News Release

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BASF cooperates with partners to introduce online control of complex batch processes

- **Research project RECOBA aims to improve product quality, efficiency and flexibility of batch processes**
- **€6 million funding by European Union**

Ludwigshafen, Germany – March 25, 2015 – A consortium of industrial companies, universities and research institutes recently launched project RECOBA (Cross-sectorial **RE**al time sensing, advanced **CO**ntrol and optimization of **BA**tch processes, saving energy and raw materials). Project participants will make use of an online Model Predictive Control (MPC) of complex batch processes for the production of emulsion polymers, steel and silicon through the application of new sensor technologies, process models and automation tools.

The RECOBA project is being funded for its three-year term with €6 million provided by the European Union. The aim of the project is to optimize the efficiency and flexibility of different kinds of batch processes, thus improving the competitiveness of a significant portion of the European batch process industry.

Under the project coordination of BASF SE, the RECOBA partners include ThyssenKrupp Steel Europe AG, Germany; ELKEM AS Technology, Norway; University of Cambridge, United Kingdom; RWTH Aachen University, Germany; University of Chemistry and Technology Prague, Czech Republic; the University of the Basque Country UPV/EHU, Spain; VDEh-Betriebsforschungsinstitut GmbH, Germany; Cybernetica AS, Norway; and Minkon Sp. z o.o., Poland.

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This group will focus on three different material systems to demonstrate the cross-sectorial applicability of developed sensors, optimization and control methods, with the goal of optimizing product quality, energy consumption, raw materials utilization and production costs of the considered processes.

As part of its contribution to the RECOBA project, BASF will focus on the online Model Predictive Control of an emulsion co-polymerization process. “Our goal is to replace the current process control, which is based on repetition at a fixed schedule, by the model-based online process control,” said Dr. Libor Seda, BASF project lead. Under this new approach, the controller acts based on the current state of the production process. Thereby the control mechanism adjusts the process control variables in real time in order to follow the optimal process trajectory, leading to the desired product properties.

Product properties to be controlled in the emulsion polymerization case include, for example, solid content, copolymer composition and morphology of polymer latex particles. “The advantage of such model-based process control is the ability to produce a product within narrow quality specification limits, and at the same time, to achieve maximal efficiency in energy and cycle / batch production time because the process control follows the optimal process trajectory at each time,” explained Seda. Thus, there is a significant potential to increase reactor productivity while also saving energy input for heating and cooling of the reactor.

European Union funding of the RECOBA project is enabled via the Public-Private Partnership SPIRE (Sustainable Process Industry through Resource and Energy Efficiency). SPIRE, in turn, is part of Horizon 2020, the EU framework program for research and innovation, which runs from 2014 to 2020 and comprises an €80 billion budget. In partnership with industry, the EU will invest in innovative technologies for sustainable processes. For more information, please visit the following websites:

http://ec.europa.eu/programmes/horizon2020,
www.spire2030.eu/projects,
www.spire2030.eu/recoba.