



Online Workshop

Shallow geothermal energy: from the ground to buildings, from the field to modelling

Presented by



UNIVERSITÀ
DEGLI STUDI
DI MILANO

30 November - 3 December 2020

Main topics of the workshop

- ✚ Introduction to regulations on low-enthalpy geothermal power exploitation
- ✚ Regional geological and hydrogeological characterisation for low-enthalpy geothermal use
 - ✚ Design of both open- and closed-loop shallow geothermal installations
- ✚ Design, analysis and optimisation of novel applications such as energy piles, walls and tunnels
- ✚ The workshop will include problem-solving sessions with practical application examples

Lecturers and contributors

Á. Tóth
Eötvös Loránd University (ELTE), Hungary

G. Dalla Santa
Università degli Studi di Padova (UNIPD), Italy

F. Cecinato, D. Pedretti
Università degli Studi di Milano (UNIMI), Italy

M. Barla, A. Casasso, S. Lo Russo
Politecnico di Torino (POLITO), Italy

T. Arola
Geologian tutkimuskeskus (GTK), Finland

D. Sterpi
Politecnico di Milano (POLIMI), Italy

L. Della Pona, M. Colombo, M. Magon
A2A Calore e Servizi, Italy

Registration

Free of charge
Closes on **23 November 2020**

[Register here](#)

The workshop is a part of the Horizon 2020 [ENeRAG project](#).
Excellency Network Building for Comprehensive Research and Assessment of Geofluids



Online Workshop

Shallow geothermal energy: from the ground to buildings, from the field to modelling

30 November-3 December 2020

Program of the workshop*

Timing: Central European Time (CET)

Monday, November 30, 2020

Session 1: Introduction and overview of shallow geothermal systems

- 09:00 – 09:45 Welcome and introduction (F. Cecinato & D. Pedretti, UNIMI, Italy)
09:45 – 10:00 Break
10:00 – 10:45 Understanding the shallow geothermal potential in light of basin-scale groundwater flow and heat transport processes (A. Toth, ELTE, Hungary)
10:45 – 11:00 Discussion
11:00 – 11:45 The Lahti ATES - experiences and monitoring results. (T. Arola, GTK, Finland)
11:45 – 12:00 Discussion
12:00 – 12:45 Numerical modelling support in addressing design issues of open-loop geothermal systems (A. Casasso, POLITO, Italy)
12:45 – 13:00 Discussion

Session 1

Tuesday, December 1, 2020

Session 2: Analysis and design of vertical closed-loop geothermal heat exchangers

- 09:00 – 09:45 Geological and geotechnical insights related to vertical borehole heat exchangers design and realization / part 1 (G. Dalla Santa, UNIPD, Italy)
09:45 – 10:00 Break
10:00 – 10:45 Geological and geotechnical insights related to vertical borehole heat exchangers design and realization / part 2 (G. Dalla Santa, UNIPD, Italy)
10:45 – 11:00 Discussion
11:00 – 11:45 Thermal and geotechnical analysis of thermo-active foundation piles / part 1 (F. Cecinato, UNIMI, Italy)
11:45 – 12:00 Discussion
12:00 – 12:45 Thermal and geotechnical analysis of thermo-active foundation piles / part 2 (F. Cecinato, UNIMI, Italy)
12:45 – 13:00 Discussion

Session 2





Wednesday, December 2, 2020

Session 3: Design and application of open-loop geothermal power plant systems

Session 3

09:00 – 09:45 Planning and design of low-enthalpy geothermal power plant (open-loop)
(S. Lo Russo, POLITO, Italy)

09:45 – 10:00 Break

10:00 – 10:45 Geothermal heat pump on Canavese power plant: a district heating application in Milan / part 1 (M. Colombo, L. Della Pona, M. Magon, A2A Calore e Servizi, Italy)

10:45 – 11:00 Discussion

11:00 – 11:45 Geothermal heat pump on Canavese power plant: a district heating application in Milan / part 2 (M. Colombo, L. Della Pona, M. Magon, A2A Calore e Servizi, Italy)

11:45 – 12:00 Break

12:00 – 12:45 ENERAG Internal Meeting

12:45 – 13:00 Discussion

Thursday, December 3, 2020

Session 4: Analysis and design of energy tunnels and walls

Session 4

09:00 – 09:45 Energy tunnels: concept, design aspects and applications / part 1
(M. Barla, POLITO, Italy)

09:45 – 10:00 Break

10:00 – 10:45 Energy tunnels: concept, design aspects and applications / part 2
(M. Barla, POLITO, Italy)

10:45 – 11:00 Discussion

11:00 – 11:45 Energy walls: thermal performance and structural behaviour / part 1
(D. Sterpi, POLIMI, Italy)

11:45 – 12:00 Break

12:00 – 12:45 Energy walls: thermal performance and structural behaviour / part 2
(D. Sterpi, POLIMI, Italy)

12:45 – 13:00 Discussion

**We reserve the right to make minor changes in the program.*

The ENERAG project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 810980.

