



CSP ERA-NET has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 838311



CSPplus – Techno-economical evaluation of different thermal energy storage concepts for CSP plants

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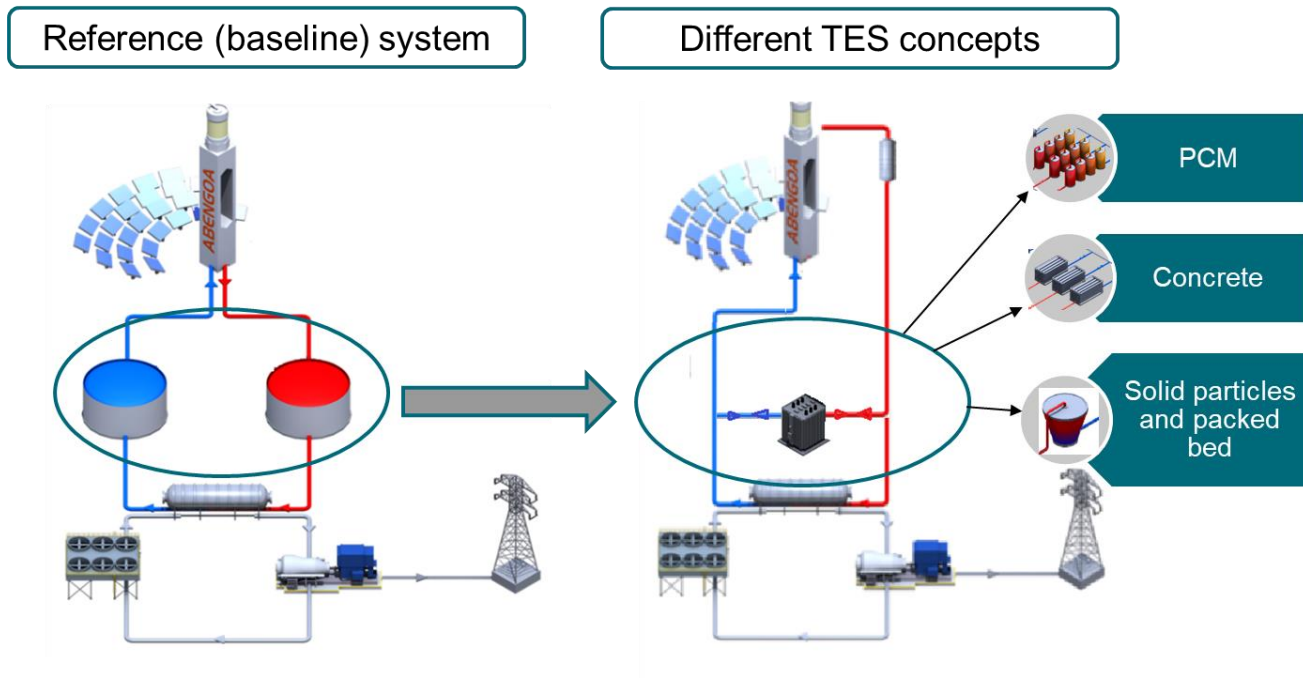


“Exchange of Experiences” Webinar – 28 September 2023



## OBJECTIVES

The objective of CSPplus is to reduce by 30% the capital expenditure (CAPEX) and by 3-4% the operating expenditure (OPEX) in the next generation of CSP plants





## PROJECT PARTNERS



**Universitat  
de Lleida**

University of Lleida (UDL),  
Spain - coordinator



**Ben-Gurion University  
of the Negev**

Ben-Gurion University of the  
Negev (BGU), Israel



**Çukurova University  
(CU), Turkey**

**ABENGOA**

Abengoa Innovación (ABE),  
Spain



**UNIVERSITAT DE  
BARCELONA**

University of Barcelona  
(UB), Spain



**Barış Teknolojik Tesisat  
Sistemleri (BARIS), Turkey**





## EXPECTED IMPACT

### Social impact:

- Creation of new qualified jobs in Europe

### Environmental impact:

- Achieving a final carbon footprint of 18 kgCO<sub>2</sub>eq/MWh (35% of the commercial CSP)

### Economic impact:

- A estimated CAPEX 30% lower than actual costs
- An estimated 15% OPEX reduction in storage systems

