



Afoco

Créateur de Matériaux Alternatifs

JOURNÉE TECHNIQUE 2021

**MIEUX VALORISER RÉGIONALEMENT
LES MATÉRIAUX ALTERNATIFS**



INSTITUT FÜR
BAUSTOFF
FORSCHUNG

FEhS

EUROSLAG / FEhS-Institute

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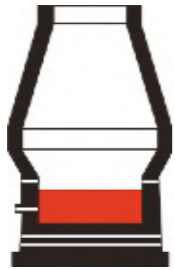
Who we are

- Service provider focused on research, consultancy and advocacy for slag and by-products of the steel industry for 70 years (since 1950)
- Registered non-profit association based in Duisburg at the heart of the European steel industry
- 45 employees with a wide variety of professional backgrounds: Engineers and natural scientists, Technicians (chemistry lab, construction materials etc.),
- 34 member companies from the steel, cement and slag processing industry
- Annual sales of 5.5 million €
- More information on www.fehs.de
- EUROSLAG: European ferrous slag association with 26 members from 16 countries, see www.euroslag.org

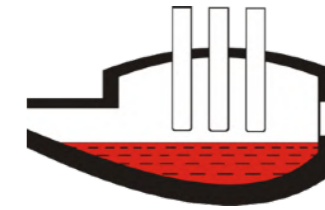


The utilization of ferrous slag based products is on a high level in Europe!

(figures 2019, total ferrous slag production: 47 Mt (25,3 Mt BFS + 21,4 Mt SFS))

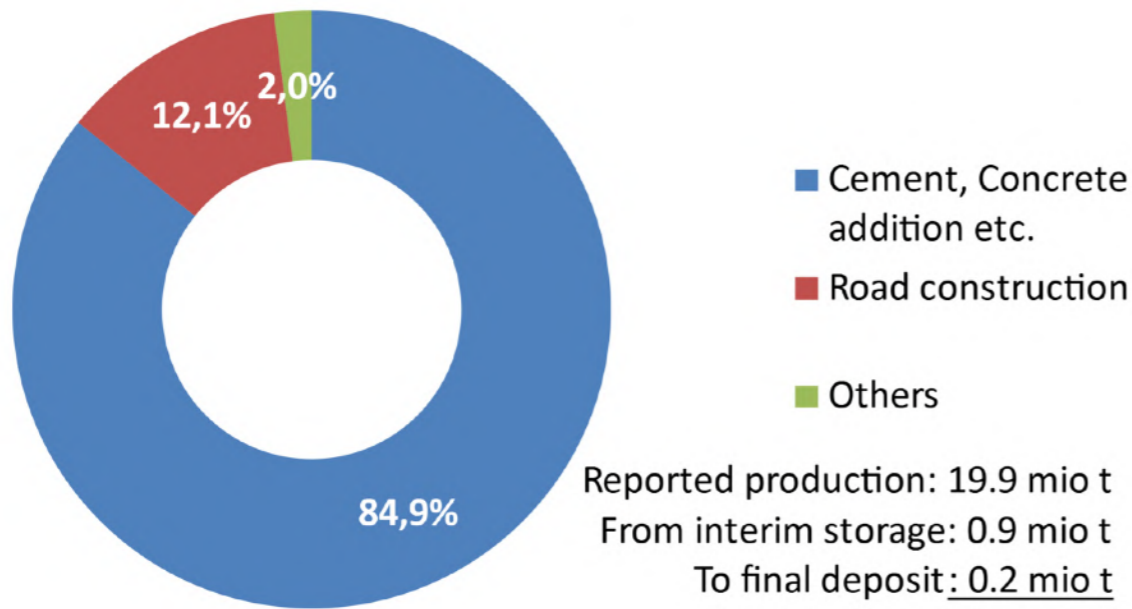


Production*: 33,8 Mt
Utilization: 31,1 Mt
(= 92 %)



