Project overview
@Sustainable Places 2020

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Heat4COOL project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 723925

Heat4cool
Project Identity

- 13 partners
- EU funded project (H2020)
- Oct 2016 – April 2021

- Demonstrate easy to install energy efficient Heating and Cooling solutions for building renovation at building and district level

- 20-30% energy savings compared to the pre-retrofitting
- <10 years payback
- Develop a business model

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Tools and systems developed within H4C

1. Building retrofitting **design planner tool**
2. Solar Thermal + VC Electric Heat Pump + **Adsorption Chiller**
3. Photovoltaics + VC Electric Heat Pump + **PCM storage**
4. **Wastewater Heat Recovery system** + VC EHP (district level)
5. Self-Correcting Intelligent Building Energy Management System (**SCI-BEMS**)

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Building retrofitting design planner tool

Introduction | Building | Heating system | Cooling system | Occupancy and thermostat settings

Building characteristics

Building or district?

Building

Which type of building would you like to assess?

Whole apartment block

Where is it located?

Country: Spain

City: Valencia

Building orientation and boundaries

Building size

Length (m)	Width (m)	Number of storeys
13	15.5	4

Storey height (m): 3

Orientation angle: deviation from (see diagram on the right): 0

Wall 1: Exposed to outside

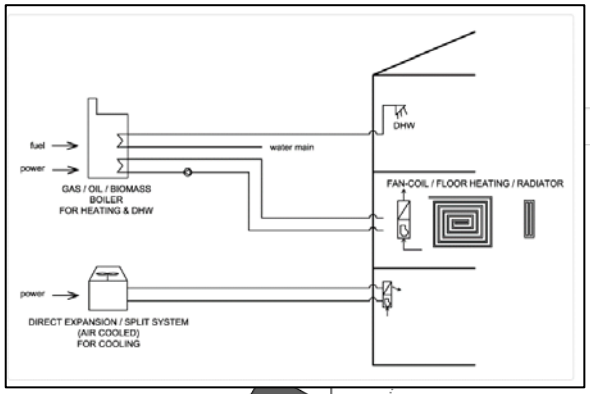
Wall 2: Adjacent to another building

Wall 3: Exposed to outside

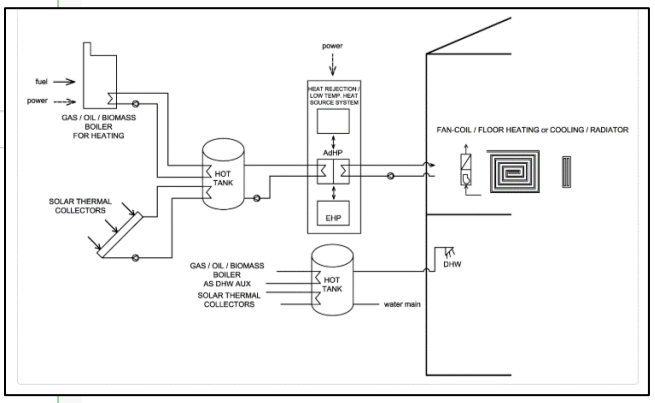
Wall 4

Wall 1

Current



AdHP + SC



Simulations KPI overview

Simulation name	Ranking	Non-renewable primary energy (kWh/m2a)	Renewable energy contribution	Greenhouse gas emissions (kgCO2eq/m2a)	Payback period (years)	Technical and regulatory information	NZEB compliance according to EU 2016/1318
+AdHP+SC	1	35.5	37%	5.5	16	show	No
Current	2	63.3	0%	16.1	0		

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Heat4Cool Residential pilots

Pilot 1: Valencia, Spain

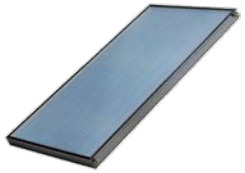
ST 50 m^2
AdC 15 kWc
EHP 45 kWc

Building characteristics

- 4 Floors, 12 apartments
- 600 m^2
- 30 tenants

Retrofitting project components:

Adsorption Heat Pump



Solar thermal collectors

Storage tanks Solar and Cooling

Air to water Heat Pump

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Heat4Cool Residential pilots

Pilot 2: Chorzow, Poland

Building characteristics

- 4 Floors, 12 apartments
- 1000 m^2

Retrofitting project components:

PV 15 kWp
EHP 30 kWt
PCM 96 kWh

Air to water Heat Pump

PV Panels

PCM Storage

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Heat4Cool Residential pilots

Pilot 3: Sofia, Bulgaria

Building characteristics

- 564 m^2 (336 m2)
- 3 Floors
- 11 tenants (4 apartments)

Retrofitting projects components:

