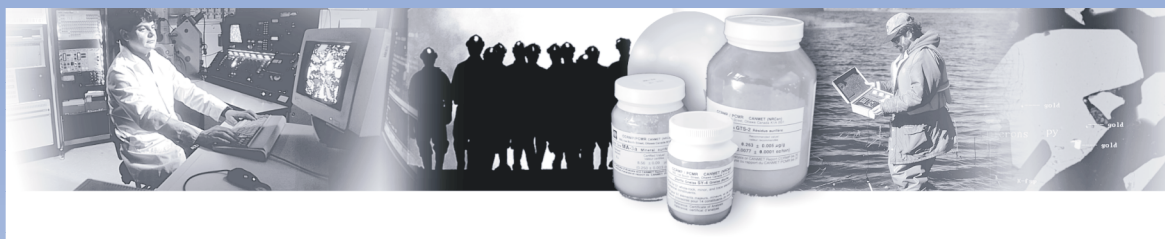
CANMET
MINING AND
MINERAL
SCIENCES
LABORATORIES



MINE MECHANIZATION/ AUTOMATION

THE CHALLENGE

Mechanization and automation are changing the way ore deposits are being mined. Industry needs more energy-efficient methods, systems, and approaches. New technologies require a higher-skilled labour force, and aim to reduce the exposure of miners to hazards.

NRCAN CAN HELP

CANMET-MMSL has established a team of specialists in mechanical, mining, electrical, computer applications and electronic engineering. We work with the Canadian mining industry to enhance health and safety in underground mining operations, facilitate mechanization and automation, improve mine profitability, and provide sound science to regulatory agencies. Of particular importance are mechanization and automation in narrow-vein mines, and addressing the needs of deep mining operations. The CANMET-MMSL Experimental Mine in Val d'Or, Quebec, provides unique underground and surface industrial-scale facilities to develop and improve underground mining equipment and systems.

OUR EXPERTISE

CANMET-MMSL has developed a range of expertise through R&D activities:

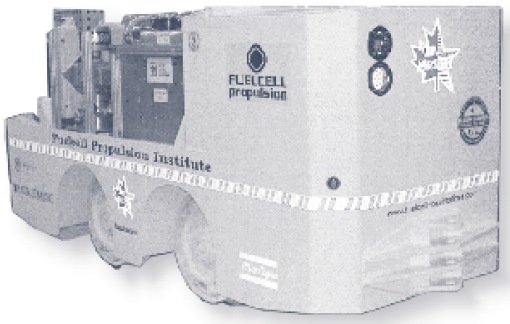
- **Equipment modelling and development**
  - Design and development of equipment to improve miner health and safety including ambient noise abatement, miner locating device and vibration reduction
  - Standardized performance evaluation systems for drilling equipment and accessories
  - Instrumentation, data acquisition and experimental procedures to evaluate and adapt mining equipment
- **Mining methods and systems**
  - Water hydraulic systems
  - Design, adaptation and testing of new mining systems for Canadian operations
  - Non-explosive techniques for rock fragmentation
- **Programmable controllers for underground systems and location of equipment**
- **Wireless communications for automated control of stationary and mobile equipment**

SUCCESSFUL PARTNERSHIPS

- In collaboration with Canadian mining companies and a South African manufacturer, CANMET-MMSL has developed a hydraulic rockdrill, the CANDRILL. CANMET-MMSL served as the project leader, and participated in improving the performance and ergonomics, as well as testing of the rockdrill at the CANMET-MMSL Experimental Mine in Val d'Or. This project has successfully produced a more environmentally-friendly and energy-efficient rockdrill which also increases productivity.

- In cooperation with the Fuelcell Propulsion Institute, CANMET-MMSL has initiated a North American research consortium to develop the application of hydrogen power systems to underground mine production vehicles. The objective is to eliminate the emissions of diesel fumes underground. CANMET-MMSL is responsible for organizing the Canadian portion of the project, to provide specifications and do the evaluation. The first worldwide fuelcell-powered locomotive will be evaluated and demonstrated at the CANMET-MMSL Experimental Mine in Val d'Or and at three different Canadian operations.

Underground at CANMET-MMSL's Experimental Mine



Locomotive with fuel cell

CONTACT US

CANMET-MMSL's goal is to help find sound, science-based solutions to operational challenges.

Please contact us at:

CANMET Mining and Mineral Sciences Laboratories
Experimental Mine
P.O. Box 1300, 1 Peter Ferderber,
Val d'Or, Quebec J9P 4P8

Tel.: (819) 736-4331 ext 221
Fax: (819) 736-7251
Email: canmet-mmsl@nrcan.gc.ca

For more information visit our web site at: **www.nrcan.gc.ca/canmet-mmsl**

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