



Wrocław
University
of Science
and Technology

COOLSPACES 4 LIFE

An innovative solar-powered cooling device,
based on climate-friendly refrigerant and
thermal energy storage
(LIFE20 CCM/PL/001607)

Kick-Off meeting

Wrocław, Poland
13/10/2021



HR EXCELLENCE IN RESEARCH



Narodowy Fundusz
Ochrony Środowiska
i Gospodarki Wodnej

Outline

Part 1:

- Introduction to the COOLSPACES 4 LIFE project.
- Short presentation from the consortium partners:
 - Wrocław University & Technology (WUST)
 - PROZON The Foundation for Climate Protection
 - UNIVERSITY of ALMERIA (UAL)
 - HEDERA HELIX S.L.



Rationale of the meeting

The 1st project meeting will be held Online and will last three hours. The meeting will be articulated in following sections:

- 1) Introduction to the project and short presentation from the partners.
- 2) Presentation of technical Actions. This will include a presentation of the overall strategy and detailed plan of the activities of each Action defining that will be done at task level. Presentation of Technical tasks A1, A2, A4, C3, C6, E1, F1 which already have started, will be allocated longer time. Furthermore, WUST will provide a project's key details and all administrative requirements, especially those pertaining to Consortium Agreement.
- 3) Awareness and dissemination activities. The project leader will propose a list of categories to be considered.

Part 2:

- Presentation of technical actions by **WUST** and the detailed plan of the activities of each action.
- Presentation of technical actions leaders:
 - **UNIVERSITY of ALMERIA**
 - **HEDERA HELIX S.L.**
 - **PROZON The Foundation for Climate Protection**

Part 3:

- Awareness and Dissemination activities.



Outline

Part 1:

- Introduction to the COOLSPACES 4 LIFE project.
- Short presentation from the consortium partners:
 - Wrocław University & Technology (WUST)
 - PROZON The Foundation for Climate Protection
 - UNIVERSITY of ALMERIA (UAL)
 - HEDERA HELIX S.L.

Part 2:

- Presentation of technical actions by WUST and the detailed plan of the activities of each action.
- Presentation of technical actions leaders:
 - UNIVERSITY of ALMERIA
 - HEDERA HELIX S.L.
 - PROZON The Foundation for Climate Protection

Part 3:

- Awareness and Dissemination activities.



Rationale of the meeting

The 1st project meeting will be held Online and will last three hours. The meeting will be articulated in following sections:

- 1) Introduction to the project and short presentation from the partners.
- 2) Presentation of technical Actions. This will include a presentation of the overall strategy and detailed plan of the activities of each Action defining that will be done at task level. Presentation of Technical tasks A1, A2, A4, C3, C6, E1, F1 which already have started, will be allocated longer time. Furthermore, WUST will provide a project's key details and all administrative requirements, especially those pertaining to Consortium Agreement.
- 3) Awareness and dissemination activities. The project leader will propose a list of categories to be considered.



Narodowy Fundusz
Ochrony Środowiska
i Gospodarki Wodnej

COOLSPACES 4 LIFE (LIFE20 CCM/PL/001607)

PROJECT LOCATION: Wrocław, Poland
 Warszawa, Poland
 Almería, Spain
 Abanto y Ciérvana, Spain

BUDGET INFO: Total amount: 2,892,623 Euro
 % EC Co-funding: 55

DURATION: Start: **01/09/21** - End: **31/08/26**

PROJECT'S IMPLEMENTORS:

Coordinating Beneficiary: Wrocław University of Science and Technology

Associated Beneficiaries: PROZON The Foundation for Climate Protection
 Universidad de Almería
 HEDERA HELIX S.L.



Wrocław University
of Science and Technology



UNIVERSIDAD
DE ALMERÍA



Hederahelix

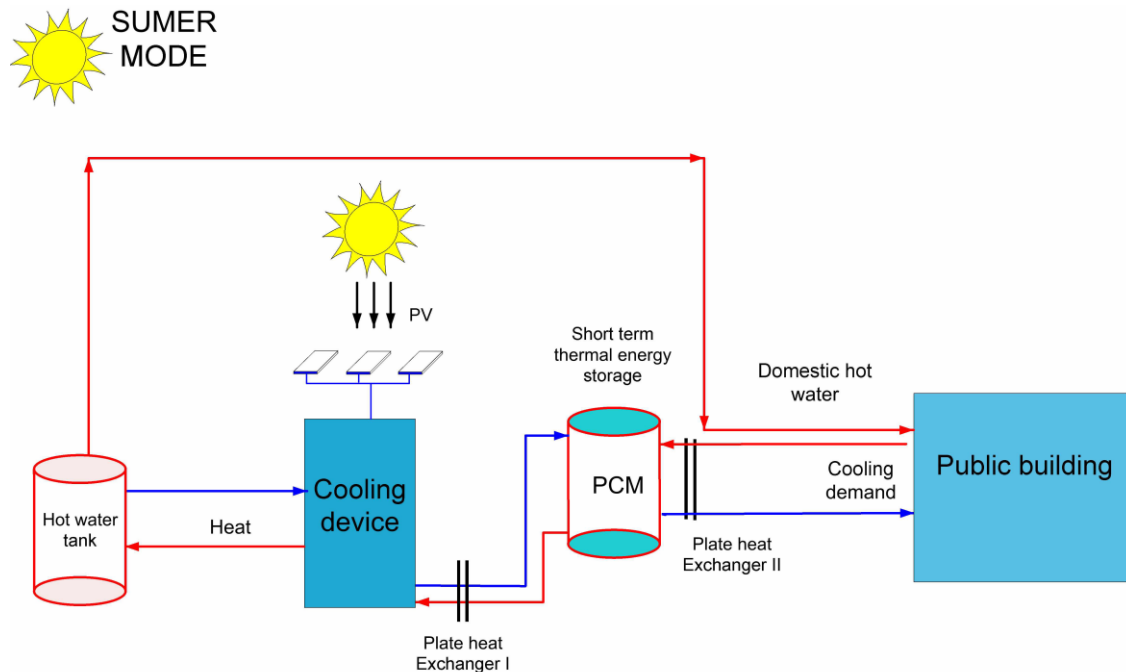
PROZON

THE FOUNDATION FOR CLIMATE PROTECTION

Project's highlights

COOLSPACES for the first time will study a solar-powered system that employs a newly designed CFR-based cooling prototype, a photovoltaic electricity production system and PCM-based tanks working in tandem.

- Two selected EU locations (Poland and Spain) - aiming to study the system applicability under different climatic conditions.
- Focus on demonstrating the technical and cost reliability and performance.



Wrocław University
of Science and Technology



Hederahelix



Narodowy Fundusz
Ochrony Środowiska
i Gospodarki Wodnej



UNIVERSIDAD
DE ALMERÍA

PROZON

THE FOUNDATION FOR CLIMATE PROTECTION

Objectives & Scope

1. Reduction of greenhouse gas emissions by reducing the consumption of primary, non-RES energy used by air conditioning systems.
2. Reduction of greenhouse gas emissions by using refrigerants with a negligible Global Warming Potential (GWP).
3. The search for the most suitable heat storage material to bridge the mismatch between renewable energy supply and energy consumption.
4. The optimization, control and metering of solar-powered CFRs-based BC system, ensuring decreased annual electricity consumption.
5. Demonstrating the potential of solar-powered BC systems around the Europe.
6. Application of Life Cycle Assessment (LCA) and Life Cycle Costing (LCC) analysis as instruments for policy support.



