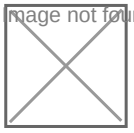
CoPro: Large-scale production scheduling in the food industry

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.

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Sector:

Chemicals

Summary:

The Problem

- Food process industries are typically characterised by the production of multiple products using flexible multi-stage facilities under tight operating and design constraints.
- The optimal production scheduling of such a complex facility is a very challenging and demanding task, and existing solutions cannot generate schedules in computational times that are acceptable in industrial practice.
- This complexity forces production engineers to derive production schedules that underutilise the true potential of the facility.
- Frinsa in Ribeira, Spain, is one of the largest producers of canned fish in the European Union. On a weekly basis, more than 150 products need to be processed, following complex production recipes in a multi-stage and flexible plant.

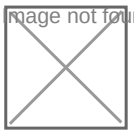
The Solution

- An optimisation framework for the efficient plant-wide production scheduling of a full-size fish canning plant was developed in a collaboration between CERTH, Frinsa and ORSOFT.
- Near-optimal production schedules are generated automatically with very short computational times.
- Significant improvements in the coordination of production have been achieved.

Theme:
Plant-wide monitoring - SPIRE02-2016
Keywords:
Scheduling, Optimization, Food Industry, Decision support, Reduction of changeover and idle times
Type:
Case study
Other
Software
Poster

Resources

Link:
Technology Short Description: Large-scale production scheduling in the food industry
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Complementary Material:

Poster: Large-scale production scheduling in the food industry

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