"IED, LCP and LCP BREF provisions in relation to Lignite fired PPs environmental conditions"

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Overview

- Introduction
- Directive 2010/75/EU on industrial emissions
- LCP BREF

Introduction

- EU legislation for industrial emissions including emissions from Thermal Power Plants:
- Directive 2010/75/EU on industrial emissions
- Directive 2015/2193/EU on the limitation of emissions of certain pollutants into the air from medium combustion plants
- The provisions of the Directives above, affect decisively the permitting and operation of almost every Thermal Power Plant and consequently their viability.

Directive 2010/75/EU on industrial emissions

- Under the IED framework, around 50,000 industrial installations operate subject to environmental permits, ranging from power plants to food and drink production.
- Sets the overall framework for the permitting and control of emissions to all environmental media from the most polluting industrial activities
- Prevention of pollution of air, water and soil and, if not feasible, reduction
- Permit is required for operating the installation
- Permit needs to contain conditions including emission limit values (ELVs) for all relevant pollutants, based on Annex V of IED and the use of the best available techniques (BAT).

Directive 2010/75/EU on industrial emissions

Transitional flexibilities

Provisions allowing later compliance dates

- **Transitional National Plan**
  - Covers combustion plants which were granted the first permit before 27 November 2002
  - Duration: 01.01.2016 to 30.06.2020
  - Pollutants: SO_2 and dust
  - Maximum total annual emissions for all of the plants covered by the plan on the basis of each plant's total rated thermal input on 31 December 2010, its actual annual operating hours and its fuel use, averaged over the last 10 years of operation up to and including 2010
  - Ceiling for 2016 are calculated on the basis of Directive 2001/80/EC. Linear reduction of ceilings for the following years

- **Limited Lifetime Derogation (operate up to 17,500 h)**
  - Duration: 01.01.2016 to 31.12.2023

Directive 2010/75/EU on industrial emissions

Best Available Reference Documents

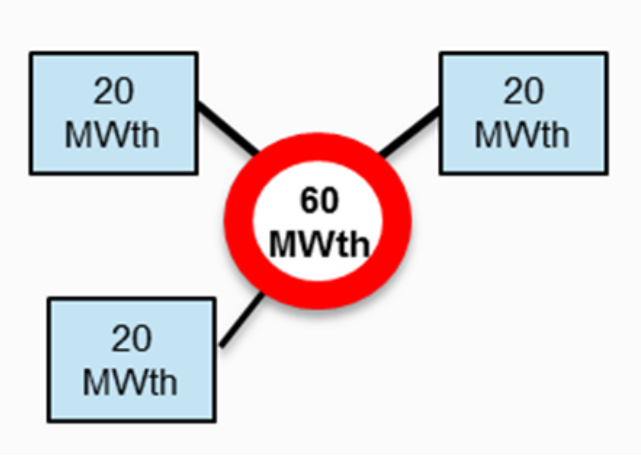
- BAT Associated Emission Levels (BAT-AELs) form part of BATC (BAT Conclusions) which are subsequently used by regulators as the legal reference point when setting the conditions of a permit.

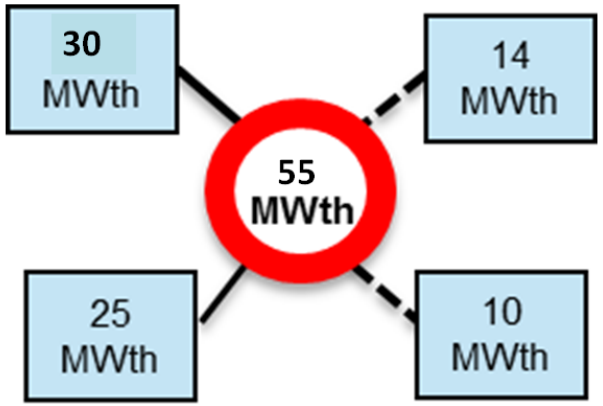
- Following the publication of BATC (relating to the main activity of an installation concerned) in the official journal, Members States have a maximum of 4 years to update installations' environmental permits in line with BAT-AELs and to ensure that the installations comply with those permit conditions.

