



COAL SEAM GAS RESERVOIR ASSESSMENT

PROFESSIONAL DEVELOPMENT COURSE

PURPOSE

The aim of this course is to provide a comprehensive understanding of the basic properties of coal seam gas reservoirs. As a result of attending this course participants will have a foundation from which to assess and interpret information as a basis for coal mine gas management, coal seam gas production, design and optimisation.

WHO SHOULD ATTEND?

This course is recommended for staff involved in exploration, coal mine gas management and gas utilisation. Participants typically include geologists, mining engineers, mine planning engineers, petroleum engineers, technical services managers, operational staff and service providers. It is also suitable for anyone interested in understanding the fundamentals of coal seam gas management and gas production.

PRE-REQUISITE SKILLS

There are no pre-requisite skills required for this course.

THE NEXT STEP

This course provides the pre-requisite knowledge for specific courses in coal mine gas management, coal mine methane utilisation and coal seam gas production.

DURATION

2 Days

DATES & LOCATIONS

This course is delivered regularly at a variety of international venues. For further information please refer to the Calendar section of the web site.

LEARNING OUTCOMES

At the completion of this course participants will be able to:

- Understand the principles of gas reservoir assessment from measurement to analysis and application
- Appreciate the contrasting properties of coal seam gas reservoirs
- Understand key drivers underpinning coal mine gas emission and coal seam gas production
- Understand the principles of designing and implementing a gas testing program
- Estimate gas resource size and uncertainty

DELIVERY METHOD

Interactive classroom-style delivery with focussed workshops.



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COURSE CONTENT

Module 1: Overview

- What is coal seam gas; a hazard and a resource?
- History of coal mine gas management & commercial extraction
- Where are coal seam gas reservoirs located?
 - Coal basins around the world
 - Commercial gas projects
- Future trends
 - Coal mining
 - Environmental issues
 - Greenhouse gases
 - Gas utilisation

Module 2: Coal Geology

- Coal formation
- Coal characterisation
 - Rank
 - Grade
 - Type
- Variability in coal
- Effect on Coal Seam Gas reservoirs

Module 3: Gas Reservoir Geology

- Gas generation, storage & retention
- Gas content in Australian coals

Module 4: Gas in place

- Parameters
- Proximate analysis and relative density
- Net coal
- Gas content, composition/quality
 - Terminology
 - Measurement methods
 - Desorption rate/diffusion
- Sampling
- Reporting bases

Module 4: Gas in place (continued)

- Gas content gradients & domains
- Gas resource
- Uncertainty

Module 5: Gas deliverability

- Gas saturation
 - What is it?
 - How is it calculated?
 - Gas sorption isotherm
 - Sensitivity to reservoir conditions, gas type and coal properties
 - Gas desorption pressure
 - Why is it important?
 - Validation
 - Uncertainty
- 📖 Workshop: Gas saturation and desorption pressure calculation
- Permeability
 - What is it?
 - Absolute permeability
 - Relative permeability
 - Stages of gas desorption & migration
 - Effect of stress
 - Matrix shrinkage
 - Measurement

Module 6: Applications Overview

The purpose of this module is to present an overview of the practical applications of gas reservoir assessment including some of the following:

- Designing a testing program
- Gas reservoir modeling
- Coal mine gas emission
- Gas drainage & extraction
- Outburst prevention
- Gas production