Valencia pilot site

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Retrofitting

Pilot building:

- Residential building, 4 floors with 3 apartments at each floor (12 total):
  - 38 m²
  - 57 m²
  - 57.5 m²
- Terrace and double sloped roof
- Orientation: SE (-66°) – NW (114°)
- Located in old city Valencia
Retrofitting

Previous facility

• Building centralized generation system for:
  – Heating
  – DHW
  – Cooling

• Generation system: 3 independent A-W reversible Heat Pumps (3x15 kW)

• 2 storage tanks for hot and cold water

• Heating/cooling delivery by fan-coils at each apartment
Retrofitting

Retrofitted facility

- **Solar Thermal** system

- **Adsorption Heat pump** (only cooling mode) supported by heat pumps

- Storage tanks for **solar**, cooling and heating productions

- **SCI-BEMS** (Self Correcting intelligent BEMS)
Retrofitting activities

• Installation of:
  – Solar thermal panels (~50 m²)
  – Solar storage tank
  – Adsorption unit (within ventilated enclosure)
  – Re-cooler (with antifreezing heater)
  – Sensors and meters
  – New fan-coil control screens
  – Z-Wave gateways for net connection of sensors/controls

• Old gas-boiler removal
Retrofitting

Monitoring system dashboard:

Monitoring system to assess the system performance. It will operate even after the project is finished and the data is stored at the server.
Retrofitting SCI-BEMS

Set of smart devices that allow:

- Monitoring of apartment conditions
- Recording of fan-coil thermostats status and control actions performed by the occupants
- Remote control of fan coils at each apartment

Since identified events from user actions Profiling algorithm estimates Comfort/Discomfort probabilities for a defined temperature.

Set-point control automation algorithm sends lower and upper temperature limits to the fan-coil thermostats as the heating and cooling set-points.
Thank you!

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