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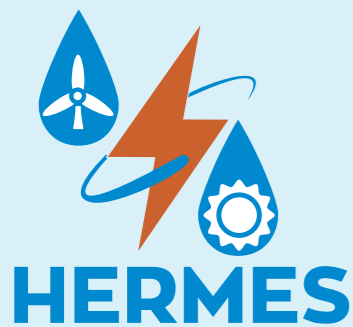
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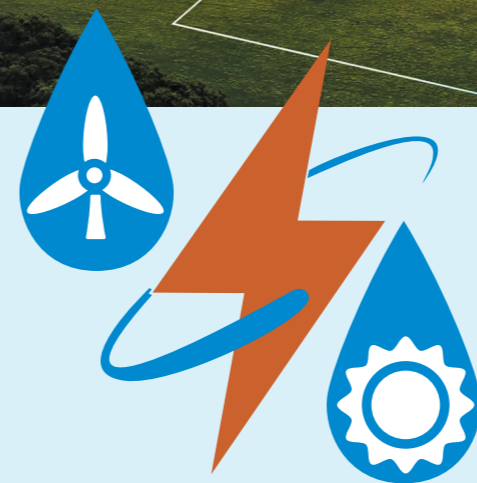
Contact us  
HERMES coordinator  
Artur Pozarlik  
[a.k.pozarlik@utwente.nl](mailto:a.k.pozarlik@utwente.nl)

[info@hermes-energy.gr](mailto:info@hermes-energy.gr)  
<https://hermes-energy.eu>

 <https://www.youtube.com/@HermesEnergy>

 <https://www.linkedin.com/in/hermes-project-59a932258/>

 <https://twitter.com/HERMESproject4>



# HERMES

Highly Efficient super critical zeRo eMission Energy System

<https://hermes-energy.eu>

  
10 partners

  
7 countries

  
2,594,660 EU Funding

  
11/2022 start date

  
10/2025 end date

## HERMES system overall benefits

- Zero generation of pollutants
- 100% carbon recovery
- Efficiency >65%
- Compactness
- Fast response time/operational flexibility
- Support to the circular economy

## Objectives

The key objective of HERMES is to develop and assess the performance of a closed-loop renewable energy system based on directly fired supercritical gas turbine engine (s-GT) operating on a variety of liquid/gaseous renewable fuels (here, methanol and hydrogen are used as a representatives) to provide electricity (and heat) with an efficiency above 65%, with net-zero greenhouse gas emissions and no emission of other pollutants. The Scientific and Technical Objectives are briefly presented below:

- Synthesis of renewable fuels for interchangeable GT operation and their value chains
- Fundamentals of zero-emission highly efficient supercritical combustion of renewable fuels
- System integration and assessment for technology maturity leap forward

## Output

Hermes goes **beyond the current state-of-the-art**. It develops a research framework encompassing

- a) **determination of carbon-neutral and carbon-free fuel properties** and development of **methods and tools** for assessing the performance of combinations of such fuels in **high pressure supercritical combustors**,
- b) **validation of renewable fuels in terms of fuels economy and pollutant formation** stemming from the use of such fuels in combustors operating under **high pressure conditions**, and
- c) approach to **support decision making** regarding the widespread deployment of these fuels to facilitate transition to a **climate friendly economy**.

