European Commission

European Bureau for Research on Industrial Transformation and Emissions (EU-BRITE)

The 2024 SF BREF and BAT conclusions

Best Available Techniques (BAT) Reference Document for the Smitheries and Foundries Industry (SF BREF)

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Green casting LIFE project meeting

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Joint Research Centre

Outline of the presentation

- Scope of the SF BREF
- Overview of the SF BREF review process
- Main changes in the revised SF BREF
- Structure and key features of the SF BAT conclusions

Scope of the SF BREF (1/3)

The BREF covers the following activities:

2.3. Processing of ferrous metals:
(b) operation of smitheries with hammers the energy of which exceeds 50 kilojoules per hammer, where the calorific power used exceeds 20 MW.

2.4. Operation of ferrous metal foundries with a production capacity exceeding 20 tonnes per day.

2.5. Processing of non-ferrous metals:
(b) melting, including the alloyage, of non-ferrous metals, including recovered products, and operation of non-ferrous metal foundries, with a melting capacity exceeding 4 tonnes per day for lead and cadmium or 20 tonnes per day for all other metals.

6.11. Independently operated treatment of wastewater not covered by Directive 91/271/EEC, provided that the main pollutant load originates from the activities covered by this BREF.

Scope of the SF BREF (2/3)

The BREF also covers the following activities:

- Ferrous metal foundries employing continuous casting processes for the production of grey or nodular iron castings at or near their final shape.
- Non-ferrous metal foundries using alloyed ingots, scrap, recovered products or liquid metal for the production of castings at or near their final shape.
- The coating of moulds and cores in ferrous and non-ferrous metal foundries.
- The storage, transfer and handling of materials, including the storage and handling of scrap and sand in foundries.
- Combustion processes directly associated with the activities covered by these BAT conclusions provided that the gaseous products of combustion are put into direct contact with material (such as direct feedstock heating or direct feedstock drying).

Scope of the SF BREF (3/3)

The BREF does not cover the following:

- The continuous casting of iron and/or steel (i.e. to produce thin slabs, thin strips, and sheets). This is covered by the BAT conclusions for Iron and Steel Production (IS).
- The production of semi-finished non-ferrous metal products requiring further forming. This is covered by the BAT conclusions for the Non-Ferrous Metals Industries (NFM).
- Cadmium, titanium and precious metal foundries, as well as bell and art casting.
- Forging presses.
- Rolling mills. This is covered by the BAT conclusions for the Ferrous Metals Processing Industry (FMP).

Overview of the SF BREF review (1/4)

Main steps	Date
TWG reactivation	July 2018
Call for wishes	January 2019
Kick-off meeting	17 – 20 September 2019
Elaboration of questionnaire	September 2019 – April 2020
Data and information collection	April 2020 – March 2021

Overview of the SF BREF review (2/4)

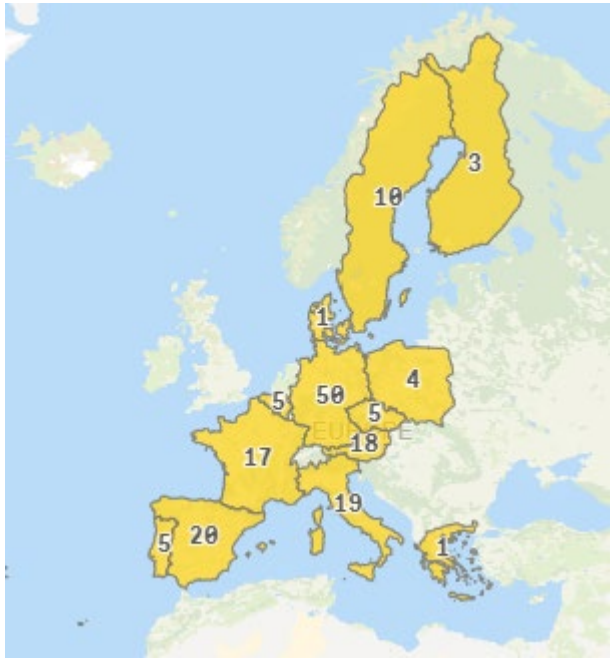
Main steps	Date
1st Data assessment workshop (webinar)	April 2021
Draft 1 of revised SF BREF	February 2022
Commenting period (1 565 comments)	February – April 2022
2nd Data assessment workshop (webinar)	March 2023
Background Paper + revised draft BAT conclusions for final TWG meeting	April 2023

Overview of the SF BREF review (3/4)

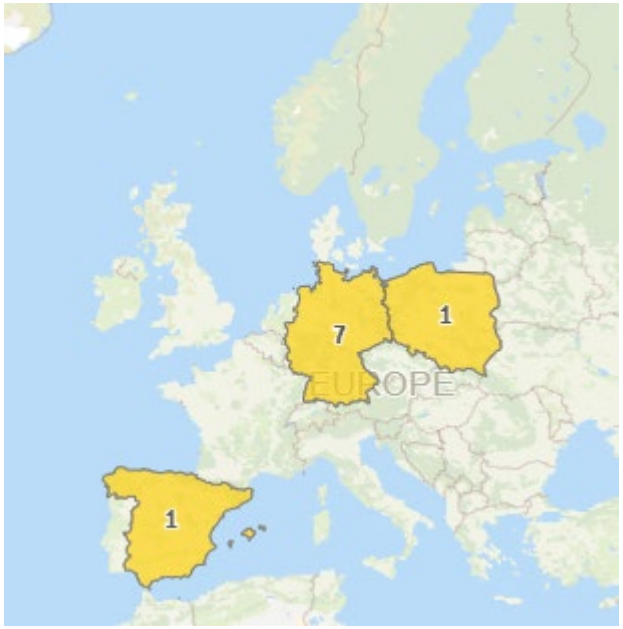
Main steps	Date
Final SF TWG meeting	26 – 30 June 2023
Pre-final draft of the SF BREF	25 October 2023
Final draft of the SF BREF	28 February 2024
IED Forum meeting	29 April 2024
Publication of SF BAT conclusions and SF BREF	November 2024

