

**Abstract:**

In order to verify the performance of the new design blast proof door based on pilot test platform, the damage conditions of explosion shock wave to new blast proof door under different explosion equivalent are carried out, the gas explosion occurred in the coal mine is simulated, the structure of the blast proof door is tested for pressure and strain. Obtain the performance parameters such as pressure and stress of the newly designed blast proof door system. The results show that the stress level of the main part of the new blast proof door is lower than the allowable stress of the material and no plastic deformation occurs during all explosion tests, which indicates that the overall design of the spare blast proof door is reasonable and the safety protection performance is reliable. The FLUENT software is used to simulate the gas explosion pressure field, and the pressure distribution on the spare blast proof door and the opening process of the movable door are obtained. The law of opening the pressure relief is obtained, and the safety protection performance of the blast proof door is improved.