

Components' and Materials' Performance for Advanced Solar Supercritical CO₂ Powerplants (COMPASsCO₂)

COMPASsCO₂

FINAL WORKSHOP

*Back to the Future: A Forward-Thinking Approach to
Concentrating Solar Technologies*

Key Takeaways from the COMPASsCO₂ Project



April 24th, 2025



Workshop: 9h30 – 14h30 CEST



Technical Tour: 14h30 – 17h00 CEST



No registration fees



Husinec u Řeže, Czech Republic &

Online



WORKSHOP OVERVIEW

As recalled by the Green Deal Industrial Plan of the European Commission¹, the next decade will be crucial to put the EU on the right track to reach 2050 carbon neutrality objectives. New markets will have been created, breakthrough clean technologies will have been innovated, developed, and brought to market, and our energy systems transformed. Research, development and innovation are key to enable a reliable emission pathway towards sustainable industry, as recalled also in the SPIRE² Roadmap. The Horizon 2020 COMPASsCO₂ project intends to contribute to sustainability by focusing on a series of key innovations in terms of renewable energy system integration, material durability and process improvement, in line with the SPIRE action concepts.

The COMPASsCO₂ project has been dedicated to advancing the development, integration, and optimization of supercritical CO₂ (sCO₂) power cycles, a promising technology for next-generation energy systems. As we reach the final stage of this initiative, this workshop provides a platform for researchers, industry professionals, and stakeholders to exchange insights on the latest advancements and challenges in the field.

The thematic sessions will focus on key aspects of sCO₂ technology, including system efficiency, material durability, component development, and industrial applications. Discussions will explore cutting-edge research on the thermodynamic performance of sCO₂ cycles, addressing the critical challenges associated with heat exchangers, turbomachinery, and cycle optimization. In particular, attention will be given to high-temperature materials, coatings, and advanced manufacturing techniques that enhance the reliability and efficiency of sCO₂ components under extreme operating conditions.

By facilitating discussions on these topics, the COMPASsCO₂ final workshop aims to consolidate the knowledge gained throughout the project, identify future research directions, and support the transition towards high-efficiency, low-carbon power generation solutions. This event serves as a crucial milestone in the broader effort to accelerate the adoption of sCO₂ technology in industrial and energy applications.

¹Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: A Green Deal Industrial Plan for the Net-Zero Age, Brussels, 1.2.2023, COM(2023) 62 final.

²Sustainable Process Industry through Resource and Energy Efficiency

AGENDA

Time	Topic	Speaker(s)
9:00 – 9:30	Registration & welcome coffee	
Introductory session		
9:30 – 9:40	Opening and welcoming remarks	Otakar Frýbort, CVR
9:40 – 10:00	Keynote speech: Status and perspectives of CST	Luka Lackovic, DLR
10:00 – 10:10	Main challenges addressed and innovations brought by COMPASsCO ₂	Daniel Benitez, DLR
10:10 – 10:25	Plant layout and state-of-the-art materials selection	Ridha Harzallah, JCR
Thematic sessions		
10:25 – 10:55	Receiver technology innovation: lessons learnt in the development and testing of new particles	Ana Gonzalez Alves, DLR Samuel Marlin & Nassira Benameur, SGCREE
Coffee break		
10:55 – 11:15		
11:15 – 11:45	Materials innovation: novel alloys design for the extreme conditions of CST	Sandy Knowles, UoB Mathias Galetz, DFI
11:45 – 12:15	From research to operation: results from the validation of metal/medium interactions	Ceyhun Oskay, DFI Florian Lebendig, FZJ Patricie Halodová, CVR
Lunch		
12:15– 13:30		
13:30 – 14:15	Turning theory into action: Lessons learned from testing technology in realistic conditions, validation on experimental infrastructure	Radomir Filip, CVR
14:15 – 14:30	Final industrial design and business case	Ridha Harzallah, JCR
Technical tour		
14:30– 17:00		

AGENDA

14:30 – 17:00

Technical tour

sCO₂ autoclave and erosion test laboratory
sCO₂ loop and HX mock-up test setup
Material labs
Hot cells and irradiated material labs

Radomir Filip
Otakar Frybort
Patricie Halodová
Petr Svrcula

17:00

End of the meeting

HOW TO REGISTER

REGISTRATION



Please **register** to the event through the link below:



[REGISTER HERE](#)

You are kindly invited to forward the invitation to all your colleagues who might be interested in participating at the event.

After registration, you would receive a confirmation email and further instructions would be sent in due time.

NO REGISTRATION FEES



REGISTRATION

This event is conducted as part of the This project which has received funding from the European Union's Horizon 2020 Research and Innovation Action (RIA) under grant agreement No. 958418.

All activities in the framework of COMPASsCO2 are committed to compliance with GDPR Regulations.

I give full consent to the use of personal data as described in the following Informed Consent statement: The hybrid event can be audio and video recorded by the event organisers for future assessment, and the organisers may use images extracted from the recording or directly taken during the event for (i) reporting purposes to the European Commission (EC), and (ii) communication, exploitation and dissemination activities within the project. The collected data from this registration form will be (i) linked with attendance records to determine the number of participants in the event, as well as further communication, exploitation and dissemination activities within the project, and (ii) used for reporting purposes to the EC. If the data are shared outside the consortium or the EC (e.g., for communication activities), these will first be anonymised by removing information that can be used to identify unique individuals (e.g. email addresses and names). The event registration service provider company Microsoft maintains its own Privacy Policy and Terms and Conditions.



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THANK YOU



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