



AGENDA REPORT
May 3, 2018

SUBJECT:

Presentation to the Board on the Dry Stabilat Process, a new waste-to-energy technology for Brevard County.

DEPT/OFFICE:

District 3

ATTACHMENTS:

Description

No Attachments Available

REVIEWERS:

Department
District 3

Reviewer
Tobia, John



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April 25, 2018

M E M O R A N D U M

TO: John Tobia, District 3 Commissioner

RE: Item I.F., Presentation on Dry Stabilat Process

The Board of County Commissioners, in regular session on April 24, 2018, acknowledged the presentation by Jeremy Roberts on the Dry Stabilat Process for a new waste-to-energy technology for Brevard County.

Your continued cooperation is greatly appreciated.

Sincerely yours,

BOARD OF COUNTY COMMISSIONERS
SCOTT ELLIS, CLERK

Tammy Rowe, Deputy Clerk

/cmw



**An innovative and climate protective waste
treatment system**



The Herhof Dry Stabilat Process





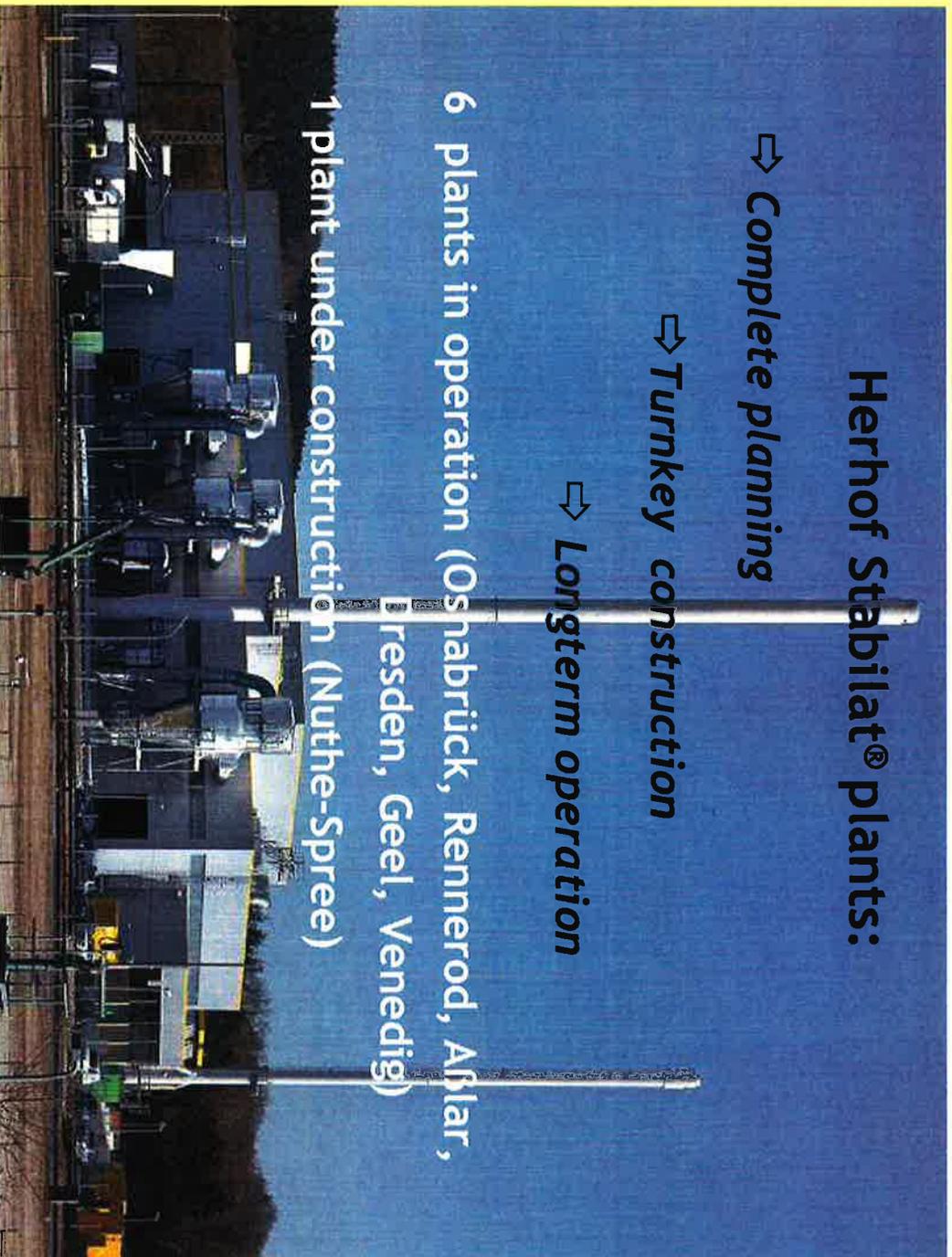
Advantages of the Herhof technology

- Waste to energy
- No waste material for landfilling
- Biological drying increases calorific value
- Separation of waste into material for energy recovery and material recovery
- 50% of input material transferred into secondary fuel
- Secondary fuel has 2/3 of organic material
- CO₂ savings for 2/3 of the output material (Stabilat)

The Herhof Dry Stabilat Process

Herhof Stabilat® plants:

- ⇒ *Complete planning*
 - ⇒ *Turnkey construction*
 - ⇒ *Longterm operation*
- 6 plants in operation (Osnabrück, Rennerod, Ablar, Presden, Geel, Venedig)
- 1 plant under construction (Nuthe-Spree)



