



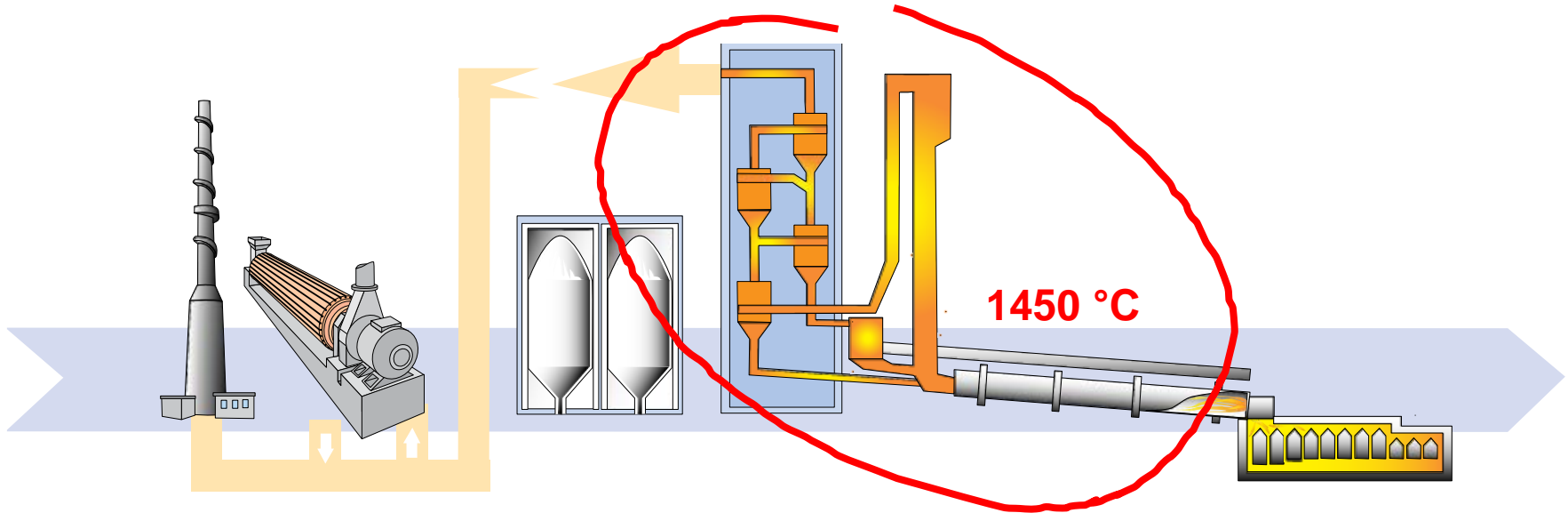
Norcem CO₂ Capture Project

Norcem/ ECRA CCS Conference – 20. - 21. May 2015

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Background – Why Carbon Capture?

850 °C



- Cement industry major emitter of CO₂: 5 -6 % (1,9 Gt/ y)

Two sources:

- 1) 2/3 Main raw material (limestone)
- 2) 1/3 Fuels → to keep the high temperature in cyclone tower and kiln

- HeidelbergCement: → 50 mill tons CO₂/y (same level as Norway)

- Norcem Brevik: Approx. 800 000 t CO₂/ y

The Project

- ✓ Small scale test centre at Norcem Brevik
- ✓ 4 post-combustion CO₂-capture technologies
- ✓ Small scale testing → full scale perspective
- ✓ Kicked off in May 2013 – scheduled for 3,5 years

- ✓ Partners:
 - Norcem
 - HeidelbergCement
 - ECRA (European Cement Research Academy)

- ✓ **Project on behalf of the cement industry in Europe!**

- ✓ Total budget: 93 mill. NOK (11,7 M€)
- ✓ Gassnova / Climit-Program: 75% support

Mandate and Main Objectives

- **Study and compare various CO₂-capture technologies on real conditions**
- **Qualification of technologies**
 - Determine how suitable these are for implementation at modern cement kiln systems
- **Focus on CO₂ Capture**
 - Transport and storage is not part of the study
- **Technology Performance due to:**
 - Capture rate
 - Energy consumption
 - Impact from flue gas impurities
 - Costs (CAPEX/ OPEX)
- **Full Scale/ Commercial Scale Perspective**
 - Utilization of waste heat
 - Full scale capture not necessarily 100 % capture

Thank you for your attention!