20,6 Mt

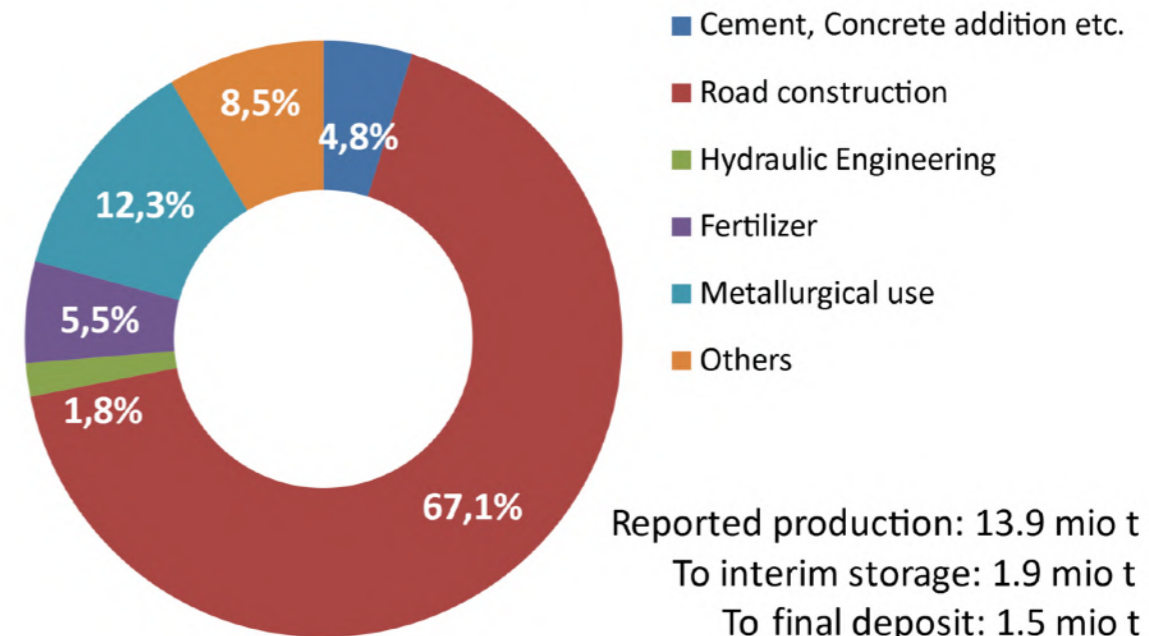
Use of BFS in Europe 2019



Reported production: 19.9 mio t
From interim storage: 0.9 mio t
To final deposit: 0.2 mio t
Reported use: 20.6 mio t

10,5 Mt

Use of SFS in Europe 2019



Reported production: 13.9 mio t
To interim storage: 1.9 mio t
To final deposit: 1.5 mio t
Reported use: 10.5 mio t

