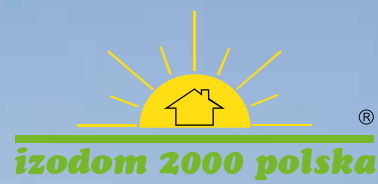


# IZODOM

# CASE STUDIES

13 PROJECTS  
IN 7 COUNTRIES  
BASED ON THE IZODOM  
TECHNOLOGY



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Izodom is a family company with 25 years of experience. It specialises in energy-efficient construction solutions. We export more than 90% of the manufactured products to Scandinavian and West European markets. So far, the Izodom technology has been used to construct 18,000 buildings worldwide.

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[http://www.download.izodom.pl/Izodom\\_case\\_study\\_catalog\\_EN.pdf](http://www.download.izodom.pl/Izodom_case_study_catalog_EN.pdf)



#### **IZODOM 2000 Polska Sp. z o.o.**

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[www.pasywnedomy.eu](http://www.pasywnedomy.eu)

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Share capital PLN 2,646,600



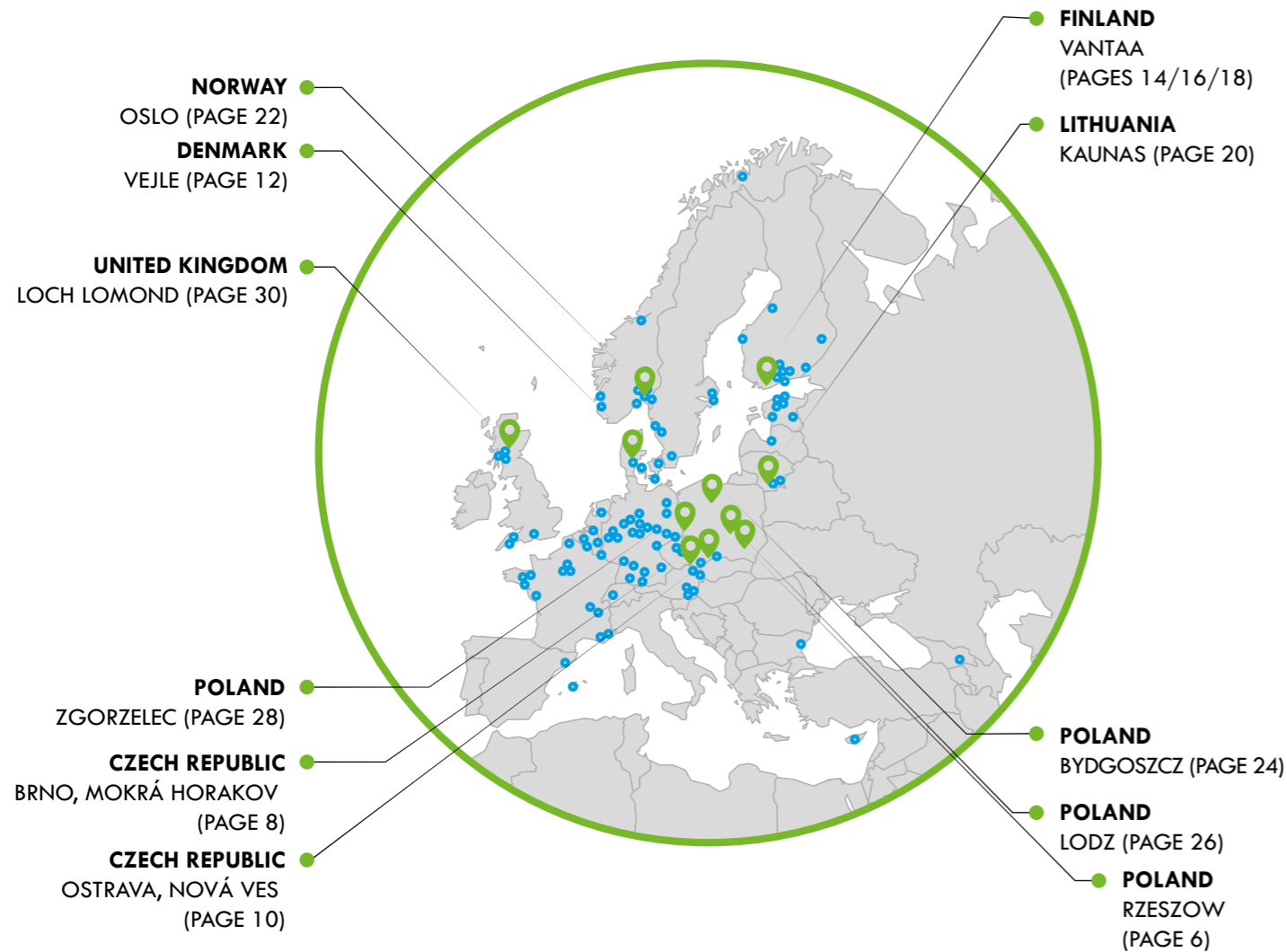
Izodom is a construction material manufacturer operating in the market for over 25 years. During this time we have assisted in the completion of over 18,000 projects worldwide. Izodom buildings can be found on every continent (except for the Antarctica). Each of the projects completed is unique and different but all of them have one common feature: all the buildings are energy efficient and the construction time is much shorter in comparison to the conventional building system. Izodom also makes sure that all the materials comply with the latest standards. Among others, we are a part of “Caring for Climate” United Nations environmental initiative, EU Gateway Programme by the European Commission and “Greenevo Technology Accelerator” awarded by the Polish Minister of Environment. Since 2007 our products have been fully certified on the territory of the European Union based on “ETA-07/0117”. Izodom is also a Passive Building Ambassador with the Passivhaus Institut in Darmstadt.

