

论文

近距离高瓦斯煤层群大采高首采层煤与瓦斯共采

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摘要:

针对我国西部地区典型的近距离高瓦斯厚煤层大采高条件下开采扰动剧烈、沿空留巷难度大、上下向扰动卸压范围更大等煤气共采的技术难题, 采用理论研究及数值分析的方法, 在研究4.2 m大采高顶板裂隙发育及演化规律的基础上, 揭示大采高工作面裂隙发育区的分布特征, 找到了采空区瓦斯富集区, 并提出采用大直径(=250 mm)钻孔群代替倾向高抽巷实现卸压瓦斯的高效抽采, 安全连续高效生产原煤67.7万t, 抽采瓦斯累计1 166.95万m<sup>3</sup>。

关键词: 煤与瓦斯共采; 高瓦斯; 近距离煤层群; 大采高; 顶板裂隙发育规律; 大直径钻孔群

Integrated coal and gas extraction in mining the first seam with a high cutting height in multiple gassy seams of short intervals

Abstract:

There are a number of challenging technical issues in mining the first seam with a high cutting single pass longwall method in thick and multiple gassy seams of short intervals in the western region of China. These issues include the stability of retained gateroads and the quantification of the extent and degree of destressed zones in surrounding strata. To gain an insight of these issues, a theoretical and numerical study was undertaken for a 4.2 m cutting height face to understand the propagation and evolution of fractures around the face, to characterize the fracture distribution, and to map out the zones of high gas concentrations in the goaf. Based on these findings, a group of large diameter (=250 mm) boreholes drilled into the zones, instead of conventionally expensive gas drainage tunnels, are successfully used to capture the goaf gas. A total of 11.669 5 million cubic meters gas is captured with the boreholes, a total of 677 000 tons of coal is efficiently extracted without any gas issue, and integrated coal and gas extraction is achieved.

Keywords: gassy condition, close multi-seam, large mining height, roof cracks development law, large diameter boreholes group

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