LIFEWATERCOOL: (LIFE18CCA/ES/001122) "Water efficient systemic concept for the climate change adaptation in urban areas"



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WATER COOL



DESCRIPTION:

The WATERCOOL project aims to develop and test innovative solutions to cope with high temperatures and with temporarily high water run-off as well as drought situations in an urban environment subject to climate change. The urban **water network** will act as the basic structure for the development of urban **green solutions** and **cooling measures** to adapt to the effects of climate change, maximizing the sustainability of the city and **citizens well-being**.

2020 → 2100 = +4,5 °C -20% rain





SPECIFIC OBJECTIVES:

- To develop a grid-based water management system allowing to soften the effect of water related extreme effects.
- ✓ To **improve the urban climate** by implementing CC adaptation measures.
- To develop new tools for public-private collaborative management, by integrating all stakeholders.
- To engage new cities and citizens for replication and to increase the level of commitment and participation in the sustainable management of resources.





LIFEWATERCOOL (LIFE18 CCA/ES/001122)

"WATER EFFICIENT SYSTEMIC CONCEPT FOR THE CLIMATE CHANGE ADAPTATION IN URBAN AREAS"

- Duration: 48 months (2019 2023)
- <u>Total Budget</u>: 3.779.677 €
- <u>5 Partners:</u>







http://www.lifewatercool.com/





Intervention planning in the demo area.

Connectivity of water elements

- The drainage system combines both pervious pavement and green areas.
- This water feeds the underground waters by using infiltration wells scattered all over the demo area.
- Only a little percentage out of the whole volume of the rainwater is finally conveyed to the sewerage system.

New concept of the public space, a "green corridor"

- Decrease of maximum temperatures in the summer season.
- The implantation of a large number of new trees.
- Decrease of CO2 atmospheric level.







Anna with set and a star



Avda. Cruz Roja

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WATER COOL

Development of the WATER-GRID

Water cooling system for the bioclimatic stays

- Design and implementation of the new cool water reservoirs
- Design and implementation of passive and hybrid air cooling

Two underground water tanks made of glass reinforced polyester provides cool water to the stays. The total capacity is 50.000 liters.





Design and implementation of the filter elements, connectors and pavements







Development of the WATER-GRID

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New cool water reservoirs

Design and implementation of passive and hybrid air cooling



Solution has been designed and tested (prototype)

Small inertial volume

Design and implementation of dissipation ponds and hybrid cold sinks •

Cover of school max 400 m² – minimum required 300 m² Improved termal comfort and reduction Energy consumption





Dual operation

- Summer

Day: electricity production Night: cold water - fallling film

- Winter

Day: electricy production Day: hot water

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SHORT DURATION



Superficial heating/cooling



Cold/Hot Surface by TABS

Surfaces: cement or metallic





MEDIUM DURATION

Semitransparent cold-pergola + cold air





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LONG DURATION - PUBLIC SPACES





Cold air using water grid

















LONG DURATION - PARK



Type of Solutions: urban tree (urban forest)





Collaborative and Green-management tools

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Decision support planning tool





Solar Radiation



1. Work area definition 2. Improvement action application

3. Calculation engine

4. Display of expected results

Work area definition

- 3D view of the selected street.
- Object edition

Software calculation tool

- Calculation engine data structure
- Air movement Computational Fluid Dynamics



Decision support planning tool











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Decision support planning tool

- URBAN LAB
- CC Adaptation office



Commons objectives

- Encourage the use of responsible resources
- Citizen participation
- Communication portal
- Disclosure of financial opportunities





- Encourage the use of responsible resources
 Gamification
 - Comunication portal, financial opportunities and citizen participation My city
 - Comunication portal Global







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