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Quick determination of gas pressure before uncovering coal in cross-cuts and shafts

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Abstract

The determination of gas pressure before uncovering coal in cross-cuts and in shafts is one of the important steps in predicting coal and gas outbursts. However, the time spent for testing gas pressure is, at present, very long, seriously affecting the application of outburst prediction techniques in opening coal seams in cross-cuts and shafts. In order to reduce the time needed in gas pressure tests and to improve the accuracy of tests, we analyzed the process of gas pressure tests and examined the effect of the length of boreholes in coal seams in tests. The result shows that 1) the shorter the borehole, the easier the real pressure value of gas can be obtained and 2) the main factors affecting the time spent in gas pressure tests are the length of the borehole in coal seams, the gas emission time after the borehole has been formed and the quality of the borehole-sealing. The longer the length of the borehole, the longer the gas emission time and the larger the pressure-relief circle formed around the borehole, the

longer the time needed for pressure tests. By controlling the length of the borehole in a test case in the Huainan mining area, and adopting a quick sealing technique using a sticky liquid method, the sealing quality was clearly improved and the gas emission time as well as the amount of gas discharged greatly decreased. Before the method described, the time required for the gas pressure to increase during the pressure test process, was more than 10 days. With our new method the required time is only 5 hours. In addition, the accuracy of the gas pressure test is greatly improved.

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Key words

gas pressure; sticky liquid sealing; quick test; cross-cut; shaft

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