ProPAT - Poster Data Fusion Strategies for NIR-Based Batch Process Ccontrol and end-point detection

Project:
Robust and affordable process control technologies for improving standards and optimising industrial operations

The Process Industries require a high degree of automation, monitoring, and advanced simulation and control for their often complex manufacturing processes and operations. Emphasis is on continuous or batch production, mixing, reaction and separation of materials of higher value. Indeed, increased globalisation and competition are drivers for process analytical technologies (PAT) that enable seamless process control, greater flexibility and cost efficiency.

ProPAT aims to develop novel sensors and analysers for providing measurements on composition, particle size and local bulk properties, as well as more traditional but smart sensors for measuring other process parameters, such as temperature, flow rate, pressure, etc., and integrate them into a versatile global control platform for data acquisition, data processing & mining and User Interface in order to measure properties of process streams and products, accurately and in real-time. The platform also provides self-learning and predictive capabilities aimed for dramatically reducing overcosts derived from even slight deviations from the optimum process.

Low cost MEMS-NIR spectroscopic and granulometric analysers, smart sensors for in batch and in continuous processes will be developed and integrated into the global control platform with the chemometric tools and the predictive software to deliver an integrated process control platform. ProPAT will enable near real time closed-loop process control to operate industrial processes at their optimum, both economically and environmentally, while ensuring high levels of quality. It will also allow the uptake of the Quality by Design for continuous process improvement. The project results will be validated in different processes and applications including milling of minerals, ceramics, metals, mixing and granulation of pharma products and polymerization of resins, and will represent a major step forward towards more efficient, reliable and sustainable industrial operation.

Project website: http://pro-pat.eu/ This project has received funding from the European Union's Horizon 2020 research and Innovation programme under grant agreement No **637232**

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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

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Steel

Summary:

Data fusion strategies for Multivariate Statistical Process Control (MSPC) combining diverse NIR-derived information or with other sensors were explored through real process examples.

Theme:
Process control - SPIRE01-2014
Keywords:
Process Industries, Process Analytical technologies, PAT, Automation, Monitoring, Advanced Simulation, Control, Manufacturing, Processes, Operations, Flexibility, Cost Efficiency, Global control, Sensor, Analyzer, Composition, Particle Size, Smart sensors, Process parameters, Data acquisition
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