Wrocław University
of Science and Technology



UNIVERSIDAD
DE ALMERÍA



Hederahelix

PROZON

THE FOUNDATION FOR CLIMATE PROTECTION

Expected impacts

1. Reduction of GHG emissions



CO₂: ~41 tons/year



HFC: ~10.6 tons CO₂ eq.

2. Improvement of air quality



Be a useful tool to effectively and timely diminish the local air pollution and carbon footprint, improving urban living standards.

3. Better use of energy



~52 MWh/year



~40 MWh/year

4. Awareness raising

We hope to inspire people and make them realize that a sustainable system for institutional buildings is not one of scarcity and limitations. It can be a great way to conserve resources, pollute far less, use CFRs and clean energy from renewable sources, and think carefully about how we produce and consume.



Narodowy Fundusz
Ochrony Środowiska
i Gospodarki Wodnej



Wrocław University
of Science and Technology



UNIVERSIDAD
DE ALMERÍA



Hederahelix

PROZON

THE FOUNDATION FOR CLIMATE PROTECTION

Outline

Part 1:

- Introduction to the COOLSPACES 4 LIFE project.
- Short presentation from the consortium partners:
 - Wrocław University & Technology (WUST)
 - PROZON The Foundation for Climate Protection
 - UNIVERSITY of ALMERIA (UAL)
 - HEDERA HELIX S.L.



Rationale of the meeting

The 1st project meeting will be held Online and will last three hours. The meeting will be articulated in following sections:

- 1) Introduction to the project and short presentation from the partners.
- 2) Presentation of technical Actions. This will include a presentation of the overall strategy and detailed plan of the activities of each Action defining that will be done at task level. Presentation of Technical tasks A1, A2, A4, C3, C6, E1, F1 which already have started, will be allocated longer time. Furthermore, WUST will provide a project's key details and all administrative requirements, especially those pertaining to Consortium Agreement.
- 3) Awareness and dissemination activities. The project leader will propose a list of categories to be considered.

Part 2:

- Presentation of technical actions by WUST and the detailed plan of the activities of each action.
- Presentation of technical actions leaders:
 - UNIVERSITY of ALMERIA
 - HEDERA HELIX S.L.
 - PROZON The Foundation for Climate Protection

Part 3:

- Awareness and Dissemination activities.



Wrocław University of Science and Technology (WUST)

Wrocław University of Science and Technology was established in 1945, mainly as a result of the involvement of the academic staff of the now-defunct Technical University of Lviv and the Jan Kazimierz University in Lviv, who adapted the destroyed buildings of the German School of Technology - Technische Hochschule.

Today we continue the tradition of these prominent Polish universities and develop in close cooperation with the leading companies of Lower Silesia. We are one of the largest and best technical universities in the country, one regularly ranked among the best in the national rankings.



- 21 233 students,
- 436 doctoral students and 311 people at the Doctoral School,
- 13 Faculties, 3 branches in Jelenia Góra, Legnica and Wałbrzych,
- over 4 000 employees, including about 2 150 research and teaching staff,
- 122 buildings with modern laboratories, libraries, Internet access, multimedia-fitted lecture rooms,
- 5 990 registered inventions, including utility models,
- 18 806 publications in journals on the ISI Master Journal List,
- 17 121 publications in JCRI indexed journals,
- 180 student science groups,
- 26 student organizations,
- 20 student culture agencies.



Narodowy Fundusz
Ochrony Środowiska
i Gospodarki Wodnej

Wrocław University of Science and Technology (WUST)

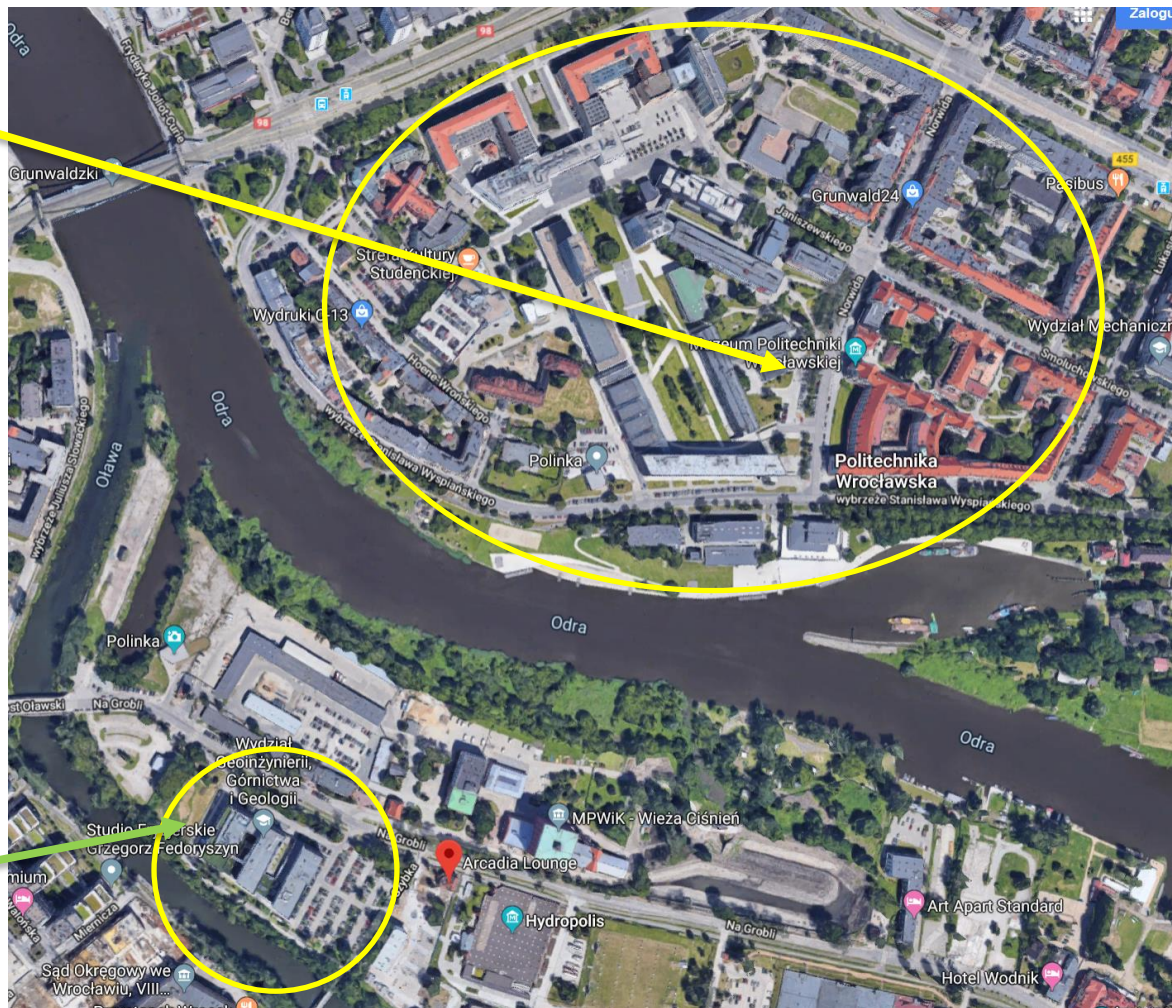
Research and teaching facilities



Wrocław University of Science and Technology (WUST)

