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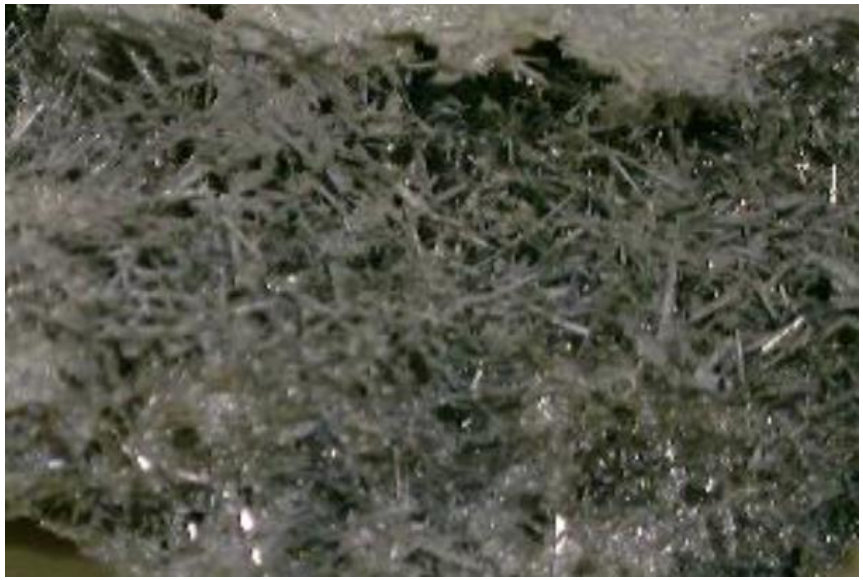
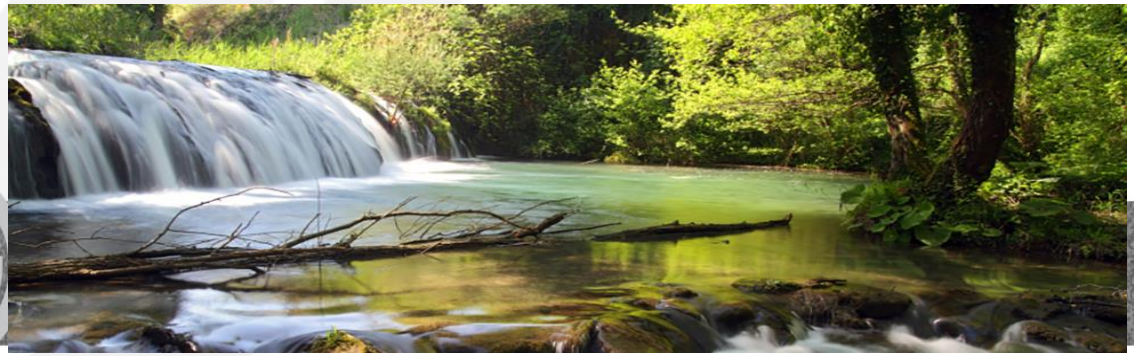
Expensive zinc losses – a reflection over BREF data



What is BAT and BREF?

- To get common rules and requirements for all plants in the same industry sector around Europe an EU directive is created
- Decide what is the Best Available Technique (BAT) for different processes
- Create a BREF: Best Available Technique Reference Document
- Aim: Knowledge transformation, better performance, less environmental impact



Data collection

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The work has started with data collection from a large number of plants around Europe – a questionnaire have been sent out

The data will be used to set requirements for the plants in the future

Key environmental issues for the BREF:

- **Energy consumption/efficiency**
- **Materials consumption (zinc, degreasing, pickling, fluxing…)**
- **Generation of waste (ash, hard zinc, filter dust…)**

Participating companies

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- **I expected a hard work with the questionnaire, but everybody from NG was very helpful (8 plants) – other NA:s had a worse situation…**

M State	BG Submitted	BG Planned
Austria	0	7
Belgium	1 (Lennsens)	10
Bulgaria	0	0
Czech Rep	3 (2xWiegel; AM Ostrava)	0
Germany	4 (?)	17
Denmark	3	2
Spain	7	16
Finland	0	0
France	10	10
Italy	12 (inc 1 tube)	12 (inc 1 tube)
Luxembourg	0	0
Netherlands	0	8
Norway	0	0
Poland	0	2 (tubes)
Portugal	4 (?)	4
Romania	0	0
Sweden	4	5
Slovakia	0	0
UK	10	13
Greece	0	2
TOTAL	**58 (inc 1 tube)**	**108**

What can you learn from the data?

