

Advances in Techniques and Equipment of Mine Water Prevention and Control in China

Shuning Dong^{1,2}, Qisheng Liu^{1,2}, Hao Wang^{1,2}

¹*Xi'an Research Institute of China Coal Technology and Engineering Group Corp., China
dongshuning@cctegxian.com*

²*Shaanxi Key Lab of Coal Mine Water Hazard Prevention and Control, China*

Extended Abstract

In China, under the effective supervision and management of state administration of Coal Mine safety, coal mine water disasters decline sharply. However, shallow coal resource is dried up gradually, so coal companies turn to deep coal resource. Generally, the deeper the coal mines locate, the more complex the hydrogeological condition is, and the harder water hazard prevention and control work is. In such conditions, large coal mine water inrush disasters still occur frequently in some coal mine areas. In order to control mine water hazard thoroughly, mine water researchers still have a long way to go.

The aim of this study was to illustrate the features of coal mine water disasters, identify the problems of present water hazard control technology and equipment, as well as introduce some new techniques and equipment of mine water prevention and control. To achieve this goal, the investigation of mine water disasters was conducted, the advances of mine water control was analyzed, and the strategies for improving water hazard control were developed.

In this paper, the features of coal mine water disasters were elaborated based on some statistical data, which include: 1) extremely large mine water disasters still occurs a lot; 2) the main sources of water inrush are goaf water and karst water; 3) mine water disasters mostly occur in private or township coal mines; 4) mine water disasters mostly occur in the process of driftage.

In addition, advances in techniques and equipment of mine water prevention and control, which include geophysics techniques and equipment, drilling techniques and equipment, hydrogeochemical detection techniques and equipment, mine water disaster control techniques and equipment, etc., were introduced.

In order to solve the problems caused by mine water hazard, some science and technology countermeasures were developed to prevent and control mine water disasters, which can be briefly summarized as studying basic theories, developing key technology and equipment, constructing research and development platform, and strengthening safety management.

Key words: Advances in Techniques and Equipment; Mine Water Hazard; Mine Water Prevention and Control; Geophysics; Drilling