Research and teaching facilities

Headquarters



RENEWABLE ENERGY
LABORATORY
GEOCENTRUM building

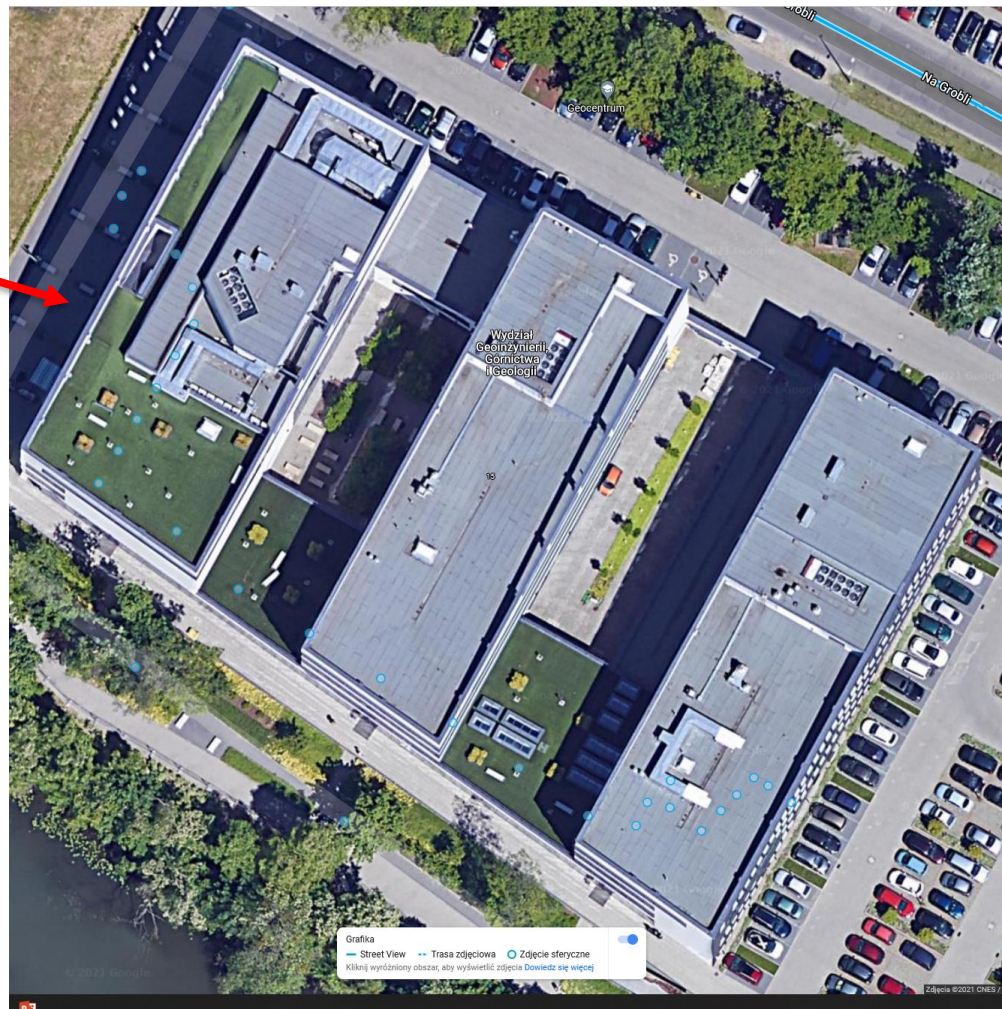


Narodowy Fundusz
Ochrony Środowiska
i Gospodarki Wodnej



Wrocław University of Science and Technology (WUST)

L-1 building (GEOCENTRUM)



Narodowy Fundusz
Ochrony Środowiska
i Gospodarki Wodnej

WUST TEAM



DSc, PhD, Eng. Sabina Rosiek-Pawłowska, Associate Professor

- absorption cooling, solar energy, energy storage, design and optimization of solar cooling and heating systems, online power output forecasting from a photovoltaic systems, optimization of energy systems, heat abatement systems for dairy sector, Life Cycle Assessment

Previous experience:

- ARFRISOL (Spanish Ministry of Science&Technology)
- UNAM13-1E-2532 (Spanish Ministry of Science &Technology)
- THERBIOR (EU project)
- PCMSOL (EU project)
- RadMAT (Polish Returns)



PhD, Eng. Bartosz Gil

- refrigerants, F-gases, phase transitions, HVAC, integration of cooling systems with RES



MSc. Eng. Jagoda Błotny

- heat abatement systems for dairy sector, cooling systems, heat exchange, renewable energy, passive heating systems, Life Cycle Assessment



Narodowy Fundusz
Ochrony Środowiska
i Gospodarki Wodnej

Outline

Part 1:

- Introduction to the COOLSPACES 4 LIFE project.
- Short presentation from the consortium partners:
 - Wrocław University & Technology (WUST)
 - PROZON The Foundation for Climate Protection
 - UNIVERSITY of ALMERIA (UAL)
 - HEDERA HELIX S.L.



Rationale of the meeting

The 1st project meeting will be held Online and will last three hours. The meeting will be articulated in following sections:

- 1) Introduction to the project and short presentation from the partners.
- 2) Presentation of technical Actions. This will include a presentation of the overall strategy and detailed plan of the activities of each Action defining that will be done at task level. Presentation of Technical tasks A1, A2, A4, C3, C6, E1, F1 which already have started, will be allocated longer time. Furthermore, WUST will provide a project's key details and all administrative requirements, especially those pertaining to Consortium Agreement.
- 3) Awareness and dissemination activities. The project leader will propose a list of categories to be considered.

Part 2:

- Presentation of technical actions by WUST and the detailed plan of the activities of each action.
- Presentation of technical actions leaders:
 - UNIVERSITY of ALMERIA
 - HEDERA HELIX S.L.
 - PROZON The Foundation for Climate Protection

Part 3:

- Awareness and Dissemination activities.





Wrocław
University
of Science
and Technology

COOLSPACES 4 LIFE

An innovative solar-powered cooling device,
based on climate-friendly refrigerant and
thermal energy storage
(LIFE20 CCM/PL/001607)

