FORO DE COMUNICADORES CON ENFASIS EN CO-PROCESAMIENTO

CO-PROCESAMIENTO EN LA INDUSTRIA CEMENTERA
EXPERIENCIA A NIVEL EUROPEA

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REGULATORY FRAMEWORK & ENVIRONMENTAL PERMITS
WASTE FRAMEWORK DIRECTIVE

- Adopted in 2008
- Implementation at Member State level by December 2010
- Incorporates new Waste Hierarchy – “priority order”
Co-processing in cement industry = recovery operation

• A ruling delivered by the European Court of Justice on the law case C-228/00 (European Commission vs. Germany 13/2/03)
  → co-processing of waste in cement plants
    = recovery (≠ disposal)

using waste as fuel in cement kilns should be classified as recovery, while burning municipal waste in dedicated incinerators, even with energy recovery, should be classified as disposal
Because

- The combustible parts of the waste replace fossils fuels;
- The non-combustible parts of the waste replace raw materials;
- The energy efficiency in cement kilns is high;
- The environmental impact is low:
  - emission to air (strictly regulated)
    - kiln - preheater system - “neutraliser” of the acid gases
    - high temperatures assures complete combustion
  - there are no releases to soil (no ash and slag) or to water
The Waste Framework Directive opens the door to the lifting of the waste status of some waste streams, e.g. used tyres, prior to the completion of the recovery operation.

CEMBUREAU actions
- Build own cement industry’s proposal on the end-of-waste criteria for used tyres
- Aim at limiting as much as possible the declassification of used tyres
LANDFILL DIRECTIVE

• Adopted in 1999
• Implementation at Member State level by July 2001
• Aims at preventing or reducing...
  ▪ Negative effects on the environment and global environment
    – Surface water, groundwater; soil and air, greenhouse effect
  ▪ Risks to human health

... from the landfilling of waste, during the whole life-cycle of the landfill

• Sets up provisions covering location of landfills and technical and engineering requirements
  ▪ Water control and leachate management, protection of soil and water, and methane emissions control
CO-PROCESSING FRAMEWORK REGULATION
BEST AVAILABLE TECHNIQUE (BAT)

Best
most effective in achieving a high general level of protection of the environment as a whole

Available
developed on a scale to be implemented in the relevant industrial sector, under economically and technically viable conditions, advantages balanced against costs

Techniques
the technology used and the way the installation is designed, built, maintained, operated and decommissioned
The BREF is the outcome of a process of information exchange between the main stakeholders for each major industrial sector.

The BREFs are intended to give guidance to regulators on each sector and its emissions, what can be considered as BAT for the sector, the levels of pollution abatement achievable, the cross-media implications, energy use, costs, etc.

2\textsuperscript{nd} Cement, Lime and MgO BREF \(\Rightarrow\) published on 25 June 2010 in the Official Journal of the European Union.

Co-processing of waste in the cement industry is covered by the Cement BREF.

INDUSTRIAL EMISSIONS DIRECTIVE


• **Industrial Emissions Directive (IED) (entry into force 6 January 2011)**
  - Integrated approach
  - Strengthen application of BAT/BREF
  - Better implementation (inspections, permit review)
  - Stricter emission limit values (ELVs) and monitoring ("minimum requirements")

Annex I: Categories of activities

- 3.1. (a) Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day...

- 5.2. Disposal or recovery of waste in waste incineration plants or in waste co-incineration plants:
  - (a) for non-hazardous waste with a capacity exceeding 3 tonnes/hour
  - (b) for hazardous waste with a capacity exceeding 10 tonnes/day
Chapter IV - Special provisions for waste incineration and co-incineration plants

Annex VI - Technical provisions relating to waste incineration and co-incineration plants

- Part 4 Determination of air emission limit values for the co-incineration of waste

2. Special provisions for cement kilns co-incinerating waste
   - “Minimum” ELVs remain the same as under the Waste Incineration Directive, except Lepol kilns and long rotary kilns co-incinerating waste: NO$_x$ not more than 800mg/Nm$^3$ until 2016

If more than 40% of the heat release comes from hazardous waste, or the plant co-incinerates untreated mixed municipal waste, the ELVs for dedicated incinerators apply
FACTS & FIGURES
Year: 2007
Region: EU 27
Company: All GNR participants

Thermal energy per tonne clinker

MJ/t

% clinker production

CSI - "Getting the Numbers Right"

Year: 2007
Region: EU 27
Company: All GNR participants

Percent thermal energy from conventional fuel

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

% clinker production


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CSI - "Getting the Numbers Right"

Year: 2007
Region: EU 27
Company: All GNR participants

Percent thermal energy from fossil waste

% clinker production

- 2007
- 2006
- 2005
- 2000
- 1990
CSI - "Getting the Numbers Right"

Year: 2007
Region: EU 27
Company: All GNR participants

Percent thermal energy from biomass

% clinker production

CO₂ FROM ALTERNATIVE FUELS & BIOMASS

- Alternative fuels include fossil-fuel based fractions, such as waste tyres, waste oil and plastics, and biomass fractions, such as waste wood, sewage sludge and animal meal.

