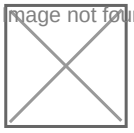
CoPro: Large-scale optimisation of production and logistics in chemical plants

Project:
Improved energy and resource efficiency by better coordination of production in the process industries



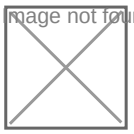
The goal of the CoPro project was to develop and to demonstrate methods and tools for process monitoring and optimal dynamic planning, scheduling and control of plants, industrial sites and clusters under dynamic market conditions, to provide decision support to operators and managers and to progress to automated closed-loop solutions to achieve an optimally energy and resource efficient production.

CoPro brought together 17 partners from 8 EU countries, including 5 industrial end users and 6 technology providing SMEs. The project developed solutions for the **plant-wide optimisation of large plants, for balancing production and consumption in industrial parks for industrial symbiosis**, and addressed **power plant scheduling** and **demand-side response**. It further developed online data analytics for **anomaly detection**, and **decision support** for plant operators and managers. The solutions can be integrated into the IT infrastructure of the plants via an **integration platform** that supports the connection to different IT systems. CoPro developed **model libraries** for the efficient development of advanced optimisation-based solutions and techniques and software for **hybrid modelling** and **model management**.

The developments of CoPro were motivated by and applied to challenging use cases from different sectors of the process industries:

- (Petro-)chemical production;
- Cellulose fiber production;
- Production, formulation and packaging of consumer goods;
- Sterilisation and packaging of food.

CoPro demonstrated that significant savings of energy and resources are possible by using advanced technologies for monitoring, decision support, optimisation, and planning and scheduling.



Sector:

Chemicals

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Non-ferrous metails

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Steel

found or type unknown

Water

Summary:

The Problem

- INEOS in Köln operates a large number of production plants that are linked by streams of intermediates and carriers of energy.
- The overall performance and efficiency of the site depends on the coordination of the individual plants and the coordination of external logistics via barges, trains and pipelines.
- An example of such site-wide integrated optimisation is the ammonia network of INEOS in Köln.

The Solution

- A site-wide optimisation model composed of modules for plants and equipment as e.g. tanks and compressors was developed.
- An economic objective is optimised which incorporates the cost of raw materials, prices of power and gas, and operating costs.
- Logistic constraints such as the arrival of ships with raw materials and the delivery of products are considered.

Theme:
Plant-wide monitoring - SPIRE02-2016
Keywords:
Site-wide optimisation, production planning, demand side management, logistics planning, inventory management, petrochemical industry
Type:
Case study
Software

Poster

Resources

Link:
Technology Short Description: Large-scale optimisation of production and logistics in chemical plant

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Complementary Material:

Poster: Large-scale optimisation of production and logistics in chemical plants

Poster: Modelling concept and model library for large-scale optimisation in chemical plants

Contact Name:
Project Coordinator : Prof. Sebastian Engell - TU Dortmund, Germany
Email:
sebastian.engell@tu-dortmund.de