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16th International Conference of the International Association
for Computer Methods and Advances in Geomechanics



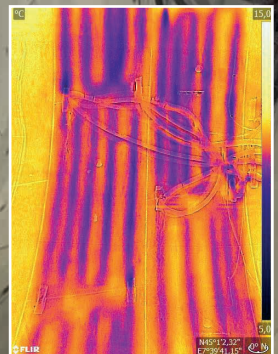
SHORT COURSE

ENERGY TUNNELS *for a* SELF-SUSTAINABLE METRO

Feedback from the design
of the thermal activation of Turin metro line 2

TORINO • ITALY
30 August, 2022

*Save
the
date*



Politecnico di Torino
Department of Structural,
Geotechnical and Building Engineering

OVERVIEW

This short course will be devoted to the description of the studies conducted for the design of the thermal activation of Turin Metro Line 2. The design had to face a number of different challenges so that the line could be inserted into the metropolitan context.

Among these, interaction with existing underground infrastructures, synergies with developing areas on the surface and the sustainability of the project from the economic and the environmental points of view.

This latter is a peculiar aspect as the line was designed to be independent from the energy point of view.

One of the solutions adopted to guarantee this expectation is the thermal activation of the tunnel linings in order to exchange heat with the ground and provide thermal energy for the conditioning of the metro stations as well as for external users.

The methodology adopted, which included site characterisation, coupled numerical modelling, GIS procedures, will be revealed and described during the short course showing how the design of the world's largest ever planned usage of energy geostructures was achieved.

Local organizers: Marco Barla, Alessandra Insana - Politecnico di Torino

PROGRAMME

Tuesday • August 30, 2022

- | | |
|---------------|---|
| 14:30 - 14:45 | Opening |
| 14:45 - 15:00 | Introduction to the short course.
<i>Marco Barla, Polito</i> |
| 15:00 - 15:30 | Turin metro Line 2 and the rail network in the city.
<i>Roberto Crova, InfraTo</i> |
| 15:30 - 16:00 | The principle of thermal activation of tunnel linings and design issues.
<i>Marco Barla, Polito</i> |
| 10:30 - 10:45 | <i>Coffee break</i> |
| 16:30 - 17:00 | Methodological study and quantification of the heat potential of the ML2 tunnel.
<i>Alessandra Insana, Polito</i> |
| 17:00 - 17:30 | Design challenges for the planning of a sustainable infrastructure.
<i>Francesco Azzarone, InfraTo</i> |
| 17:30 - 18:00 | The design of the hydraulic circuit.
<i>Riccardo Vesipa, Polito</i> |
| 18:00 - 18:30 | The possible use of the exploited thermal energy with district heating systems and the integration with other renewables.
<i>Marco Simonetti, Polito</i> |
| 18:30 - 18:45 | Discussion and closure |