

Power plant and option Report

Plant Value	Name	DE Intrinsic €/MWh	DE Simulation €/MWh	UK Intrinsic £/MWh	UK Simulation £/MWh	FR Intrinsic €/MWh	FR Simulation €/MWh
	Coal 46%	3.97 ↓	7.26 ↓	4.58 ↓	5.95 ↓	8.31 ↓	10.69 ↓
Coal 46% option	6.83 ↓	9.67 ↓	7.56 ↓	8.69 ↓	11.24 ↓	13.21 ↓	
Gas 60%	2.45 ↓	6.05 ↑	7.13 ↓	8.20 ↓	5.81 ↓	8.45 ↓	
Gas 60% option	2.99 ↓	6.45 ↑	7.71 ↓	8.79 ↓	6.28 ↓	8.82 ↓	

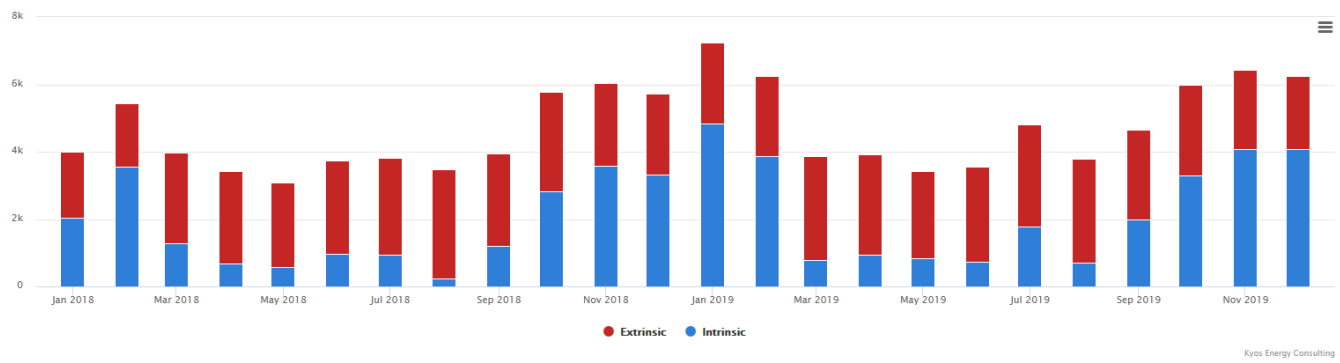
Remarks

- The valuation date for the analysis is 4 January 2018.
- Volatilities, correlations and other parameters are calibrated on 2 years of historical price data.
- The main assumptions for this analysis can be found at the end of this document.
- The 2018 forward spark spreads in Germany and UK stayed roughly constant the past month. However, due to considerably lower forward spark spreads for January 2018 (lower power forward prices), the expected gas plant values for the whole of 2018 came down by around 10-30 €ct/pence per MWh.
- The value decrease for the coal fired products has been larger: about 0.50 €/MWh in Germany, 1.10 £/MWh in the UK and 2.00 €/MWh in France. Especially in France, the January forward price levels (for power and for the spark and dark spreads) declined significantly, also affecting the expected profitability for the whole of 2018.
- Not only is January 2018 disappointingly low for most power producers, also the past December period was not so good. For example, realized gross revenues in Germany in December 2017 were about half of those in 2016.
- Although the valuation date is already in the new year 2018, the valuations are still for 2018; next month we'll value 2019 products.

