The New Generation Solar H&C Systems
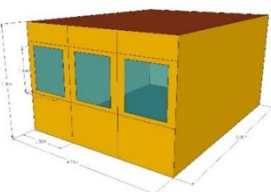## Subtask B: Control, simulation and design

Roberto Fedrizzi

Subtask B: Control, Simulation & Design

Objectives:

1. to investigate the different control and sizing possibilities for the new generation solar cooling & heating systems for buildings so as to select the best strategies for given climates and applications

2. to develop modelling tools to predict performance and size/design systems

3. to manage a smart interaction with electric grid

EUR.AC research

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Fondazione Cassa di Risparmio
sostenuto da

Task 53

Simulations for strategies and sizing

We set up a potential analysis starting from reference buildings in different climates and a reference PV + compression chiller system

SFH	s-MFH	OFF	
Sketch and picture	Sketch and picture	Sketch and picture	
	Number of floors	Zoning	
Number of floors	Living area per dwelling		
Living area per floor	Number of dwellings per floor	Zone height/width/depth	3.0 / 4.5 / 6.0 m Ceiling height 2.8 m
Ceiling/floor height	Ceiling/floor height	Zone floor area / volume	27 m² / 81 m³
Building width /depth	Building width / depth	Office area per floor	6 to 12 offices per floor
Roof type and materials	Roof type and materials	Number of floors	3 to 7
		Roof type	Flat concrete roof
Frame-to-window ratio	Frame-to-window ratio	Glazing ratio	30 % to 60%

Simulations for strategies and sizing

We set up a potential analysis starting from reference buildings in different climates and a reference PV + compression chiller system
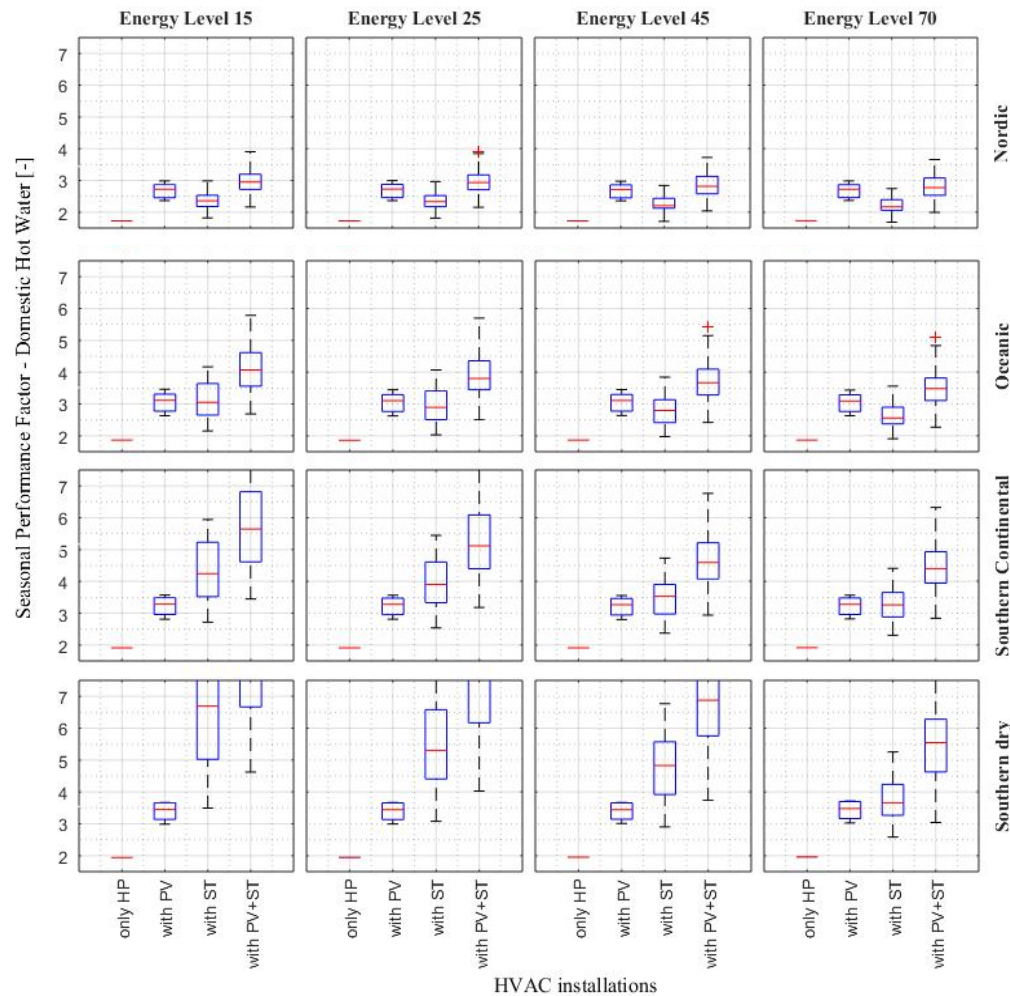