Actions introduction

Wrocław, Poland
13/10/2021



HR EXCELLENCE IN RESEARCH



Narodowy Fundusz
Ochrony Środowiska
i Gospodarki Wodnej

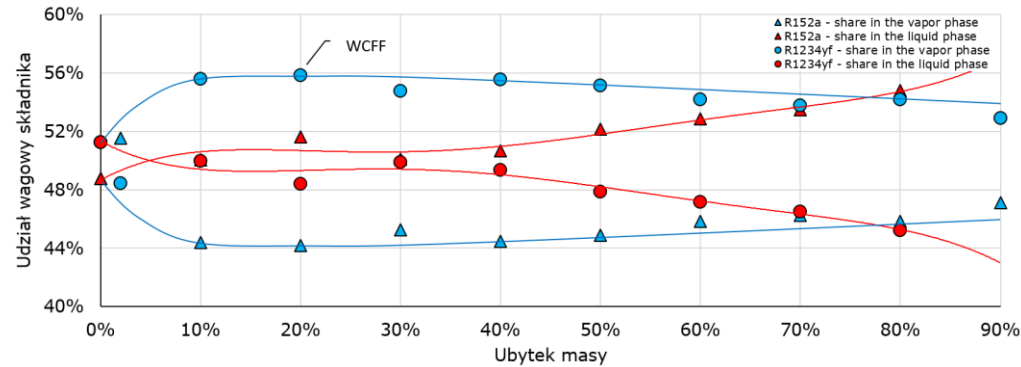
TIMETABLE

Action		2021				2022				2023				2024				2025				2026			
Action number	Name of the action	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
A. Preparatory actions (if needed)																									
A.1	Refrigerant analysis - verification of flammability, composition and safety considerations			■	■	■	■	■																	
A.2	Adaptation of infrastructure at the installation site			■	■	■	■	■	■	■															
A.3	Verification of the prototype implementation concept				■	■	■																		
A.4	Determination of EPCM thermophysical parameters			■	■	■	■	■	■	■	■														
B. Purchase / lease of land and / or compensation payments for use rights																									
C. Implementation actions (obligatory)																									
C.1	Production of a prototype and assembly of solar-powered cooling device prototype in Poland					■	■	■	■	■															
C.2	Design and implementation of PV installations					■	■	■	■	■															
C.3	Modeling of STES behavior for the selected eutectic mixture; design and assembly of the final STES system			■	■	■	■	■	■	■	■	■	■												
C.4	System metering and SCADA implementation in Poland					■	■	■	■	■															
C.5	Initial tests and validation of the prototype installation; annual system operation tests in Poland										■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
C.6	Replication and technology transfer			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
C.7	Reproduction and assembly of the solar-powered cooling device to Spain; prototype validation										■	■	■	■	■										
C.8	Annual system operation tests at CIESOL													■	■	■	■	■	■	■	■	■	■	■	■
D. Monitoring of the impact of the project actions (obligatory)																									
D.1	Environmental impact assessment report															■								■	
D.2	Socio-economic impact assessment report															■								■	
D.3	LCA and LCC analysis					■	■	■	■	■	■	■	■	■	■				■	■	■	■	■	■	■
E. Communication and dissemination of results (obligatory)																									
E.1	Marketing activities aimed at the general public			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
E.2	Promotion and communication with stakeholders					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
F. Project management (obligatory)																									
F.1				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

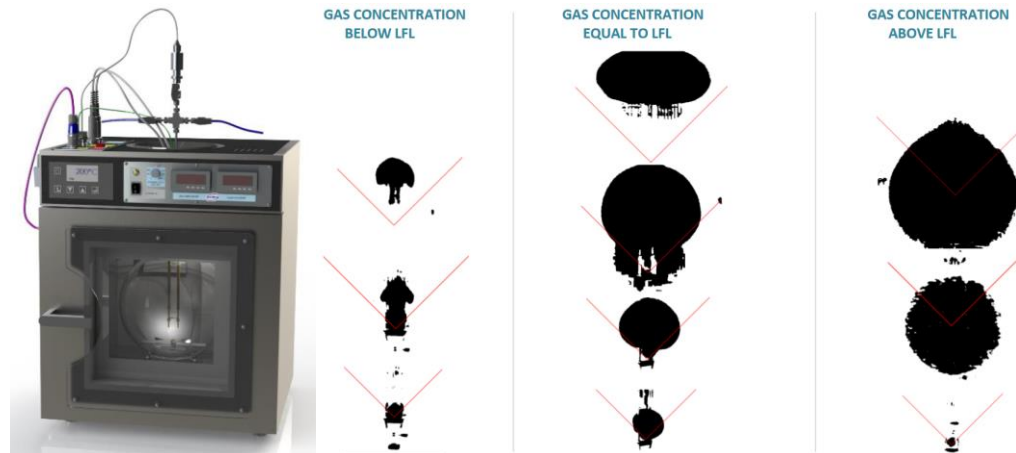
A1 Refrigerant analysis – flammability, composition, safety

Objectives:

1. Blend preparation;
2. Examining the change in its composition due to mass loss;



3. Flammability tests to determine the LFL.



Deliverable products	Report on the composition and properties of the analyzed blends	08/2022
Milestones	Refrigerant's blend determination for the SP CFRs-based CDP	08/2022

A2 Adaptation of infrastructure at the installation site (WUST)



Wrocław University
of Science and Technology

Objectives:

- obtaining permits for the placing the installation on the roof of the GEOCENTRUM (L-1) building of the Wrocław University of Science and Technology.

Additional tasks:

1. Modify the current air conditioning system;
2. Reorganize the building's power supply line to allow the unit to be backed up from the grid and to allow the discharge of excess PV electricity to the batteries;
3. Reconstruct the domestic hot water node in such a way that the produced hot water can be transferred to the building network;
4. Construction works inside the facility in order to install air quality controllers and measuring sensors;
5. Gathering information about the surfaces to be cooled as well as Geocentrum (L-1) building's thermal load.



Deliverable products	Raport on L1 building's cooling load	02/2022
Milestones	All obligatory permits gathered	02/2023

A2 Adaptation of infrastructure at the installation site (WUST)



Wrocław University
of Science and Technology

Objectives:

- obtaining permits for the placing the installation on the roof of the GEOCENTRUM (L-1) building of the Wrocław University of Science and Technology.

Additional tasks:

1. Modify the current air conditioning system;
2. Reorganize the building's power supply line to allow the unit to be backed up from the grid and to allow the discharge of excess PV electricity to the batteries;
3. Reconstruct the domestic hot water node in such a way that the produced hot water can be transferred to the building network;
4. Construction works inside the facility in order to install air quality controllers and measuring sensors;
5. Gathering information about the surfaces to be cooled as well as Geocentrum (L-1) building's thermal load.



Deliverable products	Raport on L1 building's cooling load	02/2022
Milestones	All obligatory permits gathered	02/2023

A3 Verification of the prototype implementation concept



Wrocław
University
of Science
and Technology



Wrocław University
of Science and Technology

Objectives:

- Verification of SCD and STES assumptions

Additional tasks:

1. Correct arrangement of the system components
2. Transition from a 2D concept to a 3D design of a refrigeration device.