This catalogue is a set of the best case studies from all over Europe, which presents different approaches in achieving low energy consumption in houses that are designed and executed in the Izodom technology. The presented projects vary from traditionally looking buildings. They constitute state-of-the-art constructions, which not only fulfill passive house requirements but also feature excellent aesthetic values and follow the latest architectural trends.

Should you wish to join a network of over 500 business partners worldwide, please do not hesitate to contact us.

**Andrzej Wojcik**  
**Izodom CEO**

**IZODOM  
EUROPEAN  
PASSIVE HOUSES**



● IZODOM CASE STUDIES
 ● IZODOM PROJECTS

**ARCHITECTS  
by country**

**Czech Republik**

**Ing. Petr Šoukal**  
[www.rejstrik.finance.cz/13669702-ing-pe-tr-soukal](http://www.rejstrik.finance.cz/13669702-ing-pe-tr-soukal)

**STUDIO ATRIUM Lelek, Godlewski sp. j.**  
[www.studioatrium.pl/](http://www.studioatrium.pl/)  
[atrium@studioatrium.pl](mailto:atrium@studioatrium.pl)

**Denmark**

**PlusEnergiByg A/S**  
[www.plusenergibyg.dk](http://www.plusenergibyg.dk)  
 7100 Vejle, Syddanmark

**Karolina Nesterowicz**  
[www.karolinas.dk](http://www.karolinas.dk)  
[karolina.nesterowicz@hotmail.dk](mailto:karolina.nesterowicz@hotmail.dk)

**Finland**

**HRT Group Ltd**  
[www.hrt.fi](http://www.hrt.fi)  
 Avainkierto 21, 05840 Hyvinkää, Finland

**Arkantti Ltd.**  
[www.arkantti.fi](http://www.arkantti.fi)  
 Ruosilankuja 3, 00390 Helsinki, Finland  
 Building architect - Seppo Saulamaa  
[seppo.saulamaa@gmail.com](mailto:seppo.saulamaa@gmail.com)