PV panels

Reversible HP

inspirefp7.eu
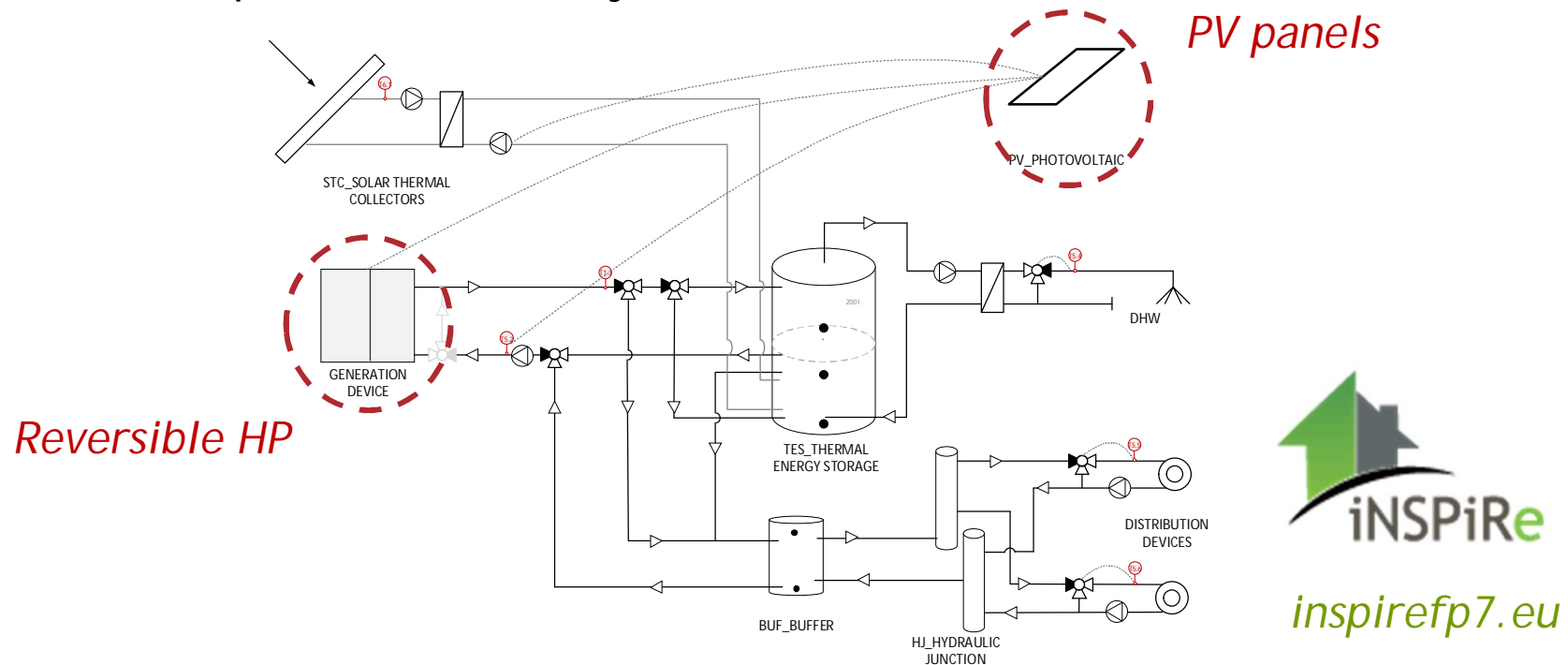
