

LARGE-SCALE DEMO-SITE
 Snack bar in the Department of Biomedical and Specialties Surgical Sciences (UNIFE)
 Via Luigi Borsari 46, Ferrara

IDEAS

Novel building Integration Designs for increased Efficiencies in Advanced climatically tunable renewable energy Systems

Italian large-scale prototype



View of the two PV/T fields

AI control system



Thermal storage tanks

- 800 litres on the source-side
- 2 x 500 litres on the user-side



Multi-source heat-pump

- ground, sun, air
- 25kW



CPC-PV/T solar panels

- 1 with PCM
- 1 without PCM

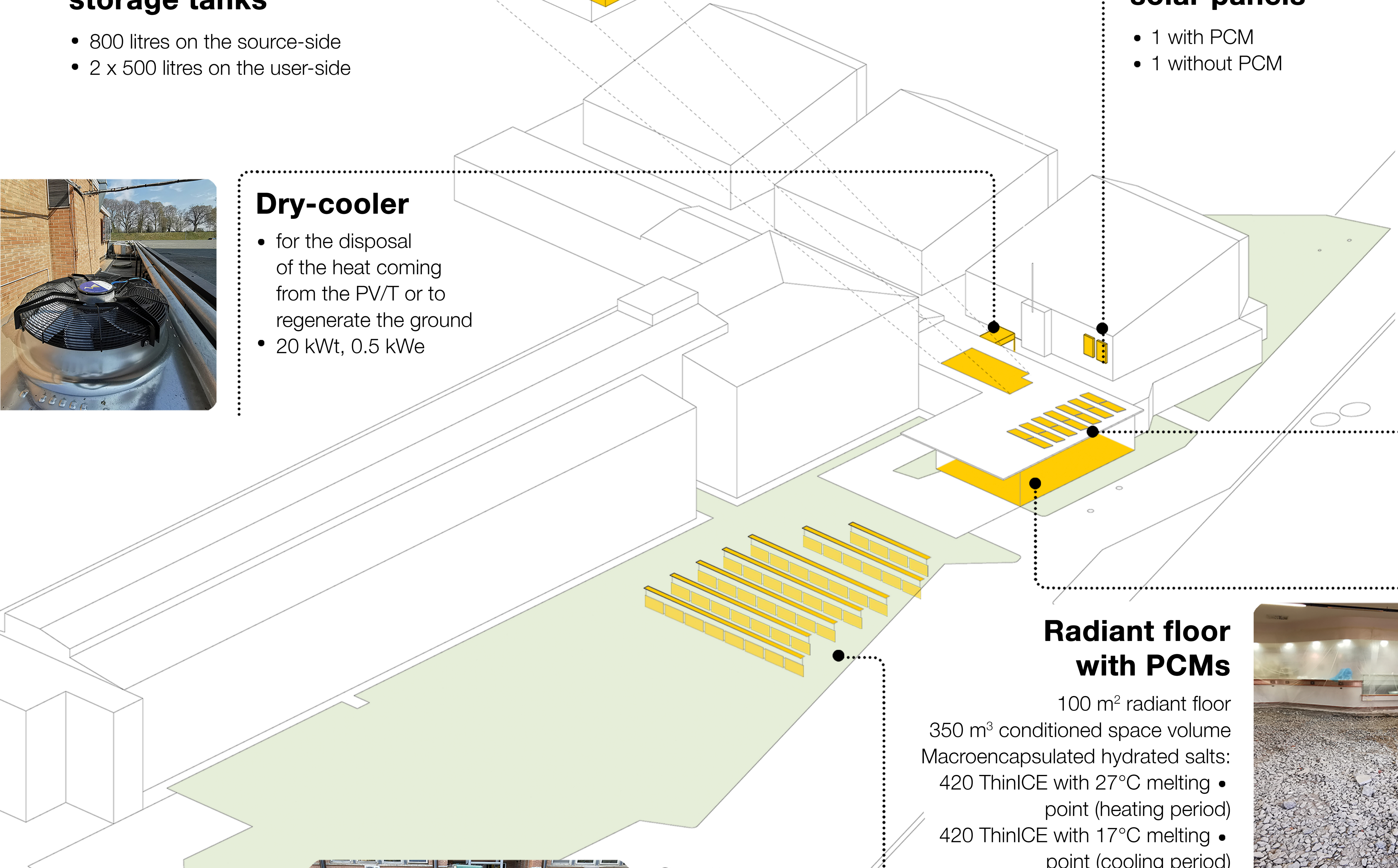


PV/T solar panels

- 14 panels (400W of peak)

