

# Thermo-mechanical schemes for energy piles

Alessandro F. Rotta Loria<sup>1</sup>\*, Lyesse Laloui<sup>1</sup>

<sup>1</sup> Swiss Federal Institute of Technology in Lausanne, EPFL, Laboratory of Soil Me-chanics, Station 18, CH 1015 Lausanne, Switzerland

\* alessandro.rottaloria@epfl.ch

## Abstract

Currently, schemes based on seminal empirical knowledge about energy piles subjected to mechanical and thermal loads are available to describe the response of such foundations. However, the acquired understanding over the past two decades about energy pile behaviour suggests the need of a revision of the quoted schemes. Looking at such challenge, this paper presents thermo-mechanical schemes based on thermo-elasticity theory to address the response of single energy piles to mechanical and thermal loads. The proposed schemes highlight a number of key aspects associated with the modelling of energy pile response to loading and may be considered in analysis and design.