Coal Mine Gas Drainage in China

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Chinese Coal Industry Overview

Map of Coal Resource Distribution in China
Regional Distribution of Chinese Coal Resources

- **Shanxi, Shaanxi and Inner Mongolia**: 64.2%
- **Southwest China**: 11.1%
- **South Central China**: 4.5%
- **East China**: 7.4%
- **Northeast China**: 4.3%
- **Beijing, Tianjin and Hebei Province**: 2.4%
- **Gansu, Ningxia, Qinghai and Xinjiang**: 6.1%
Chinese Coal Industry Overview

Diagram of Large-scale Mine Bases Distribution in China
Chinese Coal Industry Overview

Coal Resource Distribution in China
Chinese Coal Industry Overview

- 4.1 billion ton capacity; 3.9 billion ton output
- Ten 100 million ton mines; Ten 50 million ton mines
- 800 safe and highly efficient mines
- Additional 1000 billion m³ CBM reserve; 300 billion m³ CBM output

2015
Distribution of Highly Gassy Coal Mines in China
(pink stands for highly gassy mines, blue stands for low gassy mines)

Distribution of Mining Areas with Coal-Gas Outburst Threat
Gas Management of Chinese Coal Mines

- Chinese coal mines experience extremely complicated geological conditions

  - More than 95% of production is from underground mining, over 70% of state-owned mines are highly gassy or have coal-gas outbursts, and most have low permeability (permeability rate < 1).
Since 2005 the Chinese government has attached great importance to and made more efforts to strengthen comprehensive gas management, sticking to human-orientation and caring for miners’ lives.
Gas Management Plan by Extracting Gas from Adjacent Seams (Typical at China’s Huainan Mining Industry Group)

Main Gas Management Technologies in China

- Top Pressure-relief Boundary
- Air-return way of Workface B11
- Transportation Roadway of Workface B11
- Bottom Pressure-relief Boundary
- Floor Roadway B6
Gas Management of Chinese Coal Mines

Main Gas Management Technologies in China

- Gas Station
- Surface Borehole
- Gas Extraction
- Coal Mining
China Australia Mining Development Alliance (CAMDA) introduced IMSS (Integrated Mine Safety Solutions) system to promote work safety standards at the U.S. EPA CMM Conference.
Gas Management of Chinese Coal Mines

Integrated Mine Safety Solutions

Exploration

Testing

Modeling

Design

Extraction

Utilization

Operation

Planning

the U.S. EPA CMM Conference

China Australia Mining Development Alliance
Gas Management of Chinese Coal Mines

- Typical Gas Management Plan by Directional Drilling (Shenhua Group)
Gas Management of Chinese Coal Mines
Domestic high-end CMM and CBM drainage equipment and technology in China have made great headway with the help of technology introduced by CAMDA.
Gas Utilization of Chinese Coal Mines

the U.S. EPA CMM Conference  
China Australia Mining Development Alliance
Shenhua Group and CAMDA

2005 → 2006/7 → 2008 → 2009-2012

- Shenhua Group and CAMDA
  - 2005: Additional Exploration & Testing
  - 2006/7: Bajigou Coal Mine-Gas Drainage
  - 2008: Rujigou Coal Mine-Gas Drainage
  - 2009-2012: Tianrong Company-Gas Drainage