

## log laboratoire ouvert de géothermie

### The Geothermal Open Laboratory

The objective of the research carried out at the *Laboratoire ouvert de géothermie* (LOG) is to improve the understanding of heat transfer and groundwater flow phenomenon, reducing technological risks related geothermal energy production. Access to the lab is an open mode, inspired by the expansion of open source software.

The **knowledge** acquired at the LOG will be used specifically to:

- **Assess** favourability to superficial and deep geothermal systems;
- **Improve** the design of underground components of geothermal systems;
- **Develop** more competitive geothermal technologies.

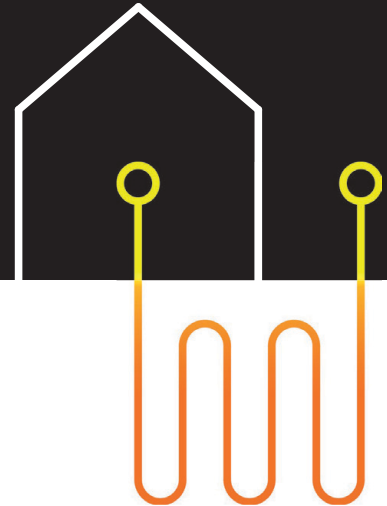
The study of heat transfer phenomena in Earth sciences and the characterization of the thermal and hydraulic properties of geological materials also find applications in the fields of:

- Environmental **hydrogeology**,
- Cold regions **geotechnical engineering**,
- Earth **geodynamics**.

### Services

Access to LOG equipment is free in exchange for sharing data. The results are recorded in a **database** available on the web to create a public repository of **thermal** and **hydraulic properties** of **geological materials**.

The **autonomous** and **collaborative** use of the LOG equipment, under the supervision of INRS staff, is encouraged. INRS staff can also perform **sample preparation** and **analysis**, but **labour cost** is expected in this case.





## Thermal conductivity scanner

TCSan from Lippmann Geophysikalische Messgeräte

To measure thermal conductivity and thermal diffusivity using infrared optical scanning, which can be done on heterogeneous rock samples of different sizes.

## Combined permeameter and porosimeter

AP-608 from CoreTest

To evaluate the permeability and porosity of rock samples in drill cores under specific hydrostatic and stress conditions (up to 10 000 psi).

## Specialized cutting devices:

### Drill press

MDP-405 from CoreTest

To cut rock samples in cores of 1.0, 1.5 and 2.0 " diameter and up to 4.5" in length.

### Dual Trim Saw with End Face Grinder

DTS-430 from CoreTest

To prepare 1.5, 2.0 and 3.5 " thick plugs with parallel ends and to smooth edges.

## Guarded heat flow meter

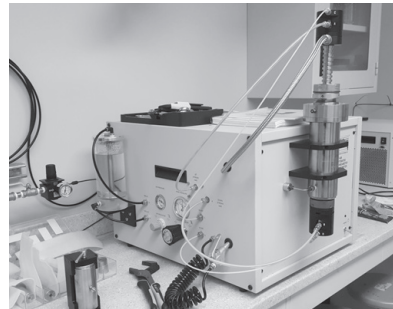
FOX50 from TA Instruments

To measure the thermal conductivity of core plugs in steady-state under different temperatures (-10°C to 180°C).

## Portable permeameter

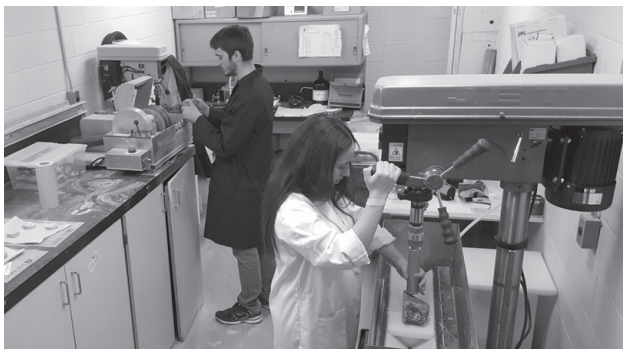
PPP-250 from Core Laboratories

Provide a method for determining gas permeability with a device that can be carried in the field or a core shack.



Combined permeameter and porosimeter

This equipment is complementary to the **CT scanner** of the INRS allowing to combine **infrared** and **X-ray scanning** techniques, a **world premiere** for a geothermal laboratory.



## Laboratoire ouvert de géothermie

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## Partners