Title of the project: Temporary storage of CO_2

Context

By 2025, the EPFL Carbon Team's prototypes will be up and running, capturing the first kilos of CO_2 directly from the atmosphere, as well as from the gas boiler of the animal facility in the SV Faculty. Several solutions are currently being studied for the further processing of this captured CO_2. One of these is permanent storage in specific geological formations in Switzerland. To make this storage as optimal as possible, a number of studies need to be carried out, concerning soil properties, the presence of impurities in the captured CO_2 stream, the conditions under which the carbon dioxide must be present during burial, and the impact of the latter on its environment. To this end, a collaboration with the Laboratory of Soil Mechanics, or LMS, has been developed to enable interested students to work on these topics. This project consists in developing a system to temporarily store the captured CO_2 in a tank so that it can be analyzed in the LMS.

Description

Design and build a system for the temporary storage of CO_2 following its capture (from the atmosphere or at the gas boiler outlet). It will be necessary to define the conditions under which the CO_2 must be present (pressure, temperature, gas/liquid, etc.), so that it can be introduced into the reservoir with the minimum of energy. Finally, a system for preparing analyzable samples from the CO_2 stored in the temporary reservoir will have to be developed. This will be used to carry out analyses and burial tests under real conditions.

Requirements

- Knowledge in fluid mechanics.
- Knowledge in electronics and energy.
- Knowledge in chemistry.

Bonus: experience in a lab or with other projects.

Contact

Supervising lab: LMS, Dr. Eleni Stavropoulou.
Student supervisor: Louis Saix (louis.saix@epfl.ch).

Remarks

Project location: Lausanne.
The project can accommodate a maximum of 5 students.
Aimed at ENAC students but students from other sections can also apply to this project.