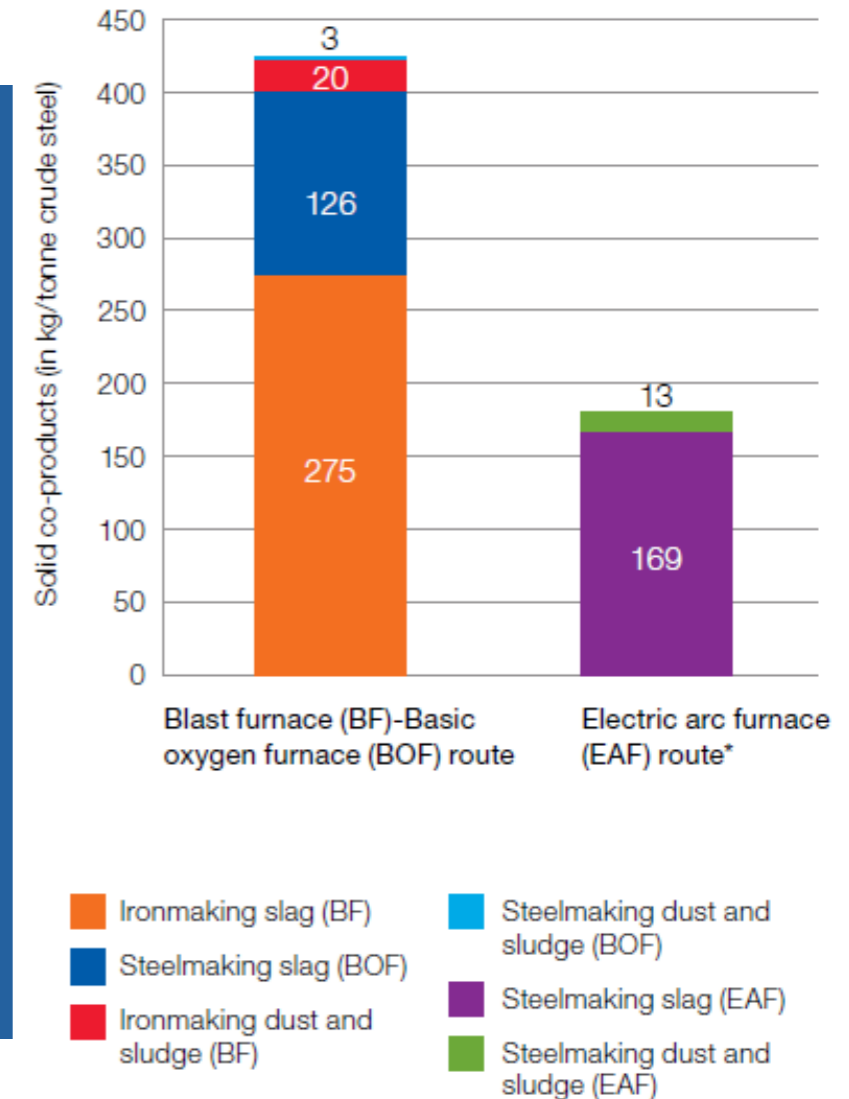
The EU has set very ambitious CO₂ reduction targets, which require a fundamental transformation process especially for the integrated route of steelmaking!

- The EU aims to become carbon neutral by 2050 – an economy with net zero greenhouse gas emissions.
- First milestone is a reduction of CO₂-Emissions by 55% until **2030** (base year 1990).
- Energy intensive industries like the steel industry aim to become carbon neutral by 2050.
- The steel industry has boosted R & D to manage this transformation process.