### Strengthen the competitiveness and growth of European companies:

- Strengthening EU leadership in renewables
- Improving EU energy security

### Improving innovation capacity:

- Several innovative components based on the new TES concepts





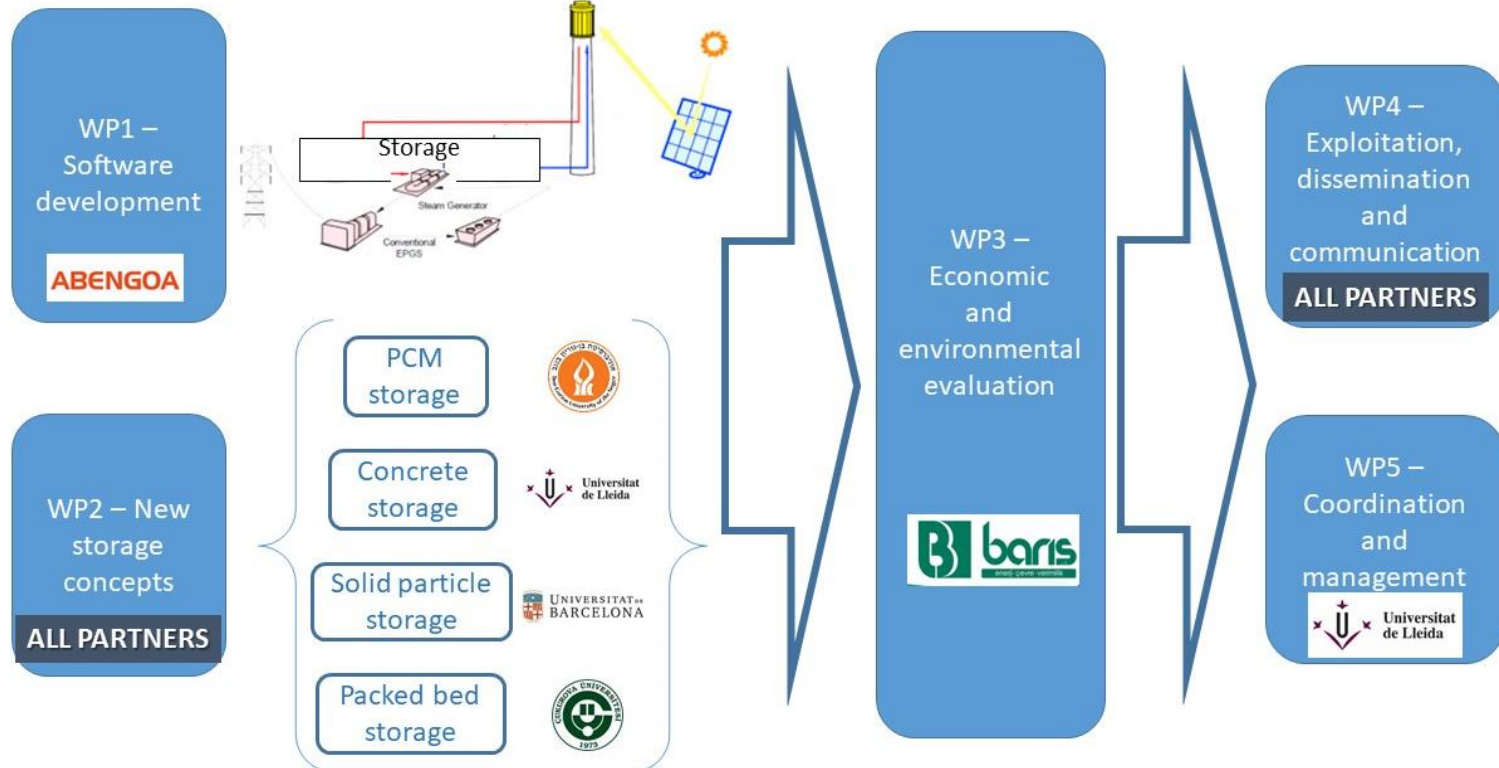
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## Exchange of experiences Webinar 230928