Simulations results - SFH
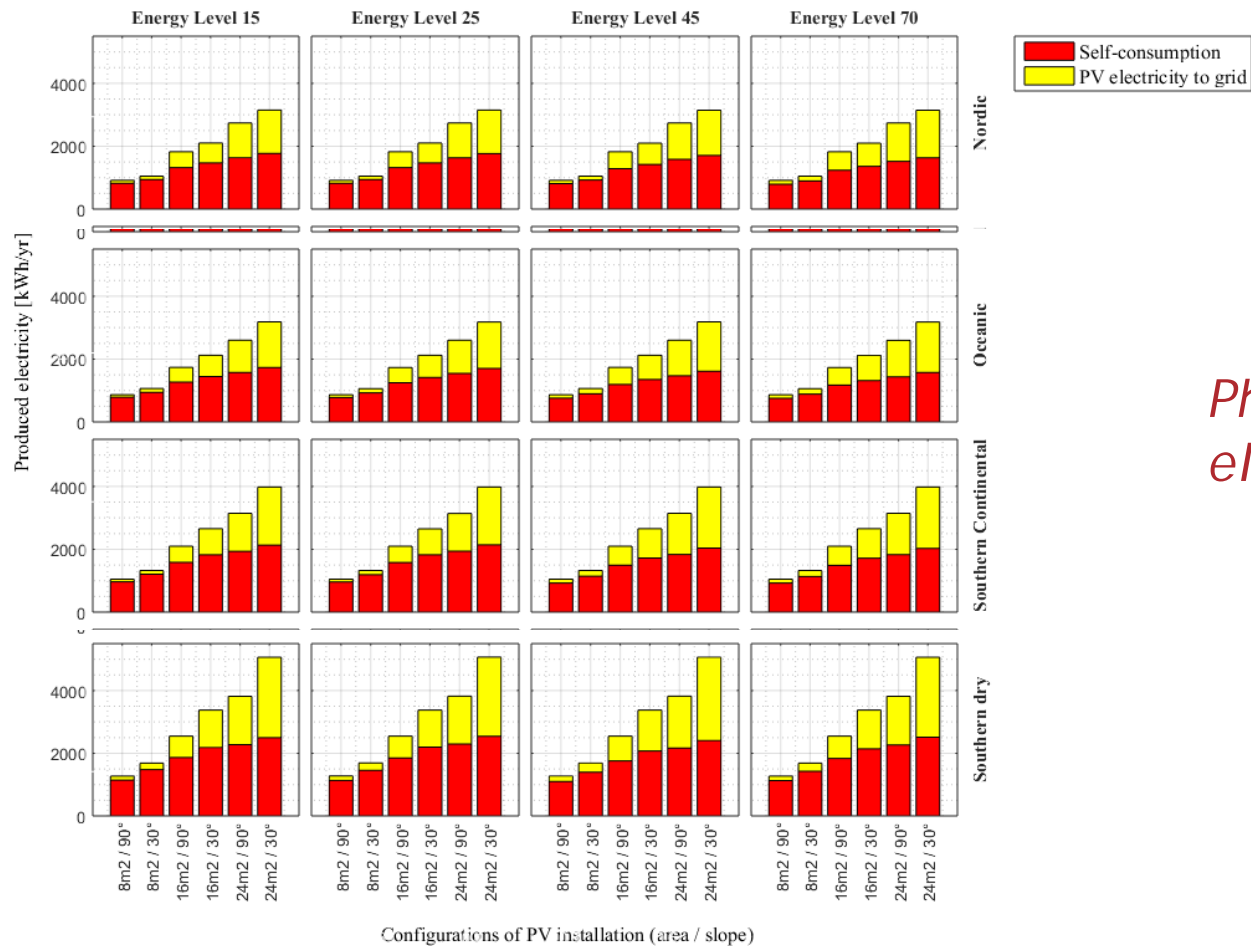
Photovoltaic produced electricity

