




Passive Witness House CLK

by [Laura Varisano](#) / 2018-06-15 11:06:36 / Luxembourg / 16472 / FR



Primary energy need :
27.8 kWhep/m².an

(Calculation method : RGD du 30 novembre 2007 - bâtiment d'habitation)

ENERGY CONSUMPTION

Economical building

< 50	A	Building A
51 à 90	B	
91 à 150	C	
151 à 230	D	
231 à 330	E	
331 à 450	F	
> 450	G	

Energy-intensive building

Building Type : Isolated or semi-detached house
Construction Year : 2016
Delivery year : 2017
Address 1 - street : 8818 GREVELS, Luxembourg
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 179 m² SHON RT (fr)
Construction/refurbishment cost : 525 000 €
Number of Dwelling : 1 Dwelling
Cost/m² : 2932.96 €/m²

Certifications :



Proposed by :



General information

Being heavily involved in passive constructions, we wanted to create a thoughtful and sustainable building. We equipped our control house with a complete EnOcean wireless home automation system. This innovative technology works without any battery or wiring. The energy recovered during the manipulation is enough to emit a radio signal, which makes it possible, for example, to turn on the light. Products and systems with EnOcean technology are perfectly integrated into the usual home automation systems, regardless of whether these systems communicate via LON, KNX, BACnet, TCP / IP or Ethernet. This allows the implementation without much work of the concepts of sustainable energy management.

Data reliability

3rd part certified

Stakeholders

Contractor

Name : CLK Constructions

Contact : Brigitte Brouwers - brigitte.brouwers@clk.lu - 888201

<http://www.clk.lu>

Construction Manager

Name : CLK Constructions

Contact : Brigitte Brouwers - brigitte.brouwers@clk.lu - 888201

<http://www.clk.lu>

Stakeholders

Function : Designer

Bureau d'Architecture Urbaine SARL

Radu Axinte

Realization of architectural plans

Function : Company

rms.lu

Claude Goetz et Carlo Posing

<http://www.rms.lu>

Implementation of the home automation system

Contracting method

General Contractor

Owner approach of sustainability

The goal was to build an avant-garde house that reflects the philosophy of the company: our wish was to have an energy-efficient house, with efficient materials, photovoltaic panels, solar thermal panels, a powerful heat pump, all with an extremely well insulated energy envelope and a perfect airtightness ($N50 = 0,26h-1$). We also wanted this house to be sustainable, which is why we used EPFC certified materials and a rainwater recovery system.

Architectural description

We wanted a very modern architecture by highlighting the assets of the house which has an exceptional view to the back. All living rooms have been oriented so you can enjoy this view. We have created the space in such a way that the intimacy of the occupants is respected while keeping passive requirements in mind. The house consists of large open spaces, beautiful ceiling heights, a skylight in the kitchen and large windows.

Energy

Energy consumption

Primary energy need : 27,80 kWh_{ep}/m².an

Primary energy need for standard building : 45,00 kWh_{ep}/m².an

Calculation method : RGD du 30 novembre 2007 - bâtiment d'habitation

Final Energy : 35,00 kWh_{ef}/m².an

Breakdown for energy consumption :

Heating installation: 1071 kWh

Domestic hot water preparation: 681 kWh

Envelope performance

More information :

Insulating facade value U 0.12 W / m2K
Slab against earth value U 0.08 W / m2K
Ceiling attic height U 0.07 W / m2K
Chassis: Ug 0.5 W / m2K; Uf 1,1 W / m2K

Indicator : EN 13829 - n50 » (en 1/h-1)

Air Tightness Value : 0,26

Users' control system opinion :

We chose this type of installation to match our ecological fiber and to limit electromagnetic waves as much as possible. By this system, we have much less electrical wiring, no batteries and radio waves propagate only during the fraction of a second during which we press the push button.

We can at any time on our Gsm by a very intuitive application to control the shutters, turn on the lights. We use it mainly to simulate our presence when we are traveling and returning later than expected. But we also use it for ease when we are in the couch.

