AN INTRODUCTION: BEST PRACTICE GUIDANCE FOR EFFECTIVE METHANE DRAINAGE AND RECOVERY IN COAL MINES

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THE GROUP OF EXPERTS ON CMM IS ONE OF 6 EXPERT GROUPS THAT CONVENE UNDER THE COMMITTEE ON SUSTAINABLE ENERGY

- Expert Group on Resource Classification (EGRC)
- Group of Experts on Cleaner Electricity Production (CEP)
- Group of Experts on Coal Mine Methane (CMM)
- Group of Experts on Energy Efficiency (GEEE)
- Group of Experts on Gas (GEG)
- Group of Experts on Renewable Energy (GERE)
BEST PRACTICES FOR CAPTURE, USE OR DESTRUCTION OF METHANE LIBERATED BY MINING ACTIVITIES

• Methods or techniques that are common practices are considered Best Practices when the outcomes of employing these practices are superior to results achieved by using alternative practices.

• There is tremendous global industry knowledge about and experience with managing methane explosion risks.

• There is a rapidly growing knowledge base and significant R&D efforts to cost-effectively reduce emissions of CMM to the atmosphere.

• Practices that reduce fugitive emissions, make mines safer, and use coal related gases in a beneficial way have been employed at many mines in several coal producing countries.
THE COAL MINING INDUSTRY RECOGNIZES BEST PRACTICES FOR CAPTURE AND USE OF CMM

• These practices are explained in “Best Practice Guidance for Effective Methane Drainage and Use in Coal Mines”

• First published in 2010 and revised and published in 2016

• Lead Organisations:
  • Global Methane Initiative, formerly Methane to Markets Partnership
  • UN Economic Commission for Europe Secretariat
  • UN Economic Commission for Europe Group of Experts on Coal Mine Methane
  • US Environmental Protection Agency
“BEST PRACTICE GUIDANCE FOR EFFECTIVE METHANE DRAINAGE AND USE IN COAL MINES” — A LIVING DOCUMENT

- Technical input and editorial oversight from an international team of experts and stakeholders
- Provides background and basis for ongoing work and technical workshops that are held in various countries over the next years
- Will be the guiding document for the International Centres of Excellence on Coal Mine Methane opened June 2017 at Katowice, Poland; and in September 2017 in Shanxi Province, People’s Republic of China
OBJECTIVES OF THE BEST PRACTICE GUIDANCE

• Complement bilateral and multilateral initiatives to support improved mine safety

• Develop a guidance that is principle based that can be adapted to varying mining conditions

• Provide for industry a standard set of recommended principles and standards for methane recovery and utilisation

• Contribute to assisting UN member states achieve sustainable development goals

• Intended audience: mine operators, regulators, government officials and technical professionals
COAL-ASSOCIATED GAS RESOURCES AND THE COAL MINING LIFE CYCLE

Coal Mining Life Cycle

Mine Planning
Undeveloped Coal Reserves

Active Mining
Developed Coal Reserves

Mine Closed
Depleted Coal Reserves

Gas Resources Evaluated and Production Plan Adopted
Exploration

Gas Produced and Sold During Mining
Pre-mine and Gob Drainage

Enhanced CH₄ Recovery and CO₂ Sequestration
Post-mining Gas Production

Gas Production Life Cycle

Pilcher, 2013
ASTANA, KAZAKHSTAN
IMPLEMENTING BEST PRACTICES AND POLICIES
TURNING COAL MINE METHANE INTO AN ASSET
20 JUNE 2018
KEY MESSAGES FOUND IN THE BEST PRACTICE GUIDANCE

• There is tremendous global industry knowledge about and experience with managing methane explosion risks.

• Regardless of constraints, mine worker safety is paramount and should not be compromised.

• A risk assessment approach to minimizing explosion risks should be combined with strong enforcement of robust ventilation and utilization safety regulations.
KEY MESSAGES FOUND IN THE BEST PRACTICE GUIDANCE

• Mine ventilation systems are critical components of an overall system to effectively remove methane from mine workings.

• Improvements to methane drainage systems can often provide a more rapid and cost-effective solution to mine gas problems than simply increasing the mine’s air supply.

• Transporting methane-air mixtures at concentrations in or near the explosive range in coal mines is a dangerous practice and should be prohibited.
KEY MESSAGES FOUND IN THE BEST PRACTICE GUIDANCE

• Underground coal mines are a significant source of anthropogenic methane emissions (about 6% of human-related global methane), but these emissions can be substantially reduced through implementation of best practices.

• There is a strong business case for installing and operating high-efficiency gas drainage systems and utilising the captured gas.
WHY IMPLEMENT BEST PRACTICES?
THE VIRTUOUS CYCLE VERSUS THE VICIOUS SPIRAL

Investment in improved drainage and use of CH₄

Increased safety and higher productivity

Improved methane management and monitoring

Reduced methane emissions and ventilation CAPEX & OPEX

Sustainable operations

Inadequate investment in drainage and use of CH₄

Unpredictable and uncontrolled accumulation of methane

Increased lower danger and productivity

Unsustainable operations

CAPEX & OPEX and methane emissions

Increased ventilation CAPEX & OPEX
FUTURE PROJECTS

• The GoE CMM has presented to the CSE Bureau and member states that the cross-cutting work that the subsidiary bodies undertake could be enhanced through greater cooperation among the expert groups.

• Will propose a project where each of the subsidiary bodies will participate in reviewing and redesigning the future of an important but aging industrial complexes – where raw materials are extracted, refined, and used in an interrelated concentrated industrial ecosystem. Need host country and sponsors.

• Developing a plan for best practice guidance related to coal mine abandonment and abandoned mine methane as a part of guidance for methane management throughout the coal mining life cycle.

• Will continue developing workshops and other forms of out reach, focused on the methane management needs of the coal mining sector.
TODAY’S PRESENTATIONS—EXAMPLES OF BEST PRACTICES AND PRINCIPLES

• Presentations by experts with diverse backgrounds and perspectives

• All will talk about opportunities to capture and use CMM which are presented to mine operators at various stages in the life cycle of coal mining

• Each speaker has a persuasive argument for considering implementation of an innovative approach to various aspects of assessing co-located coal and gas resources, drilling, producing, and capturing methane that would otherwise be a lost, and using this undervalued resource to benefit the coal mine and the environment
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