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To collect the data has been quite interesting (even though the data xl-sheet has been a bit complicated ☺)

There is a lot of interesting information to study…

- **Relation between degreasing system and consumption of pickling acid…**
- **Energy consumption in different plants….**
- **This time focus on zinc loss in the process…**

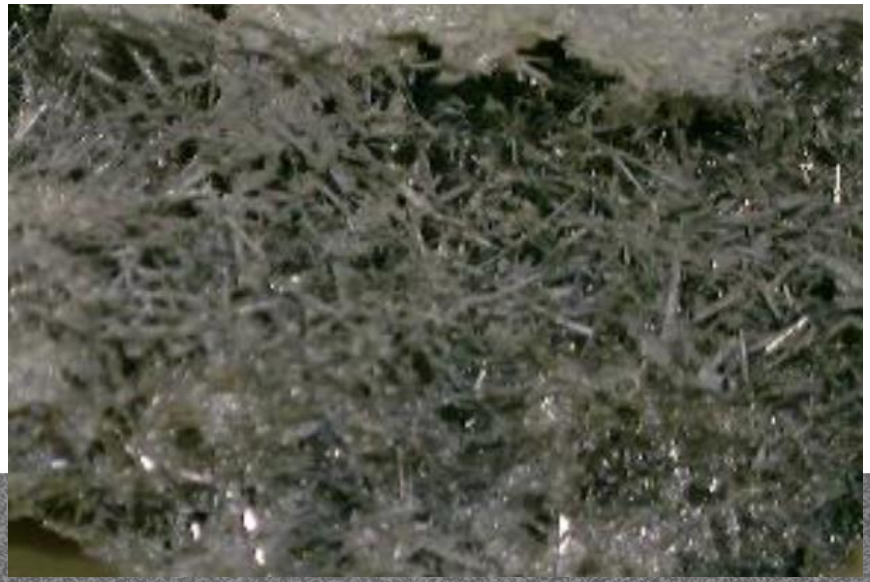
Ash

Ash consists of zinc oxide. The zinc content is about 70-80%
Total zinc consumption for ash: about 15-20%
Sold for 35-45% of the zinc price

Dross

- **Dross / hard zinc consists of iron-zinc phase**
- **Stands for about 7-11% of zinc consumption**
- **Not possible to recycle on the galvanizing plant - Sold for 65-75% of the zinc price**
- **Used for the production of zinc oxide**

Average Fe values in dross is 2,3 - 2,5% - Best values seen around 3,5% - worse values: < 1%



Data

Waste	Share of purchased zinc	Per tonnes of hdg steel	Zinc content	Selling price
Ash	15-20 %	4-25 kg 0.4-2.5 %	70-80 %	35-45 %
Hard zinc	7-11 %	5-30 kg 0.5-3 %	Ca 97-98 %	65-75 %

How large is the loss?

- **Assume a zinc consumption of 180 tonnes and a hard zinc production of 16 ton => 8,9 % of purchased zinc goes into dross**

- **180 tons of zinc and a volume of galvanized steel of 2 647 tonnes per year (average 6.8% of zinc per tonne of steel) causes the percentage of hard zinc to be 16/2 647 = 0.6% per tonne of galvanized steel ... (does not sound so high - but costs anyway money)**

16 000 kg x 30 kr/kg = 480 000 SEK

Sales price: 70 % of purchase price, ie 30 % "loss" = 144 000 SEK in this case ...

Classification of waste

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New directive from the European Commission (April 2018)

ANH = Absolutely Non Hazardous
AH= Absolutely Hazardous

Type of waste	Classification
Ash	***ANH***
Hard zinc	***ANH***
Solid waist from gas treatment	***AH***
Spent flux	***AH***
Wastes not otherwise specified	***ANH***

Some of the residues can be ‘hazardous’ for transport even if they not are classified as hazardous in the waste lists.