

Special Issue

Advances in Underground Energy Storage for Renewable Energy Sources

Message from the Guest Editors

In the transient energy context, the increasing penetration of variable renewable energies, such as wind or solar photovoltaic in the electricity mix, requires flexible energy storage systems to balance supply and demand. Large amounts of electricity could be stored using underground space with low environmental impacts. For this purpose, underground pumped-storage hydropower (UPSH), compressed air energy storage (CAES), hydrogen energy storage (HES), or gravity energy storage (GES) systems could be developed in disused or new underground structures. This Special Issue will address research on the machinery design, geomechanical analysis of the underground infrastructure, the thermodynamic performance, the geology and hydrogeology, the public acceptance, the environmental impact, the operation modes, the electrical market, the legal regulation, the round trip energy efficiency and the economic feasibility of underground energy storage plants. We would also like to invite authors to address the global potential for expanding underground energy storage systems around the world and to develop specific case studies.

Guest Editors

Prof. Dr. Jorge Loredó

School of Mining, Energy and Materials Engineering, University of Oviedo, Independencia 13, 33004 Oviedo, Spain

Dr. Javier Menéndez

Hunaser Energy, Avda. Galicia, 44, 33005 Oviedo, Spain

Deadline for manuscript submissions

closed (31 March 2021)



Applied Sciences

an Open Access Journal
by MDPI

Impact Factor 2.5
CiteScore 5.5



mdpi.com/si/47745

Applied Sciences
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
appls@mdpi.com

[mdpi.com/journal/
appls](https://mdpi.com/journal/appls)





Applied Sciences

an Open Access Journal
by MDPI

Impact Factor 2.5
CiteScore 5.5



[mdpi.com/journal/
applsci](https://mdpi.com/journal/applsci)



About the Journal

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.

Editor-in-Chief

Prof. Dr. Giulio Nicola Cerullo
Dipartimento di Fisica, Politecnico di Milano, Piazza L. da Vinci 32,
20133 Milano, Italy

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), Ei Compendex, Inspec, CAPlus / SciFinder, and other databases.

Journal Rank:

JCR - Q2 (Engineering, Multidisciplinary) / CiteScore - Q1 (General Engineering)