ROCK MECHANICS-MINING

A well-developed rock mechanics laboratory is in operation at the Institution of Mining and Geotechnical Engineering. Laboratories for computer aided mine design including modeling and valuation of mineral deposits, furthermore minimizing vibration and environmental effects of blasting will be developed in the near future.

ROCK MECHANICAL TESTING

Rock mechanical laboratory of University of Miskolc is developed with special equipment for test required by the mining industry according to the appropriate standards. Usually compressive, tensile and bend tests are done for different loading conditions. The equipment is suitable not only for rocks but numerous kinds of construction materials. Linear and hyperbolic failure curves based on our tests can be determined.

COMPUTER AIDED MINE DESIGN, MODELING AND VALUATION MINERAL DEPOSITS

Computational tools will be used for 3D modeling of the mineral deposits and mining facilities. This enables spatial demonstration of the numerical database of the deposit and solving numerous problems of mine design. The basic aim is to work out mining plans for mine development, extracting and technological decision making and mine valuation.

VIBRATION MEASUREMENTS FOR MINIMIZING ENVIRONMENTAL EFFECTS OF BLASTING

Noise and vibration are very common adverse environmental effects of mining especially as a result of increasing urbanized areas. Furthermore a continuously high output of rock mining is required to satisfy construction material demand. Consequently accurate knowledge of seismic conditions is needed for careful and efficient blast design and responsible mine management.

SERVICES

PREPARING ROCK SAMPLES

- Dry and wet machines are available for cutting blocks of rocks
- Our drills are suitable for preparing cylindrical probes meeting standards

STRENGTH TESTS

- Uniaxial compressive test
- Triaxial compressive test up to 600 bars confining pressure
- Brazilian test
- Bend test

FAILURE CURVES

- Determining linear and hyperbolic failure curves based on our strength tests

EQUIPMENT

- Compression machines up to 25, 100 and 1000 kN loads
- HBM (Hottinger Baldwin Messtechnik) data acquiring system
- Controls measuring system up to 3000 kN loads
- Dry and wet cutting machines for preparing probes
- Core drills
- Hurricane 12ch modular multi-channel system, IMI PCB M604B31 triaxial accelerometer

REFERENCES

- Testing country rocks of national underground low and medium activity nuclear waste disposal facility
- Advanced Materials and Intelligent Technologies – GINOP-2.3.4-15-2016-00004