Valencia pilot site

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Retrofitting

Pilot building:

- Residential building, 4 floors with 3 apartments at each floor (12 total):
  - 38 m^2
  - 57 m^2
  - 57.5 m^2
- Terrace and double sloped roof
- Orientation: SE (-66°) – NW (114°)
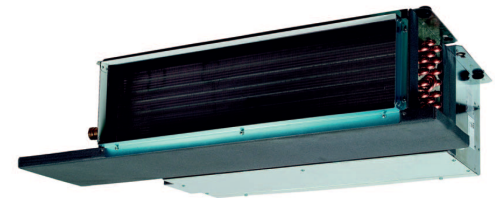- Located in old city Valencia

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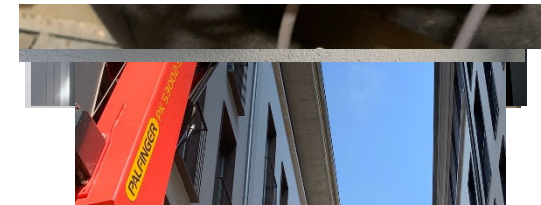
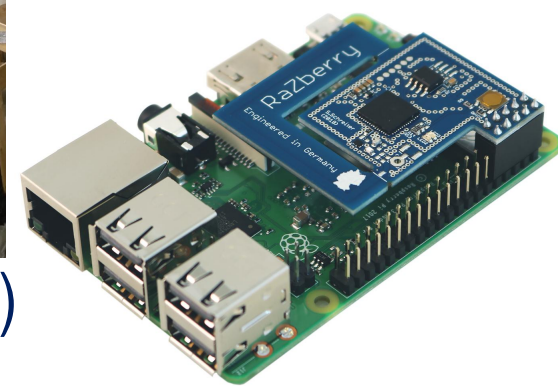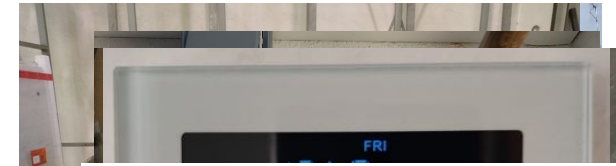- **SCI-BEMS** (Self Correcting intelligent BEMS)

Retrofitting

Retrofitting activities

- Installation of:
  - Solar thermal panels (~50 m^2)
  - 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
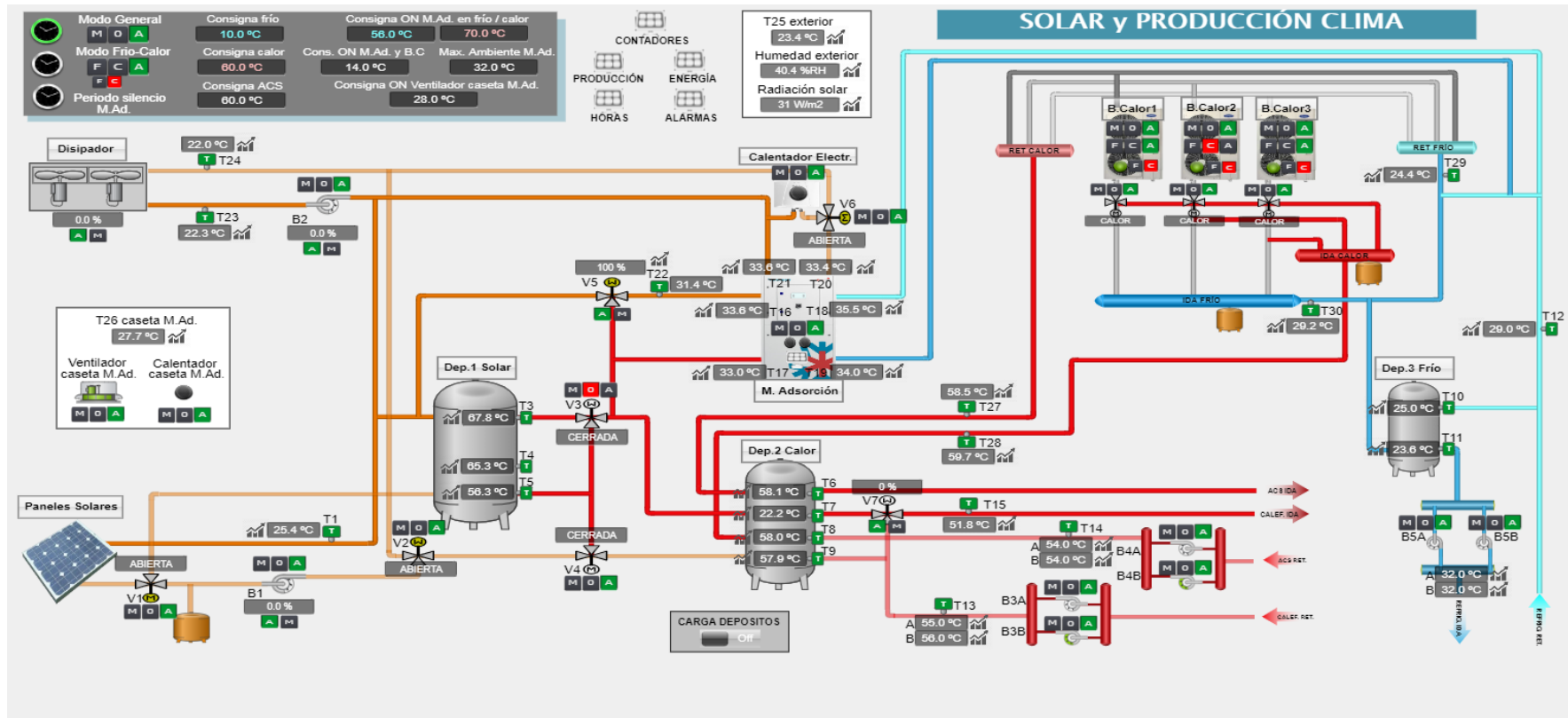
- Old gas-boiler removal

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.
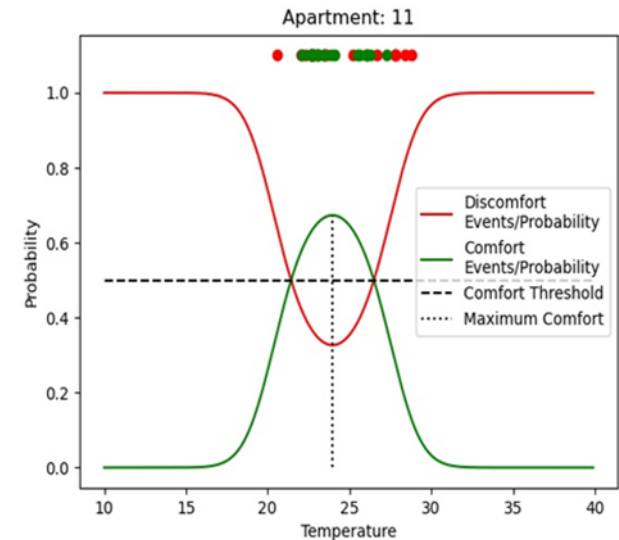
Retrofitting
SCI-BEMS

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

Apartment: 11

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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