The Herhof Dry Stabilat Process



Stabilat® technology - Using MSW as a resource



Material Recovery



Energy Recovery



Condensate / Permeate
30%



Metals
Fe 4%
NF* 1%



Inerts/ Glass
12%
Batteries / Electronic scrap



Stabilat®
53%

NF* = Nonferrous

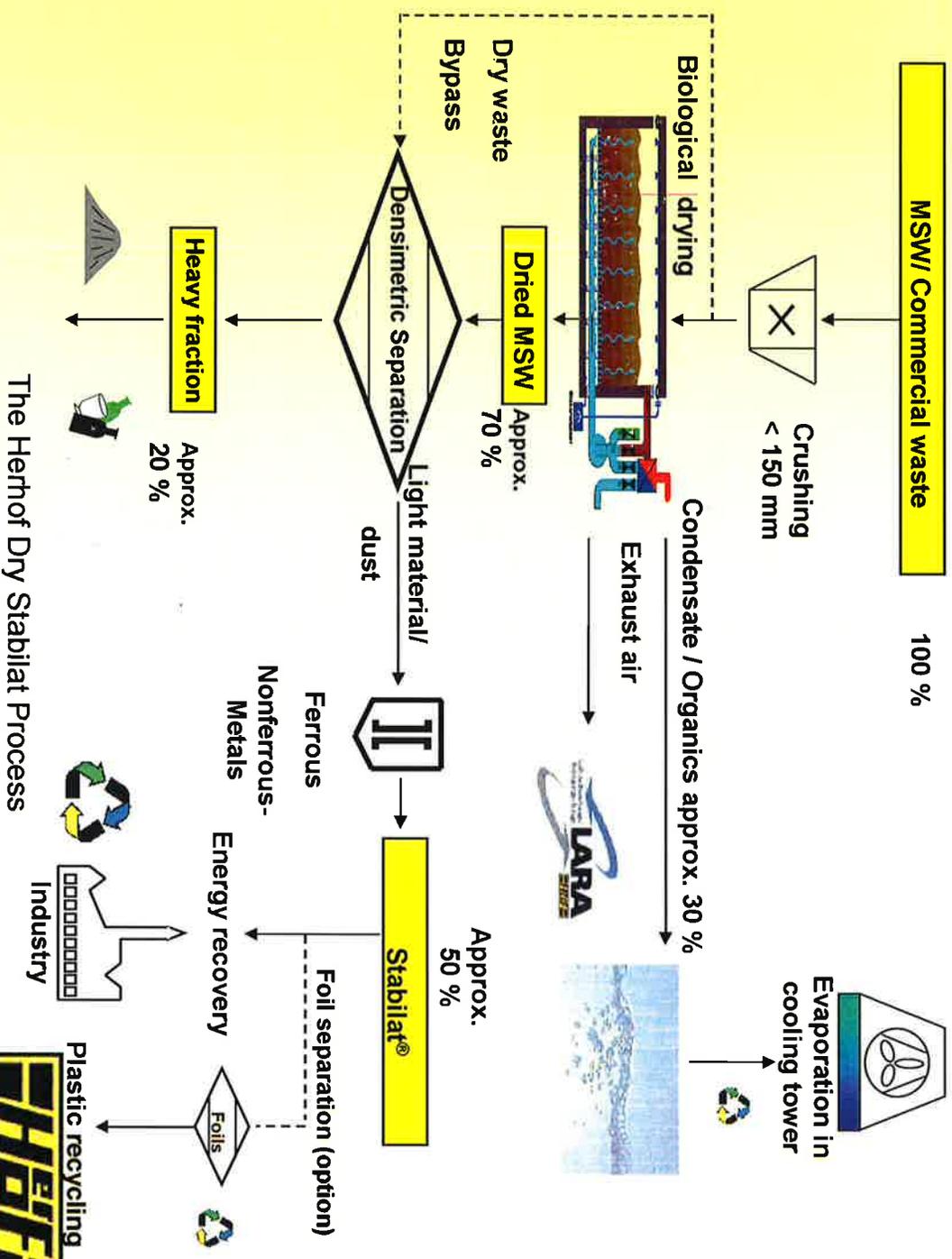
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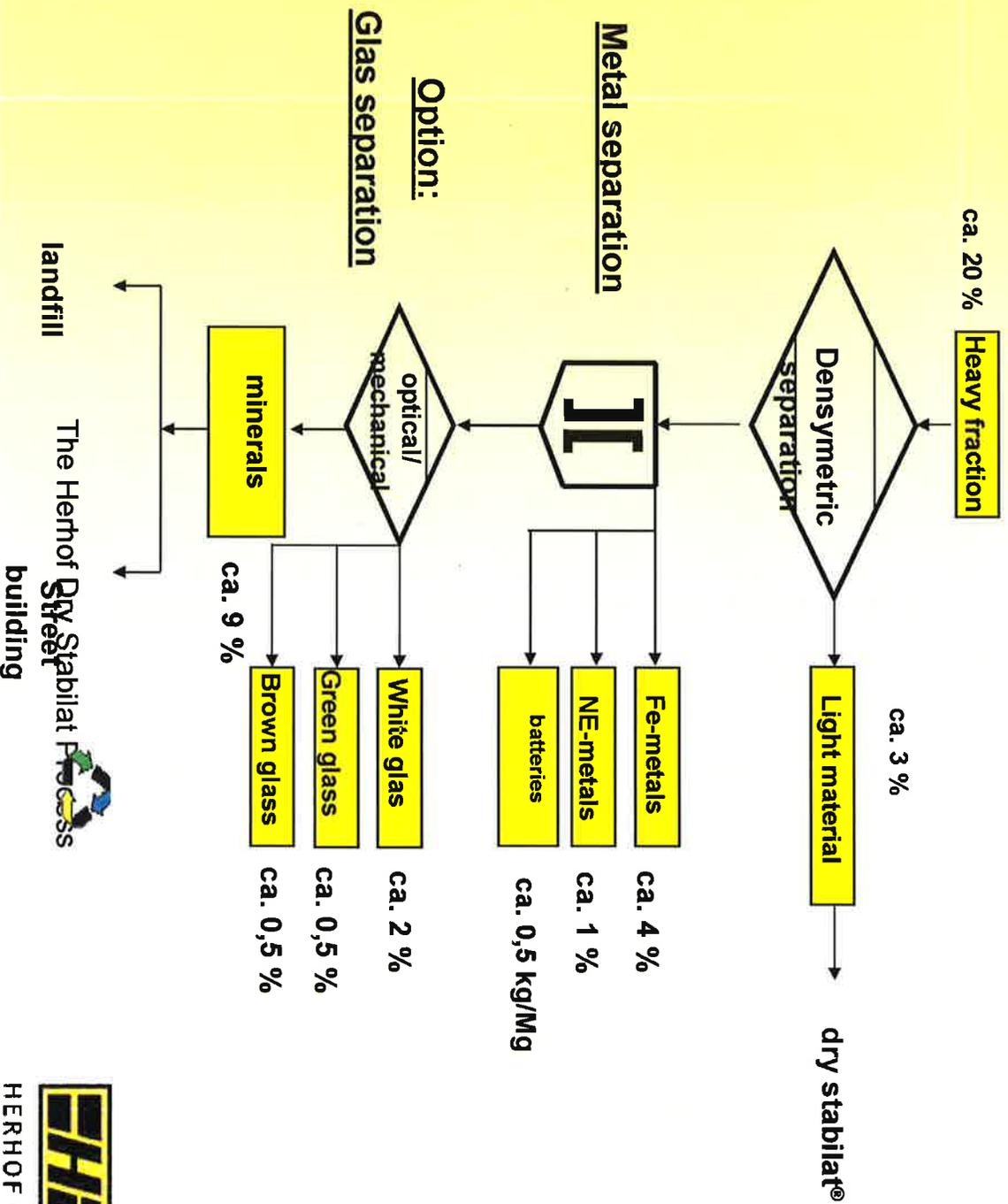


