SunHorizon

Sun Coupled Innovative Heat Pumps

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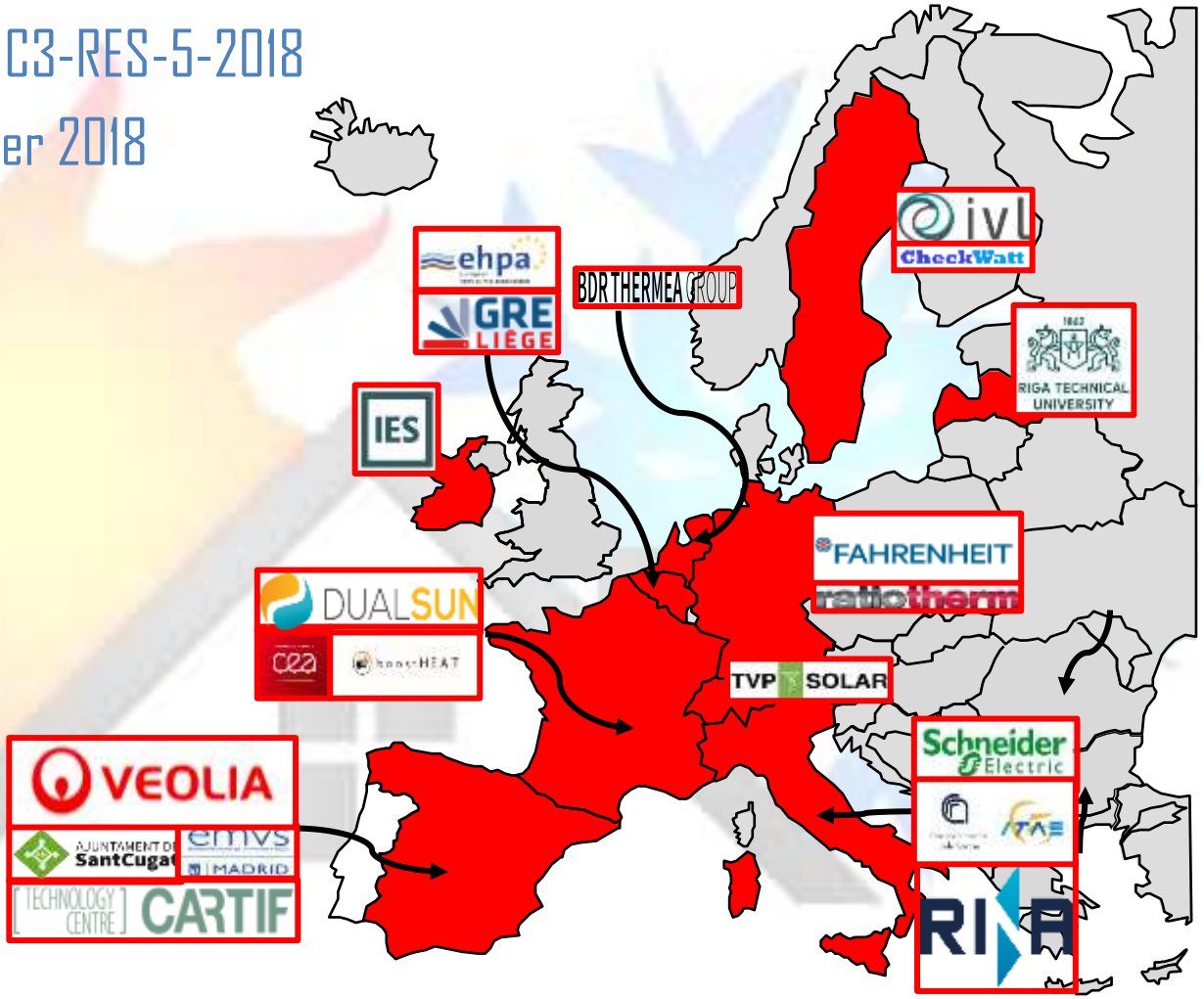
This Project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement N. 818329

The project

- H2020 call: LC-SC3-RES-5-2018
- Started in October 2018
- 4 years project
- 20 partners
- 9M€ funding



SUSTAINABLE PLACES

"Renewable Heating and Cooling Solutions for Buildings and Industry Workshop"

