



ecra

european cement research academy

The European Cement Research Academy

ECRA Members 2017 (I)

- Aalborg Portland
- A TEC Production & Services GmbH
- Buzzi Unicem
- Cementos Molins Industrial S. A.
- Cemex Research Group
- CEMKUT Research, Development
- Cemsuisse
- CIMALUX
- Cimenterie Nationale S. A. L.
- CIMPOR - Indústria de Cimentos, SA
- CRH
- Dyckerhoff GmbH
- FERRO DUO GmbH
- FLSmidth A/S
- Fives FCB
- Gebr. Pfeiffer SE
- HeidelbergCement AG
- Industria Cementi Giovanni Rossi
- Italcementi S. p. A.
- Jura Cement
- LafargeHolcim
- Lagan Cement
- Neshor Israel Cement Enterprises
- Norm Sement
- Phoenix Zementwerke Krogbeumker
- Portland Cement Association PCA

ECRA Members 2017 (II)

- Portlandzementwerk Wittekind
- Považská Cementáreň
- Praxair Deutschland
- Raysut Cement Company
- Refratechnik Cement
- Scheuch GmbH
- SCHWENK Zement KG
- SECIL
- Spenner Zement
- Südbayerisches Portlandzementwerk
- thyssenkrupp Industrial Solutions
- TITAN Cement Company
- Turkish Cement Manufacturers' Association (TCMA)
- Unitherm Cemcon
- UltraTech Cement Ltd.
- VDZ
- VÖZ
- VICAT
- Votorantim Cimentos
- w&p Zement
- YARA Environmental Technologies
- Zementwerk Leube

Members of the ECRA Technical Advisory Board 2017

- Daniel Gauthier (Chairman), HeidelbergCement
- Eric Bourdon, VICAT
- Luigi Buzzi, Buzzi Unicem
- Giovanni Cinti, Italcementi S. p. A.
- Jesper Damtoft, Aalborg Portland Group
- Akhilesh Gupta, HeidelbergCement
- Claude Loréa, CEMBUREAU
- Seamus Lynch, CRH
- Luis Oropeza, CEMEX
- José Antonio Primo Fernández, LafargeHolcim
- Martin Schneider, VDZ
- Thomas Spannagl, SCHWENK Zement KG
- Fokion Tasoulas, TITAN Cement

ECRA Programme 2017

Seminars:

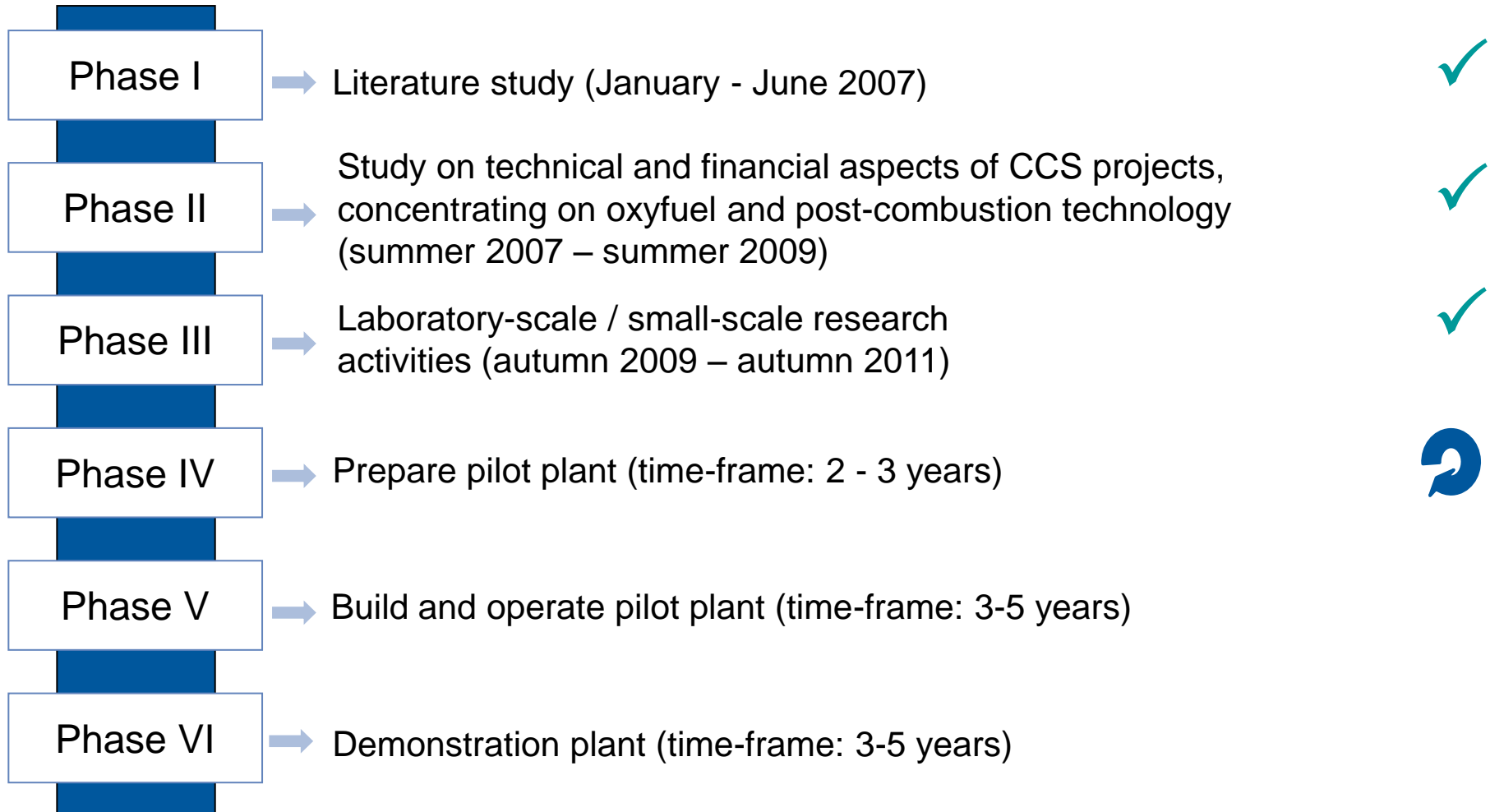
- Cement Grinding Technology (Luxembourg)
- Kiln Firing Systems for Advanced Alternative Fuel Co-Firing (Poland)
- Performance-Based Specifications for Cement and Concrete (Austria)
- Inline/Online Methods for Quality Control in Cement Plants (Germany)
- Secondary Abatement Techniques (Austria)