- CO₂ from biomass fuels is considered climate-neutral, because emissions can be compensated by regrowth of biomass in the short term.

- CO₂ from fossil fuel-derived waste, in contrast, is not a priori climate-neutral.
  - For tyres, the share of biomass accepted at EU level is 27% (higher factors accepted in some European countries, like Spain, 31%).
  - For Refuse-Derived Fuel the average biomass content is accepted as 37.3%.
**ALTERNATIVE FUELS**

**Thermal energy by fuel**
**EU27 - Year 2008**

- **Coal + anthracite + waste coal**: 27%
- **Petrol coke**: 45%
- **(Ultra) heavy fuel**: 2%
- **Diesel oil**: 0%
- **Natural gas**: 1%
- **Shale**: 0%
- **Lignite**: 3%
- **Alternative fossil fuels**: 21.9%

**Source:** WBCSD CSI - GNR

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Alternative fossil fuels EU27 - Year 2008

- **Biomass**: 20%
- **Other fossil based wastes**: 10%
- **Impregnated saw dust**: 4%
- **Solvents**: 19%
- **Plastics**: 17%
- **Mixed industrial waste**: 17%
- **Waste oil**: 5%
- **Tyres**: 17%

Source: WBCSD CSI - GNR
In 2005 the cement industry recovered 11.5 million tonnes of waste.

THE EUROPEAN CEMENT INDUSTRY RECOVERS THE LARGEST VOLUMES OF WASTE AND BIOMASS

- Europe accounts for 60% of fossil waste and 50% biomass recovered in the global cement industry (however, GNR covers 100% of Europe, 75% of NA and < 50% non-Annex 1)

- Very important growth of biomass use in Europe from 2000 to 2005, is probably animal meal and – fat, which is a temporary source
<table>
<thead>
<tr>
<th>YEAR</th>
<th>SUBSTITUTION RATE</th>
<th>CO₂ EMISSIONS AVOIDED BY FOSSIL FUELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>3%</td>
<td>1.6 Mt</td>
</tr>
<tr>
<td>2000</td>
<td>about 10.5%</td>
<td>5.5 Mt</td>
</tr>
<tr>
<td>2008</td>
<td>22%</td>
<td>12 Mt</td>
</tr>
</tbody>
</table>
EU BARRIERS
• Member States, with a few exceptions, have shown a reluctance to consider waste management as a high priority and have failed to establish the proper policies

• At EU national level
  ▪ No incentive schemes have been set up to develop waste collection and sorting systems
  ▪ No pressure is exercised to implement national waste management plans where they exist
    – e.g. Italy, Bulgaria, Romania, Greece are countries with poorly developed national waste supply chain (same holds true for biomass)
  ▪ In spite of the Landfill Directive, no appropriate measures are put in place to prevent illegal landfilling and to reduce landfilling itself
NEW BARRIERS

• Monitoring and Reporting Draft Regulation
  ▪ adopt criteria from the renewable energy sources directive for biomass. This could mean that the biomass used by the European cement industry will no longer be considered as carbon-neutral anymore

• Various uncertainties surround access to biomass in the EU
  ▪ EU policies
      • Biomass ⇒ biomass for heating, electricity, biofuels for transport
    – Renewables target (Mar 2007)
      • EU target 20% of total energy consumption by renewables by 2020 ⇒ use of biomass fundamentally redirected
NEW BARRIERS

- Increasing biomass price due to limited availability
- If all the sectors, e.g. power, lime, cement, steel, ceramics, were to consume the maximum biomass, there would not be enough biomass to cover demand from all sectors, as resources are limited
EU
ADVOCACY
KEY MEASURES FOR GROWTH

- CEMBUREAU has been strongly advocating EU institutions to
  - Take waste management seriously by improving collection and sorting methods at the national level
  - End trade distortion created by EU policies in benefit of biofuels industry and electric power
  - Put in place a well-functioning waste and biomass market to assure a reliable, sustainable and sufficient supply
www.cembureau.eu