



Advances in Underground Energy Storage for Renewable Energy Sources, Volume II

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Deadline for manuscript
submissions:

closed (20 November 2022)

Message from the Guest Editors

Dear Colleagues,

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), underground thermal energy storage (UTES), 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.

- energy storage
- underground pumped storage hydropower
- compressed air energy storage
- gravity energy storage
- hydrogen energy storage
- underground thermal energy storage





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Message from the Editor-in-Chief

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