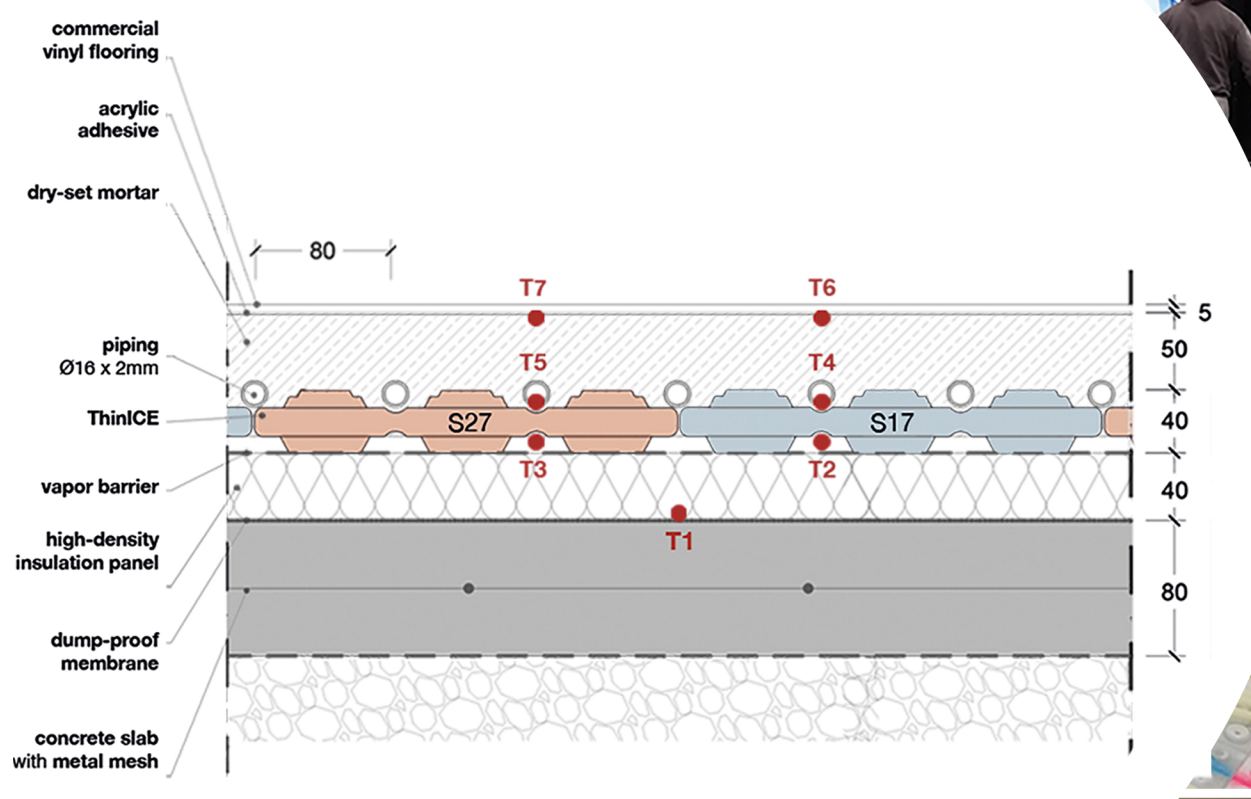
