Kaolin mining site
Photo by courtesy of Imerys

Societal impacts

- Maintaining highly-qualified engineering jobs in Europe by developing economically and eco-friendly processes for the minerals industry
- Supporting Europe's minerals industry by providing new solution for better process control
- Promoting industry 4.0 application in the minerals sector and contributing to creation and protection of high-quality jobs in the IT sector
- Maintaining Europe's competitiveness and leading role in new technology fields and securing the high standard of the European minerals industry by new analyzing methods, software tools and advanced processes
- Promoting education and qualification of experts by the EIT Raw Materials-funded educational MIDICON project

Achievements*

- Feasibility study proving MONICALC relevance in 2017
- Extension of capabilities of integrated monitoring and control system (IMCS)in 2017
- Planning of industrial demonstration of IMCS 2017
- Confirmation tests for calcination and gasification scheduled for Q3/2017

*status: June 2017

Key facts

Project duration:	05/01/2016–10/31/2018
KIC:	EIT Raw Materials
Theme:	Up-scaling
EIT Raw Materials funding:	1.837.168 EUR
Number of partners:	Three core partners + three task partners

eit RawMaterials

MONICALC

Integrated System for Monitoring and Control of Variable Energy Requirements in Calcination in the Minerals and Raw Materials Industry

Boosting Europe's minerals industry's competitiveness and environmental sustainability by digitalization and advanced processes

Outotec · Aalto University · TU Delft · IMERYS TRANSFORM TO PERFORM · PREDICT · University of Exeter

This activity has received funding from the European Institute of Innovation and Technology (EIT), a body of the European Union, under the Horizon 2020, the EU Framework Programme for Research and Innovation

Overview

MONICALC aims for providing innovative solutions to the European minerals industry (focusing on kaolin production). Based on the EU FP7 STOICISM project, it will provide new plant and software solutions increasing efficiency and promoting Industry 4.0 in the minerals sector.

Challenges

The challenges addressed by MONICALC include:

- Increase calcination product quality
- Increase energy efficiency and use of renewable energy sources

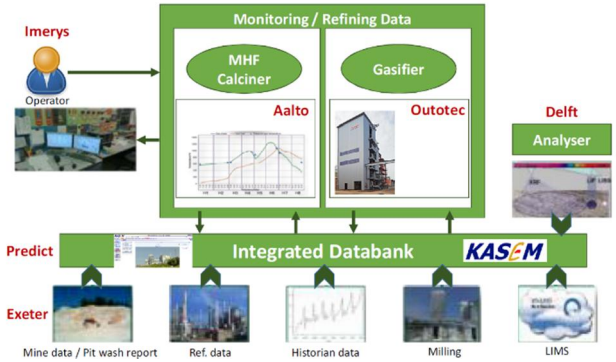
Perspective

Process optimization with integrated on-line control and monitoring and application of advanced process technologies provides energy and raw material efficiency.

- Reducing CO_2 emissions of kaolin calcination by up to 70 %
- Reducing fossil fuel use in calcination
- Simple and robust on-line kaolin feed and quality analysis
- New level of process monitoring and comprehensive use of all accessible plant, process and material data streams

Approach

To achieve the ambitious targets of MONICALC, a consortium of six partners from universities, small and medium enterprises and large enterprises was formed covering the whole innovation and value chain of kaolin and industrial minerals processing. All partners are interdisciplinary and trans-sectoral collaborating with all partners involved into all steps of the innovation processes.



Ground-breaking innovations

Products to be developed in MONICALC include:

- Software toolbox to set-up integrated monitoring and control systems for entire minerals process chains
- IR-based online-capable analysis of kaolin and industrial minerals
- Fluidized-bed calcination of kaolin
- Fluidized-bed based gasification of RDF and waste biomass for fuel gas provision for kaolin calcination

Further information

EIT KIC Raw materials MONICALC web page:

https://eitrawmaterials.eu/project/monicalc/

EIT Raw Materials core partner web pages:

- Outotec http://outotec.com
- Aalto University http://www.aalto.fi/en/
- TU Delft https://www.tudelft.nl/

Task partner web pages:

- Imerys http://www.imerys.com/
- Predict http://www.predict.fr/
- University of Exeter http://www.exeter.ac.uk/

This activity has received funding from the European Institute of Innovation and Technology (EIT), a body of the European Union, under the Horizon 2020, the EU Framework Programme for Research and Innovation