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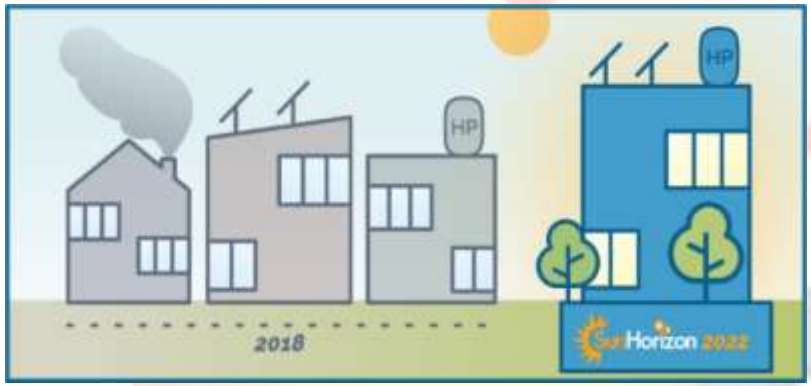
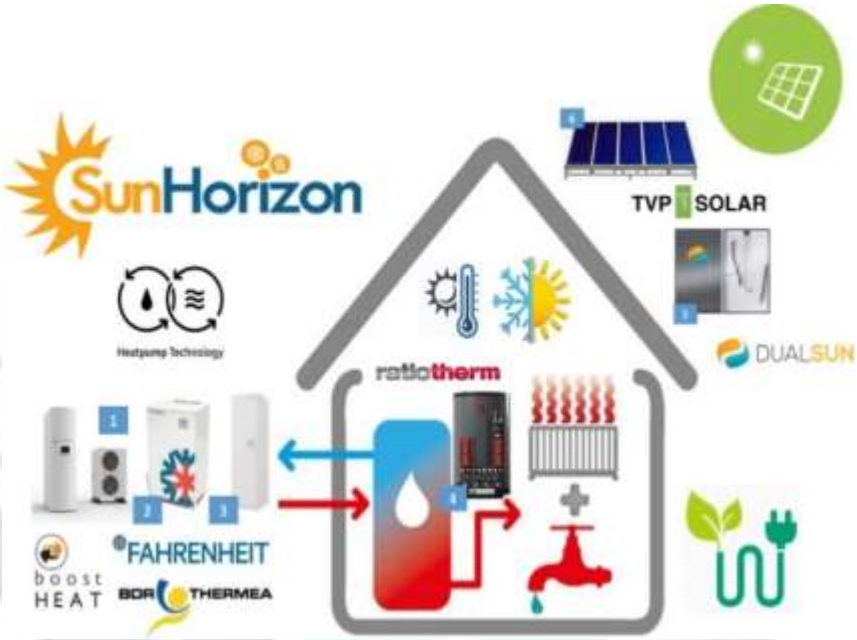
Our Vision





TRL 7 – Sun and HP as baseload of EU H&C systems
6 Technologies to be integrated – 5 Technology Packages – 7 Demos
3 Research Pillars based on Functional Monitoring Data exploitation

DESIGN – MANUFACTURE - CONTROL

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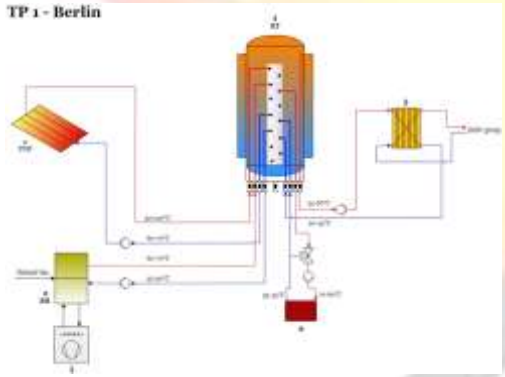
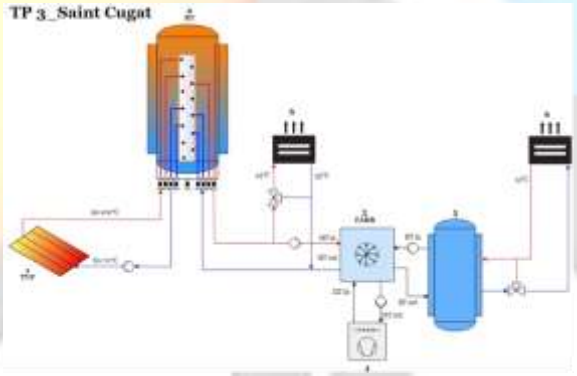
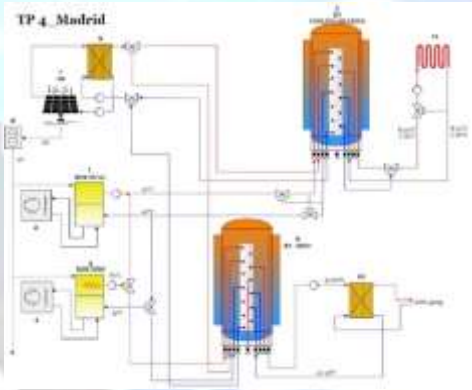
SunHorizon Technology Packages (TP)

