



**International Conference on Energy, Resources,
Environment and Sustainable Development**

ABSTRACT BOOK

Energy, Resources, Environment and Sustainable Development
in the Context of Carbon Peaking and Carbon Neutrality



May 26-27, 2022
Xuzhou, China



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aspects of mental health theory, sustainable development theory and high-density residential area theory, this paper makes a systematic and complete quantitative analysis on the cognition of high-density residential area residents to alleviate spatial oppression. The factors to alleviate space oppression include green plants, ground pavement, building facade and waterscape. Four high-density residential areas with different slopes in Xuzhou were taken from five different angles, and finally 20 photos were obtained. Using PS technology to integrate 20 photos with four elements, collect data through questionnaire survey, and classify and count the data with SPSS software. Finally, the residents' aesthetic preference for these four elements and the preference to alleviate psychological pressure are obtained. From the perspective of spatial oppression, this paper puts forward the problem of alleviating the psychological health of residents, so that the proposition of spatial oppression is no longer limited to single buildings and commercial buildings, which can help residents in high-density residential areas have a better experience in the interior of the residential area, and provide new ideas and guidance for the internal environmental landscape design of high-density residential areas.

Keywords: quantitative evaluation; high-density residential; spatial stress

Combination between kinematic analysis and distinct element modelling in pit slope stability for dimension stone quarries: Case study at dimension stone quarry Nui Trai, Binh Dinh Province, Vietnam

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Abstract: In Dimension stone extraction of Vietnam, cutting methods, such as disc sawing and diamond wire sawing are usually deployed, because they do not make joint appearance in rock mass during cutting operation, leading to forming larger pit angle to recover more extra reserve but increasing unstable risk of pit slope when joint sets-existed rock mass (joint sets characterized by dip directions, dips and spacings). The pit slope direction is necessary to be defined to mitigate failure risk in blocky and hard rock. The paper suggested determining the pit slope directions with high failure risk to abandon in design stage or to give comprehensive solution of improving the stability when the slope in operation stage. This could be done by combination between failure Kinematic Analysis (KA) and Distinct Element Modelling (DEM) for dimension stone quarries. The paper collected Discontinuous Fracture Network (DFN) at Nui Trai Quarry for the KA of failure modes with Dips software in various pit slope directions to preliminarily show which slopes to be unstable ability under consideration of the spatial relation between joint sets and pit slopes. When pit slopes with high risk of failure is shown by the KA, they will be necessary to be analysed more deeply with the DEM, with which the DFN, pit slope directions and joint properties combined using 3DEC software. The data inputted into the software was joint sets derived from the Dips and rock mechanics at Nui Trai quarry. Combination between the two methods above will decrease the time consumption and the cost in the comprehensive stability assessment.

Keywords: kinematic analysis; distinct element modelling; dimension stone quarries

Experimental study on evolution characteristics of coal seam parameters under true triaxial cyclic mining

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Abstract: In order to further explore the evolution characteristics of coal seam parameters in circular mining, physical simulation tests on the influence of cyclic stress on coal seam parameters under different initial gas pressures were carried out by using a large true triaxial physical simulation test rig, and the evolution characteristics of gas pressure and coal seam strain with the number of cycles and gas pressure were discussed. The test results showed that in the process of cyclic loading and unloading, the coal body is broken, new pores and fissures are generated, and more free gas is absorbed, which makes the pressure of the coal body decrease; Both the strain and gas pressure of coal seam change with the loading and unloading of cyclic load, and the changes of the two parameters reach the maximum value at the first loading; With the increase of the number of cycles, the increase and decrease of the gas pressure during loading and unloading show an increasing trend, and the closer the distance to the pressure device, the greater the change; With a lower initial gas pressure, the greater increase of pressure caused by the first loading. However, in the subsequent loading and unloading process, the greater initial gas pressure cause the greater gas pressure change.

Keywords: cyclic loading and unloading; initial gas pressure; strain; change in gas pressure

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