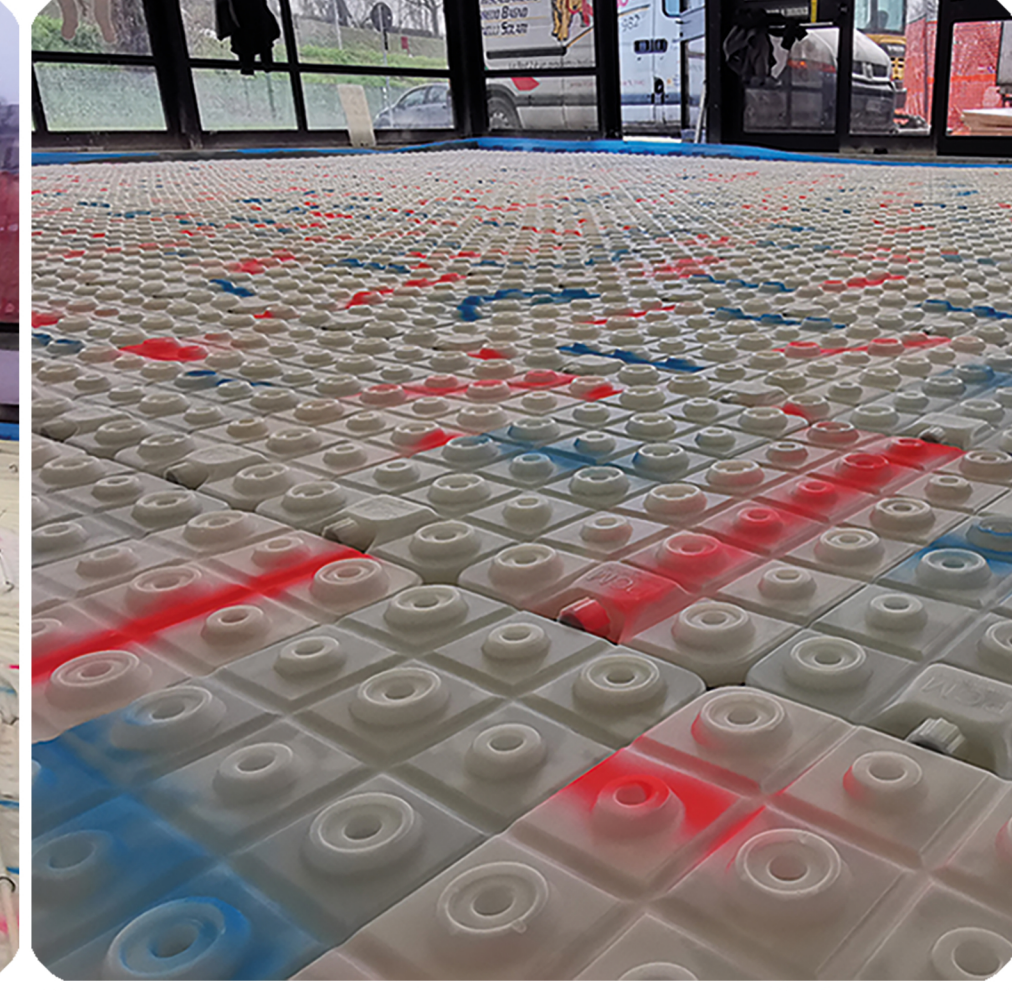
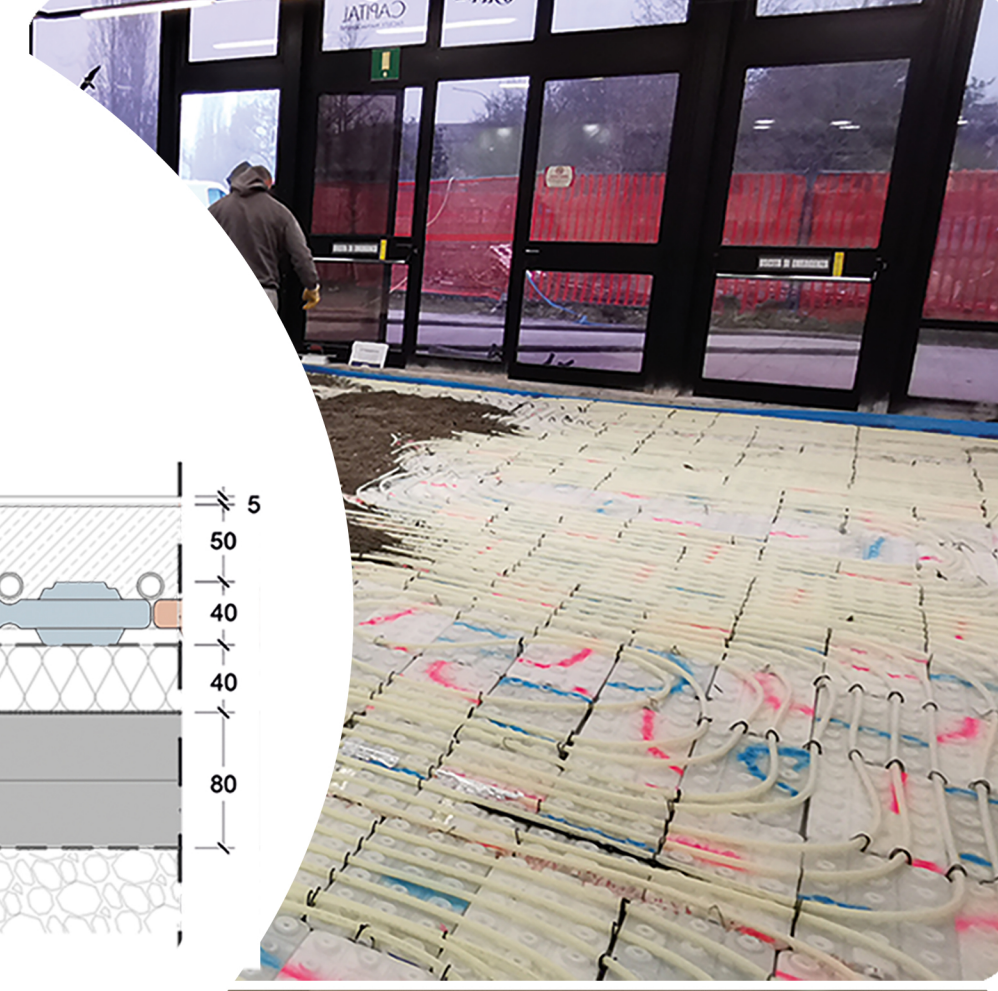
