

2-DAYS “ENERGY OPTIONS”

GREEKS & RISK MANAGEMENT

During this course you'll face the risks arising from option positions and flexibility in contracts and physical assets.

The program covers risk parameters which need to be considered in order to manage the portfolio. These parameters (Greeks variables) help staff to identify, measure, assess and control exposures.

The program covers the management of outright option positions, as well as embedded option positions plus real option.

Clearly, valuation models will be covered, just as hedging strategies or lock-in models.

The goal of the training is to provide insight in the way option valuation and hedging works and how options (or the option theory) can be applied to positions of market participants who operate in the energy markets, amongst which are embedded optionalsities (structures) in sourcing & sales contracts.

Attendees will be provided with a report which combines scenario analysis and sensitivity analysis in one overview .

Target groups

The course provides participants insight in sensitivities of option values and risk parameters with respect to option positions.

This course is therefore not only applicable to those who are active in the Front or Mid Office as trader or risk manager, but can also be allocated by others to master what actually takes place in the trading environment. And that is why we also welcome others who work in the trading environment, ranging from board members, project managers, legal staff, treasury management, ICT staff, back office employees, sales personnel, finance specialists, controllers and compliance officers. Next, accountants, legal experts, regulators, consultants and ICT specialists are also more than welcome to learn how companies manage their portfolio.

Level & Prerequisites

Mercurious guarantees a very interactive, practical and hands-on two days, full of examples, cases and exercises. Participants are required to participate actively and thereby we stimulate the learning curve optimally.

There are no prerequisites to attend. In other words, you don't need any basic knowledge, and still you'll manage to take it into depth. Basic know how regarding options however is convenient, but -as stated- not a must. Mercurious is happy to be responsible for your success and has proven many time to serve as guidance for participants. This will help you to deal with related challenges.

DAY 1

OUTRIGHT OPTIONS

The 1st day you'll become familiar with options, option valuation and especially with the risk parameters related to option positions.

OPTIONS & OPTION STRATEGIES

Different types of options are covered. Which types are available in the markets? And what exotics can be distinguished. How about option styles? European style, American style, Asian style and many other styles.

Calls & puts on fuels, power & carbon. What strategies can be set up with options? What do risk-reward profiles look like? Potential versus risk.

COMPLEX POSITIONS

The characteristics of a time spread, location /basisspread, spark spread, dark spread, crack spread.

OPTION VALUATION

How are options priced? What factors influence the option premium?

→ **Exercise: Black & Scholes + Binomial valuation model + more complex models (Monte Carlo Simulations)**

PORTFOLIO/RISK MANAGEMENT & GREEK VARIABLES

How are options portfolios managed? What are the Greek variables? How are these influenced?

How sensitive is the value of your energy portfolio (including your power plants, transport capacity, and gas storages) to changes in prices of fuels and electricity, and to changes in interest rates, and to changes in volatility, and to time passing by? And what about the dynamics of these factors over time?

→ **Exercise: Delta, Gamma, Vega, Theta and Rho. The interpretation of those parameters. And the sensitivity of these sensitivities themselves (charm, vomma, vanna).**

DAY 2

EMBEDDED OPTIONS & SUPPLY CONTRACTS

In this session you will analyze the specific risks and risk parameters related to energy supply contracts.

FLEXIBILITY in SUPPLY CONTRACTS

What are the risks related to the validity period of proposals. How to model a click option? How to model swing options and volume flex options?

→ **Exercise: Delta hedging of a volume flex contract; and discuss the exotic style of the embedded option and the consequences of such for managing the position.**

REAL OPTIONS & PORTFOLIO MANAGEMENT

In this session you will apply the real option approach to physical assets and manage associated risks.

PRODUCTION CAPACITY

How can oil & gas production fields, coal mines and power plants be considered as options?

→ **Exercise : Model a gas-fired power plant according to the real option theory.**

STORAGE CAPACITY

How to model gas/oil storage capacity? What are the consequences of such? What are the disadvantages of such?

→ **Exercise: Optimization of gas storage capacity.**

TRANSPORT CAPACITY

How does the option theory help to value and hedge transport or transmission capacity?

PORTFOLIO/RISK MANAGEMENT & GREEK VARIABLES

Exercise: Model and discuss the Delta, Gamma, Theta, Vega, Rho of a power plant and the consequences for hedging the position.

- Delta
- Gamma
- Theta
- Vega
- Rho