Air to water Heat Pump

PV Panels

PCM Storage

PV 12 kWp
EHP 10 kWt
PCM 36 kWh

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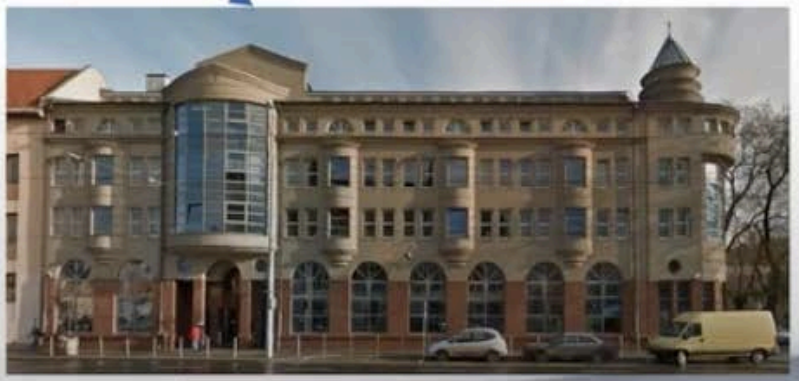
Heat4Cool District System pilot

MAYOR'S OFFICE

NEW MARKET HALL



GOVERNMENT WINDOW

Pilot 4 – Budapest - District heating/cooling (12.500 m^2)

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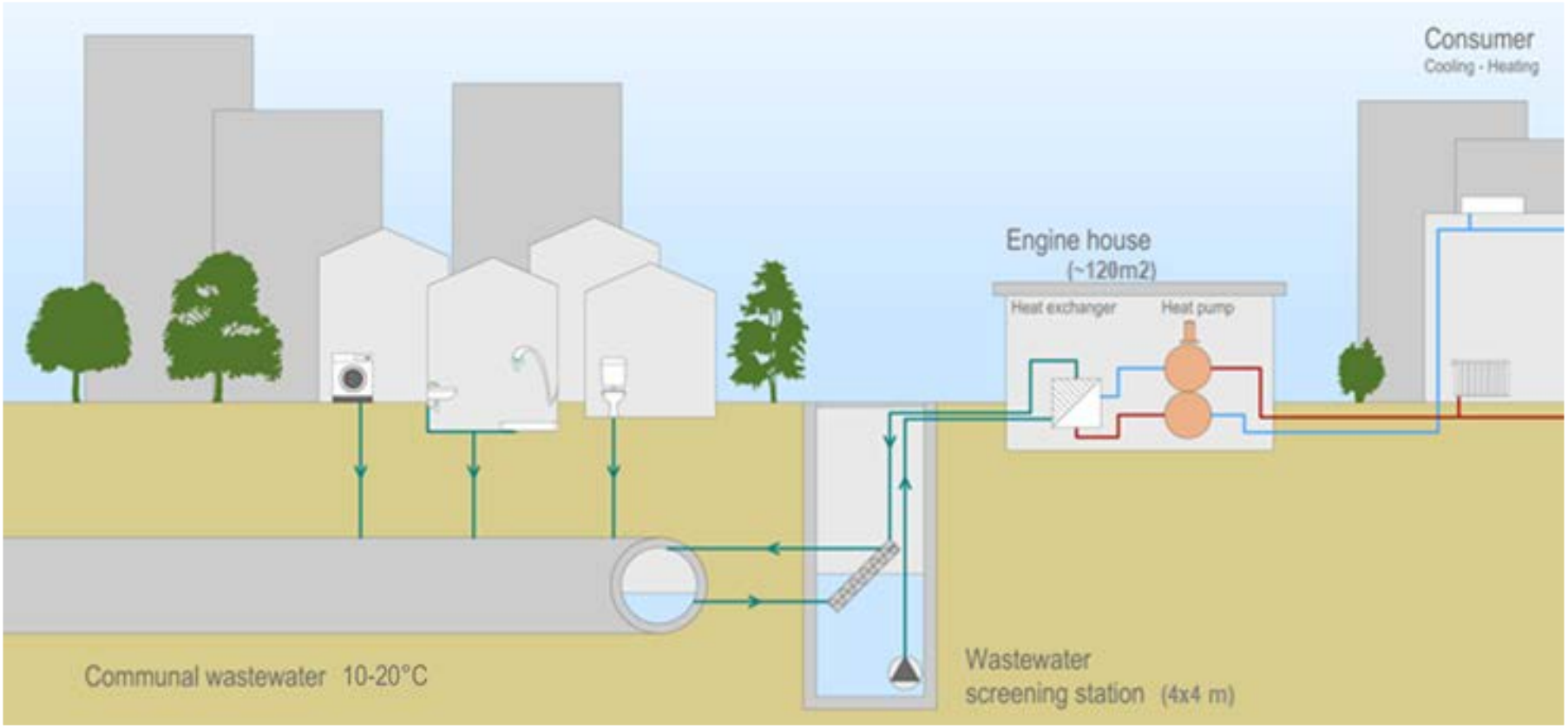
Heat4Cool District System pilot

Wastewater exploitation



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Remarks

- Heat4Cool proposes efficient and cost-effective renewable based solutions with a degree of flexibility for space heating, cooling and domestic hot water.

- 20÷30% energy savings are expected based on our simulations

- Modelling and simulation have been key in identifying the best configuration and control strategy in each pilot.

- Fast simulation tools like H4C RetroSim
  and integrated solutions easy to install, monitor and control will be key for replicability

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https://www.heat4cool.eu/

https://smartcities-infosystem.eu/sites-projects/projects/heat4cool

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