5.2.2.3.4, 1.5.3.2.3, 1.6.6.1.1, 1.6.6.2.1, 1.7.4, 1.9.3.2

BAT-associated emission levels

The BAT-associated emission level (BAT-AEL) for emissions of NH_3 to air from the use of SCR and/or SNCR is < 3–10 mg/Nm^3 as a yearly average or average over the sampling period. In the case of combustion plants firing biomass and operating at variable load and in the case of engines firing HFO/gas oil, the higher end of the range is 15 mg/Nm^3. The lower end of the range can be achieved when using ~~may correspond to the combined use of~~ SCR ~~with wet abatement techniques (e.g. wet FGD or flue-gas condenser),~~ and the upper end of the range can be achieved when using ~~may correspond to the use of~~ SNCR without wet abatement techniques.

The associated monitoring is in BAT 3 ter.

General BAT conclusions

BAT 3 ter in Revised Draft 1

Emissions of ammonia to air (4/5) – BP 1.3.3.2.1, 1.4.3.2.6, 1.5.1.2.2.4, 1.5.2.2.3.4, 1.5.3.2.3, 1.6.6.1.1, 1.6.6.2.1, 1.7.4, 1.9.3.2

Substance/ Parameter	Fuel/ Process	Combustion plant total rated thermal input	Standard(s) (1)	Minimum monitoring frequency	Monitoring associated with
NH_3	When SCR and/or SNCR is used	All sizes	Generic EN standards	Continuous (2) (3)	BAT 4 bis

General BAT conclusions

BAT 3 ter in Revised Draft 1

Emissions of ammonia to air (5/5) – BP 1.3.3.2.1, 1.4.3.2.6, 1.5.1.2.2.4, 1.5.2.2.3.4, 1.5.3.2.3, 1.6.6.1.1, 1.6.6.2.1, 1.7.4, 1.9.3.2

(2) In the case of plants with a rated thermal input of < 100 MW_{th} operated in emergency-load mode, the monitoring frequency may be ~~reduced to~~ at least once every year. ~~In the case of plants with a rated thermal input of < 100 MW_{th} operated in peak-load mode, the monitoring frequency may be reduced to at least once every six months.~~(to be revisited)

(3) In the case of SCR ~~combined use of dedusting and wet abatement techniques (e.g. wet FGD or flue-gas condenser)~~, the monitoring frequency may be ~~reduced to~~ at least once every year, if the emissions are proven to be sufficiently stable ~~it is demonstrated that the emission levels are consistently within the BAT-AELs set~~.