EPOS Technology Focus - Solids

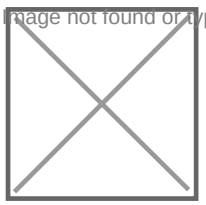
Project:
Enhanced energy and resource Efficiency and Performance in process industry Operations via onsite and cross-sectorial Symbiosis

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 competitiveand more sustainable across process sectors.

The research project receives funding from the European Community‘s Framework Programme for Research and Innovation Horizon 2020 (2014-2020) under grant agreement no. 679386. This work was supported by the Swiss State Secretariat for Education, Research and Innovation (SERI) under contract number 15.0217.

Image not found or type unknown



Sector:

Cement

found or type unknown

Ceramics

found or type unknown

Chemicals

found or type unknown

Engineering

found or type unknown

Minerals

Image not found or type unknown

Non-ferrous metails

found or type unknown

Steel

found or type unknown

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.

Solids: Solid waste and other by-products can be utilised in many ways in order to achieve resource efficiency and industrial symbiosis. Two of the most common options for the utilisation of solid wastes are re-use and recycling. These are often used in the waste streams of plastics and metals. Re-use and recycling of solid waste is, in some cases, not feasible, e.g. due to highly contaminated waste. In such cases, the solid waste can be used for energy production through incineration, producing heat, steam or electricity. Energy valorisation of the solid wastes is especially practical, as it can have caloric content.

Image not found or typ

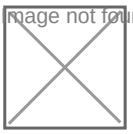
Trommel separator (drum screen)
High-frequency vibrating screen
Density separation – liquid principle
Magnetic density separation – liquid principle
X-ray separation and sorting
Near infrared separation and sorting
Magnetic separation of ferrous metals
Eddy current separator
Shredding and grinding
Cryogenic grinding
Pelletising and agglomeration

Image not found or typ

Metal waste treatment and recycling
Pyrometallurgy

Hydrometallurgy

Electrometallurgy



Counter-current fixed bed (up draft) gasifier

Co-current fixed bed (down-draft) gasifier

Fluidised bed gasifier

Entrained flow gasifier

Rotary kiln gasifier

Plasma gasifier

Pyrolysis

Keywords:
Technology, Industry, Sustainability, Solids, Waste, Treatment, Recycling
Type:
Case study
Education/training materials
Other
Rights:

Open Access

Contact Name:
Project coordinator: Greet Van Eetvelde
Email:
info@project-epos.eu