powel

FACT SHEET
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Powel Optimal Thermal - Short-term production optimisation

Powel Optimal Thermal is an optimisation tool targeting short-term production planning in thermal power plants. The length and resolution of the planning period is user defined. The goal is to utilize the generating units, available fuels and markets in order to maximize the total profit from the produced power.

Powel Optimal Thermal is based on a deterministic mixed integer optimisation model, which is solved using the market-leading optimisation engine. Solutions provided comes with an optimality guarantee (as an upper bound on the difference from the optimal profit).

About Powel Optimal Thermal

Powel Optimal Thermal computes near-optimal unit commitments and dispatch for systems with thermal generating units.

Purpose

The purpose is to produce a plan that maximizes total profit (revenue minus cost) over the planning horizon.

The constraints include energy balances, physical properties on generating units and fuel consumption. Other constraints are time-dependent limits on power production and ramp rate limits.

Advantages

- Built on Powel Smart Energy
- Quality-assured solutions
- Competitive solution times
- Flexible, transparent model

Area of use

Powel Optimal Thermal can provide input for

- Dispatch and bidding
- Allocation of reserves
- Intra-week and next-day planning
- Analysis, simulation, what-if
- Revision planning

Main features

- Mixed integer linear optimisation model
- Start and stop costs of units
- Minimum up- and down-times
- Fuel mix optimisation
- Different production modes
- Flexible time resolution (varying coarseness)
- Time-dependent limits for power production and fuel consumption
- Asymmetric spinning reserve requirements

User interface

Powel Optimal Thermal can be used with the user-interface Powel Nimbus. Nimbus is a process-oriented interface, which supports organizing the planning into tasks consisting of a logical sequence of steps. It is fully user-configurable, and Powel consultants can assist in building the initial application from templates.

System requirements

Powel Optimal Thermal is integrated with Powel Smart Energy.

A recommended minimum installation includes:

- Powel Time series kernel
- Powel Mesh and
- Powel Nimbus

Third party licenses

Powel Optimal Thermal requires a valid license for IBM ILOG CPLEX. Such a license can be purchased from Powel.

Operative system requirement

Windows 7 or higher.

Hardware recommendation

Solution times benefit from sizeable RAM and multi-core processors.

Contact

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