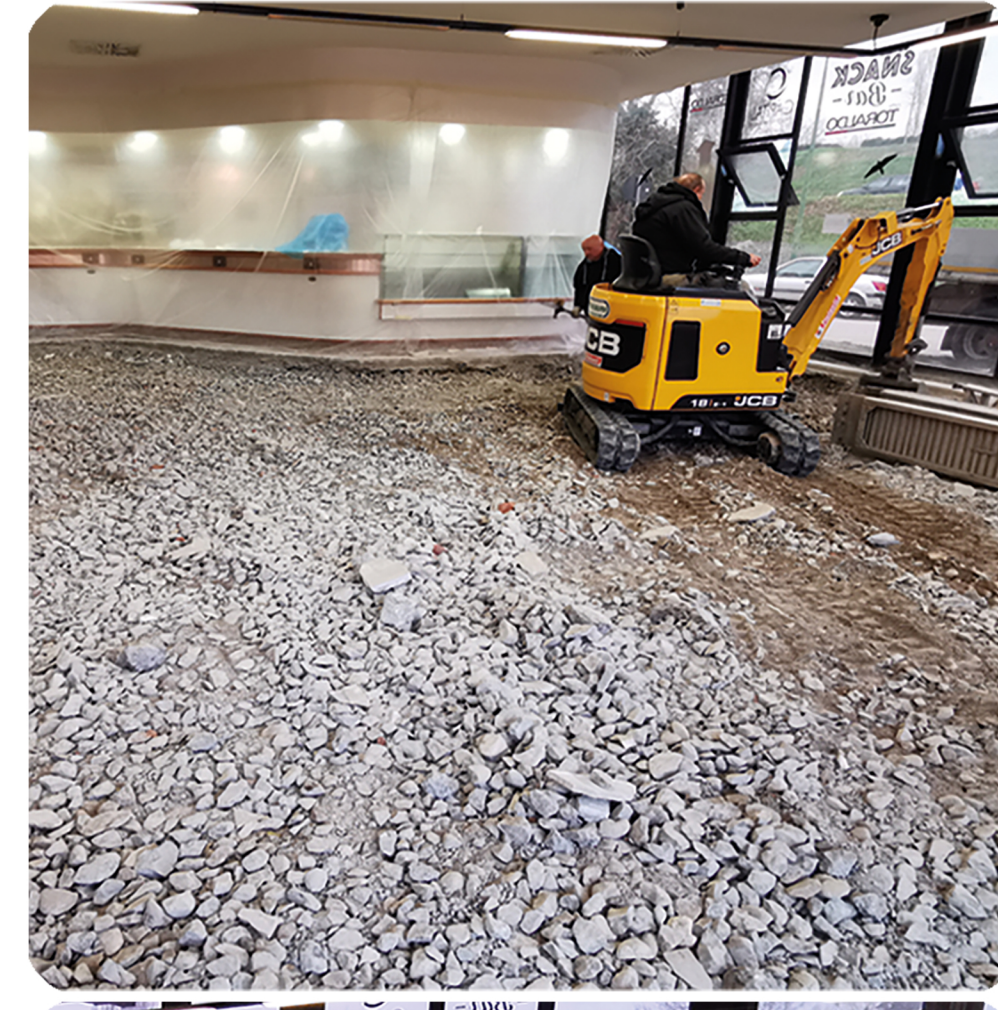
Dry-cooler

