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[www.sCO2-HeRo.eu](http://www.sCO2-HeRo.eu)

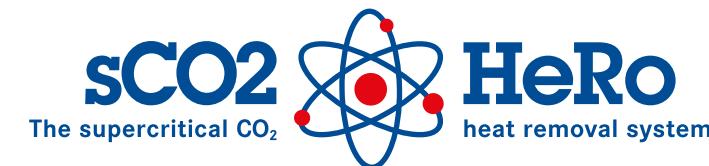


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# Workshop The supercritical CO<sub>2</sub> heat removal system

1 September, 2017

Research Centre Řež



Opening new avenues towards  
nuclear reactor safety

Designing a self-propellant,  
self-launching cooling cycle

Proofing the concept regarding  
safety and reliability

Demonstrating the ongoing  
research in nuclear safety to  
early-stage researchers

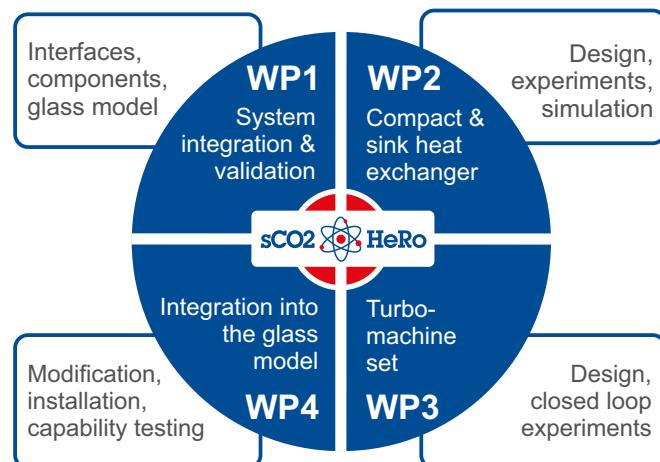
## Workshop

The workshop is aimed to give an overview of the supercritical CO<sub>2</sub> conversion cycle development and introduce its applications, particularly the sCO<sub>2</sub>-HeRo project.

The first part will be devoted to the **theoretical** lectures in which the working packages (WP's) are described. WP1 is about the thermodynamics of the sCO<sub>2</sub>-HeRo system and its integration into the European Light Water Reactor (LWR) fleet. WP2 and WP3 aim at designing, investigating and testing the compact heat exchanger, the sink heat exchanger and the turbo-machine set. In WP4, all single components will be installed and tested in the PWR glass model under different accident scenarios.

The second part will be **practical** including the operation of sCO<sub>2</sub> loop, a visit to the LR0 reactor and the newly built hot cells.

## The project structure



## Program

Registration		8:00 – 8:30
Opening of the workshop	D. Burkert (CVR)	8:30 – 9:00
Current status of sCO <sub>2</sub> cycles	V. Dostál (CVR)	9:00 – 9:30
sCO <sub>2</sub> - HeRo project	J. Starflinger (USTUTT) D. Brillert (UDE)	9:30 – 10:00
sCO <sub>2</sub> loop and CVR R&D activities	A. Vojacek (CVR)	10:00 – 10:30
Coffee break		10:30 - 11:00
Numerical heat transfer in sCO <sub>2</sub>	M. Rohde A. Hennink (TUD)	11:00 – 11:30
Scarlet experimental facility/HX testing	J. Starflinger M. Strätz (USTUTT)	11:30 – 12:00
Glas model and HeRo cycle	M. Seewald T. Freutel (GfS)	12:00 – 12:30
Turbomachinery for HeRo cycle	D. Brillert A. Hacks (UDE)	12:30 – 13:00
Lunch		13:00 – 14:00
Technical tour - sCO <sub>2</sub> loop, hot cells, LR0 reactor		14:00 – 17:00

sCO<sub>2</sub>-HeRo has the potential to significantly increase the safety of nuclear power plants.

## An innovative reactor safety concept

sCO<sub>2</sub>-HeRo is a Horizon 2020/Euratom research and innovation project and its main purpose is the development of a cooling system that safely, reliably, and efficiently removes residual heat from nuclear fuel without the requirement of external power sources.

In the case of a nuclear station blackout, the sCO<sub>2</sub>-HeRo transports the decay heat to an ultimate heat sink through a self-propellant, self-sustaining, and self-launching, highly compact cooling system using supercritical carbon dioxide (sCO<sub>2</sub>).

The system will be ultimately demonstrated and experimentally proven by reactor simulation studies in a unique glass model of a pressurized water reactor (PWR).



Glass model of a pressurized water reactor (PWR)  
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Please register here

<http://cvrez.cz/hero>

Find more information on

[www.sCO2-HeRo.eu](http://www.sCO2-HeRo.eu)