



Sustainable and flexible production of high quality chemical products CONSENS paves the way for the factory of the future by developing novel sensors and integrated process control techniques

Leading European chemical companies and research groups have launched the research and innovation project CONSENS on Integrated Control and Sensing for Sustainable Operation of Flexible Intensified Processes, funded by HORIZON 2020, the European Union's Research and Innovation Programme.

A consortium of 15 European organizations, led by Bayer Technology Services and driven by major European chemical companies – Arkema, BASF, Clariant, Coatex, Procter & Gamble, Solvay – have met in the Procter & Gamble's Brussels Innovation Center on 22nd and 23rd January 2015 for the CONSENS project kick-off.

CONSENS is funded by Horizon 2020, the European Research and Innovation Programme, under the SPIRE public-private partnership <http://www.spire2030.eu/> dedicated to innovation in resource and energy efficiency in process industries.

The main goal of the CONSENS project is to advance the continuous production of high-value products that meet high quality demands in flexible intensified continuous plants by introducing novel online sensing equipment and closed-loop control of the key product parameters. CONSENS will focus on flexible continuous plants, but the results in the areas of sensing, control, and performance monitoring will be **transferable to large-scale processes**.



Project team at the kick off meeting in Brussels











Intensified continuous processes enable more sustainable production and more distinct product properties compared to traditional processes, but they often tend to **fouling and clogging**, and they require **fast sensing** and more accurate control of quality parameters such as the **rheology** or the **composition** of the products. Flexible plants are vital for producing customer-specific products and to reduce the time to market for innovative products, but they require **self-adapting control schemes** to keep the costs of control design affordable. To tackle these and other issues, novel technologies will be developed and implemented in 3 case studies: **intensified synthesis of organic compounds, intensified production of high-viscous polymers, and continuous formulation of complex liquids**.

Built upon the results of the successful **FP7 project F³ Factory**, CONSENS will address key challenges in online sensing, adaptive control, and monitoring and engineering of PAT-based control solutions simultaneously. Both the breadth and the depth of its innovation are highly ambitious. The project's results are expected to have important impacts on the competitiveness of European chemical industry, and other sectors.

About the project:

- **Start Date:** 1st January 2015
- **Duration:** 36 Months, until 31st December 2017
- **Budget:** 6 million €
- **Project web site:** www.consens-spire.eu (in construction)
- **Coordinator:** Manuel A. Pereira Remelhe, BAYER TECHNOLOGY SERVICES
- **Consortium members:** see next page

CONSENS consortium members:

	<p>Bayer Technology Services GmbH, Germany – Bayer’s global technological solution provider in the fields of process development, process and plant engineering, construction, and optimization..</p>
	<p>Arkema, France – a global chemical company in the area of specialty chemicals and advanced materials holding leadership positions in all its markets, and with a portfolio of internationally recognized brands.</p>
	<p>TECHNISCHE UNIVERSITÄT DORTMUND, Germany – a leading German technically oriented research university with strengths in chemical engineering and in the operation of chemical processes.</p>
	<p>Nederlandse Organisatie voor toegepast natuurwetenschappelijk onderzoek TNO, Netherlands – TNO connects people and knowledge to create innovations that boost the competitive strength of industry and the well-being of society in a sustainable way.</p>
	<p>Procter & Gamble Services Company NV, Belgium – an innovative multinational consumer goods company of leading brands for personal care products, baby care products, fabric and home care products and perfumes.</p>
	<p>Clariant Produkte (Deutschland) GmbH, Germany – a leading specialty chemical company contributing to value creation with innovative and sustainable solutions for customers from many industries.</p>
	<p>Invite GmbH, Germany – a research joint venture between TU Dortmund and Bayer Technology Services GmbH developing new production technologies and building the factory of tomorrow.</p>
	<p>BASF SE, Germany – the largest chemical producer in the world with a portfolio ranging from chemicals, plastics, performance products, and crop protection products to oil and gas.</p>
	<p>BAM Bundesanstalt für Materialforschung und -prüfung, Germany – a Federal Institute for Materials Research and Testing ensuring ongoing safety in technology and chemistry by innovative measurement and testing technology.</p>
	<p>Università degli Studi di Cagliari, Italy – a university established in 1606 with cutting edge research and multi-discipline education and with strengths in chemical engineering and data-analysis.</p>
	<p>Krohne Messtechnik GmbH, Germany – a world-leading manufacturer and supplier of solutions in industrial process instrumentation.</p>
	<p>Rhodia Operations, France – part of Solvay, a global chemical group assisting industries in implementing ever more responsible and value-creating solutions in many markets, from energy and the environment to automotive and aeronautics or electricity and electronics.</p>
	<p>inno TSD, France – one of Europe’s leading innovation management consultancy firms, specialised in helping major private and public stakeholders design and implement R&D and innovation projects.</p>
	<p>Coatex SAS, France – a world leading designer and producer of water-based rheology additives. Coatex deploys its expertise on multiple markets.</p>
	<p>atlan-Tec Systems GmbH, Germany – a solution provider for process data analysis and process optimization with an experience of more than 20 years.</p>