



# KyPlant: Power plant

**KyPlant supports traders and plant owners in power markets. The power plant optimization software determines the value of a (portfolio of) power plants by quickly calculating the optimal dispatch, supports trading decisions and reports exposures.**

The real options-based model combines actual plant and contract characteristics with realistic price simulations. It can be applied to real physical power plants, but also virtual power plants, spark and dark spread options, and power options.

- ✓ Increase revenues of power plants and power products
- ✓ Deal with all power plant characteristics and optionalities
- ✓ Make quick calculations, fully automated
- ✓ Enjoy easy interfaces with market and other data
- ✓ Calculate accurate values and hedges with Monte Carlo simulations

## Benefits

### Plant valuation What is a fair price?

The power plant valuation model calculates the fair value of a power station. The model shows which part of the value is intrinsic, and can be made easily, and which part is extrinsic, requiring a more active trading strategy. Such a valuation provides a fair assessment of the future value. Backtesting is another feature: it shows how much money you would have made in the past, following a specific trading strategy.

### Spot optimization How to dispatch?

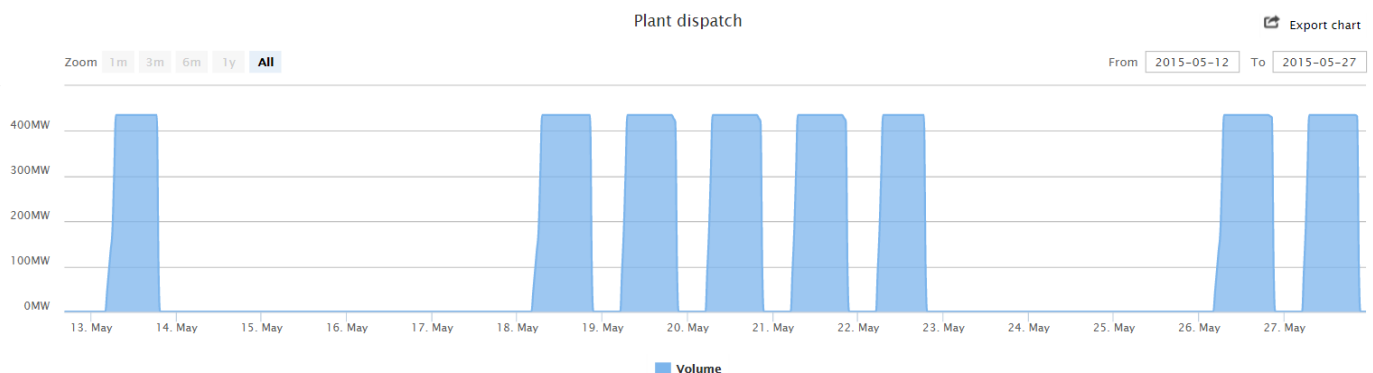
For day ahead and intraday markets, the power plant optimization model tells you what is optimal to do: produce or don't produce?

When prices change due to unforeseen circumstances, it could be optimal to change the dispatch decision on the intraday market.

### Forward hedging Keep the risk or lock in profits?

KyPlant shows which forward transactions are optimal to hedge risks and lock in profits.

The user can choose between intrinsic hedging and delta hedging, two strategies to secure profits. It can provide hedge recommendations for the asset alone or for multiple assets together.

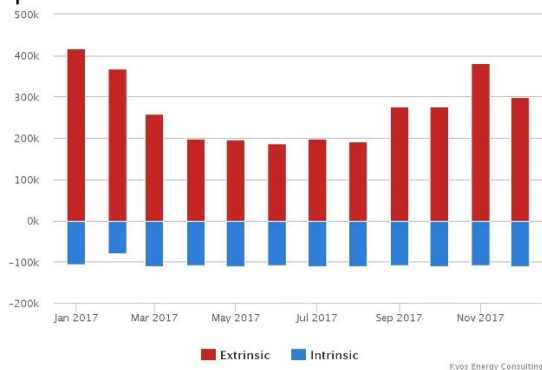


## Features

Most KyPlant users optimize the power stations at individual plant level. But power plant optimization software is also used effectively for a portfolio of plants, for example connected by joint heat obligations and a heat buffer. Detailed technical characteristics of the power stations can be provided as input, including efficiency curves, a range of start types and curves, costs, trips, maintenance, start constraints, etc.

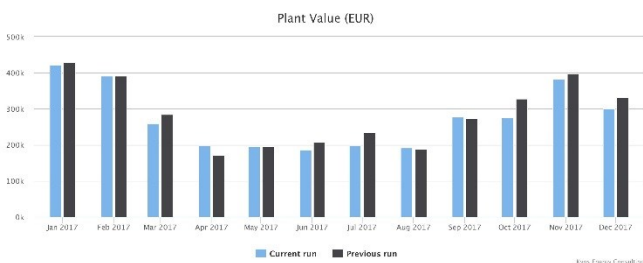
KyPlant is fully embedded in the KYOS Analytical Platform. With automated data feeds, up-to-date plant valuations are always available.

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## Methodology

KyPlant uses advanced Monte Carlo simulation techniques. Important characteristics are cointegrated commodity prices, and a mean-reverting multi-factor model with long-term, short-term and seasonal dynamics. Users can also import their own price simulations or use those of KySim. Optimal dispatch and exercise decisions are based on dynamic programming and least squares Monte Carlo techniques. The volatility term structure and other simulation inputs are easily derived from historical data. Implied option volatilities may be used as well, by overwriting the historical volatility estimates.



## KYOS Analytical Platform

KyPlant is fully embedded in the KYOS Analytical Platform. With automated data feeds, up-to-date plant valuations are always available.

All KYOS Analytical models are developed in Matlab, and part of the KYOS Analytical Platform. Other software modules include:

- **KyStore:** optimize a gas storage and calculate values, delta positions and day-ahead trades
- **KySwing:** helps to generate most income from gas contracts by optimizing the contract flexibility
- **KyCurve:** create detailed hourly price forward curves for power, gas and other commodities
- **KySim:** generate Monte Carlo price simulations, relying on a hybrid approach of statistics and fundamentals
- **KyPF:** generate hourly price forecasts and simulations for one or more power markets.
- **AtRisk:** calculate both Cashflow and Earnings-at-Risk. Both metrics show the distribution of future results over longer horizons.

The KYOS Analytical Platform is developed in PHP. A MySQL or MS SQL database is used for data storage. Compiled Matlab models perform the analytical calculations.

## Technical information

The Platform can run on a Windows and on a Linux environment. The platform is delivered by default as cloud solution, and it can also be installed on a local server.

The Platform can operate as a stand-alone software application. Automated price connections are possible and recommended. Connections to other systems for contract data and calculation results can be developed based on customer specifications and the XML protocol.

An installation on a local or cloud server is typically performed in one working day.

