



Minisymposium proposal
HYBRID ENERGY and HEAT STORAGE SYSTEMS (HEHSS)

for a joint scientific event of
International Conference GEOTECHNOLOGY AND ENERGY 2022 (GE2022)
Kraków, Poland, 19-21 October 2022

Organisers

J. Leszczyński¹, S. Nagy¹, W. Nowak¹, W. Stanek², K. Świerczek¹,
P. Poneta³, P. Prus⁴, G. Putynkowski⁵, J. Szmyd¹, B. Wittmann⁶

¹AGH University of Science and Technology, Poland

²Silesia University of Technology, Poland

³Tauron Polska Energia S.A., Poland

⁴Tauron Ekoenergia Sp. z o.o., Poland

⁵CBRTP S.A., Poland

⁶Gas Storage Poland, Poland

The main goal of the HEHSS symposium is to provide a functional platform aimed at improving the efficiency for the industry-academia discussion and collaboration on the hybrid energy and heat storage systems and technologies available at all scales. We start with the following single technologies: BES, CAES, EES, FCS, FES, HES, LHS, MES, PSH, SC, SHS, SMES, TCES, TES and others, and mix them to design and optimize the Hybrid Systems (HS). As an example, Pumped Thermal Electricity Storage (PTES) involves PSH and TES technologies. Going one step forward, we describe a particular HS with a countable number of factors, indicators and state functions that illustrate the technology mathematically. Another aspect focuses on conversion processes and techniques that exists in the HS. Thus, we look at dynamics, transient states, and stationary systems. Commercially, HEHSS demonstrate the potential to achieve the double-digit percent reduction in the investment and convenient CAPEX/OPEX, and significantly extend system's life.

Notices

1. Please register here <http://geoenergyconference.agh.edu.pl/index.php?id=88> indicating HEHSS acronym on your abstract
2. The abstract template file is [HERE](#)
3. Additionally, please send your abstract directly to jale@agh.edu.pl for confirmation
4. Predicted start time of the Minisymposium: October, 21th (Friday), 10⁰⁰ am*
*It may vary being dependent on the final Conference Agenda
5. The event has closed form and only confirmed abstracts will include in the Minisymposium
6. Detailed information will announce during the Conference

List of Acronyms

BES	- Battery Energy Storage / Buoyance Energy Storage
BESS	- Battery Energy Storage Systems
CAES	- Compressed Air Energy Storage
CAPEX	- Capital Expenditures
EES	- Energy/Electrical Storage System
FCS	- Fuel Cell System
FES	- Flywheel Energy Storage
GES	- Gravity Energy Storage
HEHSS	- Hybrid and Heat Storage Systems
HES	- Hydrogen Energy Storage
HS	- Hybrid System
LHS	- Latent Heat Storage
MES	- Mechanical Energy Storage
OPEX	- Operating Expenditures
PSH	- Pumped Storage Hydropower
SC	- SuperCapacitor
SHS	- Sensible Heat Storage
SMES	- Superconducting Magnetic Energy Storage
TCES	- ThermoChemical Energy Storage
TES	- Thermal Energy Storage