MONSOON

MOdel based coNtrol framework for Site-wide OptimizatiON of data-intensive processes

H2020 SPIRE-02-2016

Budget: 5 million €

Coordinator: Claudio Pastrone, ISMB

2016-2019

PROJECT VISION

The MONSOON vision is to provide Process Industries with dependable tools to help achieving improvements in the efficient use and re-use of raw resources and energy.

MONSOON aims at establishing a data-driven methodology supporting the exploitation of optimization potentials by applying multi-scale model based predictive controls in production processes.

MONSOON features harmonized site-wide dynamic models and builds upon the concept of the cross-sectorial data lab, a collaborative environment where high amounts of data from multiple sites are collected and processed in a scalable way.

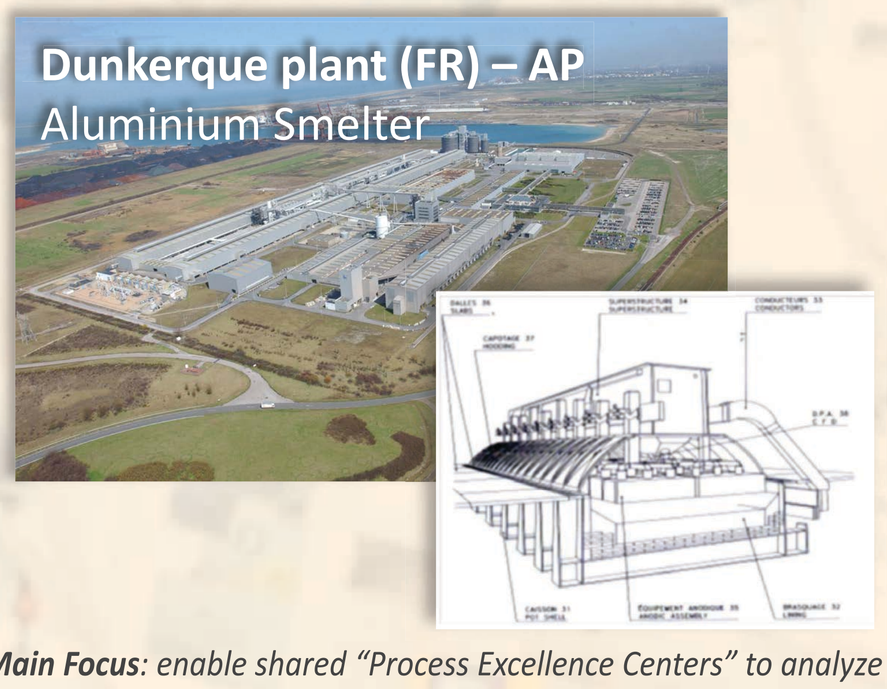
MONSOON will be developed and evaluated in two sites from the aluminium and plastics domains.

APPLICATION DOMAINS

Maceira-Leiria plant (PT) – GLN
Plastic Injection

*"**Main Focus**: enable plant managers to optimize injection molding processes (e.g. reducing defects rate) by leveraging analysis high-volume data from additional sensors"*

Dunkerque plant (FR) – AP
Aluminium Smelter



*"**Main Focus**: enable shared "Process Excellence Centers" to analyze large volume of available data from carbon and electrolysis areas"*

KPI MONSOON CONTRIBUTION

USE OF RESOURCES

The consumption of several resources – **Primary Energy, Electricity, Natural Gas** and **Raw Materials** are the first basic focus that support the development of tools to increase the efficiency of a process. MONSOON platform will correlate the production entries with production flow and deliver alerts for a solid control of the process.

WASTE VALORIZATION

The production outcomes lead to numerous categories of waste. MONSOON is engaged to the **Waste Reduction** and increase the **Recycling Rates** or decrease the forward to **Landfill**, through a Life Cycle Management plugin.

ENVIRONMENTAL IMPACTS

MONSOON contribution will help the end-users to improve their production processes. On a global overview these enhancements will contribute to the reduction of **Global Warming**, mitigation of the **Ozone Depletion** and lowering the effects of **Acidification** on soils and atmosphere.

PREDICTIVE MODELS

SLOPE STATISTIC PROFILE

REPEATED PATTERN DISCOVERY

LOCAL INTERPRETATION OF MODELS WITH **LIME** MODULE

KERNEL BASED STRUTURE ANALYSIS

MACHINE LEARNING

RioTinto · UNE Normalización Española · Capgemini · CERTH Centre for Research & Technology-Hellas · Fraunhofer · GLN PLAST Molding the Future · ISMB Istituto Superiore Mario Boella · Kunststoff Institut Lüdenscheid · Life Cycle Engineering · probayes · Technická univerzita v Košiciach

SPIRE PROJECT

https://www.spire2030.eu/monsoon

"This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 723650"