Simulations results - SFH

Seasonal Performance Factor

DHW preparation

Simulations results - SFH
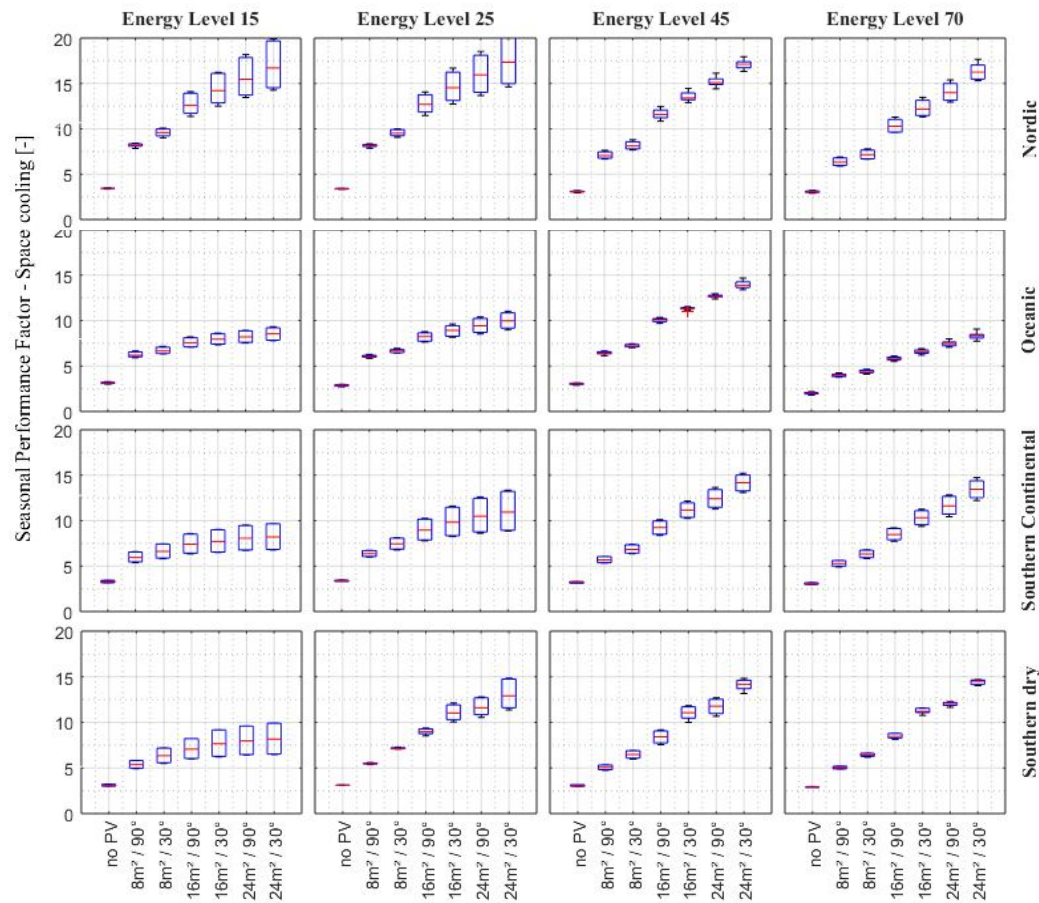
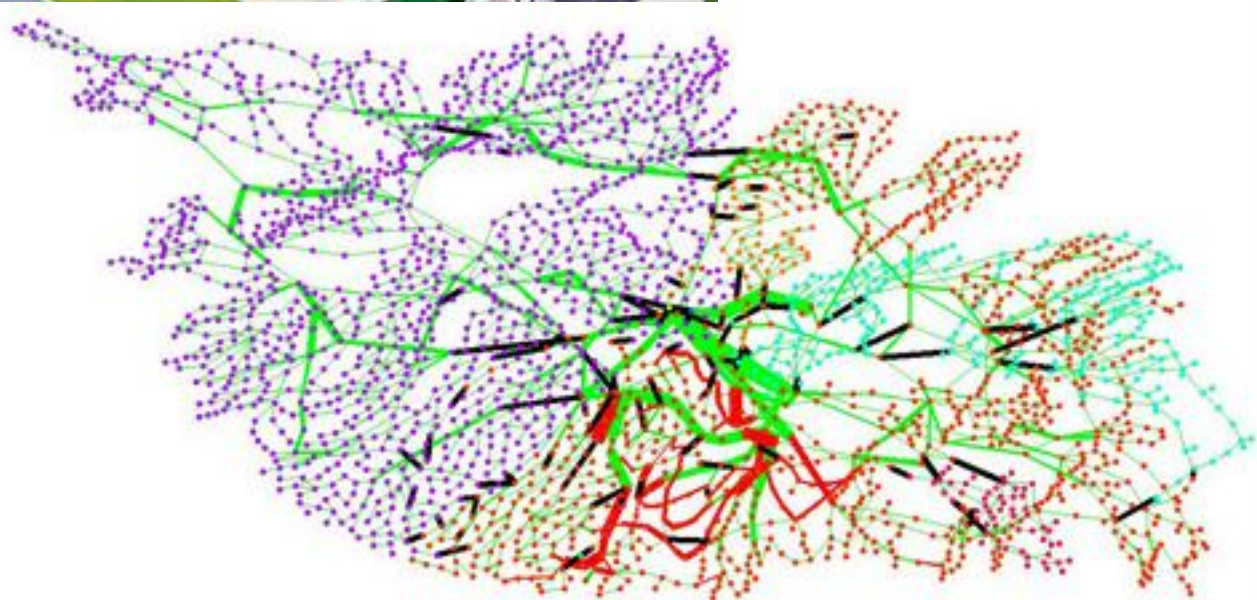
Seasonal Performance Factor

Space cooling

Interaction with the grid

What is the effect of an increasing number of chillers on a specific grid?

Thank you for your attention

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