Being able to check at all times that the windows and doors are closed is very reassuring as well.

The weather station also protects our house from overheating and lowers the blinds from the indoor temperature we choose. With indoor temperature and humidity probes and outdoor temperature and temperature sensors, we can regulate and control everything.

Now that we have got used to it, it would be difficult for us to do without it.

Renewables & systems

Systems

Heating system :

- Heat pump
- Low temperature floor heating
- Solar thermal

Hot water system :

- Heat pump
- Solar Thermal

Cooling system :

- Others

Ventilation system :

- Double flow heat exchanger

Renewable systems :

- Solar photovoltaic
- Solar Thermal
- Heat pump

Renewable energy production : 100,00 %

Smart Building

BMS :

Transverse energy optimization: automatic shutter closure

Recovery of free energies: recovery of rainwater

Home automation system: EnOcean, with a clean energy consumption of almost zero

Easy management of the temperature of the parts, control of the closing of the chassis, understanding and warning in case of water leakage.

Smart Grids planned to work with self-produced electrical energy storage systems

-relative energy

-power supply

-energy production

-etc.

Smartgrid :

Home automation allows the monitoring of the production and consumption of the whole installation: photovoltaic panels, technical, ventilation, production, rest of the house for electricity, as well as consumption of rainwater and city water . Possibility of making data available in the cloud.

GHG emissions

GHG in use : 5,60 KgCO₂/m²/an

Methodology used :

CPE Energy Performance Certificate

Life Cycle Analysis

Eco-design material :

Lifecycle and durability analyzes as well as deconstructability analyzes were calculated according to the Luxemburg Lenz reference system.

Water management

No sufficient return on the building at the moment as it is our Witness House.

10 000 l cistern in operation.

Products

Product

Motiv340 swing door

DANA

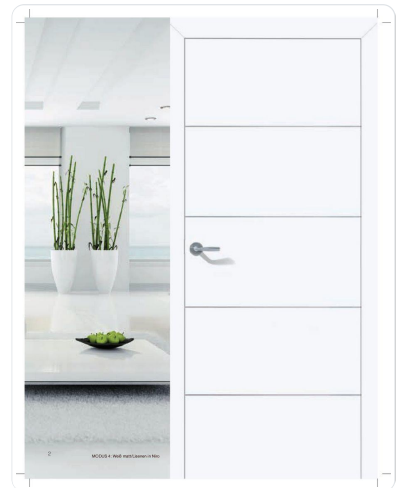
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<http://www.dana.at/>

Product category : Finishing work / Millwork - Hardware

White lacquered wood door, honeycomb core with slightly rounded door frame and linear hollow pattern

It was important for us to work with quality materials, which is why we chose these eco-certified doors.



Oak Rome

HQ

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[-](#)

Product category : Finishing work / Millwork - Hardware

oak engineered hardwood floor "eiche rom" rustic look

It was important for us to work with quality materials, which is why we chose this eco-certified parquet.



Sylitol® organic interior paint

Caparol

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<http://www.caparol.de>

Product category : Finishing work / paints, mural, wallcoverings

High quality interior silicate paint, solvent free. Suitable for use in spaces used by allergic patients.

The interior painting is one of the elements with which the occupant is in direct contact and the non-harmful character is very important in this respect.



NodOn

NodOn

contact@nodon.fr

<https://nodon.fr/>

Product category : Finishing work / Electrical systems - Low and high current

The combination of miniature energy harvesting modules and ultra-low power radio technology makes it possible to offer innovative sensors that require no maintenance. These self-powered switches and sensors therefore operate wirelessly and offer unparalleled flexibility of use as well as increased time and energy efficiency. All while limiting investment and operating costs. Wireless, self-powered sensors and switches using the EnOcean wireless standard are an ideal solution for sustainable building applications. This power supply by movement, light or temperature makes cables and batteries for switches unnecessary, as well as for collecting information from sensors such as: Temperature, water or presence sensors. The sensors and actuators can communicate directly with each other and / or can be controlled by a controller / gateway placed in the room via a cloud interface for applications requiring remote management and control via a computer or smartphone.



