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2018

NOON TALK @ DIATI

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Please bring
your own mug.
Coffee and tea
will be
provided
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**Mercoledì 14 febbraio 2018
ore 13.00**

**Politecnico di Torino
Sala Riunioni, primo piano,
DIATI ingresso 3**

Alessandro Casasso
RTD-A at DIATI

**“Shallow geothermal energy:
technologies, developments and
opportunities”**

Prof. Rajandrea Sethi moderates the discussion



**POLITECNICO
DI TORINO**

Dipartimento di Ingegneria
dell'Ambiente, del Territorio
e delle Infrastrutture



ABSTRACT

Shallow geothermal applications are based on the exchange of heat with the ground at depths up to 400m. These geothermal resources can be used for heating and cooling of buildings, and for the production of domestic hot water, generally by means of a heat pump. The field of shallow geothermal energy is multi-disciplinary and integrates geology, groundwater and environmental engineering, and building physics. In this presentation, an overview will be offered on geothermal heat pump technologies, of their fields of application, strengths and weaknesses, and environmental benefits and impacts. Some of the research activities recently carried out by the Groundwater Engineering research group will then be illustrated. These include: numerical flow and heat transport modelling; the development of simplified methodologies to solve specific design issues and of methods to assess the site-specific potential for shallow geothermal energy; and the assessment of policy issues addressed by the EU-funded project GRETA-Alpine Space. Finally, opportunities for possible future developments will be presented, such as district heating, demand-side management, integration with other renewable energy sources and with interventions of remediation and reclamation.

BIOGRAPHY

Alessandro Casasso is a researcher (RTD-A) at the Department of Environment, Land and Infrastructure Engineering of Politecnico di Torino. He graduated in 2008 in Civil Engineering, and received his PhD in 2012 (24th cycle) with a thesis titled “Low enthalpy geothermal systems: coupled flow and heat transport modelling of the long-term performances of Borehole Heat Exchangers”. He works in the Groundwater Engineering research group and his main research interest is shallow geothermal energy, with a focus on cross-cutting issues between energy and environmental engineering, such as groundwater flow and heat transport modelling, land planning tools for geothermal heat pumps, legislation, environmental benefits and impacts of this technology. At present, he is involved in the EU-funded project GRETA-Alpine Space and in an exchange project between Italian and Quebecois universities. He also worked on projects focused on groundwater characterisation, modelling and monitoring, and contributed as a technical advisor for trials on contaminated sites. He has tutored 13 MS and BC theses in engineering (environmental, civil, energy and mechanical) and architecture. He is lecturer in renewable energy resources and teaching assistant in groundwater engineering, hydrology and pollutant dynamics.

Save the date for our next speaker-event, on March 7 2018 , at 13:00.