Herhof Stabilat® Technology - with glass separation -



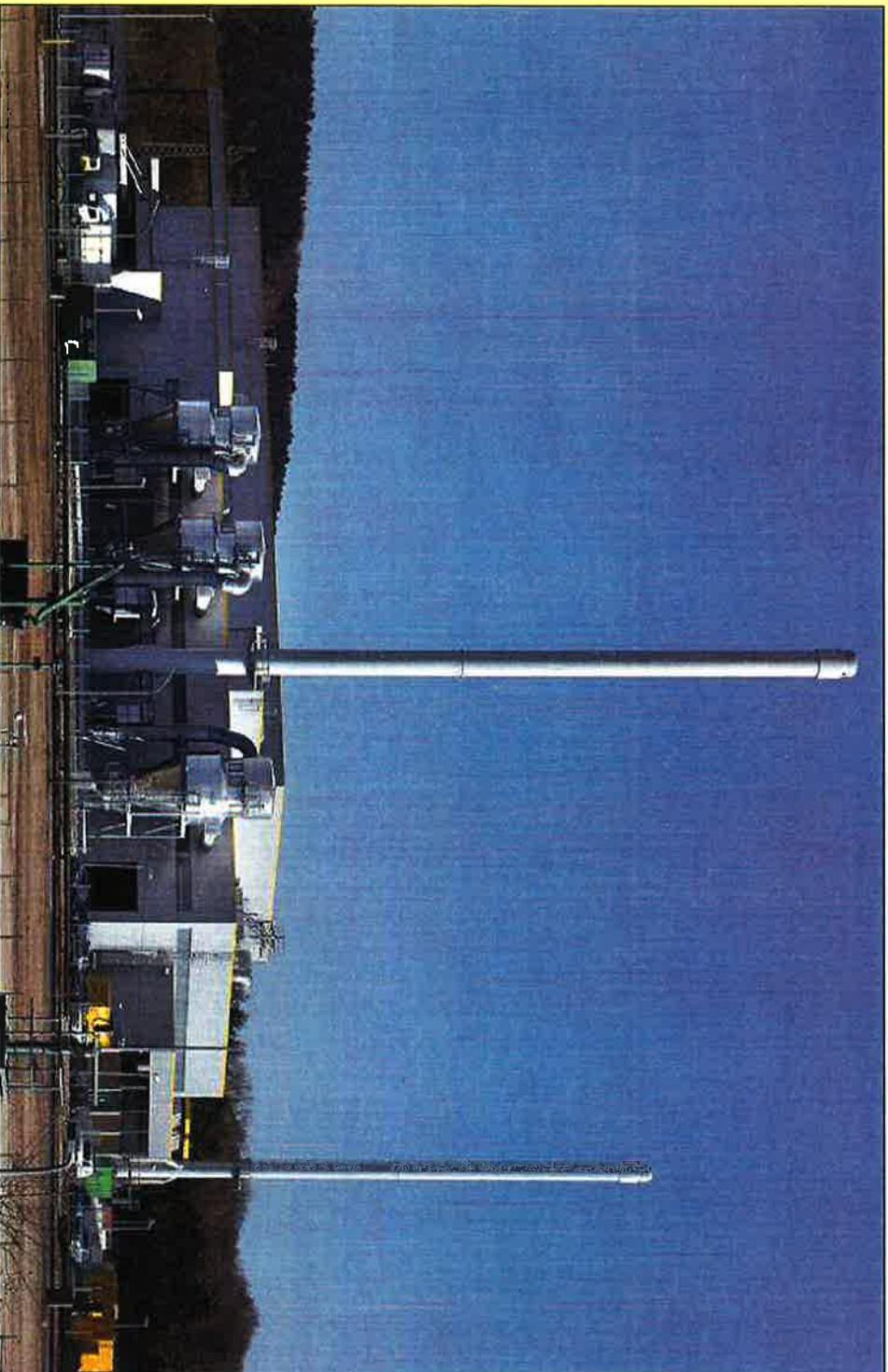
The Herhof Dry Stabilat Process

Separation of the heavy fraction



landfill The Herhof Dry Stabilat Process building

View of a plant (MBS Osnabrück)



