

VELUX®

ZERO ENERGY

Row Houses in Dronten, The Netherlands





A CHALLENGE FROM THE LOCAL AUTHORITY

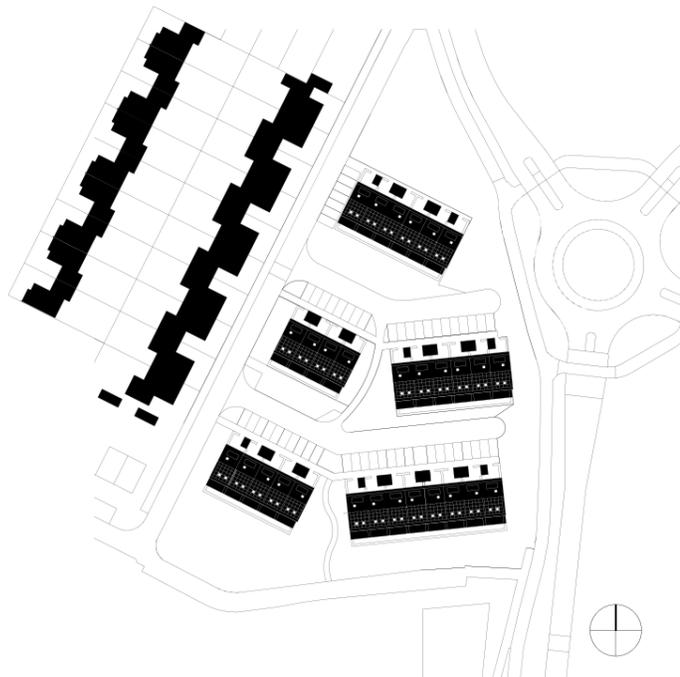
'Gildenhof' is one of a kind. Indeed, it is the first project in Flevoland to feature homes that generate as much energy as their residents use. The project initiator is IJsselland Ontwikkeling. As in previous projects, this property developer collaborated closely with FIER architects and Bouwbedrijf De Bruin-Putten.

"The local authority had a gap in their zoning plan; a site for which 93 flats had originally been planned. However, the project never got off the ground. The local authority then approached us with the challenge of realising a unique project in its place. The only guiding principles were that the homes had to comprise houses - as opposed to flats - and be aimed at first-time buyers."

Frans van de Wetering, IJsselland Ontwikkeling

STARTER HOMES FREE FROM ENERGY COSTS

It was ultimately decided to build 29 energy-neutral homes, with a starting price of €169,000. Energy neutral implies that the houses generate at least as much energy as a model family requires for normal residential use.