- In contrast to the previous Directive (IPPC), BATC are legally binding (4 years after adoption from Art. 75 Committee)

Directive 2010/75/EU on industrial emissions

- Among other activities: The combustion of fuels in installations with a total rated thermal input of 50 MW or more, falls within the scope of IED.
- Common stack: two or more separate combustion plants where the flue-gases are discharged through a common stack are considered as a single combustion plant
- For calculating the total rated thermal input of such a combination, the capacities of all individual combustion plants concerned, which have a rated thermal input of at least 15 MW, shall be added together





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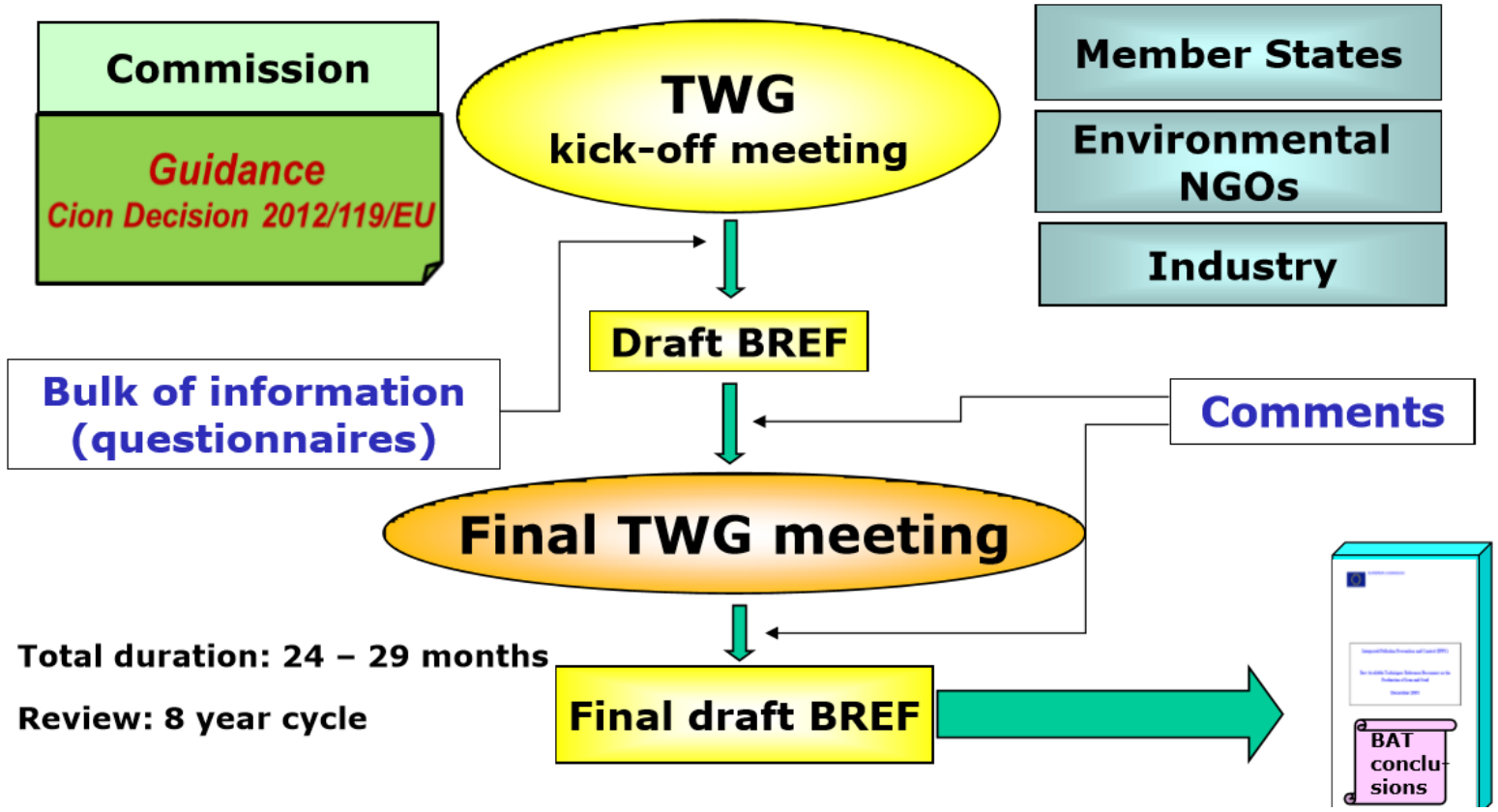
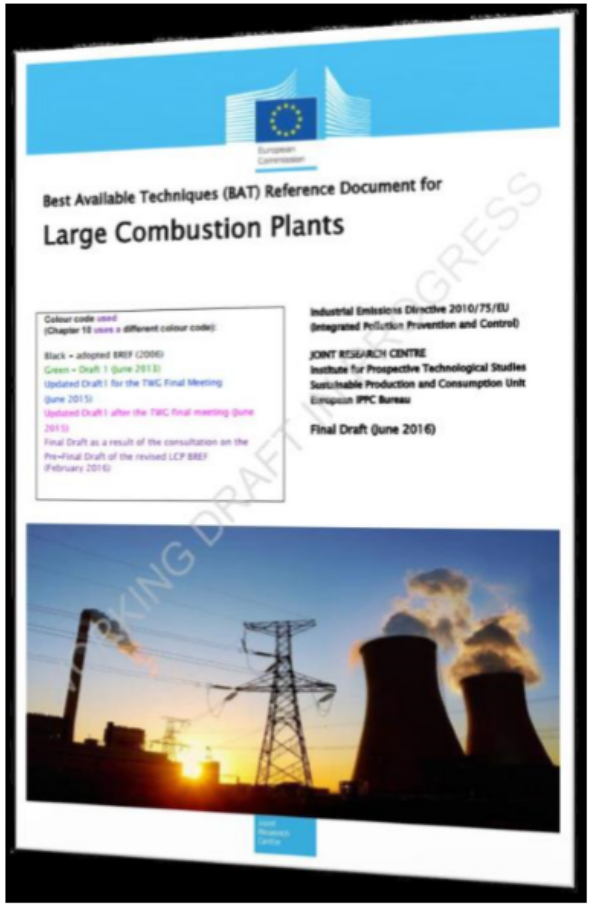

