

COMPAS_sCO₂

COMPAS_sCO₂ SECOND STAKEHOLDERS WORKSHOP

*Next generation advanced materials for
particle/supercritical CO₂ heat exchangers*

Hybrid - physical venue: Hotel Anker,
Kolpingstraße 7, 97828
Marktheidenfeld, Germany &
Online: Zoom

September 25th, 2023
11h00 – 15h00 CET
No registration fees

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. In order to exchange knowledge, validate results and identify areas for improvement, a series of stakeholders workshops are envisaged throughout the project implementation (2020-2024).

This second stakeholder workshop focuses on the demanding material requirements of the proposed concentrated solar power (CSP) particle/Brayton cycle heat exchanger (HEX). On the interior HEX walls the materials will be exposed to supercritical CO₂, while on the exterior wall side the materials will be subjected to oxidation and erosion by the hot falling particles. The main research findings to-date will be presented with discussions on project next steps and industrial perspectives. The workshop is addressed to researchers, EU and international consortia working on similar topics, industry representatives and any other interested stakeholder willing to learn more about advanced heat exchangers for supercritical CO₂ cycles and aggressive industrial environments towards sustainable industrial solutions for the energy industry.

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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)
11:00 – 11:10	Welcome, Project Overview (CSP HEX) and Workshop Objectives	Daniel Benitez, DLR
11:10 – 11:40	Current status of materials for sCO ₂ processes for more efficient and sustainable energy systems: approaches and challenges	Bruce Pint, ORNL
11:40 – 12:30	Session 1: Material behaviour in sCO₂ environment (Interior HEX wall)	Mitsutoshi Ueda
11:40 – 11:55	Materials requirements for sCO ₂ (oxidation/carburization)	Dmitry Naumenko, FZJ/CIEMAT
11:55 – 12:10	Testing results on state-of-the-art materials (mechanical properties - creep)	Christoph Grimme, DFI
	Roundtable discussion with stakeholders	
12:10 – 12:30	<i>What properties need to be tested for sCO₂ applications? What experiments should be done? In labs vs. industry? What testing standards exist/should be developed? Are today's commercial materials applicable in sCO₂? Why/why not? Is sCO₂ as far as it will be, as currently defined, or will it go further/be more aggressive in future processes?</i>	
12:30 – 13:30	Networking Lunch	

AGENDA

Time	Topic	Speaker(s)
13:30 – 15:00	Session 2: Advanced materials for abrasive environments (Exterior HEX wall)	Mathias Galetz, DFI
13:30 – 13:45	External wall investigation results	Florian Lebendig, FZJ
13:45 – 14:00	Development of new materials	Thomas Blackburn, Uni Birmingham
14:00 – 14:15	Coffee Break	
14:15 – 14:30	Exploitation opportunities: an industrial perspective	Company participants
	Roundtable discussion with stakeholders	
14:30 – 14:55	<i>Are there other commercial erosion/sCO2 resistant materials that should be tested? Costs? Availability? Also applicable as HEX tubes? Is the current testing aggressive enough? Why/why not? Is oxidation/carburization or erosion more critical? Are there other new material directions currently being explored? What is their timeframe? Feasibility of industrial application?</i>	
14:55 – 15:00	Concluding Remarks & Takeaways	Daniel Benitez, DLR
15:00	End of meeting	

HOW TO REGISTER

REGISTRATION



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

[REGISTER HERE](#)

NO REGISTRATION FEES

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

Further instructions will be sent in due time.



REGISTRATION



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THANK YOU



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