Deliverable products		
Milestones		

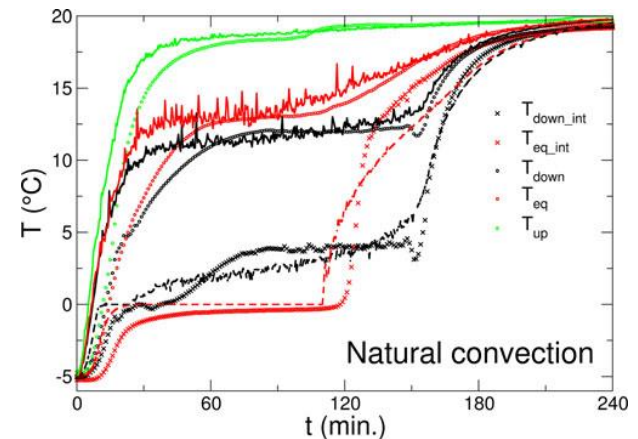
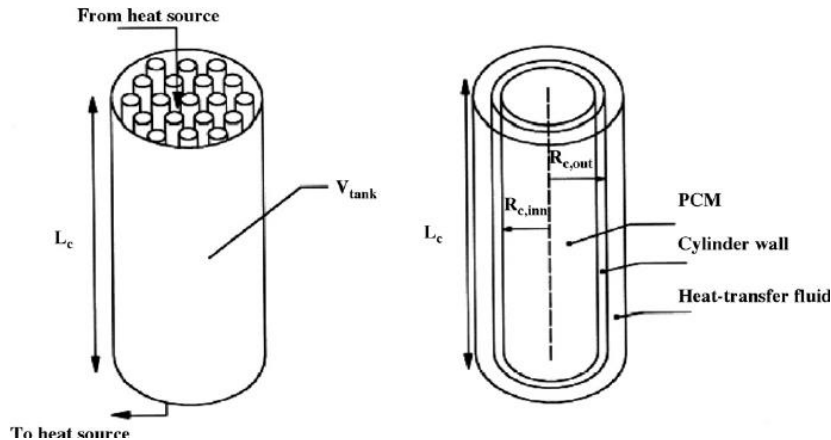
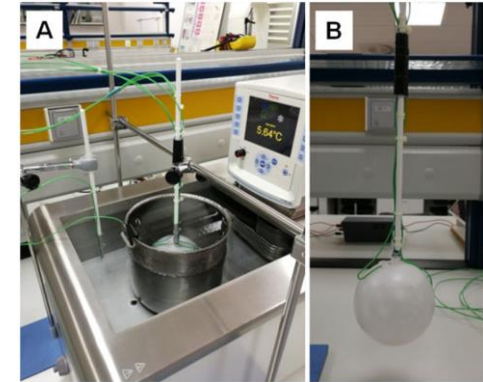
A4 Determination of EPCM thermophysical parameters

Objectives:

- Selecting the commercial encapsulated phase change materials (EPCM)

Additional tasks:

1. Thermophysical characterization of the selected PCMs:
 - Kinetics of freezing and melting;
 - Aging of the PCM.
2. Optimization of the encapsulation.
3. Optimization the fraction of the finally selected PCM.



Deliverable products	Report on EPCM selection	05/2023
Milestones	EPCM determination for the STES	05/2023

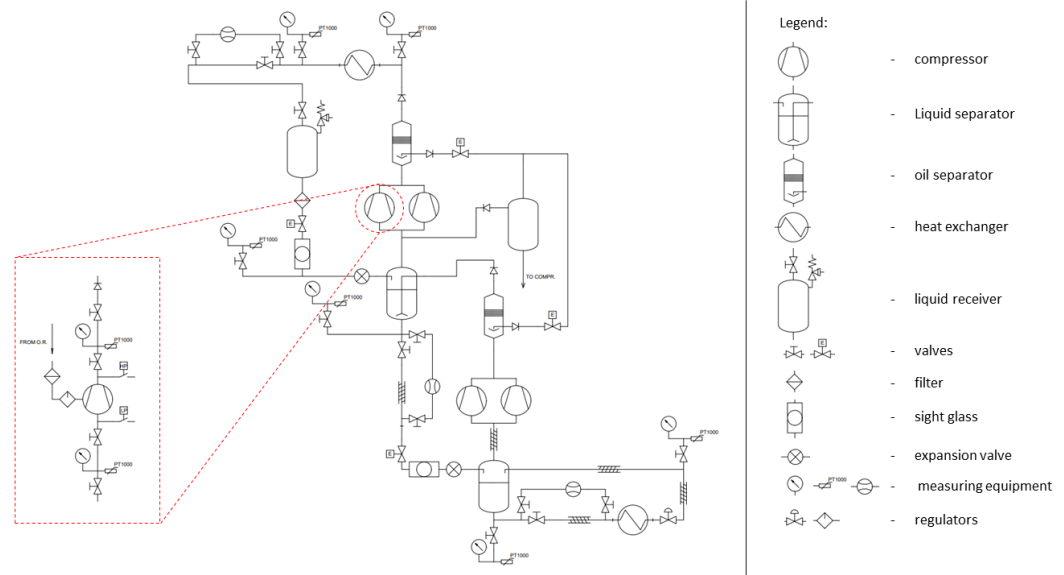
C1 Production of a prototype and assembly of solar-powered cooling device prototype in Poland

Objectives:

- Making two prototypes of a cooling device using a blend based on natural refrigerants (hydrocarbons)

Additional tasks:

1. Connecting the prototype to the power system (PV panels and a set of batteries).
2. Preparation for connecting of a short-term cold energy storage system and a domestic hot water tank.

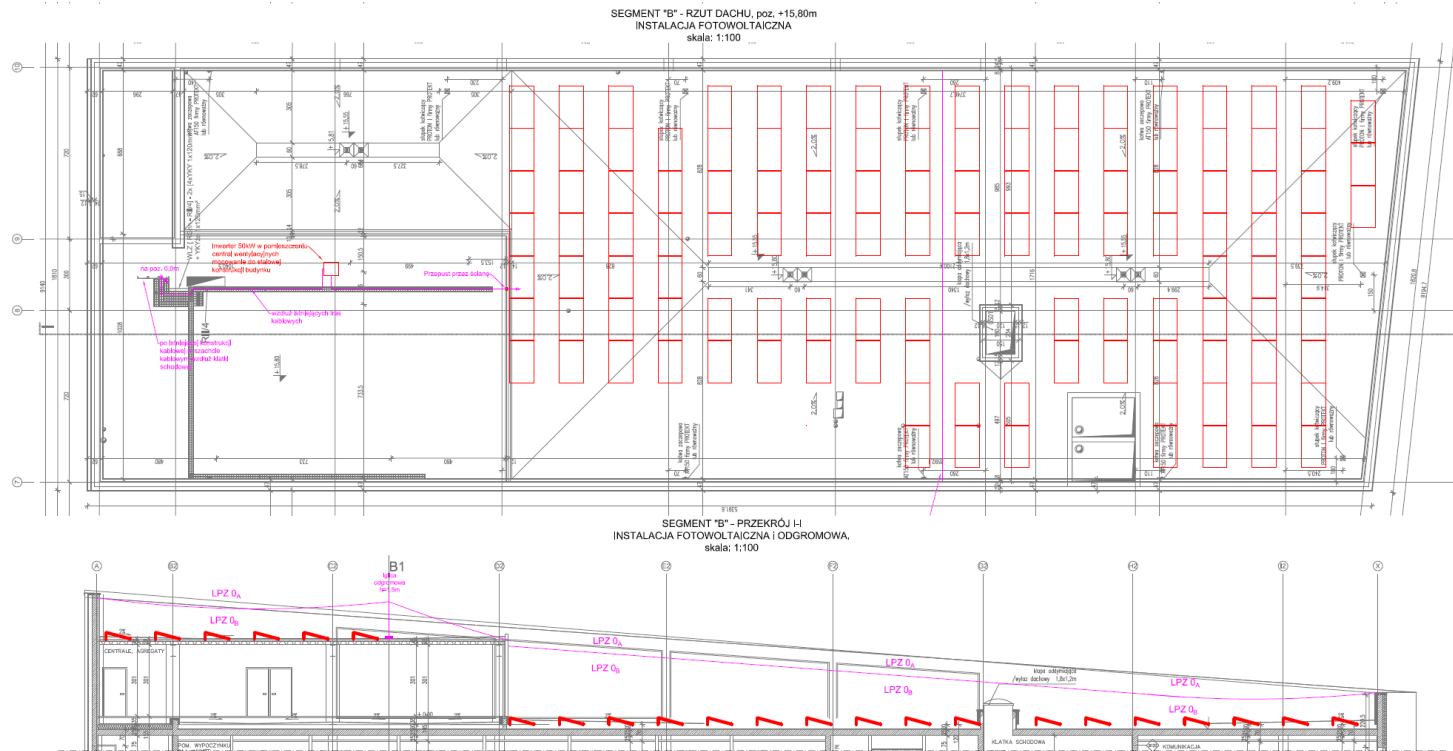


Deliverable products	Description of the SCD demonstration plant's final design	05/2023
Milestones	WUST's both SCD prototypes completed and running flawlessly	05/2023