The Herhof Dry Stabilat Process



Herhof box with process crane



The Herhof Dry Stabilat Process

Ventilation corridor



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Condensate cleaning

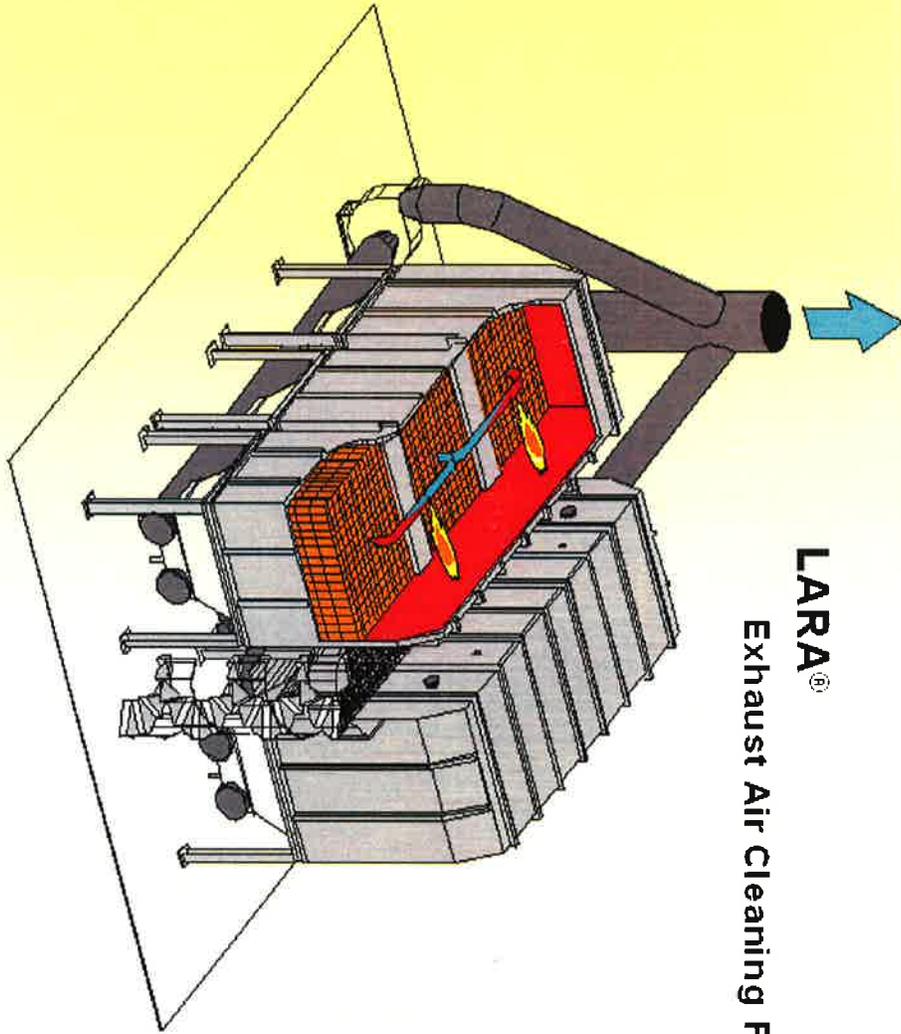


The Herhof Dry Stabilat Process

Exhaust air cleaning



LARA[®]
Exhaust Air Cleaning Plant



The Herhof Dry Stabilat Process



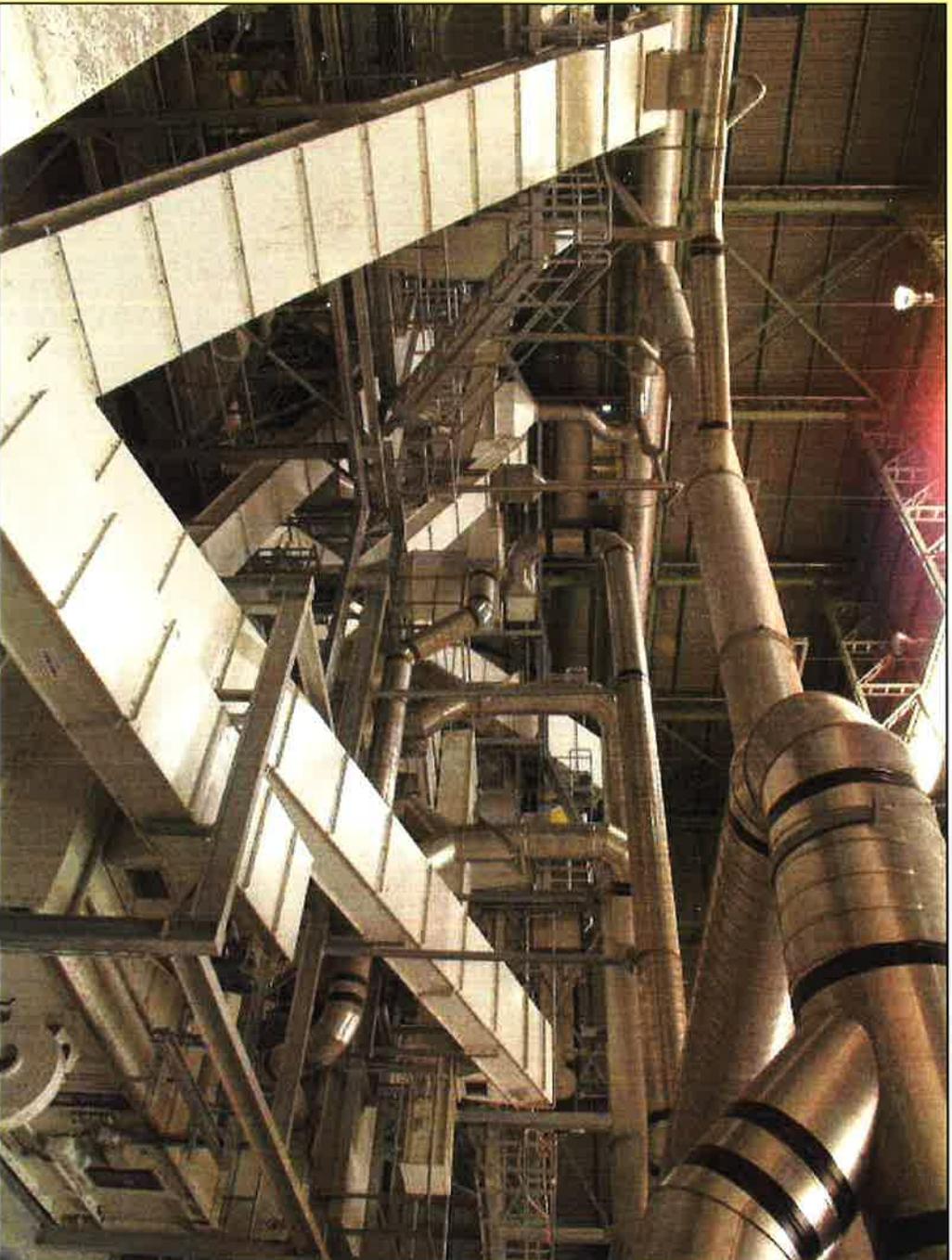
LARA air cleaning



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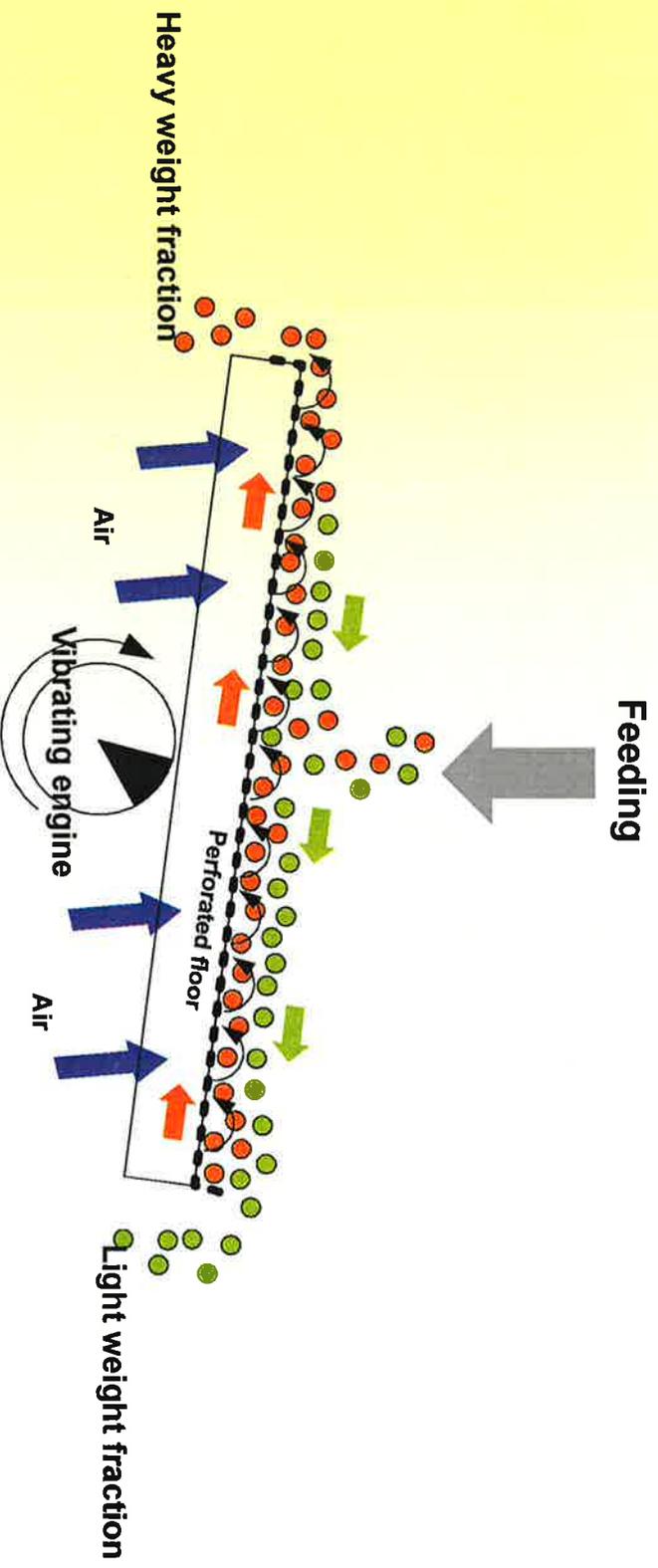


