

EPOS Technology Focus - Flue and Process Gases

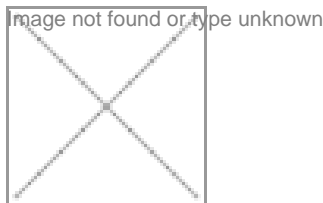
Project:

Enhanced energy and resource Efficiency and Performance in process industry Operations via onsite and cross-sectorial Symbiosis

The EPOS project brings together 5 global process industries from 5 key relevant sectors: steel, cement, chemicals, minerals and engineering.

EPOS's main objective is to enable cross-sectorial Industrial Symbiosis (IS) and provide a wide range of technological and organisational options for making business and operations more efficient, more cost-effective, more competitive and more sustainable across process sectors.

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Sector:

Cement

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Ceramics

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Chemicals

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Engineering

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Minerals

Non-ferrous metals

Steel

Water

Summary:

EPOS Technology Focus: Within the scope of the EPOS project, extensive literature and market research reviews were performed in order to identify different technological, organisational, service and management solutions that could be applied to different industrial sites and clusters. The collected information will aid in establishing on-site and/or cross-sectorial industrial symbiosis opportunities; additionally, to enhance overall sustainability, performance and resource efficiency of different process industry sectors. Through the cooperation of project partners, a longlist of different technological options was created. Resource material for this list included: scientific articles, project reports, manufacturer's documentation and datasheets.

Flue and process gases: The emission of flue gas is one of the most significant issues that process industries must deal with. Flue gas is a result of combustion, taking place in ovens, furnaces, boilers, etc. The composition of the flue gas relates to the type of source that is burned; mainly consisting of water vapour, carbon monoxide, carbon dioxide, particulates, nitrogen oxides and sulphur oxides.



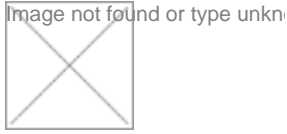
- Membrane separation
- Condensation and cryogenic condensation
- Adsorption
- Wet gas scrubber
- Bio-filtration
- Bio-scrubbing



- Bio-trickling
- Moving-bed trickling filter
- Thermal oxidation
- Catalytic oxidation

Ionisation

Photo/UV oxidation



Pre-combustion capture

Post-combustion capture

Chilled ammonia process (CAP)

Calcium looping adsorption

High efficiency amine based solvents scrubbing

Oxy-fuel with post-combustion

CO₂ storage in enhanced oil recovery

CO₂ Mineralisation



FLUE AND PROCESS GASES

Carbon capture and storage or utilisation (part 2)

Artificial photosynthesis

Utilisation of CO₂ for urea production

Utilisation of CO₂ for production of the polyurethane

CO₂ liquefaction methods

Keywords:

Technology, Industry, Sustainability, Flue Gas, Process Gas, Recovery, Carbon

Type:

Case study

Education/training materials

Other

Rights:

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