- Installation of a PV system on the roof of the L-1 building



Wrocław University
of Science and Technology



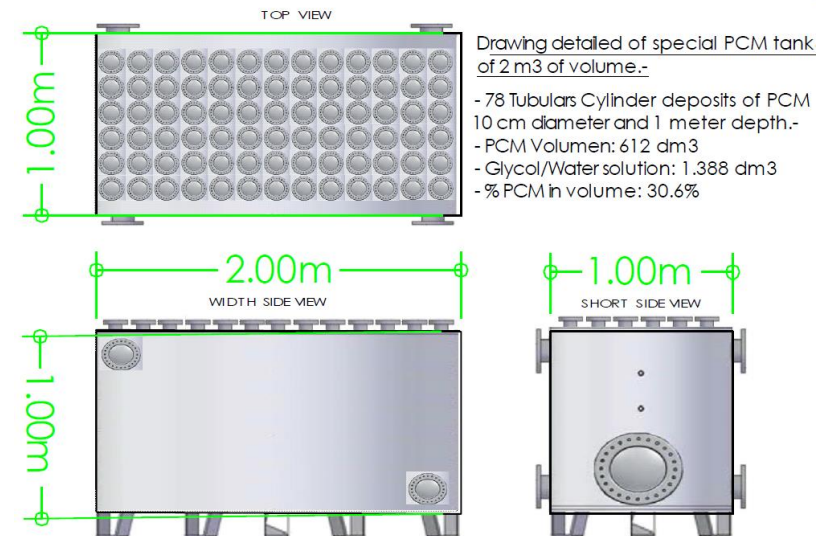
Deliverable products	System design with connection conditions to the existing power grid	08/2022
	Assembly and commissioning of the PV system	02/2023
Milestones		

C3 Modeling of STES behavior for the selected eutectic mixture; design and assembly of the final STES system



Objectives:

- Mathematical model of a small storage tank to simulate the heat exchange process between the working medium and the PCM material (WUST);
- Preparation of the pilot tank, with a total capacity of 20–50 liters (HH), to check the model predictions (UAL);
- Model addaptation to simulate the operation of the full-size storage tanks (WUST);
- Design and construction of two cold storage tanks for each of the installations (located in WUST and UAL) (HH)



Deliverable products	Report on the pilot-tank experiments	02/2023
	Technical report of the STES size and geometry	02/2023
Milestones	Determining the STES size and geometry	08/2023

C4 System metering and SCADA implementation in Poland

Objectives:

1. Installation of SCADA components:

- Sensors inside the building;
- Sensors in the meteorological-radiometric station;
- Sensors in the solar-powered BC system.

2. Modeling and development of the appropriate control system strategy.

Deliverable products	Report on the monitoring sensors and the SCADA system selection for Poland	02/2023
Milestones	Definition of a modeling framework for monitoring the SP BC system based on...	02/2023
	All data gathered and analysed	08/2023

C5 Initial tests and validation of the prototype installation; annual system operation tests in Poland

Objectives:

The first year of the Action C.5 is planned for the commissioning of a prototype installation and adjustment of all systems (PV drive, innovative AC system, STES tanks, and data control and acquisition system).

The next two years (07/2024–06/2026) are planned for testing the entire installation under normal operating conditions with full and partial thermal load of the building resulting from the variability of climatic conditions and the functioning of the facility.

Deliverable products	Report on the solar-powered BC prototype's installation progress	08/2024
Milestones	Solar-powered BC system installed and running at WUST site	08/2024

C6 Replication and technology transfer

Objectives:

1. Developing a replication and transfer plan.
2. Performing a market analysis.
3. Developing a business model.
4. Developing a license package.



Wrocław University
of Science and Technology

Deliverable products	Licence package	08/2026
	Replication and transfer plan	08/2026
	Draft business plan	01/2024
	Final business plan	08/2026
	An „Initial Close-to-Market questionnaire”	08/2022
	A „Final Close-to-Market questionnaire”	09/2026
Milestones	National and/or EU funding ensured for R&TT activities’ continuation	08/2026
	Business model of the SP BC system, permitting its adoption Europe-wide	08/2026
	Licence package	08/2026

C7 Reproduction and assembly of the solar-powered cooling device to Spain; prototype validation

Objectives:

- System implementation to Almeria for its further validation

Deliverable products		
Milestones	Solar-powered BC system installed and running at UAL site	05/2024

C8 Annual system operation tests at CIESOL



Deliverable products	Report on the SPBC prototype's installation progres at UAL site	08/2026
Milestones		

D1 Environmental impact assessment report

D2 Socio-economic impact assessment report



Objectives:

- 2 reports that monitor the project's impact on the environmental factors
- Data collection and evaluation in order to assess the socio-economic impact of the project (the use of renewable energy sources and low-GWP refrigerants on the environment)

Additional tasks:

1. Building awareness among the local, national and international community regarding the use of renewable energy sources and alternative refrigerants in building air conditioning systems.
2. Disseminating the idea of using the innovative CFR-based cooling device and thermal energy storage among key project recipients.

Deliverable products	Environmental and socio-economic impact assessment reports No. 1	08/2024
	Environmental and socio-economic impact assessment reports No. 2	08/2026
Milestones	Key project indicators fulfilled	08/2026

D3 LCA and LCC analysis



Objectives:

- Demonstrate the environmental and economic feasibility of solar-powered CFRs-based BC projects in the public sector.

Additional tasks:

1. Evaluation of direct and indirect environmental and financial consequences of applying the COOLSPACES 4 LIFE technology.
2. The research question is whether or not COOLSPACES brings both environmental and economic benefits compared to current situation and to identify improvement options.