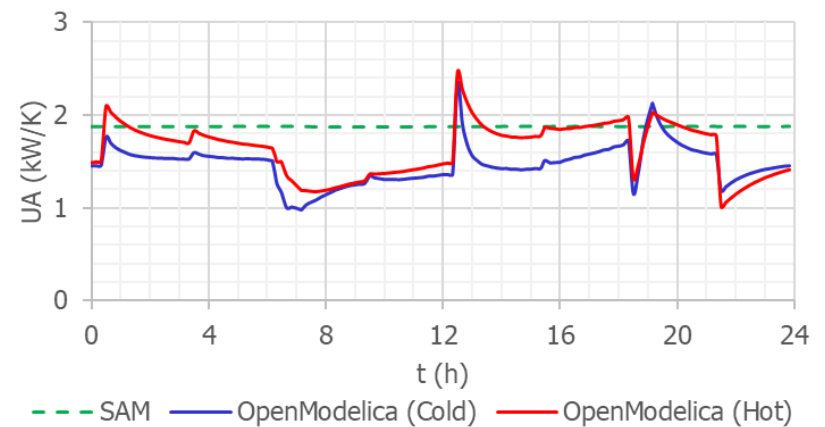
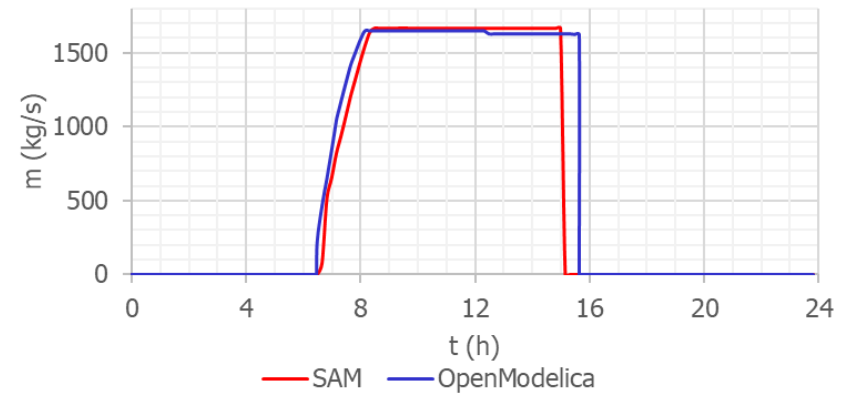
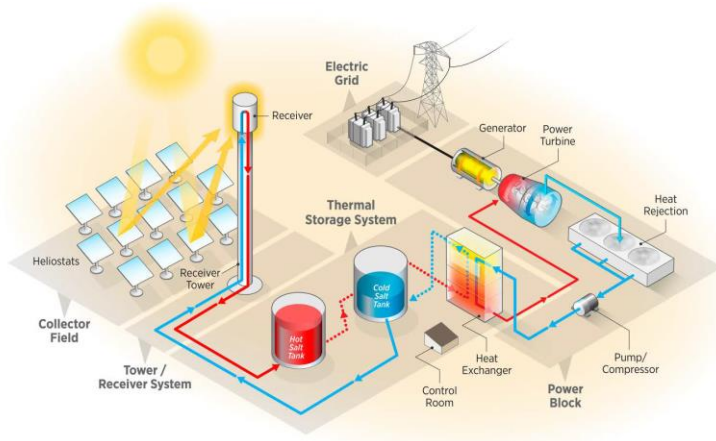
### WP DESCRIPTION





## KEY OUTCOMES

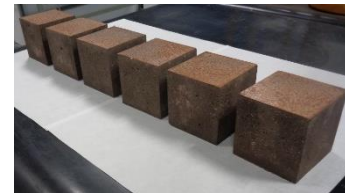
### System modeling (WP1)



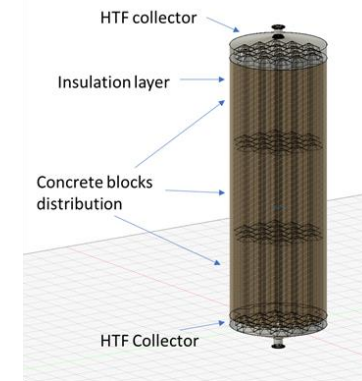
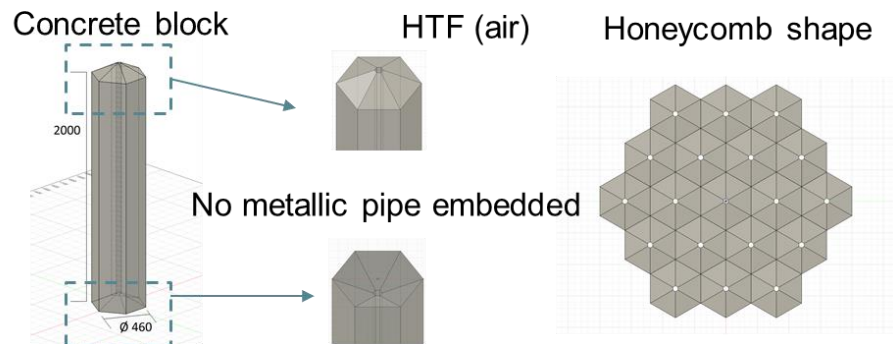
## KEY OUTCOMES

