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european cement research academy

Main Obstacles for Funding

Workshop European Commission – CEMBUREAU

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AGENDA

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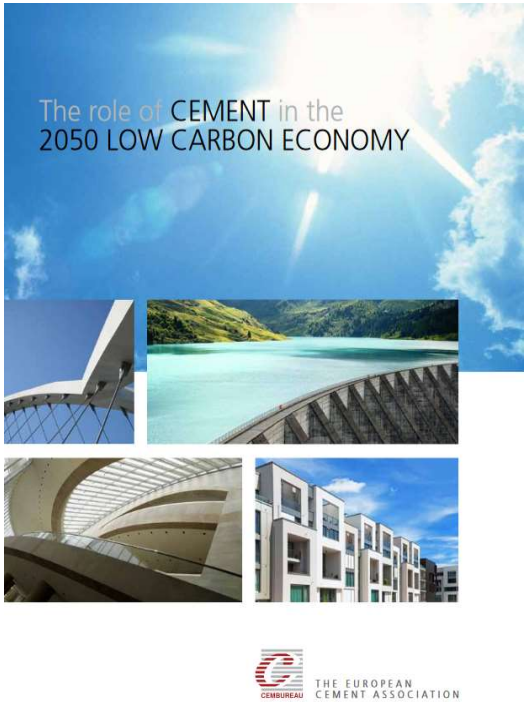
3	European Funding for CCS
4	Funding Challenges
5	Innovation Fund – Chances and Challenges
6	IF-project planning (co-financing, synergies)
7	Recommendations

Low carbon topics and EU Funding Programmes

„Low carbon topics in the cement industry“ Funding options



5 parallel routes for cement in **the low carbon economy roadmap:**

- **resource efficiency**
- **energy efficiency**
- **carbon sequestration and reuse**
- **product efficiency**
- **downstream**

Public funding:

- Horizon 2020: R&I
  - SC3 (energy)> CCS
  - SC5 (raw materials)
  - NMBP, SPIRE (advanced materials/manufacturing etc.)
- Interreg: low carbon/resource efficiency
- InnoFin: demonstration projects
- NER 300>CCS
- Other (private investment, national programmes)

Status quo: European Funding for CCS

Funding for research projects (lower TRL-level)

- H2020, Energy, **NZE- Calls** (Enabling near-zero CO_2 emissions):
  - Work programme 2018-2020: 6 calls
  - e.g. LEILAC: Lime and cement industry (-2021) // CC
  - e.g. CLEANKER – Calcium looping in cement plants (-2021) // CC
- ERA-NET-Cofunds: ACT – (Accelerating CCS-Technologies) – projects
- Low carbon Interreg projects

Demonstration projects:

- InnoFin: Energy Demonstration projects?
- NER Programme: **no successful CCS project**

Funding Challenges

Access to funding

- Projects have to „fit in“
- Private versus public sector approach
- Lack of flexibility of legal requirements

Costs

- Relatively high costs for demonstration projects
- Co-financing, synergies, procurement
- Long-term funding

Complexity

- „Breakthrough projects“, lack of experience
- Technical problems
- Coordination

Ethical questions (CCS/CCU)

- Low public acceptance of CCS/CCU
- Lack in support by member states

Innvation Fund: Chances and Challenges

Chances	Challenges
• „Lessons learned from NER 300“ • More flexibility • Bigger scope (more technologies covered) • Increase in funding • Simplification of small-scale projects • Project development assistance • Two stage evaluation process • Upfront financing; milestone approach in financing • „Idea to learn from call to call“.	• Selection process (potential to avoid greenhouse gas emissions); • Recovery rate (CO_2 avoidance) • (Co-) financing; synergies • Coordination • „Long-term perspective of projects“ • Support of member states • First call: projects are not yet ready.

IF-project planning (synergies, co-financing)

Research (3-4 years)	Demonstration	Roll-Out Phase
Horizon Europe: Cluster: Digital, Industry, Space/ Energy, Climate, Mobility	Innovation Fund	Cohesion Funds
	„synergies“/ co-financing” (risk-sharing schemes)	Connecting Europe Facility
Cohesion/Structural Funds, e.g. Interreg	Invest EU	
National Programmes e.g. Germany/Energy programme, Decarbonisation programme	InnoFin, Energy demo projects	
	Private investment/ National Funding/Other	Future: Capacity Building Programmes?

Recommendations

For future IF-projects it might be helpful to get some support in:

- Co-financing
- „Synergies“// IF references in other funding programmes
- Project management support in a later stage of the project (not only in the project development phase)
- a clear definition of the CO_2 avoidance potential

Future/Planned IF-projects need

- a long-term strategy
- a good understanding of different funding options/of the political CCS environment

ECRA's approach towards carbon capture

Phase I	Literature study (January - June 2007)	✓
Phase II	Study about technical and financial aspects of CCS projects, concentrating on oxyfuel and post-combustion technology (summer 2007 – summer 2009)	✓
Phase III	Laboratory-scale / small-scale research activities (autumn 2009 – autumn 2011)	✓
Phase IV	Prepare pilot plant (time-frame: 2 - 3 years)	
Phase V	Build and operate pilot plant (time-frame: 3-5 years)	
Phase VI	Demonstration plant (time-frame: 3-5 years)	

Organisation of the CCS project

Steering Committee

Buzzi Unicem
CEMBUREAU
CSI
Cimpor
CRH
LafargeHolcim
HeidelbergCement
Italcementi
PCA
MPA
Norcem
thyssenkrupp Industrial Solutions
Schwenk
Secil
VDZ
Titan
VICAT

