

productive architecture
Project Portfolio 2010

**Kiss +
Cathcart,
Architects**

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ijsselstein rowhouses



Kiss + Cathcart worked with a team of Dutch architects and planners in developing a new standard for moderate-cost, solar-electric housing. These rowhouse units were built in a “new town” development in the Netherlands, and conform to strict space and budget guidelines.

The photovoltaic (PV) panels are integrated into raised two-level sunrooms, and take advantage of the fact that, at high latitudes, vertically-oriented PV panels are efficient. The panels are interspersed with glass, wood, and translucent materials in a wood frame. Solar thermal panels for hot water are also integrated into the wall.

PV use in the Netherlands is among the most advanced in the world, and it is a special honor to have Kiss + Cathcart’s expertise in design and solar technology recognized there.



The Client:
Thomasson Dura

The Team:
Kiss + Cathcart, Architects
Han Van Zwieten, Architect

Project Details:
\$12,000,000
20,000 sf
Completed 2002



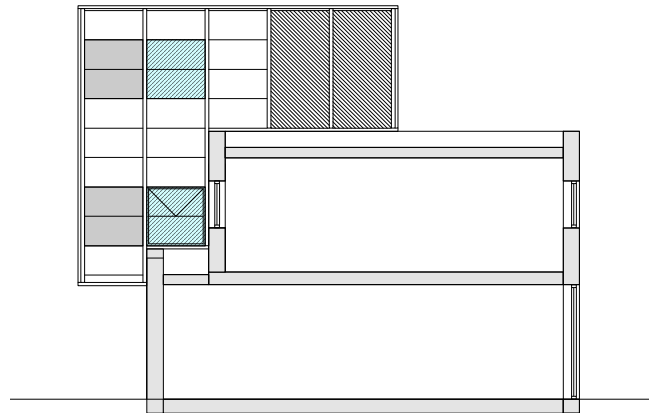
ijsselstein rowhouses



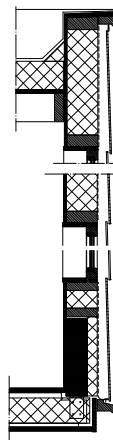
Site

IJsselstein is a small town in central Holland, near Utrecht. The old town of IJsselstein was expanded in the early 2000s with a new town development of 15,000 units. As is typical in the Netherlands, the community was designed to offer high density, a variety of housing typologies, and an integrated transportation network of roads, pedestrian and bicycle paths, connected to the rail system. In addition to large scale design themes of water and land, the master plan specified a mixture of housing costs. Our 14-unit site was designated to be among the lowest cost in the development.

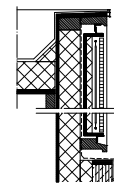
This project was a close collaboration between Kiss + Cathcart and Han van Zwieten, architect



Section through a unit. Gray tone is semi transparent PV; white is standard PV; blue hatch is clear glass; hatch is solar thermal.



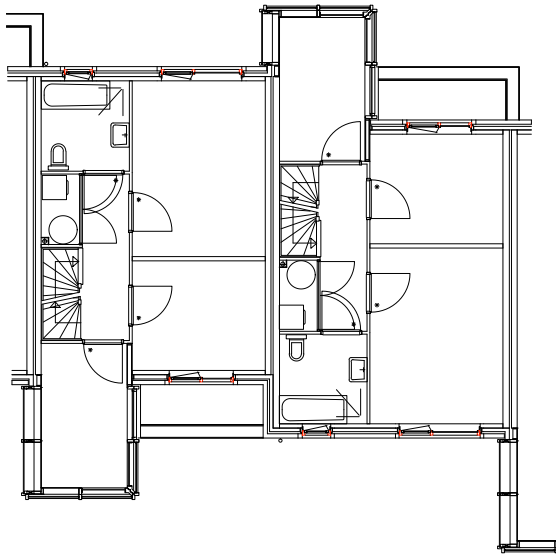
Section through top of PV rain screen.



Rain screen section at solar thermal panel.

Rain screen section at fixed window with clear glass shingle in front.





Typical plan - two units.

Landscape

The fourteen units face a hardscape court on the east, with automobile access and parking in a hardscape landscape. To the west is the bicycle and pedestrian networks, with separate access to the units. Each unit also has an individual bicycle storage “barn”. This side of the project is more intensively vegetated.

Materials

The building is brick-clad with the two story “solariums” clad in an innovative wooden curtain wall which incorporates a photovoltaic rain screen, integral solar thermal panels, and both fixed and operable clear glazing, and special first-of-their-kind semi transparent photovoltaic glazing.

Energy

Each unit integrates PV glazing into three of the vertical faces of the solarium units (all sides except North). At the high latitude of IJsselstein, the vertical PV application works relatively well, and the superior performance of the amorphous silicon PVs in a Building Integrated PV application: better performance at high temperatures and low light levels. This was the first time they were used in a building project in Holland

Water

The wooden curtain wall also integrates vertically-mounted solar thermal panels to produce domestic hot water with little or no backup heat.



PV rain screen cladding on a Solarium



Detail of wood curtain wall and PV shingle connection under construction



View from top floor solarium.



Solarium interior showing semitransparent PV glazing (between glass windows.)