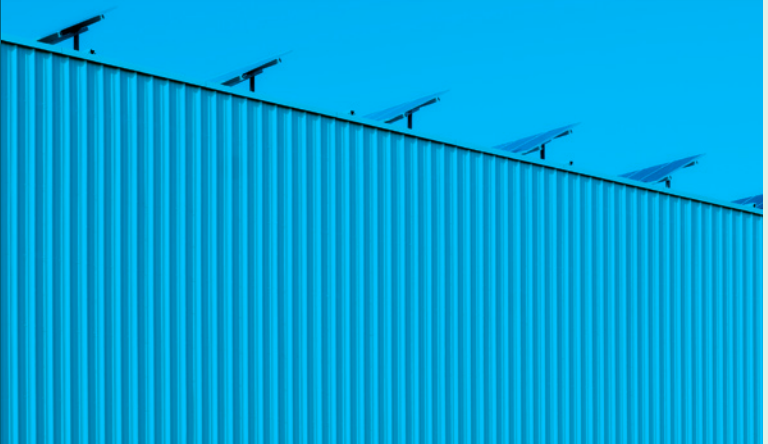
Objectives

The purpose of FUDIPO is to develop, implement in full-scale, and validate up to TRL 6 a system for optimization on all levels in a factory integrating the different control levels from the separate production units to mill level or even corporation level.

Approach

FUDIPO will integrate machine learning functions on a wide scale into several critical process industries, showcasing radical improvements in energy and resource efficiency and increasing the competitiveness of European industry (pulp & paper, oil refining, waste water treatment, metals, food, manufacturing, ceramic production, steel production, etc)



Fudipo Impact

Increased energy and resource efficiency and economic performance of European Union Industries

Increase of European Union industry competitiveness

Better quality of products

Lower CO2 and other chemical emissions

Better industry process control

Potential Fudipo Output

Toolbox with a set of tools for advanced control and optimization which can be used at any automation platform.

This project is funded by the European Commission under H2020 research and innovation program.

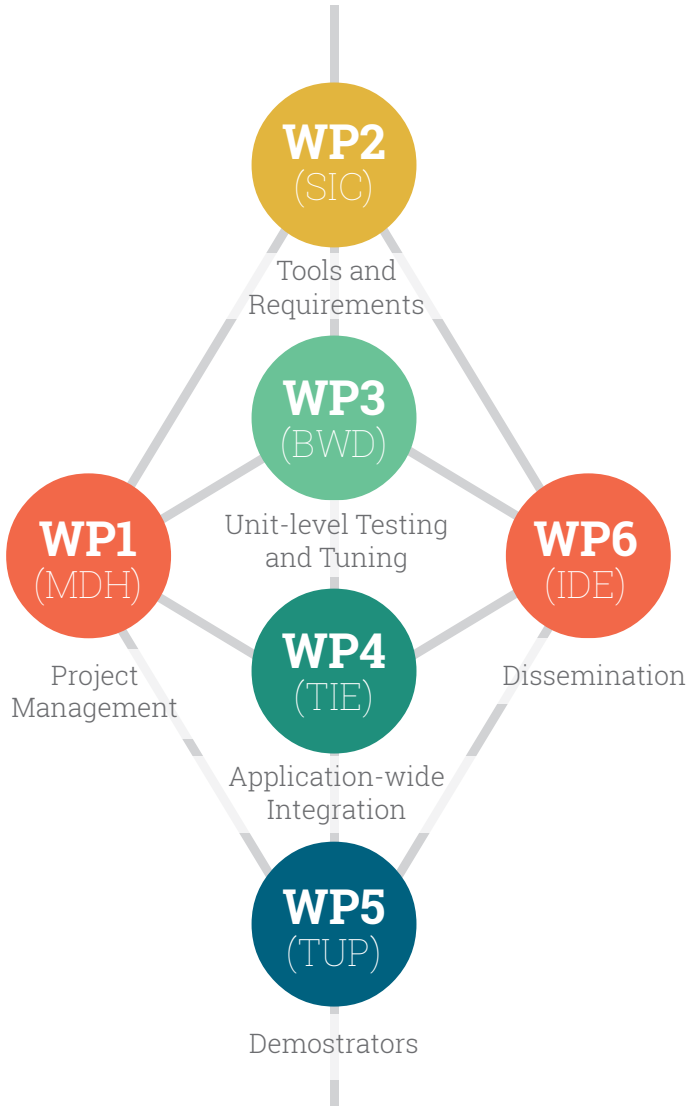
FUDIPO

Future **Di**rections of Production **P**lanning and **O**ptimized Energy and Process Industries

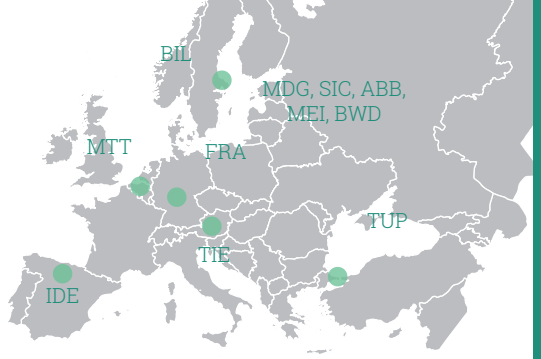
www.fudipo.eu

Start date: 1 Octubre 2016 Duration: 48 months

Project Start



Project Finish



Coordinator: Prof. Erik Dahlquist (MDH)

Universities

MÄLARDALENS HÖGSKOLA ESKILSTUNA VÄSTERÅS

Coordination and development of models and the pilot and demo applications

Technical Institutes

Fraunhofer

Assessment and development of high temperature thermo-optical measurements technologies for production sites

SWEDISH ICT

Large-scale diagnosis integrating information from lower-levels to detect faults in higher levels to efficient plant monitoring

Supplier Industries

tieto

Developing process solutions for the industrial use cases

BESTWOOD

Development and commercialization of products based on demonstrators

ABB

Report on experience with waste-water treatment applications

MTT

Micro CHP applications

idener

Model predictive control development and dissemination&exploitation activities

User industries

BILLERUDKORSNÄS

Develop feed forward control, combined with process and sensor diasnostics

MälarEnergi

Heat and power plants provider as case study

Tüpraş

Models development for their processes, implementation of advanced functions and its evaluation

INDUSTRIAL USE CASES

- **OIL REFINING PLANT (Tupras)**
  crude oil is bought in different qualities. If the properties are better predicted, the production planning can be optimized to utilize the oil available in the best possible way to meet the consumer needs.

- **PULP AND PAPER (Billerudkorsnäs)**
  paper qualities depends on the properties of fibers, which if are predicted by NIR measurement combined with lab measurements for tuning a suitable mix of wood, chips with different quality can be chosen. By matching demand from the paper mill, backward calculation can be made on demand for fibers and how to cook the fibers, where and how much to store at different vessels along the fiber line, etc.

- **HEAT AND POWER PLANTS (MTT, Mälarenergi)**
  the focus will first be placed on stabilizing the temperature in the boiler and steam system (or turbine entry).

- **BIOLOGICAL WASTE-WATER TREATMENT PLANTS (ABB)**
  combining algae with microorganisms may eliminate the aeration demand (energy costs) when using activated sludge processes, giving much more biomass and biogas.