IbD - State of the art in analytical technologies and metering solutions suitable for Process Intensification (PI) control

Project:
Intensified by Design® for the intensification of processes involving solids handling

The IbD Project has delivered the EU process industry with an affordable and comprehensive devices-and-processes design-platform endeavoured to facilitate process intensification (PI), which specially targets -but is not limited to- solid materials processing. Five PI industry case studies have been implemented in mining, ceramics, pharmaceutical, non-ferrous metals and chemical processes using the IbD approach and to validate the IbD methodologies, tools, PI modules, control and fouling remediation strategies and the ICT Platform itself for the industrial implementation of PI in processes involving solids. The Platform includes design modules for the commonest intensified reactors- Rotating fluidized beds, micro-structured reactor and spinning disk, among others, as well as a generic Module Builder -equipped with a set of both proprietary and third-parties design tools- for designs carried out on the basis of radically novel ideas. The IbD Platform output is basically a data set that comprises the intensified reactor design -ready to be built or assembled-, an optimised whole process design including the upstream/downstream intensified unit operations and their solids handling capability, as well as cleaning methods, etc. and the expected economic and environmental quantitative impacts.

Project website: http://ibd-project.eu/ This project has received funding from the European Union's Horizon 2020 research and Innovation programme under grant agreement No **680565**

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Sector:

Ceramics

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Chemicals

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Engineering

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Minerals

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Non-ferrous metails

Summary:

The original objectives of this project outcome can be summarized as follows:

• Definition of novel sensors and process analytical devices, advanced statistical and chemometric methodologies, and advanced process control for the intensification of processes involving solids handling.

• To provide tools for identification of intensified processes.

• To provide methods for utilizing indirect measurements in control.

• To provide control strategies for intensified processes.

Theme:
Process Intensification - SPIRE05-2015
Keywords:
process intensification, solids handling, process design, digital platform
Type:
Case study
Document
Rights:

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Resources

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d4.7-public-outputs-from-wp4-pat-and-control-solutions-of-intensified-processes.pdf
Link:
IbD Project

A state of the art review in analytical technologies and metering solutions suitable for PI control involving solids handlingwas compiled as the first task. The work included a review of process analytical tools (PAT) suitable for powder processing, the basic principles of chemometrics, probes and their interfaces, as well as the cleaning of probes, measurement heads and windows. The basic

principles and applications of the theory of sampling was reviewed, as well as metering solutions, which covers both measuring powder flow properties and in-line measurement of powder flow rate.

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