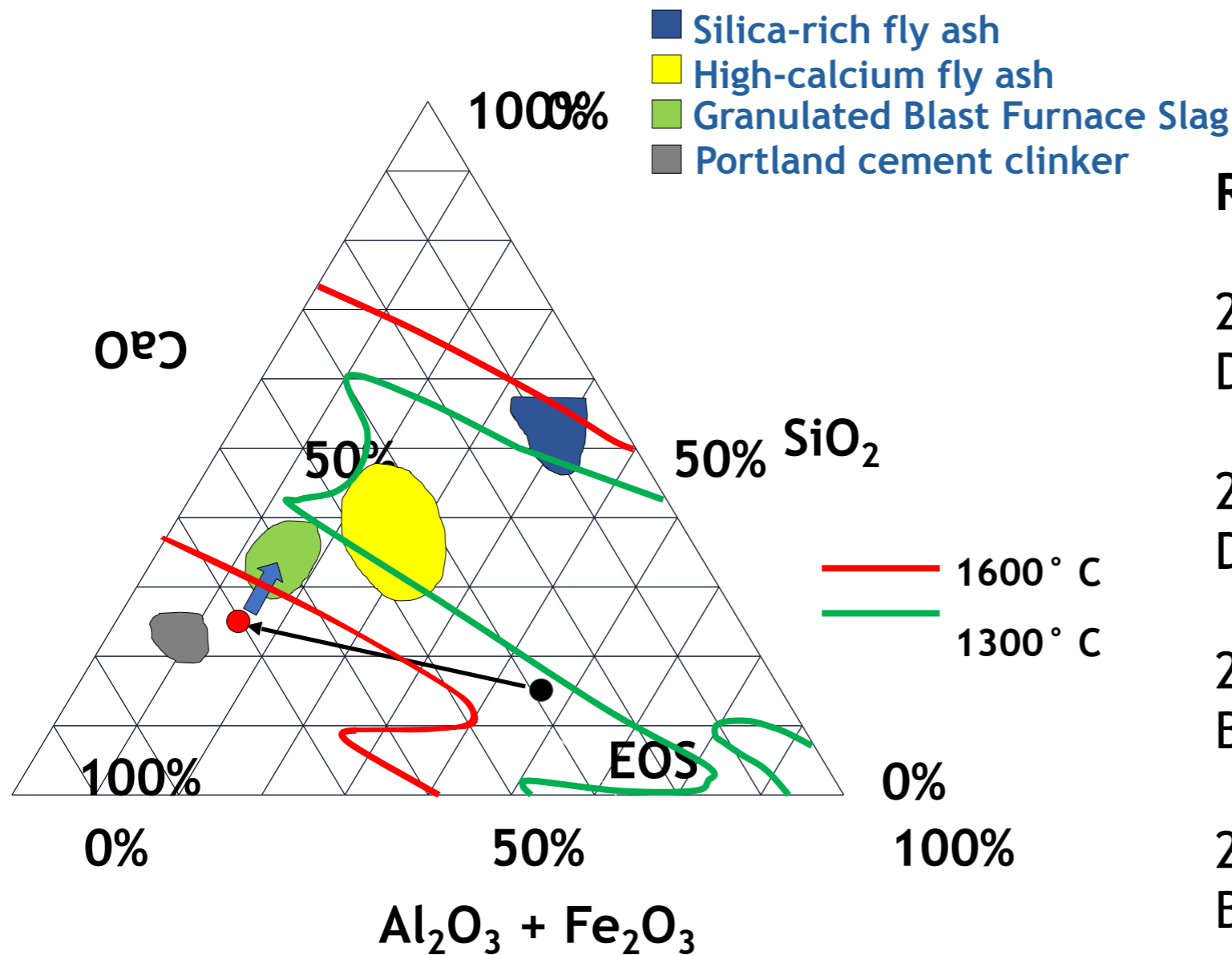
Main finding for the slag value chain: the “slag mix” will be substantially different in future!

- Decrease in Blast Furnace Slag (GBS/ABS) and Basic Oxygen Furnace Slag (BOF) despite high GBS demand by the cement industry !
- Increase in Electric Arc Furnace Slag (EAF)
 - CO₂ reduction targets
 - General shift towards scrap as raw material
- “ New slag types” due to new iron and steel making processes (direct reduction – different slag types in the EAF)
- R & D to secure for the utilization of these slags!



Source: worldsteel 2018

We have already been doing research on the conditioning of Electric Arc Furnace Slag for several years. The aim is to work on « GBS 2.0 » from both scrap-based and DRI-based EAF slag.




R&D projects:

2013-2015
DBU: *KLINKEOS*

2017-2018
DBU: *DIREKT*

2019-2021
BMW i/AiF: *PROEOS 2*

2021-2024
BMBF: 

Scrap based

DRI-based

The slag business model is highly affected by EU Green Deal policy initiatives!



Interface Chemicals,
Products and Waste

EU Taxonomy



Circular Economy Action Plan
(Green Public Procurement)

From 'Non-Toxic',
to 'Zero-Pollution'

ECHA SCIP Database
SVHC in Articles



Waste Framework
Directive - Study on
EoW and by-products



We need a sound „rebalancing“ between soil / groundwater protection and circular economy / preservation of natural resources !



-	+
Image / Acceptance	Best practice examples for circular economy / preservation of natural resources
„Precautionary principle“	Proven environmental performance
Total limit content values	Contribution to climate protection

We need a sustainable improvement of the framework conditions for the utilization of slag-based products !

Austrian construction materials regulation: **unequal treatment** of natural stones and by-products („no“ vs. „strict“ environmental performance standards)

Discrimination in public tenders (exclusion of industrial by-products and recycling materials)

Wording: **„secondary“** raw materials...