Deliverable products	LCA and LCC report including Eco-design recommendations in order to further reduce the environmental impact of the solutions proposed	07/2026
Milestones		

E1 Marketing activities aimed at the general public

Objectives:

- Project website (public and classified areas)
- Short video
- Meetings with local authorities, schools, etc. aimed at increasing the public's knowledge of the use of natural refrigerants and renewable energy in the cooling sector
- Networking with other LIFE and EU-funded projects
- Layman's report



Wrocław University
of Science and Technology

Deliverable products	Project's website and official Twitter and Facebook feeds - e.g. "coolspaces4LIFE"	11/2021
	Project's short video	05/2024
	Layman's Report	08/2026
	Report on proactive means taken as part of dissemination activities in Poland and Spain for the purpose of incorporating project results into municipal climate action plans	08/2026
Milestones	Meeting for the general public in Poland: Lower Silesian Science Festival and the Open Laboratories Night	11/2024
	Meeting for the general public in Spain: European Researchers' Night	12/2025
	Meeting with the Inspectorate of Environmental Protection and the Marshal's Office of the Lower Silesia Voivodship	02/2026
	Meeting with the authorities of the city of Wrocław and the authorities of the Kąty Wrocławskie commune	02/2026
	Meeting with the authorities of other interested regions, marshal offices and cities Europe wide aimed at presenting the results of the project and encouraging pro-environmental activities	08/2026
	Meeting with the Delegate for Science and Innovation of the regional government of the Junta de Andalucía	02/2026
	Meeting with the Presidency of the provincial council of Almería	02/2026
	Project website	11/2021

E2 Promotion and communication with stakeholders

Objectives/indicators:

- Increase the developmental and research capacity of the participating partner countries in terms of efficiency improvements in solar-powered BC systems and to reduce their installation costs so that such systems can be increasingly deployed in the public construction sector
- Contribute to using renewable energy potential more efficiently in the European air-conditioning sector



Wrocław University
of Science and Technology

1. Open days of the LIFE project (WUST)
2. Presentations at key international conferences (e.g. EuroSun, The World Renewable Energy Congress, IIR ICR)
3. Regular seminars organized by COOLSPACES dedicated to low-GWP refrigerants, Energy Efficiency Research and the EU Innovation Sector
4. Scientific and technical conference on environmental protection, alternative refrigerants, use of renewable energy in the RAC sector, (PROZON)
5. At least 4 publications in peer-reviewed international journals and 4 presentations at international conferences

Deliverable products		
Milestones	Two presentations at international conferences presented	08/2024

F1 Project management, monitoring and reporting by WUST



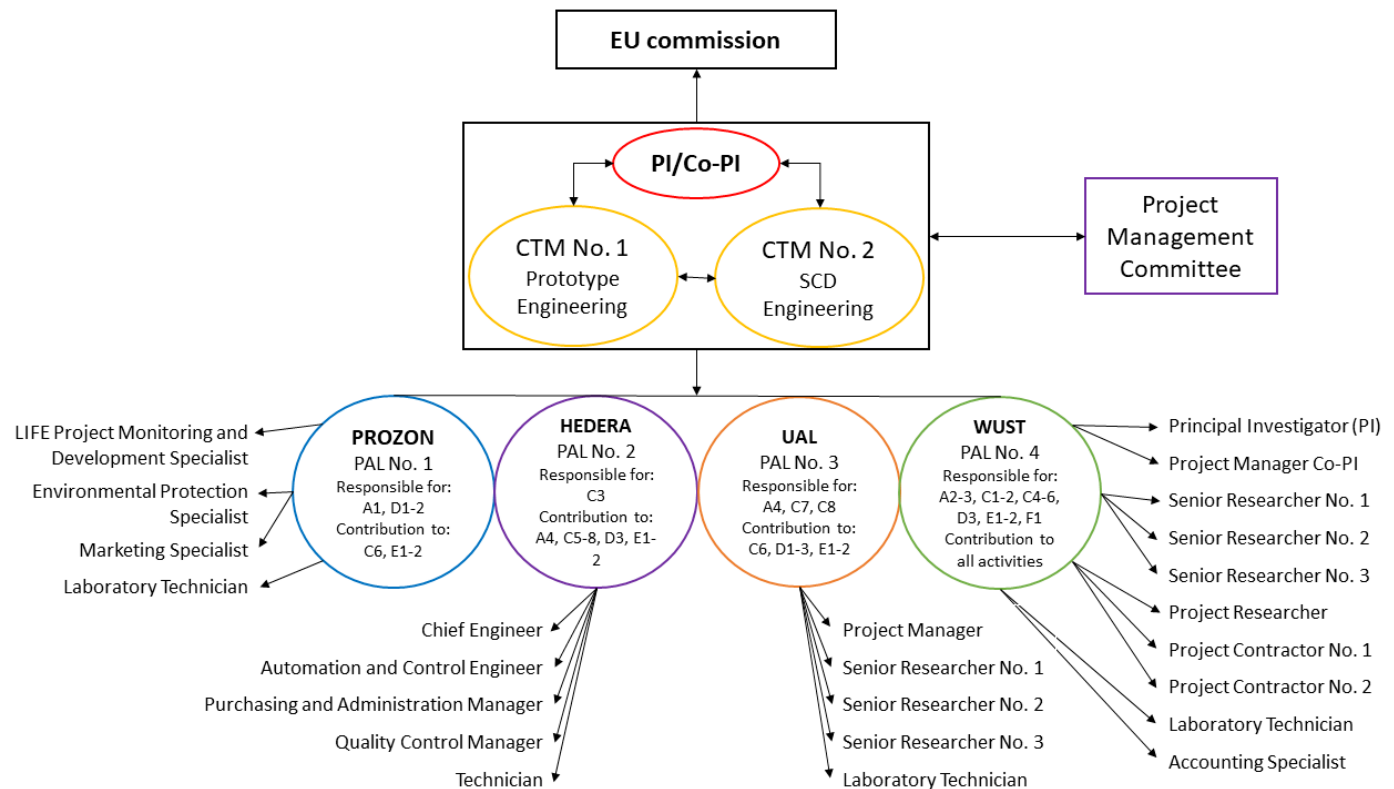
Wrocław
University
of Science
and Technology

To complete:

- select PMC members (one person from each partner)
- consortium meetings (ultimately once per six months)



Wrocław University
of Science and Technology



Deliverable products		
Milestones		



Wrocław
University
of Science
and Technology

COOLSPACES 4 LIFE

An innovative solar-powered cooling device,
based on climate-friendly refrigerant and
thermal energy storage

(LIFE20 CCM/PL/001607)

Awareness & Dissemination activities

Wrocław, Poland
13/10/2021



HR EXCELLENCE IN RESEARCH



Narodowy Fundusz
Ochrony Środowiska
i Gospodarki Wodnej

Project reporting

- Midterm report: **29/02/2024**
- Final report: **31/10/2026**

Midterm report

Action		2021				2022				2023				2024				2025				2026			
Action numbe	Name of the action	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
A. Preparatory actions (if needed)																									
A.1	Refrigerant analysis - verification of flammability, composition and safety considerations				■	■	■	■	■																
A.2	Adaptation of infrastructure at the installation site			■	■	■	■	■	■	■															
A.3	Verification of the prototype implementation concept				■	■	■																		
A.4	Determination of EPCM thermophysical parameters			■	■	■	■	■	■	■	■	■													
B. Purchase / lease of land and / or compensation payments for use rights																									
C. Implementation actions (obligatory)																									
C.1	Production of a prototype and assembly of solar-powered cooling device prototype in Poland						■	■	■	■	■														
C.2	Design and implementation of PV installations					■	■	■	■	■															
C.3	Modeling of STES behavior for the selected eutectic mixture; design and assembly of the final STES system			■	■	■	■	■	■	■	■	■													
C.4	System metering and SCADA implementation in Poland						■	■	■	■	■														
C.5	Initial tests and validation of the prototype installation; annual system operation tests in Poland											■	■	■	■	■	■	■	■	■	■	■	■	■	■
C.6	Replication and technology transfer			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
C.7	Reproduction and assembly of the solar-powered cooling device to Spain; prototype validation											■	■	■	■	■									
C.8	Annual system operation tests at CIESOL															■	■	■	■	■	■	■	■	■	■
D. Monitoring of the impact of the project actions (obligatory)																									
D.1	Environmental impact assessment report																■								■
D.2	Socio-economic impact assessment report																■								■
D.3	LCA and LCC analysis					■	■	■	■	■	■	■	■	■	■	■					■	■	■	■	■
E. Communication and dissemination of results (obligatory)																									
E.1	Marketing activities aimed at the general public			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
E.2	Promotion and communication with stakeholders							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
F. Project management (obligatory)																									
F.1				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