SunHorizon TP		Solar-HP integration concept
TP1	TVP+BH	Parallel integration
TP2	DS+BH	Mixed solar-assisted/ parallel integration
TP3	TVP+FAHR	Solar-driven HP for cooling
TP4	DS+BDR	Parallel integration
TP5	TVP+BH+ FAHR	Mixed solar-driven/ parallel integration







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SunHorizon: Demosites

Nº	Location	Climate	Building type	SunHorizon TP
1	Berlin (Germany)	Cold	Small residential	TP1: TVP+BH
2	Nürnberg (Germany)	Cold	Large residential	TP2: DS+BH
3	Saint Cugat (Spain)	Warm	Tertiary (Civic centre)	TP3: TVP+FAHR
4	Madrid (Spain)	Average	Large residential	TP4: DS+BDR
5	Piera (Spain)	Warm	Small residential	TP4: DS+BDR
6	Verviers (Belgium)	Average	Tertiary (Sport Centre)	TP1: TVP+BH
7	Verviers (Belgium)	Average	Tertiary (Swim. pool)	TP2: DS+BH
8	Riga (Latvia)	Cold	Small residential	TP2: DS+BH

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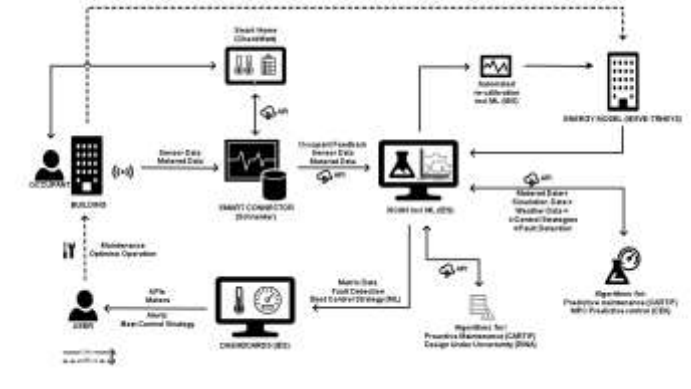
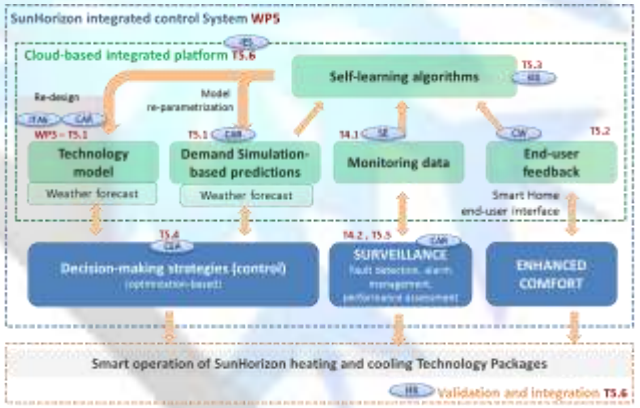
SunHorizon monitoring and control

- **Optimised sensoring/monitoring platform for:**
  - Control purposes
  - Design under uncertainty tool to reduce CAPEX (RINA-C)
  - Predictive maintenance strategy (reduce OPEX)



- **Developing an integrated smart control and surveillance system that combine**
  - Monitoring
  - Decision-making strategies
  - Prediction technique
  - Self-learning
  - End-users interaction



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SunHorizon main achievements

SunHorizon will produce significant impact in the energy efficiency of buildings

- The engagement of different kind of buildings increase the replication potential and the impacts of the project representing in the most comprehensive way the whole EU building stock

	SunHorizon impacts		
Demo location/TP	$PE_{reduction}$ [%]	GHG reduction [%]	OPEX reduction [%]
Berlin/TP1	43	43	37.4
Nurnberg/TP2	33.4	48.5	50.6
Saint Cugat/TP3	35.4	35.4	35.4
Madrid/TP4	76.2	68.8	84.6
Verviers Sport centre/TP1	26.7	26.9	26
Verviers Swimming pool/TP2	24.75	30.67	23.9
Riga/TP2	43	39	37

- **Main challenges**
  - Integration of different H&C technologies
  - Integration of SunHorizon TPs with existing H&C system
  - Affordable investment cost and PBP
  - Social acceptance by end-users

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THANKS FOR YOUR TIME!!!

www.sunhorizon-project.eu

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