Commission
Guidance
Cion Decision 2012/119/EU
TWG
kick-off meeting
Member States
Environmental NGOs
Industry
Draft BREF
Bulk of information (questionnaires)
Comments
Final TWG meeting
Total duration: 24 – 29 months
Review: 8 year cycle
Final draft BREF
BAT conclu-sions

LCP BREF
Revision

- Kick-off meeting in 2011
- Technical Working Group (experts from MS, industry, NGOs)
- Exhaustive technical and economic data collection
  - 580 plant level questionnaires + bulk info (reports, site visits)
- Draft 1 (2013) - 8500 comments
- Intermediate meeting (2014) to discuss key issues
- Final meeting + Webinar (June/July 2015)
  - all main issues discussed and conclusions reached
  - BAT and BAT-AELs based on analysis of data sets (2010 situation)
  - dissenting views registered if supported by valid rationale
- Split views submission and assessment
- Article 13 Forum meeting and opinion (October 2016)
- Article 75 committee (April 2017) – Qualified majority - Adopted

LCP BREF
Revision

- PREFACE
- SCOPE
- 10 BEST AVAILABLE TECHNIQUES (BAT) CONCLUSIONS
  - Scope
  - 10.2 BAT conclusions for the combustion of solid fuels
    - 10.2.1 BAT conclusions for the combustion of coal and/or lignite
      - 10.2.1.1 General environmental performance
      - 10.2.1.2 Energy efficiency
      - 10.2.1.3 NOX, N2O and CO emissions to air
      - 10.2.1.4 SOX, HCl and HF emissions to air
      - 10.2.1.5 Dust and particulate-bound metal emissions to air
      - 10.2.1.6 Mercury emissions to air
    - 10.2.2 BAT conclusions for the combustion of solid biomass and/or peat
  - 10.6 BAT conclusions for the co-incineration of waste
  - 10.7 BAT conclusions for gasification
  - 10.8 Description of techniques
- RECOMMENDATIONS FOR FUTURE WORK
- 13 ANNEXES
- GLOSSARY
- REFERENCES



LCP BREF
Revision

- Permits shall contain emission limit values (ELVs) ensuring that, under normal operating conditions, emissions do not exceed BAT associated emission levels (BAT-AELs) (Art 15(3) a+b)

- Derogation from meeting BAT-AELs is only possible in specific and justified cases: (Art 15(4))
  - where assessment shows that costs of applying BAT-AELs are disproportionately higher than environmental benefits
  - due to location / installation specific situation
  - IED minimum ELVs cannot be exceeded