Workshop:

- Kiln Examinations: Energy/Material Balances and Efficiency (Spain)



ECRA CCS Project: Research Agenda



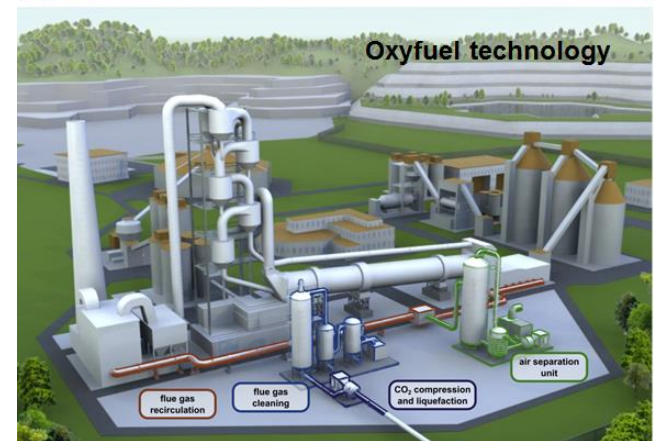
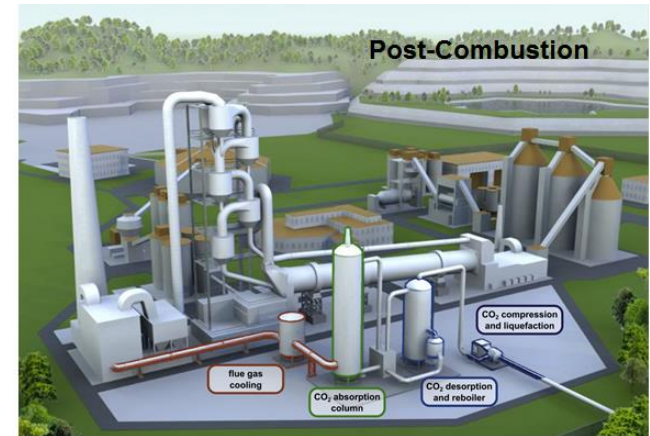
Potential capture solution for the cement industry

Post-Combustion: Tail-end separation of CO₂ from flue gas by e.g. chemical absorption, adsorption, membranes or Ca-looping.

