Passive House Architecture in Spain: Lessons for California
Travels in Spain
California and Spain
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Play Arquitectura
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Creating a feeling of openness in a crowded site
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Adapting to site constraints
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Careful attention to daylighting
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Creative window placement
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Lightwell, north side
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Central courtyard
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Tree of Wisdom
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Wall composition and air barrier

1. XPS insulation
   EPDM waterproof membrane
   Crushed stone fill
2. Linoleum flooring
   Mortar for flooring
   Armed concrete slab
   PE film
   XPS insulation
   Pitching limestone
3. Drain rock
   EPDM waterproof membrane
   XPS insulation
   Armed concrete foundation wall
4. Lime mortar
   XPS insulation
   EPDM waterproof membrane
   Armed concrete foundation wall
5. Acrylic finished facade
   EPS insulation
   Armed concrete beam
   Laminated wood beam
6. Linoleum flooring
   Mortar for flooring
   OSB sheathing
   Laminated wood beam
7. Acrylic finished facade mortar
   EPS thermal insulation
   Air tightness layer
   OSB sheathing
   Laminated wood beam
8. Acrylic finished facade mortar
   EPS thermal insulation
   Air tightness layer
   Acrylic finished facade mortar
9. Artificial grass
   Mortar for flooring
   EPDM waterproof membrane
   XPS thermal insulation
   OSB sheathing
   Laminated wood beam
10. Acrylic finished facade mortar
    EPS thermal insulation
    Ceramic thermal insulation
    Acrylic finished facade mortar
    Laminated plasterboard with rockwool insulation
11. Ceramic clay building block
12. Acrylic finished facade mortar
    EPS thermal insulation
    Ceramic thermal insulation
    Air tightness layer
    Acrylic finished facade mortar
Lleida
Summer diagram

SUMMER DIAGRAM

1. Mobile roof
2. White canopy
3. Ventilated roof
4. Roof insulation U = 0.15 W/km²
5. Night ventilation free cooling
6. Ventilated facade
7. Facade insulation U = 0.2 W/km²
8. Ground thermal mass
9. Concrete wall thermal mass
10. Canadian well
11. Mechanical ventilation heatsink
12. Fixed sun protection
13. Directional slats
14. Thermal solar panel for hot water
15. Mobile sun protection
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Winter diagram
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Temperatures 2010.07.02
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Temperatures 2011.06.19-21
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Patio screens
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Patio screens
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Light well
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Light well shading
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Calderon Folch Sarsanedas
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Emphasizing outdoor living
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Applying traditional Catalan design
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Row house retrofit
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Barcelona 2
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1880s Hay Barn Retrofit

VAND arquitectura
Hay Barn
Hay Barn
Hay Barn
original barn
Hay Barn
Hay Barn
Hay Barn
Hay Barn
Hay Barn
Hay Barn
Hay Barn
Hay Barn

Wood stove and pellet boiler for heat
Hay Barn
Winter garden
Hay Barn
Hay Barn
North facing facade is cozy
PassivHaus Sevilla
Arquitecto Costano
PassivHaus Sevilla

Elevation, row house
PassivHaus Sevilla
Courtyard from above
PassivHaus Sevilla
Winter strategy
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Summer strategy
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Interior courtyard light well
PassivHaus Sevilla

Plans
PassivHaus Sevilla

Section

- Passive House Roof Top
  - Closed in Winter: Greenhouse Effect
  - Open in Summer: chimney effect / cold well effect

- Plants Around Patio: Evaporative Cooling

- Thermal Bridge Free Construction

- Active Sun Cooling and Heating
  - Cool/Hot Water Inside Concrete Slab

- Big Patio Windows
  - To Maximize Natural Light

- Many Windows Can Be Opened
  - Maximize Natural Night Ventilation in Summer

- Water Flowing in Patio
  - Evaporative Cooling

- Heated Basement

CROSS SECTION THROUGH PATIO
Casa Passiva growing in Spain
Plataforma de Edificación Passivhaus
PASSIVE HOUSE
IN DIFFERENT CLIMATES
THE PATH TO NET ZERO

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The Places and Architects

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