

SUSTAINABLE MONUMENT DRIEBERGEN

Title	Energy neutral monument Driebergen
client	Particulier
Extern project manager project team Zecc	Construction, Liesbeth Wassenberg, www.bouwvrouw.com Marnix vd Meer, Bart Kellerhuis
period	january 2009 - november 2010
special	Transformation villa into first energy neutral monument of the Netherlands

General

In Driebergen (NL) there is a monumental villa. The owners had the ambition to not only restore the monument, but also turning it into a state-of-the-art energy neutral building at the same time. OPAi developed the energy concept for the house. This would be the first energy neutral monument of the Netherlands (or even outside of the Netherlands).

Zecc architects had the task to unite this energy concept into this existing monument and expand the house on the back.

In every operation we have to weigh by either preserving its monumental expression or focusing on the energy concept. There is not a certain way in this process. Every monument have to be investigated to be able to measure its monumental qualities in relation to the necessary interferences.

It makes people think about how to deal with monuments in relation with sustainability.

This combination will be more important in the future , that is why this project is of great importance.



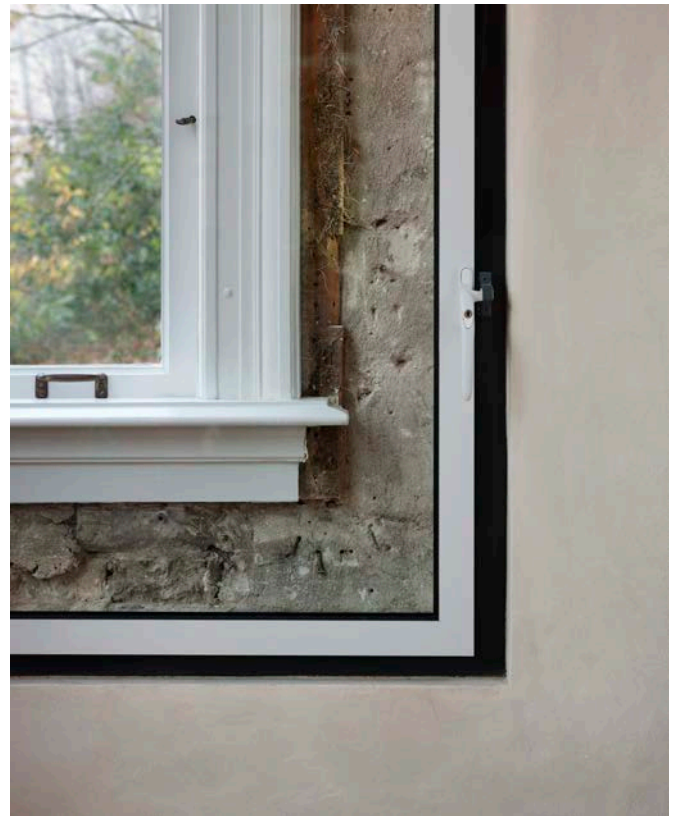
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The logo for ZECC, featuring the letters 'ZECC' in a bold, black, sans-serif font. The 'Z' and 'E' are connected, and the 'C' and 'C' are also connected. The logo is positioned on the right side of the page.

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Monumental Value

In the villa on the Diederichslaan 12 time has stood still. From the outside the house has something mysterious because of the large trees in the background and the lack of maintenance. The house has a solid front to the street and looks bigger than it really is. Once inside you go back nearly one hundred years in time. All original elements are still present in good condition. Only a thin layer of paint covers the wooden frames and profiling. Old glass ventilation slats provide plenty of fresh air. The radiators betray a change in time; the existing chimneys are fallen into disuse. By this sustainable renovation the heating of the house changed again: pipes in walls and floors heat the house at low temperature. All new installations and architectural additions reflects the reversibility. By changing vision in the future, the house can be returned into its original condition. The additions are clearly readable in material and details. This creates a beautiful stratification of the historic house.



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The energy concept

OPAI (One Planet Architecture institute) has invented the energetic concept, which made the house energy neutral. By using a heat pump, a buffer-barrel and ground collectors geothermal energy is used for heating the house. The house is heated by floor and wall heating and with a "heat pump boiler" hot water is made. The electricity needed for the heat pump is obtained from PV solar panels on the roof of the main house and the new extension. On sunny days, this energy is supplied to the public network and on dark days energy will be extracted from the public network. The entirety is energy neutral, but the house stays connected to the electricity network. To reduce heat losses, the house is isolated with sustainable materials.



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Translation energetic concept and fitting into the monument

On the flat roof of the new extension solar collectors are placed, while the high installation technique is placed in the basement of the extension. The new construction as a metaphor for the infusion which is connected with the monument: the old villa becomes supplied with new energy. The solar panels are placed on the rear roof of the villa despite objections from the monument committee. Only with these panels, the ambition for an energy neutral monument could be received. Fortunately, they are completely out of the sight and together with the panels on the roof of the new extension the necessary electricity is provided.



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Materialization

The stately façades of the villa are on the inside provided of reed mats, clay plaster, wall heating and insulating secondary glazing. At the back side of the villa there is chosen to isolate the outside to save valuable historic details in the stairwell. By making the conversion glazing bigger than the old wooden frames a part of the masonry of the original façade remains visible. The new insulation layer is kept visually separate from the monument. The wooden roof is insulated with flax. There are always 'breathable' materials used that don't choke the house. This prevents condensation which would lead to rot beam ends. This method of post-isolation is often applied with framework house in Southern Holland and Germany. There was much attention for retaining the original detail and the reversibility of new interventions by the insulation and extra glazing. The additions are readable in the different building layers. This makes the plan also on the level of detail a clear historical-architectural stratification.



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Division main house and new extension

The main house remains nearly in original state in terms of division: a corridor at the back with beautiful stately rooms located at the street. By the original dense corridor zone, the house lacks a qualitative connection with the garden. The original small kitchen and a later established development hindered the relationship between living room and garden. The old extension was of poor structural condition and of limited monumental value. The owners wanted a large kitchen and light dining room overlooking the garden. Exactly these functions in the new plan became the link between living room and garden. With a new extension the corner of the monument opened where old and new come together. The new isolated back façade is in its style one entity with the extension, so the villa gets multiple faces. Turning from traditional in the front to modern at the back. The finish of the new facades is plaster with crushed bricks from the demolished extension.





Future vision Zecc

Zecc is experienced in the restoration of monuments and re-use of cultural heritage. In previous years we worked primarily from two objectives: preserving the monument and give a second live by a contemporary adaptation/addition. With the villa in Driebergen our vision is enriched by a third objective: How do we make a monument also energetically ready for the future? There is no standard recipe for it. For each monument a new balance has to be found between an energetic concept and the monumentality of the building. Careful considerations will be made in the choice of materialization, detailing and the accommodation facilities.

For the future, Zecc sets a clear objective: How to build aesthetic, functional and durable simultaneously? Combining these three principles often seems like an impossible task. Just in this lies the power of Zecc. We call it GROUNDED ARCHITECTURE.

grounded architecture

The strenght of a tree equals the depth of its roots. Our architecture is the same. Architecture with a strong foundation. With deep roots. Since these bring forth the most wonderful ideas. 'The deeper the roots, the higher the vision.'

Info en Contact

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