Machinery Hall



The Herhof Dry Stabilat Process

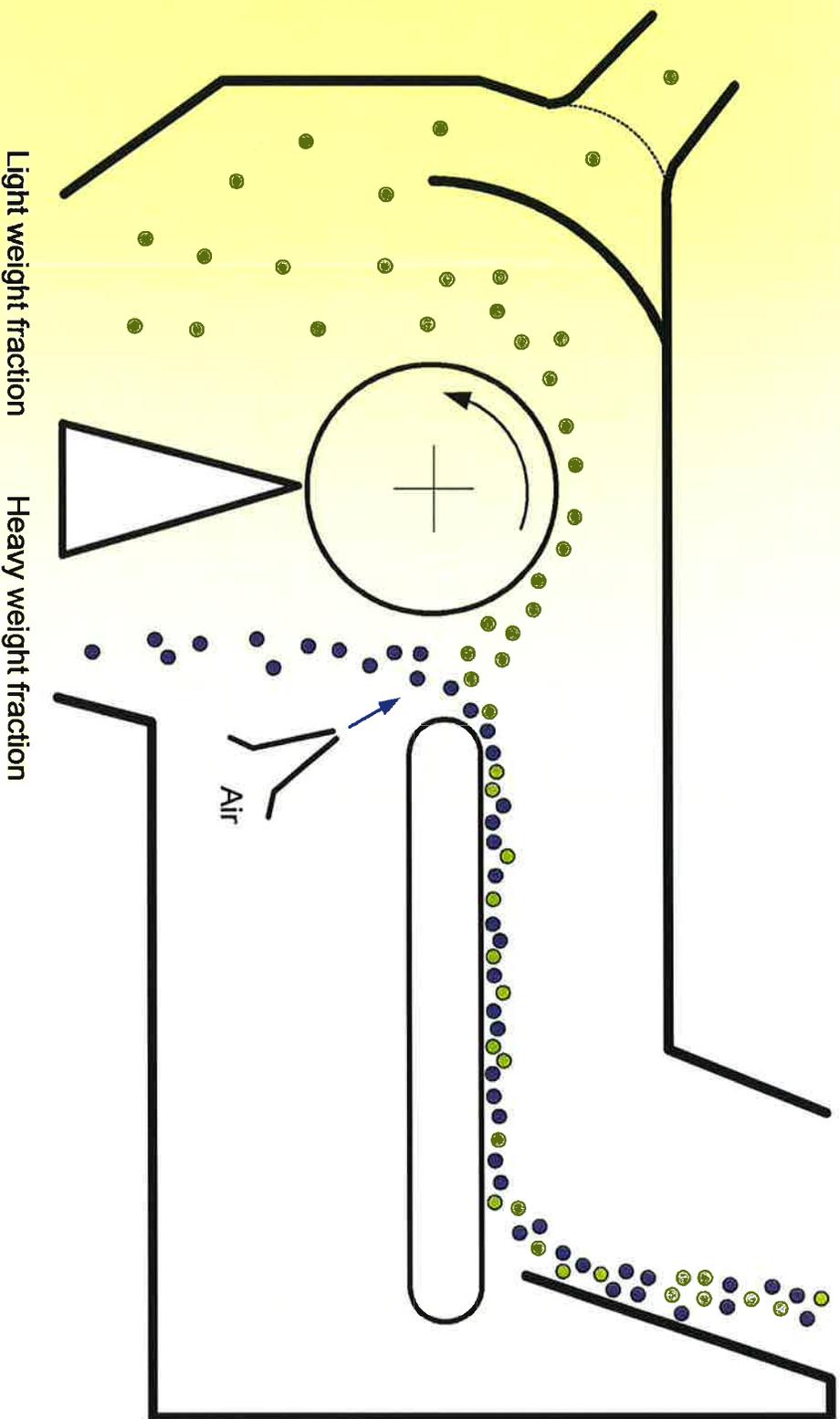
Wind sifter



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Wind sighter



The Herhof Dry Stabilat Process



Batteries



The Herhof Dry Stabilat Process





Stabilat® - Fluff



Stabilat® - Softpellet



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Stabilat® - Hardpellet

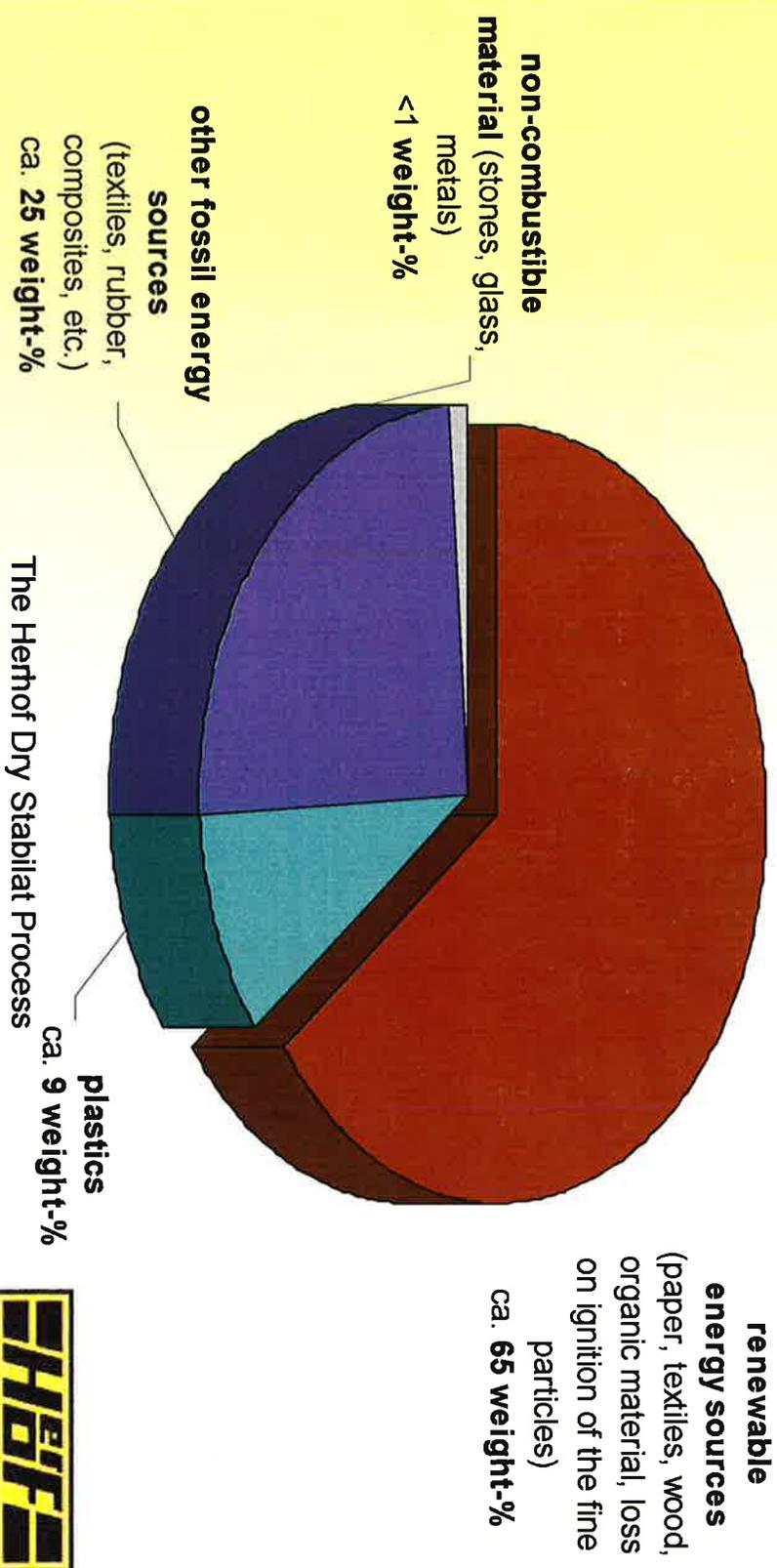


The Herhof Dry Stabilat Process



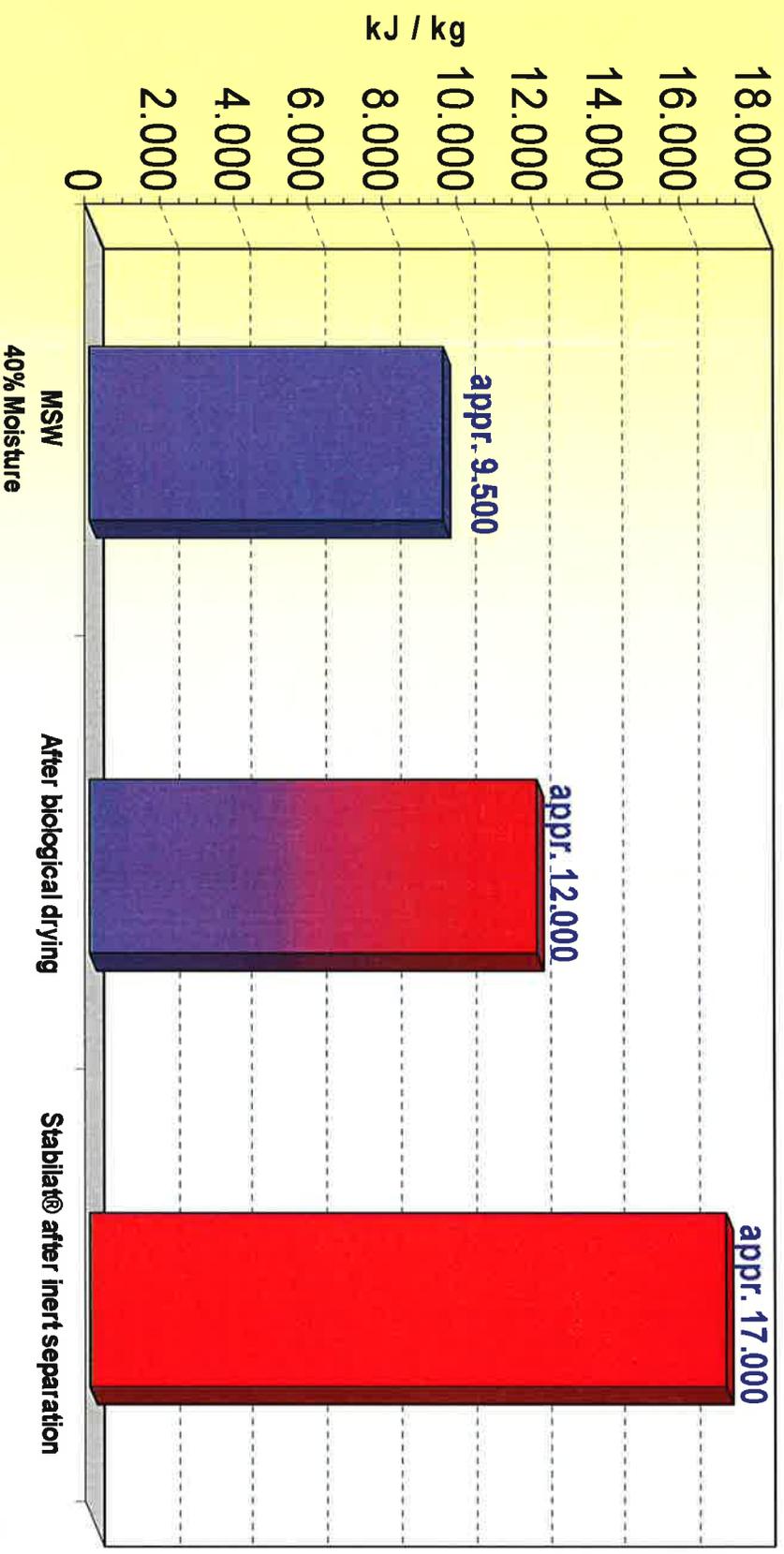
Composition of stabilat®

Heating value : 15 - 18 MJ/kg
Water content : ca. 15 weight-%
Percentage of the total waste throughput : ca. 53 weight-%





Increase of calorific value



The Herhof Dry Stablat Process





Calorific values of different fuels in comparison

Fuels	Calorific value [kJ/kg]	Calorific value [Btu/lbs]
Lignite	8,000 – 16,000	3,600 – 7,200
Wood	10,500 – 16,500	4,500 – 7,100
Paper	13,500	5,800
Stabilat [®]	16,000 – 18,000	6,900 – 7,800
Pulverized lignite	20,000	8,600
Hard coal	22,000 – 33,000	9,500 – 14,200
Heating oil	42,000	18,100