Legislation: Construction materials from the steel industry = **waste??**



Actions

1. Increase R&D

- Further improvement of the technological and environmental performance of slag-based products
- Secure for the utilization of new slag types emerging from the transformation process



Actions (2)

2. Improve the framework conditions

- Implementation of prioritization in public procurement law (revision of the EU Public Procurement Directive, see FEhS/EUROSLAG legal opinion)
- Rebalancing, i.e., no additional limit values for slag-based products with proven environmental performance (see European Fertilizer Product Regulation)
- Fair treatment, i.e., level playing field between natural stones and slag-based products



We are working on a revision of the European Public Procurement Directive.

- Expert opinion of the law firm Kopp Assenmacher Nusser on the use of EU public procurement law as an instrument to promote circular economy
- Objective: Amendment of the EU Public Procurement Directive analogous to the amendment of the German Closed Substance Cycle Waste Management Act (§ 45 KrWG)
- Conditional preferential treatment of secondary raw materials in public procurement procedures
- Joint lobbying FEhS/EUROSLAG/EUROFER and also FEAD



The "battle" over the framework conditions for the use of secondary raw materials as fertilizers under the scope of the European Fertilizers Regulation is the "worst" example of the discrepancy between theory and practice in circular economy.

- Inclusion of a solid Cr total limit value in the regulation (PFC) could be prevented.
- Extension of the regulation by definitions for industrial by-products (CMC) necessary and in the pipeline
- EU Commission wants to introduce additional Cr and V solid limit values for our products (converter lime) in the CMC 11 definition
- Joint lobbying (FEhS/EUROSLAG/EUROFER) of the legal opinion on the admissibility of setting limit values in this respect within the framework of "delegated acts". MEP's are involved.



Actions (3)

3. Sustainably increase image and acceptance

- From reactive to proactive communication (we do have a good story to tell - see substitution, contribution to climate protection and technological / environmental performance)
- Spend more resources on communication within the slag value chain
- Do not cannibalize your own business model (see discussion on CO₂ allocation between main and co-product)!



In the current discussion on CO₂ allocation at European level, the marketability of by-products from the steel must be considered!

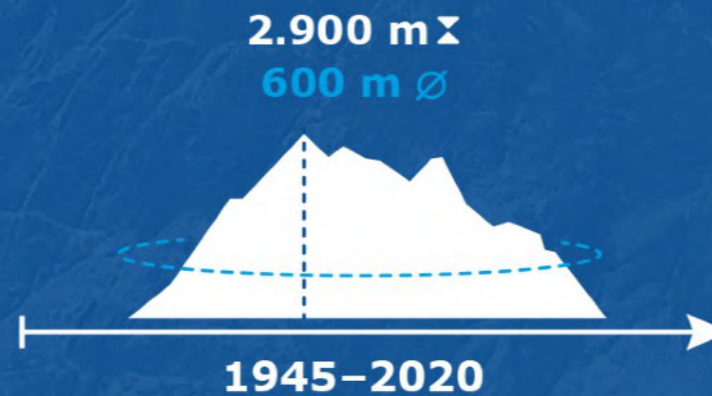
- Compromise of CO₂ allocation between main product (steel) and by-product (slag) necessary
- Comparison of carbon footprint with competing products from other sectors important
 - Slag-based cement (CEM IIIA) vs. CEM I
 - Industrial aggregate vs. natural stone
 - Converter lime vs. natural lime fertiliser
 - Bridge steel vs. concrete



EUROSLAG is lobbying on a position, which is based on economical allocation.

- Focus on granulated blast furnace slag, CO₂ backpack between 50-100 kg/ t
- Derivation via economic allocation according to EN 15804
- No exclusion of economic allocation by formulation of draft EN 17662!
- Even a small CO₂ backpack for transport construction materials and fertilizers will lead to the loss of marketability of these applications.





Würde man alle seit 1945 in Deutschland verwendeten Schlacken – über eine Milliarde Tonnen – auf einen Haufen schütten, wäre dieser mit **600 Meter Durchmesser** und **2.900 Meter Höhe** so groß wie die Zugspitze.

Slag based construction materials and fertilizers are best practice examples for circular economy and the preservation of natural resources!

MERCI / THANK YOU VERY MUCH !

Thomas REICHE

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