VISIBILITY OF UNION FUNDING

1. Any communication or publication made by the beneficiaries jointly or individually that relates to the project, including at conferences, seminars or in any information or promotional materials (such as brochures, leaflets, posters, presentations, in electronic form, etc.), must:
 - indicate that the project has received funding from the Union;
 - display the LIFE Programme logo (Annex II to the LIFE Regulation, https://cinea.ec.europa.eu/life/communication-gdpr-rules_en).
2. For audio-visual material, the credits at the beginning and/or at the end shall include an explicit audible and readable mention to the LIFE financial support (e.g. "With the contribution of the LIFE Programme of the European Union").
3. All durable goods acquired in the frame of the project shall bear the LIFE logo unless otherwise specified by the Agency.
4. When displayed in association with another logo, the LIFE Programme logo must have appropriate prominence.



Wrocław University
of Science and Technology



UNIVERSIDAD
DE ALMERÍA



Hederahelix

PROZON

THE FOUNDATION FOR CLIMATE PROTECTION

VISIBILITY OF UNION FUNDING

5. Project visibility will be heightened by the production of a **project logo** to be used in all communications by the partners. A stand will also be present at relevant exhibitions to share knowledge within the industry and amongst the general public. This could happen at the **26th IIR ICR** planned for 2023, **the World Renewable Energy Congress**, or at **the 14th EuroSun** planned for 2022 .
6. The project involves the construction of **4 Notice Boards (with the LIFE logo)** describing the COOLSPACES project that will be located strategically at the Beneficiaries sites.
7. Two **leaflets and posters** (in English, Polish and Spanish) will be produced in total; one at the project's inception presenting the objectives, collaborating partners and expected results, and the other will be prepared after Phase I has been completed, providing more information regarding the project's achievements.
8. These leaflets will be distributed at all relevant events and meetings in which project partners are participating, while the posters will be placed in the research organization premises. The leaflets will be designed and distributed as a tool for raising basic awareness about the project, and will provide the web address where more information can be obtained.



Wrocław University
of Science and Technology



UNIVERSIDAD
DE ALMERÍA



VISIBILITY OF UNION FUNDING

9. The COOLSPACES consortium will pay particular attention to **networking with other LIFE and EU-funded projects** that are pursuing research themes related to CCM, Renewable Energy Efficiency and Innovation, sharing common interests and exchanging information.
9. As part of COOLSPACES's promotional activity a **"Layman's Report"** (in English, Spanish and Polish: both in paper and electronic format) will be developed. **This will be targeted at a non-specialist audience and serve to inform decision-makers and non-technical parties of the project objectives and results.**
10. This report will provide a permanent record of the COOLSPACES project that can be filed for future reference. The document will be prepared in 3 language versions (English, Spanish and Polish) both in paper and electronic format. The report will consist of 5–10 pages and will present the COOLSPACES objectives, its actions and results to the general public.



Narodowy Fundusz
Ochrony Środowiska
i Gospodarki Wodnej



Wrocław University
of Science and Technology



UNIVERSIDAD
DE ALMERÍA



Hederahelix

PROZON

THE FOUNDATION FOR CLIMATE PROTECTION

PUBLICATIONS

- A detailed list with abstract or copy of the publication should be provided as part of the midterm and final reporting (Midterm and Final Progress Report).

According to the project proposal, the following main scientific output is expected (for the whole consortium):

- At least **4 publications** in peer-reviewed journals
- **4 international conference presentations**
- In addition to these activities at the project level, *Hedera Helix*, has particular dissemination plans for the project results in terms of distributing project leaflets at all the conferences and exhibitions it attends to advertise its products.

As for dissemination/communication, the following main output is expected:

- A project website with all updates (www.coolspaces4LIFE.eu)
- A short video outlining the concept and the work performed within the project



Wrocław University
of Science and Technology



UNIVERSIDAD
DE ALMERÍA



Hedera*helix*



AWARENESS & DISSEMINATION ACTIVITIES

- Future project meetings: 1st , 2nd, 3rd semester meeting: date, hosting.
- Dissemination plan.
- Dissemination events: scientific journals, conference papers, social media.
- Overall guidelines to awareness and networking.
- Open Access publications.

Description / travel and subsistence costs	Number of travels	Cost per unit €	Total €
Participation in project meetings - WUST group (3 rd meeting, 5 th meeting, 7 th meeting, 9 th meeting - 4 meetings in total): ticket cost (EUR 450), daily allowance (7 x EUR 50), travel costs to the airport (1 x EUR 50), accommodation costs (7 x EUR 100), car rental (cost divided into delegated persons, for 9 th meeting only EUR 60)	8	1,610	12,880
Participation in project meetings - UAL group (kick-off meeting, 3 rd meeting, 5 th meeting, 6 th meeting, 7 th meeting, final meeting - 6 meetings in total): ticket cost (EUR 450), daily allowance (7 x EUR 43), travel costs to the airport (2 x EUR 100), accommodation costs (7 x EUR 100)	6	1,651	9,906
Participation in project meetings - HEDERA group (kick-off meeting, 5 th meeting, 6 th meeting, 7 th meeting, 9 th meeting, final meeting - 6 meetings in total): ticket cost (EUR 450), daily allowance (7 x EUR 43), travel costs to the airport (2 x EUR 100), accommodation costs (7 x EUR 100)	6	1,651	9,906
Participation in project meetings organized outside Poland - PROZON group (3 rd meeting, 5 th meeting, 7 th meeting, 9 th meeting - 4 meetings in total): ticket cost (EUR 450), daily allowance (7 x EUR 50), travel costs to the airport (1 x EUR 50), accommodation costs (7 x EUR 100), urban transport diet (EUR 60)	4	1,610	6,440
Participation in project meetings organized in Poland - PROZON group (kick-off meeting, 6 th meeting, final meeting - 3 meetings in total): daily allowance (7 x EUR 10), travel costs (2 x EUR 100), accommodation costs (6 x EUR 100)	3	870	2,610
Kick-off meeting with the Contracting Authority representatives (WUST)	2	1,800	3,600
TOTAL COSTS			45,342

- Feed the web page providing the partners input: news, events, reports...
- How to implement and monitor linkage activities with other local and EU LIFE projects.



Wrocław University
of Science and Technology



Narodowy Fundusz
Ochrony Środowiska
i Gospodarki Wodnej



UNIVERSIDAD
DE ALMERÍA

PROZON
THE FOUNDATION FOR CLIMATE PROTECTION

Next steps

Next three months:

- Consortium Agreement
- Webpage
- New project's Staff
- Actions A1, A2, A4, C3, C6, E1, F1 started at M01 will be checked to ensure best possible attribution of results.





Wrocław
University
of Science
and Technology

COOLSPACES 4 LIFE

Thank you very much for your
attention!



HR EXCELLENCE IN RESEARCH



Wrocław, Poland
13/10/2021



Narodowy Fundusz
Ochrony Środowiska
i Gospodarki Wodnej