

PERMECA at the heart of your projects

- Multi-scales,
- Multi-stresses (static or dynamic mechanics, thermal freezing and heating),
- Multi-matrix (soils, sediments, waters, rocks, recycled materials, non-dangerous waste),
- Multi-methods,
- Collaborative projects (design, implementation, valorization) supported by regional, national or European funding,
- Service delivery at different levels of the value chain,
- Training/demonstration support.

The Antea Group makes available its know-how in terms of engineering and counselling to serve the environment. PERMECA'S experimental and analytical assets are grouped in Orléans in the Antea Group's geomechanical testing laboratory, in direct connection with all the other modelling tools and platforms.

The Antea Group proposes global solutions in the sectors of the environment, infrastructures, water and land-use planning.

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PIVOTS

www.plateformes-pivots.eu

PIVOTS is a coordinated set of experimental and analytical platforms dedicated to the development of environmental engineering and metrology for activities with a high consumption of natural resources.

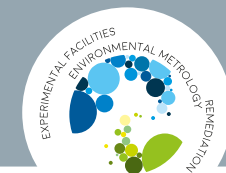
Along the entire value chain, it brings together public and private-sector actors in monitoring the quality of the environment and the sustainable management of natural resources (soil, subsurface, surface water, groundwater, sediment, air).



With the support of:



This operation is co-financed by the European Union. Europe is committed to the Center-Val de Loire region with the European Regional Development Fund.



PIVOTS

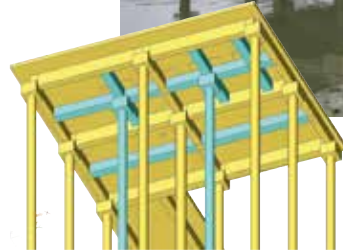
PERMECA

Test Platform for Research in Collaborative and Applied Environmental Mechanics

Experimental laboratory tools dedicated to static and dynamic thermo-hydro-mechanical stresses on samples of natural soils and materials derived from industrial sub-products recycling.



Apply, develop and validate your test protocols with PERMECA



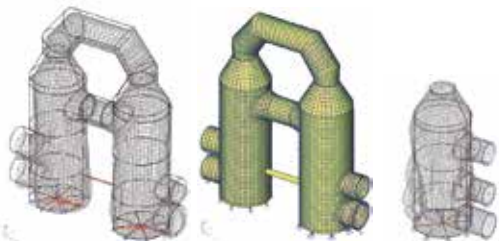
Applications of PERMECA

- Deformation studies of soils and infrastructures when subjected to cyclic and dynamic phenomena (earthquakes, storm surge, tides,...),
- Thermal transfers studies in soils and materials and associated mechanical modifications for energy optimization in the sustainable city, geothermal structures in particular,
- Processing studies of the mechanical, hydraulic and environmental properties in the framework of a circular economy, in particular on the second life of the materials.

PERMECA allow to apply, develop and validate test protocols:

- For an improved **factoring in of cyclical and dynamic stresses** in the design of large engineering structures and the prevision of soil liquefaction phenomena,
- To **model and optimize thermomechanical exchanges** between energy-related geos-structures at various scales of integration, from the building up to the scale of the city,
- To **determine the hydromechanical and chemical resistance of recyclable materials** in order to obtain the approvals required for their implementation.

These means are mobilizable in the framework of collaborative research projects and services.



Available means of study

- **Soil and infrastructure deformation:**
 - Dynamic testing systems (triaxial dynamic, resonant column),
- **Energy optimization:**
 - Device simulating a geothermal pile with fluid circulation under various mechanical strains and temperature cycle,
- **A second life for materials:**
 - Development of new "broad diameter" static and cyclical test facilities (triaxial, oedometer, permeameter),
- **Specific data management:**
 - LIMS (Laboratory Information Management System) oriented towards geomechanical testing and environment.