### Concrete TES (WP2)

- New concrete formulation



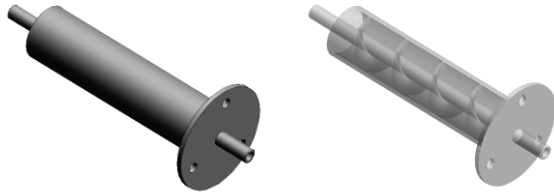
- Novel modular design



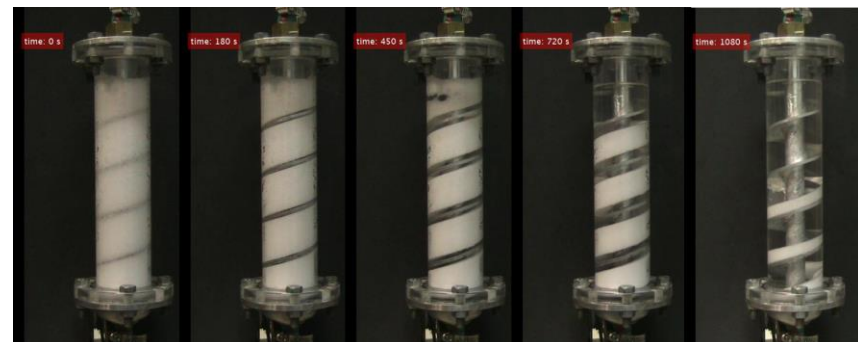
## KEY OUTCOMES

### PCM TES (WP2)

- Lab-scale storage unit



- Lab-testing

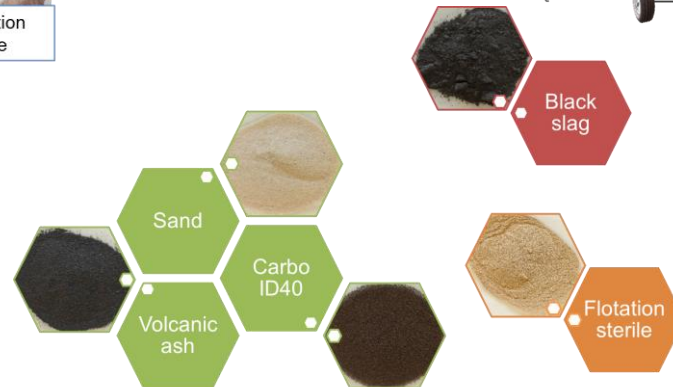
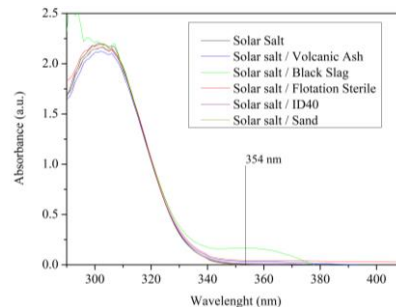
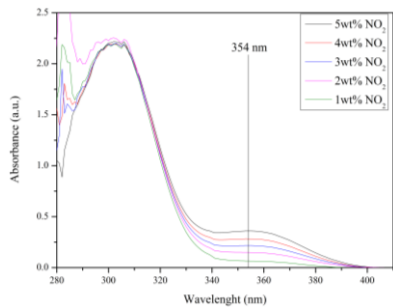
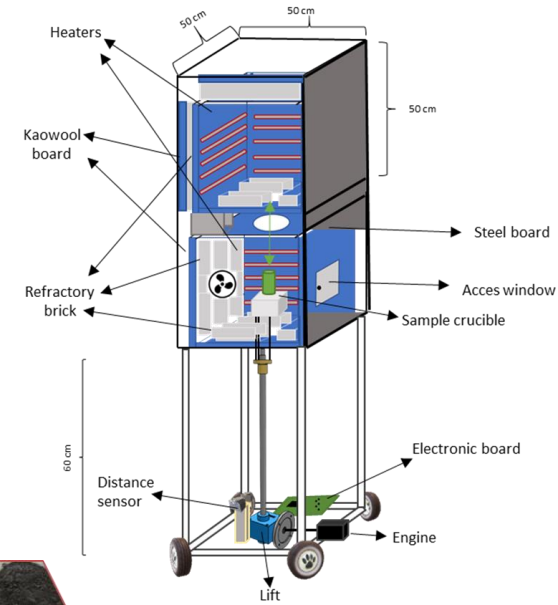
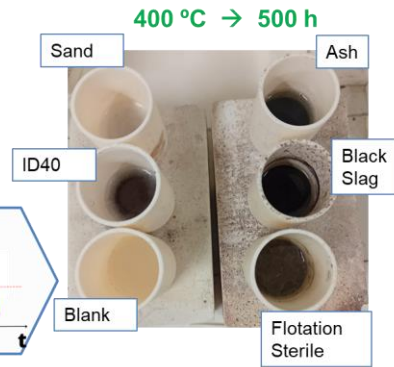
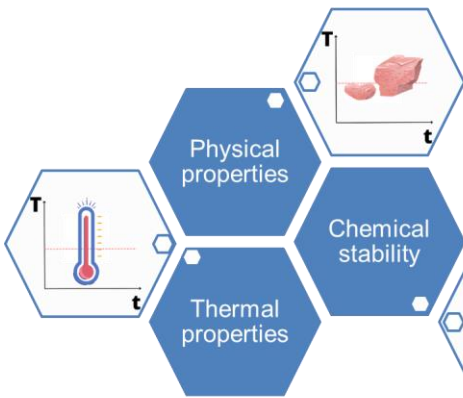




