



OIL AND GAS

Uncertainty Modeling & Risk-Based Decision Making in Energy Projects

Course code: OG-010

SPARK TRAINING

Professional training courses for leaders, specialists, and organizations seeking practical capability development.

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— Workshop Overview

Energy projects operate under conditions where volatility, technical complexity, and long investment cycles make uncertainty a critical factor in success. Managing this uncertainty effectively requires more than traditional risk registers—it demands structured modeling and disciplined decision frameworks. This course provides practical techniques to model uncertainty, quantify risk exposure, and support high-impact decisions across the project lifecycle. Participants will learn how to transform uncertain variables into actionable insights, improving confidence in investment, planning, and operational decisions.

Why Attend

The program is designed to balance theory with practical application through:

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Industry-based case studies from oil, gas, and energy projects

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Guided exercises in uncertainty modeling and risk evaluation

Who Should Attend

Project Managers and Engineers in energy and oil & gas

Risk and Planning Specialists

Investment and Financial Analysts

Operations and Asset Management Professionals

Decision-makers involved in capital and strategic projects

— Learning Objectives

- Model uncertainty using structured quantitative approaches
- Apply risk-based decision-making techniques in complex projects
- Evaluate project scenarios using probabilistic analysis
- Assess the impact of uncertainty on cost, schedule, and performance
- Improve decision quality through data-driven insights
- Integrate uncertainty modeling into project governance and reporting

Course Outline

DAY
1

Foundations of Uncertainty in Energy Projects

- Understanding uncertainty vs. risk in energy environments
- Sources of uncertainty (market, technical, geopolitical, operational)
- Risk management frameworks in energy projects
- Techniques for identifying and structuring uncertainty
- Building a robust risk and uncertainty register
- Qualitative assessment and prioritization

DAY
2

Quantitative Uncertainty Modeling

- Introduction to probabilistic modeling concepts
- Key statistical tools for uncertainty analysis
- Defining input distributions and assumptions
- Sensitivity analysis and key risk drivers
- Introduction to simulation techniques (e.g., Monte Carlo concepts)
- Interpreting and validating model outputs

DAY
3

Risk-Based Decision Analysis

- Principles of decision-making under uncertainty
- Decision trees and expected value concepts
- Evaluating alternatives using risk-adjusted metrics
- Risk appetite and decision criteria
- Scenario comparison and trade-off analysis
- Case study: Energy investment decision

DAY
4

Integrated Risk Modeling for Projects

- Linking cost, schedule, and performance risks
- Modeling dependencies and correlations
- Scenario planning and stress testing
- Risk mitigation strategies and optimization
- Introduction to risk modeling tools (conceptual overview)
- Practical workshop: building an integrated model

DAY

5

Embedding Risk-Based Decision Making

- Applying risk insights across the project lifecycle
- Governance and risk reporting frameworks
- Communicating uncertainty to senior stakeholders
- Supporting strategic and operational decisions
- Lessons learned and industry best practices
- Final group exercise and action planning

— Upcoming Classroom Dates

DATE	LOCATION	FEE
12 - 16 October 2026	Kuala Lumpur - Malaysia	€1,400
9 - 13 November 2026	Barcelona - Spain	€1,925
14 - 18 December 2026	London - United Kingdom	€2,100
18 - 22 January 2027	Munich - Germany	€2,125
15 - 19 February 2027	Barcelona - Spain	€1,925
15 - 19 March 2027	Madrid - Spain	€2,125
19 - 23 April 2027	Rome - Italy	€2,125
17 - 21 May 2027	Kuala Lumpur - Malaysia	€1,400

— Certificate and Registration

Participants who attend and complete the full programme receive a SPARK Training Certificate of Completion. For registration, in-house delivery, or availability questions, contact info@sparktraining.eu or +31 85 115 0004.