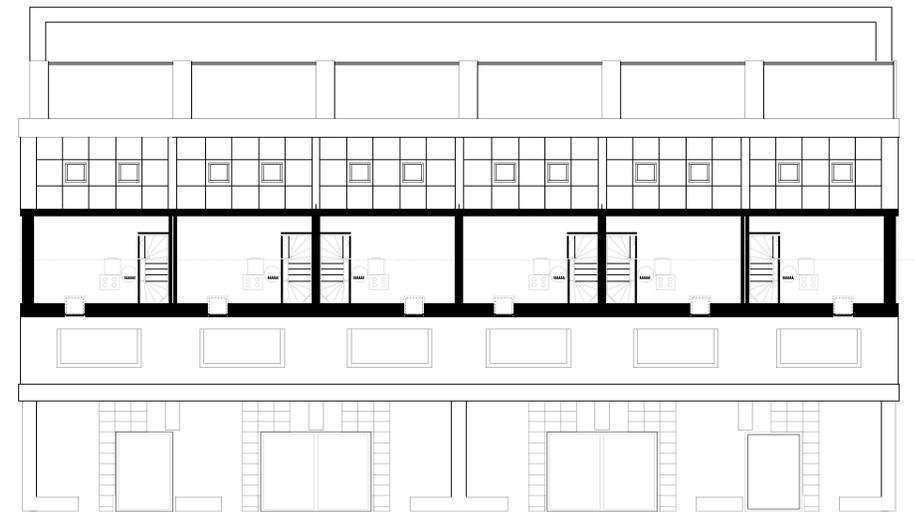
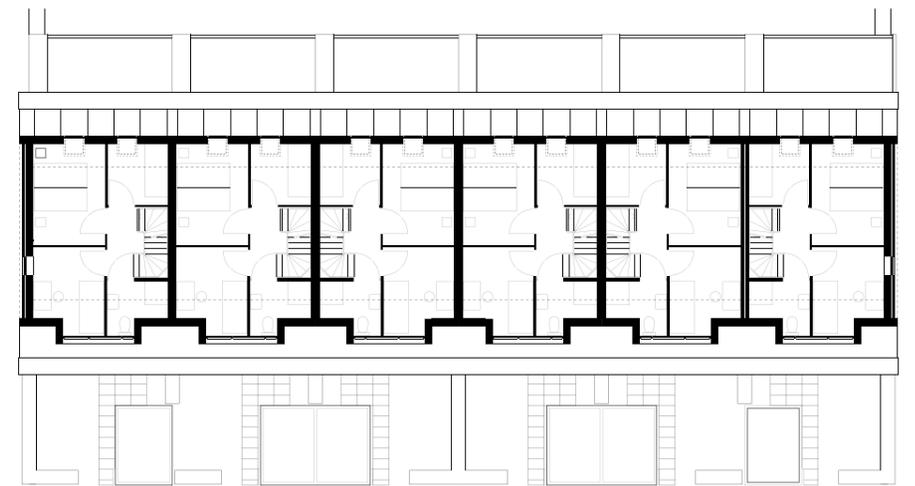
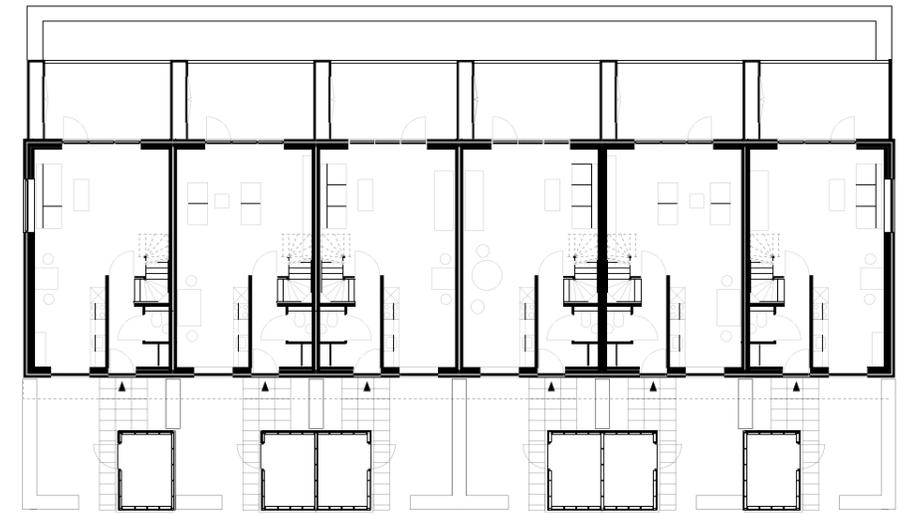
"That's an attractive prospect for first-time buyers, because it eliminates their energy costs. It also makes it easier to secure a bigger mortgage."

Frans van de Wetering, IJsselland Ontwikkeling





Floorplans of a 6-unit row.
From above groundfloor, first floor
and attic. In front of each house
there is a storage unit, the tiny
garden is partially a winter
garden. The division walls
between the gardens are at the
same time storage space.