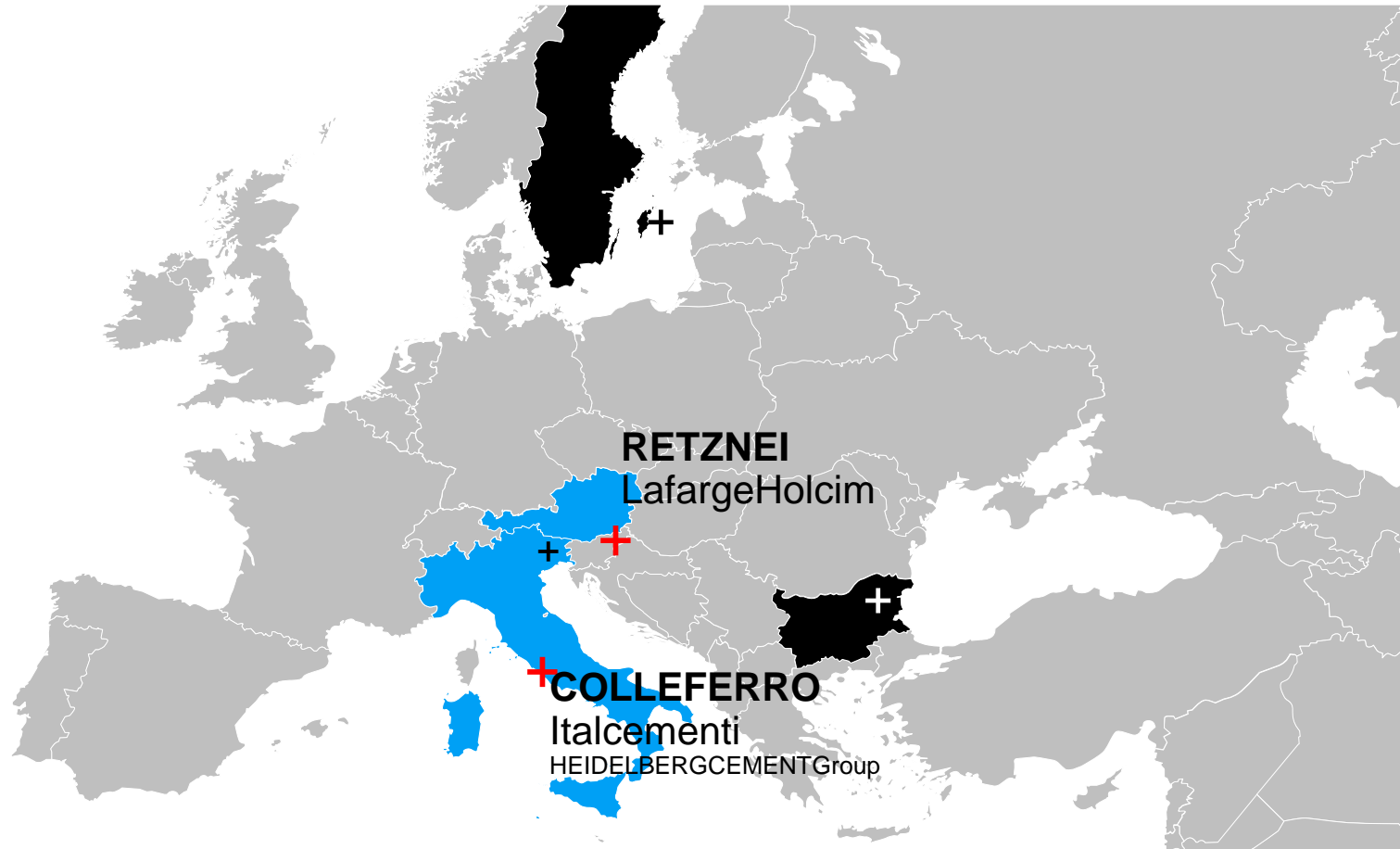
- A very energy-intensive technology.
- Important projects: Norcem's Brevik project (pilot testing), CEMCAP (prototype testing).

Oxyfuel Technology: Combustion with pure oxygen instead of air in combination with flue gas recirculation to increase the CO₂ concentration.

- Requires process and design adaptations.
- Important projects: ECRA (complete oxyfuel), LafargeHolcim/ AirLiquide/ FLSmidth (pilot testing of partial oxyfuel), CEMCAP (prototype testing).



Two sites identified for the oxyfuel project



Academic Chair at the University of Mons



- ECRA chair “CO₂ to Energy: Carbon Capture in Cement Production and its Re-use” established in 2013, extended in 2015 until 2019.
- PhD students, graduate students, visiting professors
- Main research focus:
 - Oxygen production; subsequent comparison of different production techniques
 - Flue gas treatment for CO₂ capture (oxyfuel combustion, post-combustion technologies)
 - Re-use of CO₂



Thank you for your attention!



ecra

european cement research academy