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Energy recovery

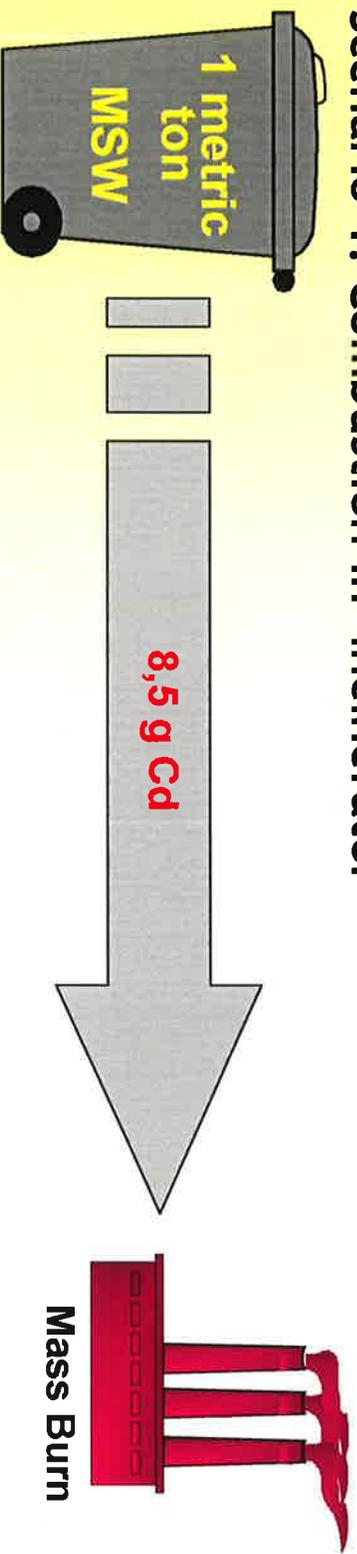
- 1,000 tons Stabilat equal approx.
 - 447 MJ (heat recovery) and
 - 114 kW (el. Power)

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Comparison of traditional mass burn and the Herhof Stabilat® process in terms of heavy metal reduction