## KEY OUTCOMES

### Solid particles TES (WP2)

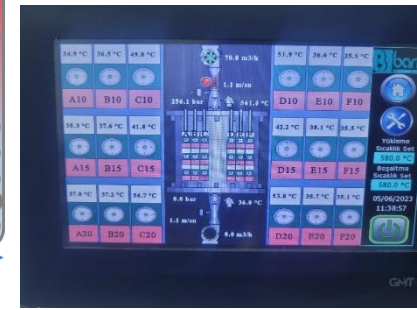
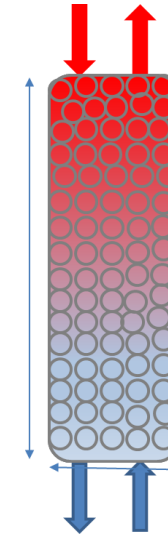
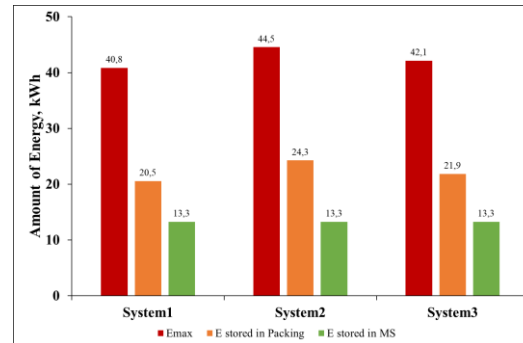
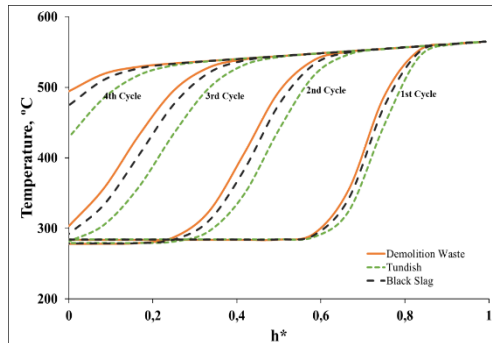
- Alternative solid particles evaluation



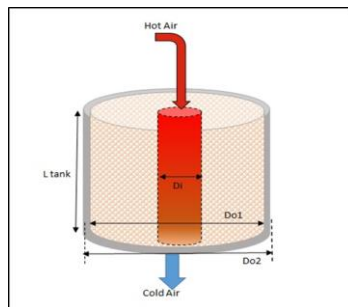
## KEY OUTCOMES

### Packed bed TES (WP2)

- Numerical simulations



- Packed bed set-up and lab-testing





## EXPERIENCED GAINED AND BENEFITS

- Strong collaboration between project partners
  - Preparation of applications to other calls by the consortium due to CSP funded project results
  - Joint PhD supervisions
  - Collaborative papers (e.g., UDL-BGU, UB-CU, UDL-UB)
- Participation in conferences / workshops and other international scientific events
  - Organization of final CSPplus conference in May 2023
  - Organization of Researchers Night event
  - Participation in international conferences, seminars or symposiums, workshops, etc.
- Publications
  - Journal papers (6 already published, several in preparation)
  - Conference papers





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# Thank you!!

Presented by Dr. Gabriel Zsembinski (GREiA Research Group, University of Lleida, Spain)

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