- for the disposal of the heat coming from the PV/T or to regenerate the ground
- 20 kWt, 0.5 kWe



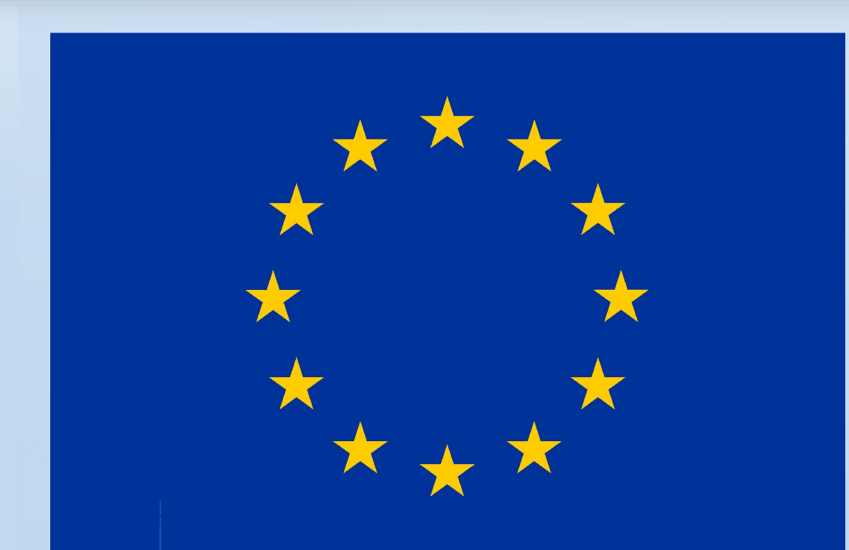
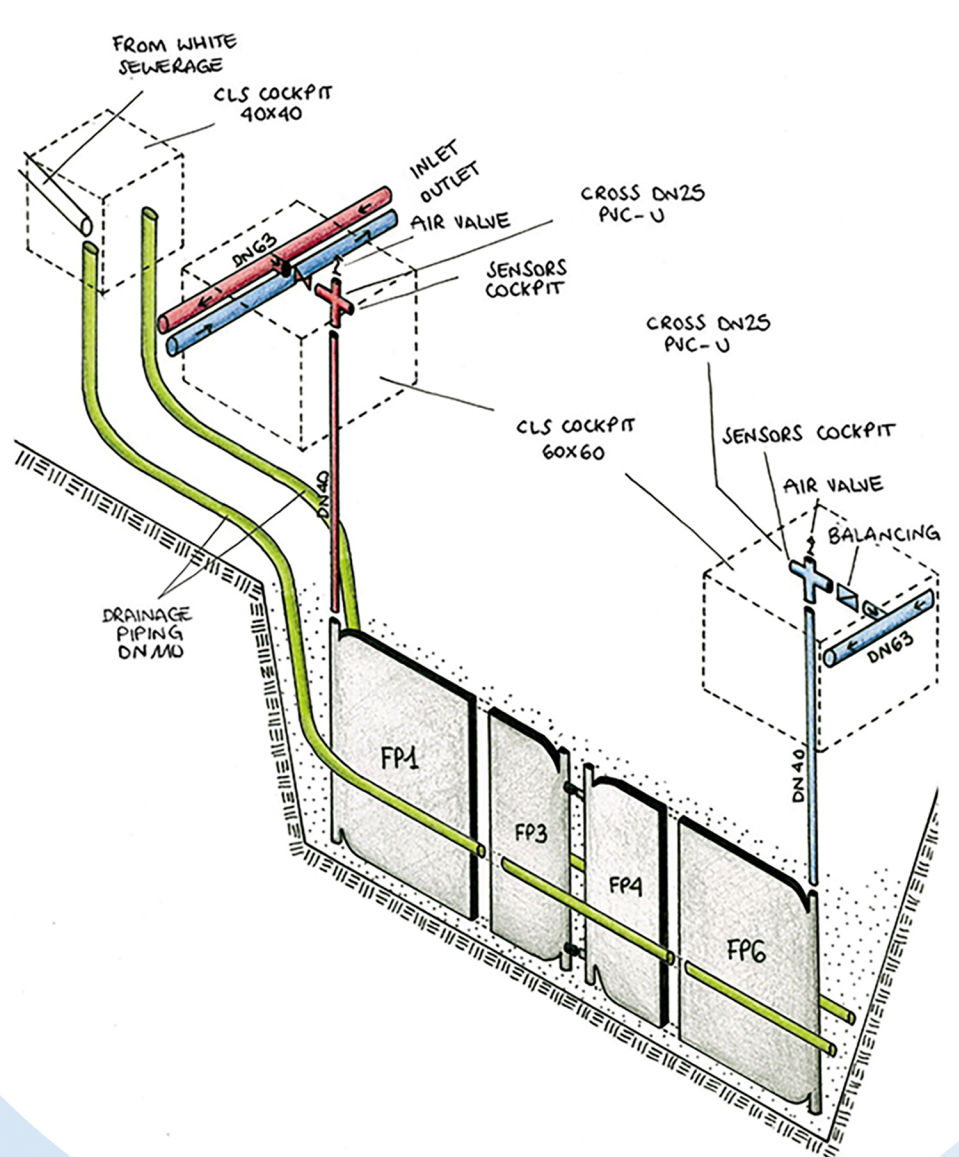
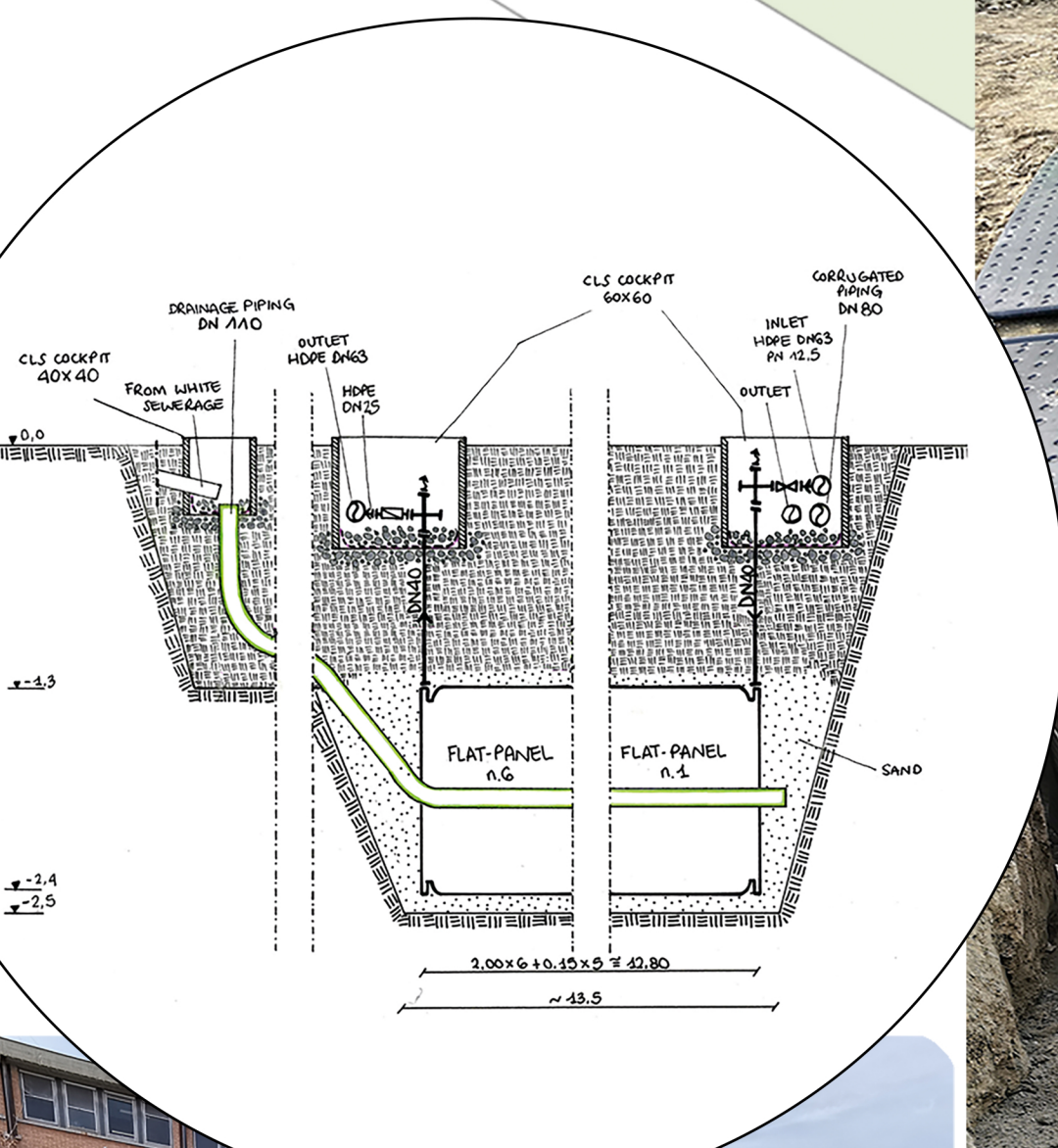
Radiant floor with PCMs

- 100 m² radiant floor
- 350 m³ conditioned space volume
- Macroencapsulated hydrated salts:
 - 420 ThinICE with 27°C melting point (heating period)
 - 420 ThinICE with 17°C melting point (cooling period)



Shallow ground heat exchangers

- 46 Shallow ground heat exchangers, UNIFE patent
- 7 lines, 92 m of GHXs (> 10kW continuous peak power)



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