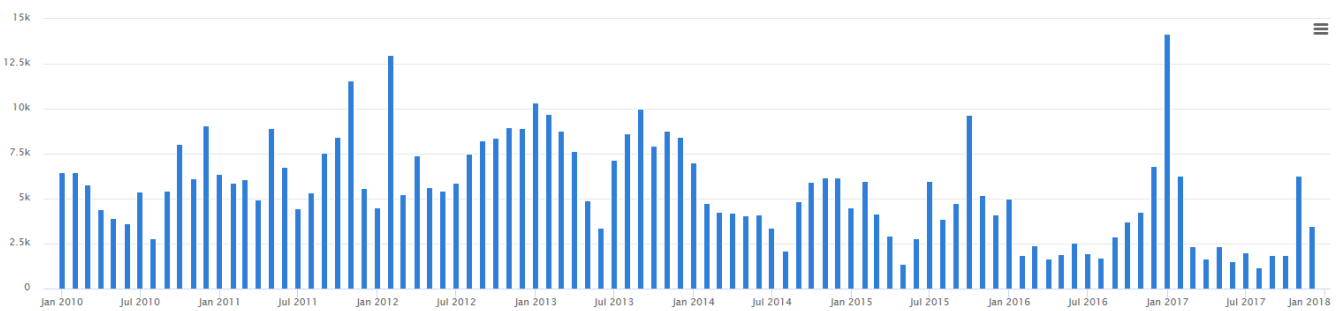
Realized value for the Gas 60% plant product (German market, value per MW)



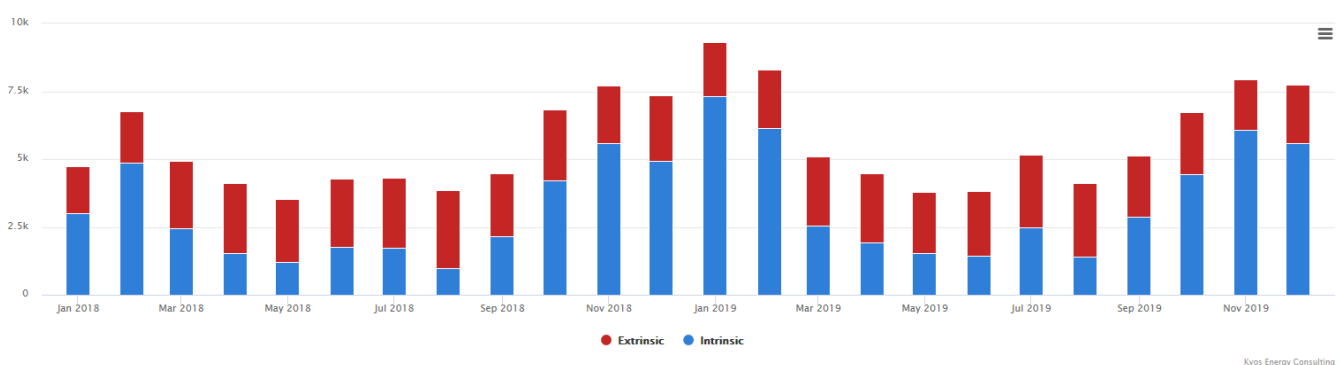
Estimated future value for the Gas 60% plant product (German market, value per MW)



Realized value for the Coal 46% plant product (German market, value per MW)



Estimated future value for the Coal 46% plant product (German market, value per MW)



Explanation

All valuations have been performed with KYOS software, in particular KyPlant and KySim. Simulation values are the average across a large number of Monte Carlo price simulations and using the least-squares Monte Carlo methodology to derive the optimal dispatch (exercise) of the products.

All plants and option products have a maximum capacity of 1 MW, at which they reach the maximum efficiency. The reported values in the table are for calendar year 2018. The 'option' products are strips of hourly clean spark or dark spread options, with no start costs and a single efficiency.

The other two products are more like real plants: they have start costs of EUR 30 (GBP 25) for coal and EUR 12.50 (GBP 11) for gas. Furthermore, to avoid a start, they can produce at 0.5 MW capacity at an efficiency which is 6% point lower.

The variable costs per MWh are EUR 3 (GBP 2.60) for the coal plant, and EUR 2.50 (GBP 2.15) for the gas plant. The coal plant also faces coal transport costs of 10 EUR (GBP 8.60) per tonne.

No other plant operational, investment or financing costs are assumed. Nor did we include maintenance, trips, minimum on- and off-times, ramp rates, etc. All these features can easily be modelled by KyPlant, but for simplicity are left out from this report.

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