Overview of the SF BREF review (4/4)

Foundries:
158 plants in 13 Member States



Smitheries:
9 plants in 3 Member States



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Site visits

MS	Site/type of installation	Date
ES	• Guivisa : Steel casting • Fagor Ederlan: HPDC aluminium foundry • Metal Group: Ferrous foundry / Nodular Iron	December 2018
SE	• Svelda: Sandvik SRP AB foundry (steel) • Jönköping: Husqvarna AB foundry (NFM) • Skövde: Volvo Powertrain foundry (cast iron) • Örebro: Johnson Metal foundry (NFM)	February 2020
FR	• Villers-Semeuse: Stellantis Charleville foundry (ferrous metal and NFM)	May 2022
BE	• Ypres: Proferro foundry, part of the Picanol Group (cast iron)	November 2022

Main changes in the revised SF BREF

- A scope expansion: Inclusion of Smitheries
- A general update (e.g. recent information on SF sector, 10-heading structure)
- Restructuring of the document (e.g. generic and sectorial approach)
- Plant-specific data from SF questionnaires presented in tables and graphs
- 52 BAT conclusions in line with IED requirements (10 BAT conclusions applied to both Smitheries and Foundries, 35 BAT conclusions specific for Foundries and 7 BAT conclusions specific for Smitheries)

Structure of the SF BAT conclusions

Scope
Definitions
Acronyms
General considerations
4.1 **General BAT conclusions (for both Smitheries and Foundries)**
4.1.1 Overall environmental performance
4.1.2 Monitoring
4.1.3 Energy efficiency
4.1.4 Noise and vibrations
4.1.5 Residues
4.2 **BAT conclusions for Foundries**
4.2.1 General BAT conclusions for Foundries
4.2.2 BAT conclusions for cast iron foundries
4.2.3 BAT conclusions for steel foundries
4.2.4 BAT conclusions for non-ferrous metal foundries
4.3 **BAT conclusions for Smitheries**
4.4 Description of techniques

Key features of the SF BAT conclusions (1/3)

- General BAT conclusions for both smitheries and foundries on:
  - *EMS, inventory of inputs and outputs, CMS, emissions to soil and groundwater, OTNOC*
  - *Monitoring (consumption of resources, waste water discharge, material recovery, residues generation)*
  - *Energy efficiency*
  - *Noise and vibration management plan*
  - *Residues management plan*
- General BAT conclusions for foundries on:
  - *Hazardous substances and SVHC*
  - *Energy efficiency (BAT-AEPLs)*
  - *Material efficiency (BAT-AEPLs for sand reuse and waste sent for disposal; indicative levels for Operational Material Efficiency)*

Key features of the SF BAT conclusions (2/3)

- General BAT conclusions for foundries on (continued):
  - *Emissions to air from moulding using lost moulds and core-making (BAT-AELs for: dust, amines, benzene, formaldehyde, phenol, TVOC)*
  - *Emissions to air from casting, cooling and shake-out processes in foundries using lost moulds including the full mould process (BAT-AELs for: dust, benzene, formaldehyde, phenol, TVOC)*
  - *Emissions to air from lost foam casting (BAT-AELs for dust and TVOC)*
  - *Emissions to air from the casting process in foundries using permanent moulds (BAT-AELs for : dust, Pb and TVOC)*
  - *Emissions to air from finishing (BAT-AELs for dust)*
  - *Emissions to air from sand reuse (BAT-AELs for dust, TVOC, NO_X and SO_2)*
  - *Water consumption and wastewater generation (BAT-AEPLs)*
  - *Emissions to water (BAT-AELs for: AOX, COD, TOC, TSS, HOI, metals (Cu, Cr, Pb, Ni, Zn), Phenol, TN)*

Key features of the SF BAT conclusions (3/3)

- BAT conclusions for cast iron foundries on:
  - *Emissions to air from thermal processes (BAT-AELs for: dust, HCl, HF, CO, NO_X, PCDD/Fs, SO_2, TVOC, Pb) and nodularisation (BAT-AEL for dust)*
- BAT conclusions for steel foundries on:
  - *Emissions to air from thermal processes (BAT-AELs for: dust and PCDD/Fs) and steel refining (BAT-AEL for dust)*
- BAT conclusions for non-ferrous metal foundries on:
  - *Emissions to air from thermal processes (BAT-AELs for: dust, HCl, HF, CO, NO_X, PCDD/Fs, SO_2, Pb)*
- BAT conclusions for smitheries on:
  - *Energy efficiency (indicative levels)*
  - *Material efficiency*
  - *Vibrations*
  - *Emissions to air (BAT-AELs for: CO and NO_X)*

Thank you