External project partners

Aixergee
Cinar
Danish Technical University
Fives FCB
IKN
IrishCement
Praxair
Refratechnik Cement

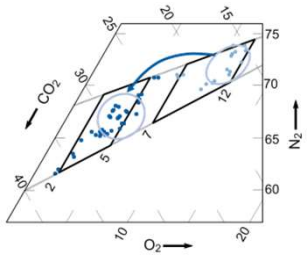
Quelle: Springerprofessional

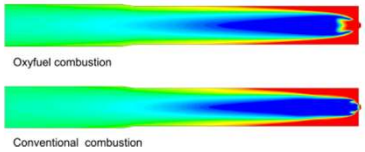
Cooperations

University of Mons
Norcem Projekt
CEMCAP

Finalised oxyfuel research packages

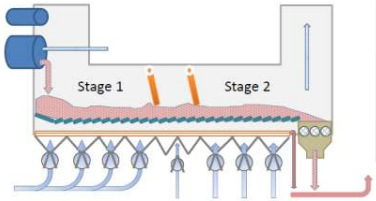
Plant operation and false air reduction

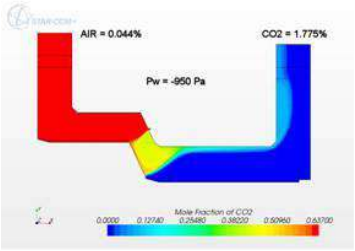


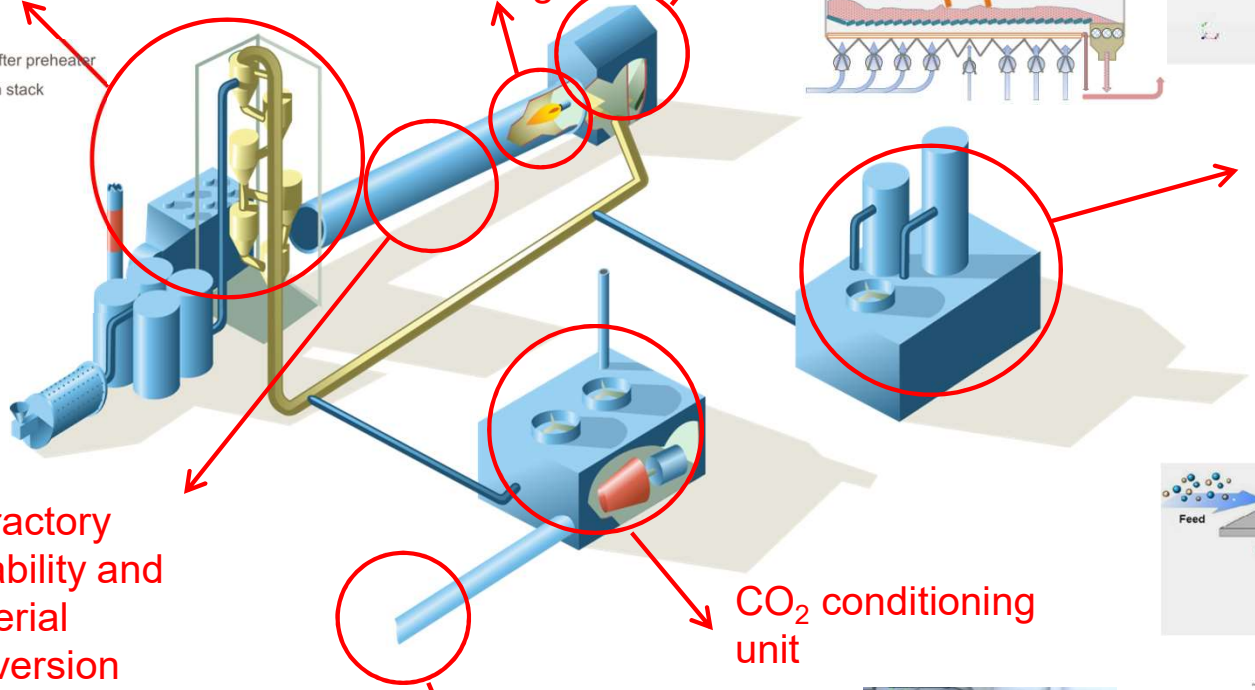


Burner design

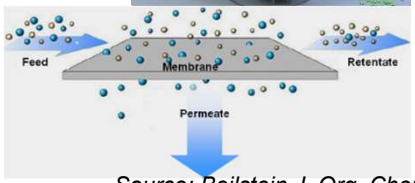
Cooler design





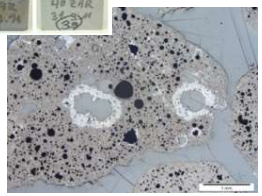


Future oxygen supply systems

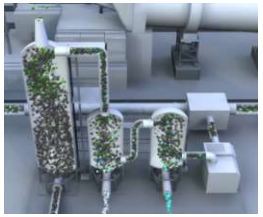


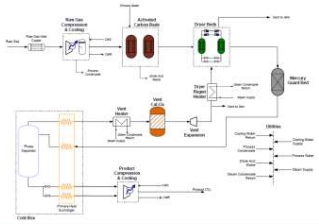
Source: Beilstein J. Org. Chem.

Refractory durability and material conversion



CO_2 conditioning unit





CO_2 reuse

ECRA cooperation in EU CO_2 capture research projects

- Oxyfuel carbon capture technologies for the cement industry based on ECRA project
- 2016 to 2018: Testing of key technologies under cement industry conditions
- Successful demonstration of key oxyfuel technologies; advancement to technological readiness level (TRL 6)

Next step:
Demonstration of a complete oxyfuel capture system prototype in a cement plant (TRL 7 and 8)

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