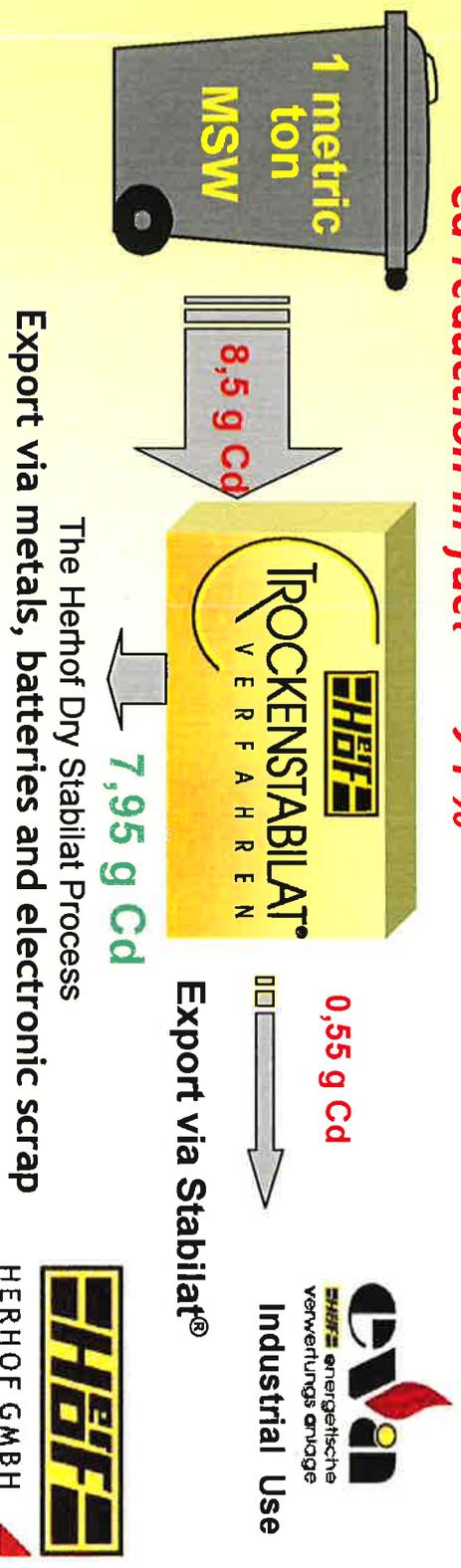
- Cadmium -

Scenario 1: Combustion in incinerator

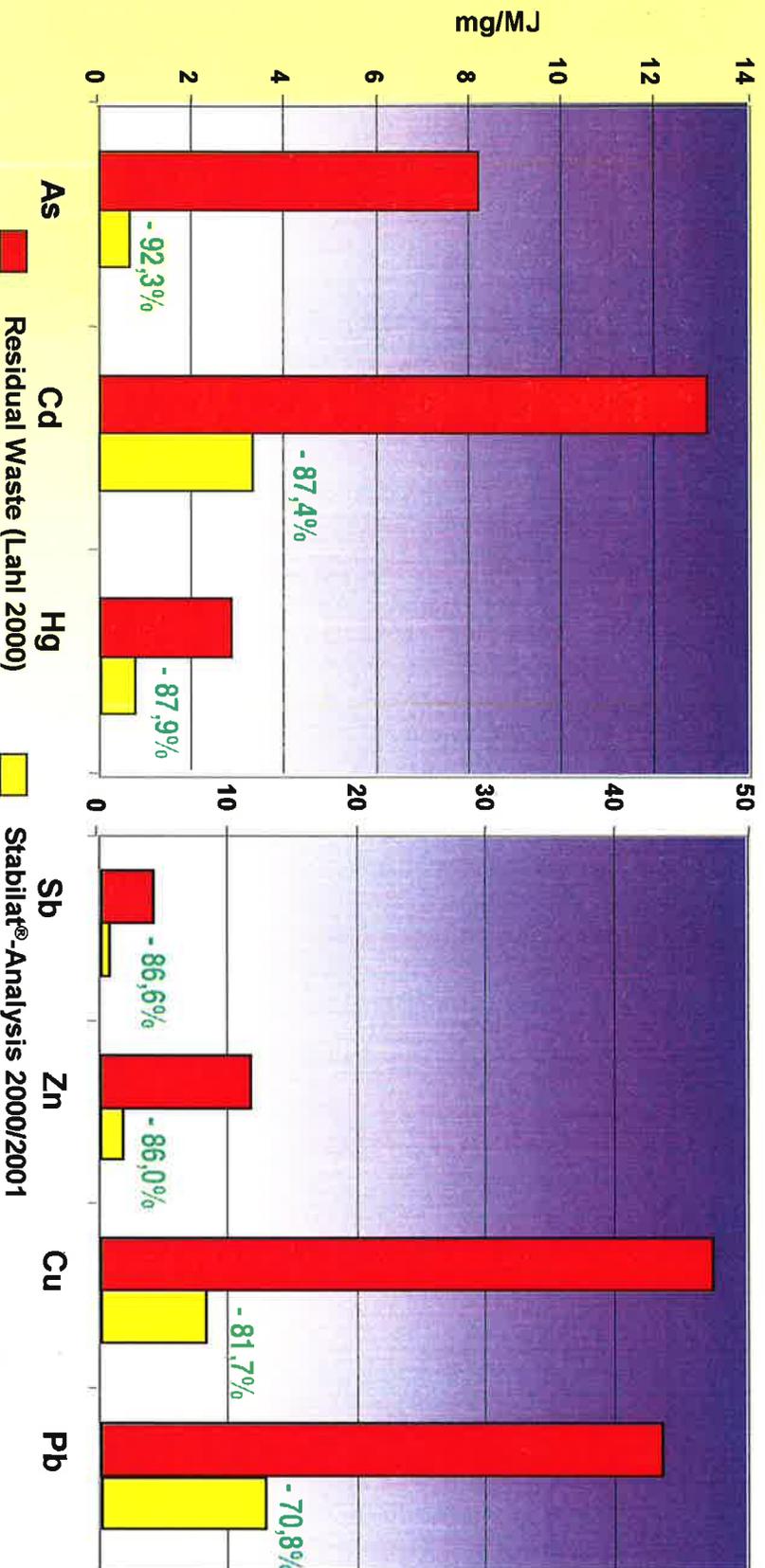


Scenario 2: Recovery by Stabilat® Technology

Cd reduction in fuel -94 %



Energy Related Heavy Metal Reduction MSW vs. Stabilat®



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Energy Recovery with Stabilat®



- Industrial energy recovery:**
- Co combustion
 - Cement kilns
 - Power plants

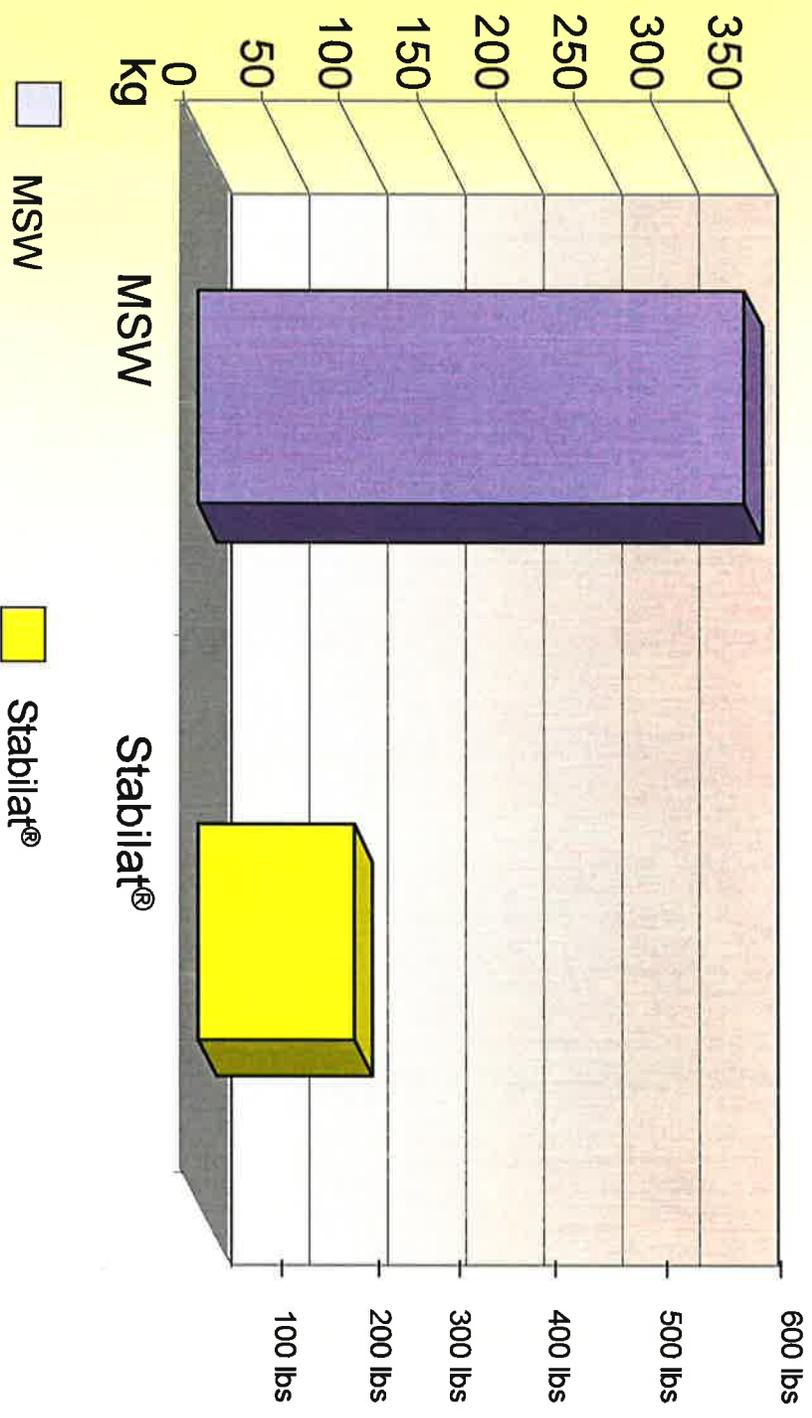


- Material utilisation**
- Gasification with the IPV process
 - Production of diesel fuel
 - Production of methanol
 - Energy and heat generation

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Bottom Ash from 1 metric ton MSW



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Climate effective CO₂-emissions

- comparison of fossil energy sources with stabilate® -

energy source	Overall CO ₂ - emission factor	heat value	specific Overall-CO ₂ - emissions	regenerative energy contingent	specific fossil CO ₂ - emissions	fossil CO ₂ - emission factor
	g CO ₂ /MJ	MJ/kg	g CO ₂ /kg	%-energy contingent	g CO ₂ / kg	g CO ₂ /MJ
brown coal	111	8,6	955	0%	955	111
hard coal	93	29,7	2.762	0%	2.762	93
fuel oil	74	35,4	2.620	0%	2.620	74
natural gas	56	31,7	1.775	0%	1.775	56
stabilate	71	15	1.067	66,8%	354	24

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Status report for the contribution of the waste management to climate protection and possible potentials

Source: Öko Institut e.V. and ifeu Heidelberg GmbH; August 2005
by order of Bundesumweltamt

There are 3 alternative processes for MSW:

1. Conventional MBT with disposal of the rotting residuals in a waste incineration plant
2. MBT with fermentation of the „wet fraction“, drying of the fermentation residuals in a curing area and disposal in a waste incineration plant
3. **Mechanical-Biological Stabilisation (MBS)** with drying of the complete input by means of an intense rotting process; mechanical separation of the dry waste in a secondary fuel fraction, metals and inerts

The Herhof Dry Stabilat Process





Status report for the contribution of the waste management to climate protection and possible potentials

Source: Öko Institut e.V. and ifeu Heidelberg GmbH; August 2005
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Concerning the mentioned criterias there is no basic difference between the three processes.

But it is assumed that the MBS will put the other two processes out of business - under the premise that no residuals will be sent to landfill, because in connection with energy recovery the MBS is the cheapest process.

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