



## Simulation, Analysis, Optimization and New Challenges of District Heating and Cooling Networks

Guest Editors:

**Prof. Dr. Francesco Melino**

Department of Industrial  
Engineering, University of  
Bologna, Viale del Risorgimento,  
2, 40136 Bologna, Italy

**Dr. Lisa Branchini**

Department of Industrial  
Engineering, University of  
Bologna, 40136 Bologna, Italy

Deadline for manuscript  
submissions:

**closed (30 September 2017)**

### Message from the Guest Editors

The challenges in efficiency increases, pollutant emissions, and so on has led to an increased attention to district heating and cooling networks (DHCNs). DHCNs are diffused, since the elimination of combustion systems at the final user stage allows to drastically reduce both pollutant and thermal emissions. To promote an efficient thermal energy production, DHCNs are supplied with heat produced by means of Combined Heat and Power (CHP) units and/or renewable generators. The increasing complexity of the networks makes the management of production system operations importance. New generation of DHCNs introduce the concept of smart thermal grids. The networks operate and install micro-CHP and/or thermal solar panels. This new approach to DHCNs promotes the concept of distributed generation transforming a thermal network into a smart grid.

- district heating and cooling
- smart district heating
- combined heat and power plants (CHP)
- renewable generators integration
- dynamic simulation
- heat exchange optimization
- software for DHCNs design and analysis
- techno-economic analysis





an Open Access Journal by MDPI

## Editor-in-Chief

**Prof. Dr. Giulio Nicola Cerullo**

Dipartimento di Fisica,  
Politecnico di Milano, Piazza L.  
da Vinci 32, 20133 Milano, Italy

## Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal Applied Sciences has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

## Author Benefits

**Open Access:** free for readers, with article processing charges (APC) paid by authors or their institutions.

**High Visibility:** indexed within Scopus, SCIE (Web of Science), Inspec, CAPlus / SciFinder, and other databases.

**Journal Rank:** JCR - Q2 (*Engineering, Multidisciplinary*) / CiteScore - Q1 (*General Engineering*)

## Contact Us

---

Applied Sciences Editorial Office  
MDPI, St. Alban-Anlage 66  
4052 Basel, Switzerland

Tel: +41 61 683 77 34  
[www.mdpi.com](http://www.mdpi.com)

[mdpi.com/journal/applsci](http://mdpi.com/journal/applsci)  
[applsci@mdpi.com](mailto:applsci@mdpi.com)  
[X@Applsci](https://twitter.com/Applsci)