

# ROCK MECHANICS

Since the 1970's

## *In-situ rock stress measurements*

- Overcoring using CSIRO Hollow Inclusion stress cells
- Hydraulic fracturing with Minifrac-equipment

## *Rock stability monitoring*

- Rod extensometers
- Incremental extensometers
- Convergence bolts
- EI-Beam tilt sensors
- Basset convergence profiles
- Temperature and pressure sensors
- Strain gauge
- Crack meters
- Manual or computerized automatic reading and registration

## *References*

- Overcoring measurements for Kamppi Center, Kemi and Pyhäsalmi mines, as well as several parking halls and storage caverns.
- Hydraulic fracturing measurements for Vuomaali project, Kamppi Center and several community underground shelters.
- Installations and monitoring systems for Kamppi metro station, Loviisa and Olkiluoto low activity nuclear waste disposal sites, Viikinmäki underground water treatment plant, Salmisaari underground coal storage, several mines etc.