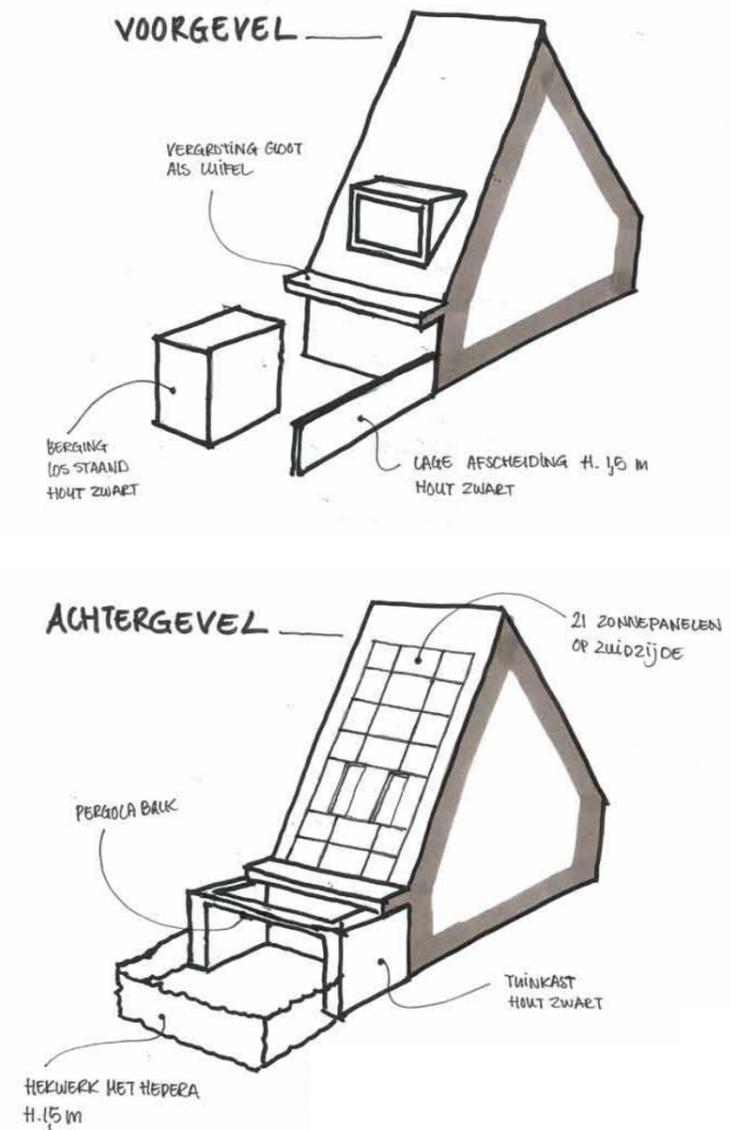


DAYLIGHT IN "ZERO ENERGY" HOMES

Solar PV panels are a fundamental component in many energy-neutral homes.

The same holds true for the 29 properties in 'Gildenhof', a new residential development in Dronten. Each house is equipped with 23 solar panels. These are essential for the energy supply, yet present a considerable challenge when it comes to ensuring sufficient daylight in the rooms behind them. How do you create an affordable, energy-neutral home that is also comfortable to live in?

The construction team responsible for the Gildenhof project turned to VELUX in search of the answer. Together, they devised a suitable solution using roof windows that are seamlessly aligned to the roof-integrated solar panel system in order to guarantee optimal daylight.



SOLID PREPARATION, COOPERATION AND COORDINATION

Energy-neutral construction demands that little bit extra from the design, installations and construction technique.

Amongst other things, it meant that we had to build properties that were airtight. During the preparation phase, you have to thoroughly consider critical details, such as the airtightness of roof windows, and also test this throughout the process.”

Thom Grevengoed, Bouwbedrijf De Bruin-Putten B.V.:

And effective coordination between the various stakeholders is key. “When building energy-neutral homes, all stakeholders must simultaneously harness their individual disciplines in order to achieve the ultimate product. Installation consultant, Breman Hasselt, was directly involved in the project for precisely this reason. With traditional building projects, you work step by step. First the architect does his job, followed by the consultant and then the contractor, etc. The installations are a sort of add-on, so to speak. With energy-neutral construction, the shell and installation requirements determine the actual design, and everything has to be integrated with this.”

Willem-Alex Jansen, FIER architects:



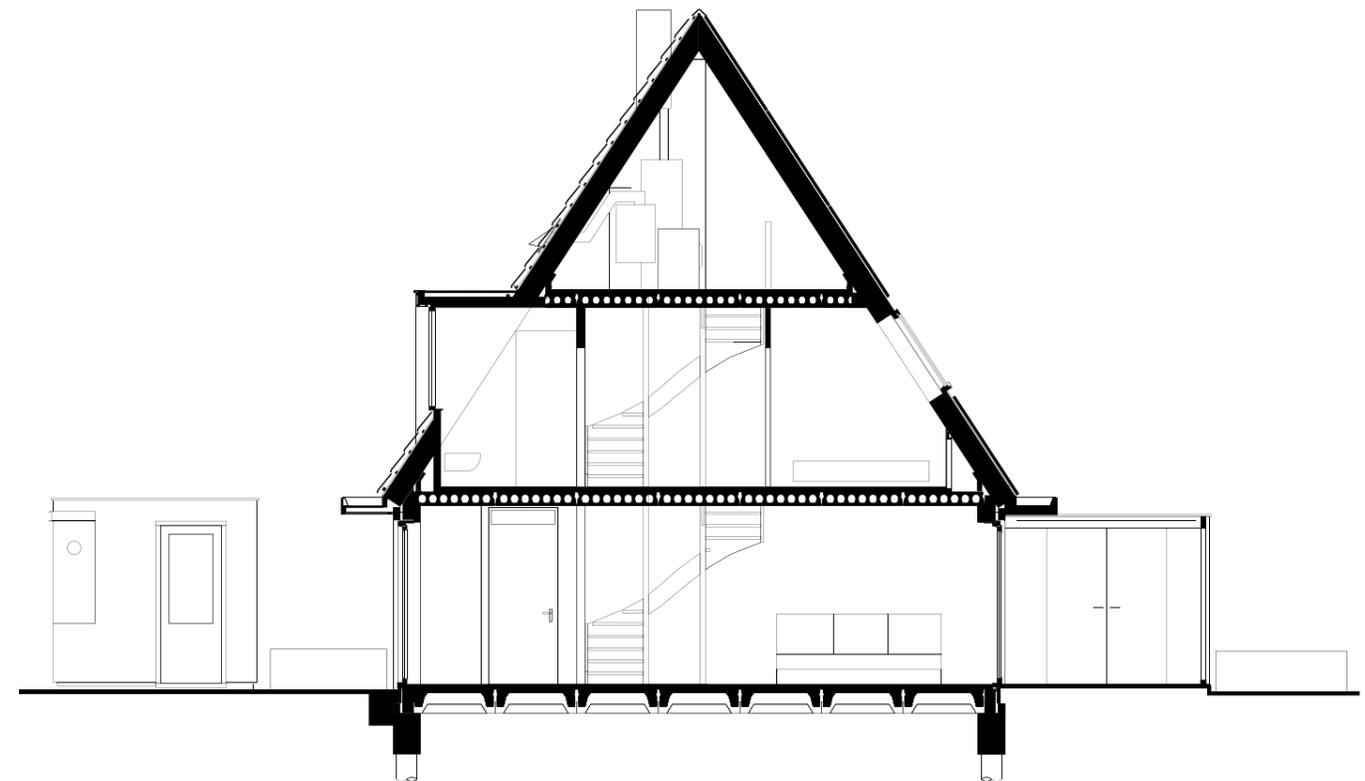


SOLAR PANELS EMBEDDED IN THE DESIGN

The houses boast an airtight shell, high-performance insulation and a heat recovery system based on a heat pump boiler. This heat pump boiler is powered by the 23 solar panels with which each home is equipped.

"The available land had not yet been divided into plots. This allowed us to position the houses in a way that created an open structure in conjunction with the adjacent residential area. The houses are also positioned to optimally benefit from the sun. Solar PV panels were a good match to the project's budget constraints. From the moment it became clear how many panels were required to satisfy the energy demand and how many roof windows would provide sufficient daylight, I set to work on the drawings. We ultimately devised a roof-mounted solar panel system as an integral part of the design."

Willem-Alex Jansen, FIER architects



SPECIALLY DEVELOPED ROOF WINDOWS

The roof windows were a key consideration in the design. These had to provide sufficient daylight, be seamlessly integrated into the roof-mounted solar panel system, be airtight, aesthetically appealing and also benefit from the police-approved 'Safe Housing' label. Two roof windows per home guaranteed the requisite daylight in the rooms immediately below the roof.

"We regularly sat around the table in order to come up with this exclusive product. For example, a modification was required to enable the roof window to be integrated with our chosen GSE mats, which are fitted beneath the solar PV panels. We also paid considerable attention to detail in terms of the "airtightness" requirement. Naturally, everything had to be seamlessly integrated. The roof windows were equipped with exterior blinds as standard, making a positive contribution to the EPC (Energy Performance Coefficient) calculations.

I was also impressed by the way in which VELUX incorporated police-approved "Safe Housing" locks into their roof windows. The result is impressive. In my opinion, the roof couldn't be any more pleasing to the eye."

Thom Grevengoed, Bouwbedrijf De Bruin-Putten B.V.:



"The construction sector is increasingly involved in near zero-energy construction. This project was extremely instructive and now serves as an excellent calling card for other clients. I'm delighted that all the individual pieces of the puzzle came together so well. We were aiming for comfortable, near zero-energy homes that benefit from sufficient daylight, attractive architecture and were affordable for first-time buyers. And we have thoroughly succeeded."

Frans van de Wetering















PROJECT DATA

Project: 29 row houses
Location: Gildenhof, Dronten, Netherlands
Architect: FIER architecten, Nijkerk
Client: IJsselland Ontwikkeling
Installation consultant: Breman Hasselt
General Contractor: Bouwbedrijf De Bruin-Putten

Photos: Kasia Jackowska



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