



Colorado School of Mines
1500 Illinois Street
Golden, CO 80401 U.S.A.
Web site: <http://www.mines.edu/Research/>

Excavation Engineering and Earth Mechanics Institute (EMI)

The Excavation Engineering and Earth Mechanics Institute (EMI), established in 1974, combines education and research for the development of improved excavation technology. By emphasizing a joint effort among research, academic, and industrial concerns, EMI contributes to the research, development and testing of new methods and equipment, thus facilitating the rapid application of economically feasible new technologies.

Current research projects are being conducted throughout the world in the areas of tunnel, raise and shaft boring, rock mechanics, micro-seismic detection, machine instrumentation and robotics, rock fragmentation and drilling, materials handling systems, innovative mining methods, and mine design and economics analysis relating to energy and non-fuel minerals development and production. EMI has been a pioneer in the development of special applications software and hardware systems and has amassed extensive databases and specialized computer programs. Outreach activities for the Institute include the offering of short courses to the industry, and sponsorship and participation in major international conferences in tunneling, shaft drilling, raise boring and mine mechanization.

The full-time team at EMI consists of scientists, engineers, and support staff. Graduate students pursue their thesis work on Institute projects, while undergraduate students are employed in research.

Background:

- Created in 1973
- Accomplishes \$300,000 to \$600,000 research yearly

Areas of Expertise:

- Mine mechanization and automation
- Civil underground construction
- Geotechnical engineering
- Tunneling
- Mechanical mining
- Advanced drilling systems
- Novel rock excavation systems

Sponsoring Organizations:

- U. S. Department of Defense
- National Science Foundation
- U. S. Department of Energy
- National Institutes of Occupational health & Safety
- Private industry

Method of Technology Transfer:

- Works directly with industry leaders to better understand the science of rock excavation
- Provides real-world work opportunities for students
- Provides workshops, symposiums, short courses, and special services
- Networks to an industrial expertise base

Spin-offs / Contributions:

- Reduced underground construction costs
- Cost and performance prediction equations
- New cutting and drilling tools
- Advanced rock fragmentation systems

Contact: EMI Director, Dr. Levent Ozdemir, Mining Department, (303) 273-3419; lozdemir@mines.edu