LCP BREF
Revision

NOx BAT AELs for lignite and coal

Combustion plant total rated thermal input (MW_{th})	BAT-AELs (mg/Nm3)			
	Yearly average		Daily average or average over the sampling period	
	New plant	Existing plant [4]	New plant	Existing plant [7] [11]
≥ 300, FBC boiler combusting coal and/or lignite and lignite-fired PC boiler	50–85	< 85–150 [8][9]	80–125	140–165 [10]
≥ 300, coal-fired PC boiler	65–85	65–150	80–125	< 85–165 [6]

BAT for NOx reduction

- Combustion optimisation
- SNCR
- SCR
- Combined techniques for SOx and NOx reduction

(6) The higher end of the range is 220 mg/Nm3 for FBC boilers put into operation no later than 7 January 2014 and for lignite-fired PC boilers
(8) The lower end of the range is considered achievable when using SCR.
(9) The higher end of the range is 175 mg/Nm3 for FBC boilers put into operation no later than 7 January 2014 and for lignite-fired PC boilers
(10) In the case of plants put into operation no later than 7 January 2014, the higher end of the range is 200 mg/Nm3 for plants operated ≥ 1500 h/yr, and 220 mg/Nm3 for plants operated < 1500 h/yr

LCP BREF
Revision

SO_2 BAT AELs for lignite and coal

Combustion plant total rated thermal input (MW_{th})	BAT-AELs (mg/Nm3)			
	Yearly average		Daily average	Daily average or average over the sampling period
	New plant	Existing plant [3]	New plant	Existing plant [7]
≥ 300, PC boiler	10–75	10–130 [6]	25–110	25–165 [4]
≥ 300, Fluidised bed boiler [1]	20–75	20–180	25–110	50–220

BAT for SO_2 reduction

- Boiler sorbent injection
- Spray dry absorber
- Circulating fluidised bed dry scrubber
- Wet scrubbing
- Wet FGD
- Seawater FGD
- Combined techniques for SOx and Nox reduction
- Fuel choice

(4) The higher end of the BAT-AEL range is 220 mg/Nm3 in the case of plants put into operation no later than 7 January 2014 and operated < 1500 h/yr. For other existing plants put into operation no later than 7 January 2014, the higher end of the BAT-AEL range is 205 mg/Nm3.

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Revision

SO_2 BAT AELs for lignite and coal

- For indigenous lignite fuels, the daily average BAT-AELs do not apply, and the upper end of the yearly average BAT-AEL range is as follows:

  (i) for a new FGD system: RCG x 0.01 with a maximum of 200 mg/Nm3

  (ii) for an existing FGD system: RCG x 0.03 with a maximum of 320 mg/Nm3

  in which RCG represents the concentration of SO_2 in the raw flue-gas as a yearly average at the inlet of the SOx abatement system, expressed at a reference oxygen content of 6 vol-% O_2

  (iii) If boiler sorbent injection is applied as part of the FGD system, the RCG may be adjusted by taking into account the SO_2 reduction efficiency of this technique (ηBSI), as follows:
  RCG (adjusted) = RCG (measured) / (1-ηBSI)

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Dust BAT AELs for lignite and coal

Combustion plant total rated thermal input (MW_{th})	BAT-AELs (mg/Nm3)			
	Yearly average		Daily average or average over the sampling period	
	New plant	Existing plant (1)	New plant	Existing plant (7)
300–1000	2–5	2–10 (4)	3–10	3–11 (5)
≥ 1000	2–5	2–8	3–10	3–11 (6)

BAT for dust reduction

- ESP
- Bag filter
- Wet FGD

(4) The higher end of the BAT-AEL range is 12 mg/Nm3 for plants put into operation no later than 7 January 2014
(5) The higher end of the BAT-AEL range is 20 mg/Nm3 for plants put into operation no later than 7 January 2014
(6) The higher end of the BAT-AEL range is 14 mg/Nm3 for plants put into operation no later than 7 January 2014

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Mercury BAT AELs for lignite

Combustion plant total rated thermal input (MW_{th})	BAT-AELs (µg/Nm3)	
	Yearly average or average of samples obtained during one year	
	New plant	Existing plant
Lignite < 300	< 1–5	< 1–10 (2)
Lignite ≥ 300	< 1–4	< 1–7 (2)

BAT for mercury emissions reduction

- ESP
- Bag filter
- Dry or semi-dry FGD system
- Wet FGD
- SCR
- Carbon sorbent (e.g. activated carbon or halogenated activated carbon) injection in the fluegas
- Use of halogenated additives in the fuel or injected in the furnace
- Fuel pretreatment
- Fuel choice