Vitocal 242-S compact heat pump unit

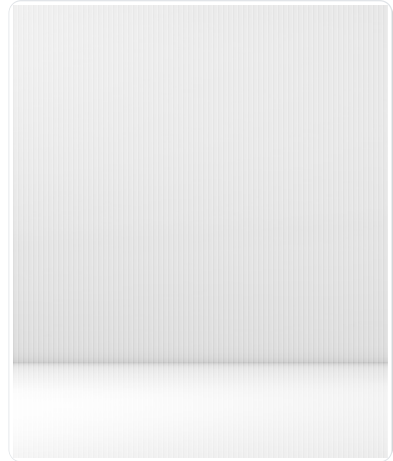
Viessmann

Christian Haus - hauc@viessmann.com

<http://www.viessmann.lu>

Product category : HVAC, électricité / heating, hot water

Split version System combination with Vitovent 300-F home ventilation system with central control unit for heating, hot water, solar system and ventilation



Solar flat plate Vitosol 200-FM

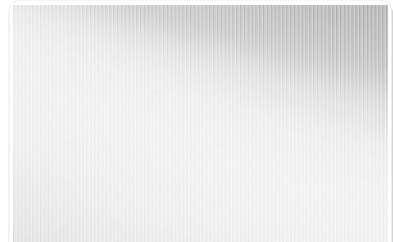
Viessmann

Christian Haus - hauc@viessmann.com

<http://www.viessmann.lu>

Product category : HVAC, électricité / heating, hot water

for DHW heating, with overheating protection ThermProtect



Costs

Construction and exploitation costs

Renewable energy systems cost : 46 764,80 €

Subsidies : 20 468 €

Urban environment

Our house is located in Grevels, part of the municipality of Wahl in the canton of Redange.

Land plot area

Land plot area : 934,00 m²

Built-up area

Built-up area : 18,00 %

Parking spaces

A garage (2 cars) + outside parking

Building Environmental Quality

Building Environmental Quality

- indoor air quality and health
- water management
- energy efficiency
- renewable energies
- products and materials

Contest

Reasons for participating in the competition(s)

La technologie EnOcean permet une maison connectée intelligente. Cette intelligence est invisible, elle avertit et permet également de contrôler les données, ceci en ne consommant aucune énergie et en émettant moins d'ondes. Cette technologie nécessite moins de matières premières (pas de piles, moins de câbles) et permet une grande modularité, c'est-à-dire que la maison évolue selon les besoins de ses habitants. Enfin, la maison intelligente permet de grandes économies d'énergie grâce notamment à la gestion de la surchauffe et à la fermeture automatique des volets ou encore à la gestion des températures des pièces ainsi qu'au contrôle de la fermeture des châssis. D'autre part, la maison intelligente permet également une meilleure compréhension des habitudes de vie via les données.

Voici les fonctionnalités qui ont été intégrées dans la maison témoin:

- *l'économie d'énergie*
- contrôle de la température
- Contrôle des consommations / productions
- Ombrage intelligent
- Abaissement cohérent des stores
- Éteindre systématiquement les lumières
- *sécurité*
- éteindre tout
- Contrôle des ouvertures de fenêtres et portes
- Simulation de présence
- Alarm
- *Confort*
- Visualisation centrale et contrôle de l'ensemble de l'installation électrique
- Contrôle des éclairages chronométré
- Ombrage automatique
- contrôle de scènes
- Positions programmables pour stores et volets
- *Opération*
- PC avec/sans Touchscreen
- Applications sur Tablette
- Applications sur Smartphone
- Pilotage à distance
- Commande vocales

Building candidate in the category



Building candidate in the category



Smart Building



Coup de Cœur des Internautes