**Architects Alpo Halme Ltd**  
[www.halmeacoustics.fi](http://www.halmeacoustics.fi)  
 Norotie 7, 01600 Vantaa, Finland  
 Eija-Halme Salo Architect SAFA  
 Architectural designer's registry:  
 Architectural ARK member number  
 1139; acoustic FISE designer AA  
 difficulty category, contact:  
[eija.halme-salo@halmeacoustics.fi](mailto:eija.halme-salo@halmeacoustics.fi)

**Certek Ltd.**  
[www.certek.fi](http://www.certek.fi)  
 Koivurinne 15d, 01680 Vantaa, Finland  
 Hannu Järvi Measuring the tight-  
 ness of VTT-person certificate VTT-  
 -C-8128-31-12, [hannu.jarvi@certek.fi](mailto:hannu.jarvi@certek.fi)

**Lithuania**

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 Architect, project architect  
[www.vytatanas.lt](http://www.vytatanas.lt)  
[vytatanas@gmail.com](mailto:vytatanas@gmail.com)

**KA Projektai, Ltd.**  
[www.energinisertifikavimas.lt](http://www.energinisertifikavimas.lt)  
 Savanorių pr. 192-309, Kaunas

**Andrew Kirklys**  
 expert of building energy performance  
 certification (Certificate No. 0314)  
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 1387 Asker, Norway  
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**Poland**

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**BXBstudio Bogusław Barnaś**  
[www.bxbstudio.com](http://www.bxbstudio.com)  
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**United Kingdom**

**Econect**  
[www.econect.co.uk](http://www.econect.co.uk)  
 2 Simpson Court Clydebank  
 Glasgow, G81 2NR, UK

## POLAND RZESZÓW

What: **Single-family house**<sup>[1]</sup>  
 Function: **Residential**  
 Where: **Rzeszów, Poland**  
 Client: **Private customer**  
 Architect: **BXBstudio Bogusław Barnas**<sup>[2]</sup>  
 Execution: **self-built**  
 Energy calculations: **N/A**  
 Area of the building: **215 m<sup>2</sup>**  
 Total construction time: **N/A**  
 Construction commencement: **2011**  
 Habited since: **2015**  
 Approximate construction cost (installations excluded): **N/A**



1.34 €/m<sup>2</sup>  
energy cost  
per year

80%  
savings on  
hot water and  
heating bills

### Izodom elements:

**FLP** ( $U_0=0.09 \text{ W/m}^2\text{K}$ )  
 Peripor (ground slab)

**MC 2/45** ( $U=0.10 \text{ W/m}^2\text{K}$ )  
 Neopor (wall elements)

### Outside walls:

**$U=0.10 \text{ W/m}^2\text{K}$**

### Made of the Izodom system:

- plaster rendering
- 150 mm polystyrene (Neopor)
- 150 mm in-situ cast concrete
- 50 mm polystyrene (Neopor)
- 12.5 mm plaster board
- finish

### Basement floors to the ground:

**$U=0.10 \text{ W/m}^2\text{K}$**

### Made of the Izodom system:

- floor covering
- compressed sand and gravel
- 250 mm ground slab insulation formwork (the Izodom system – Peripor)
- DPM
- 250 mm reinforced concrete
- floor finish

**Roof:** flat roof with water collection system (no other information available)

### Ecological solutions applied in the house:

- Water collection system from the roof (volume: 1,000 m<sup>3</sup>) (water will be used in the garden and for other sanitary purposes)
- Water treatment plant installed on the plot

**Main heat source:** Floor heating

**Additional heat source:** Wood burning stove (connected to the ventilation unit)

**Cooling system:** none

**Ventilation:** Mechanical with a heat recovery unit

### Energy consumption per year<sup>[3]</sup>:

<15 kWh/m<sup>2</sup>

### Energy cost per year<sup>[4]</sup>:

6.04 PLN/m<sup>2</sup> (1.35 €/m<sup>2</sup>)

**Which means 80% savings on heating costs when compared to a standard building of this type.**

**Standard heating costs for the building from that time<sup>[5]</sup>: 659.26 PLN – 30.66 PLN/m<sup>2</sup>€**

**TV PROGRAMME ABOUT THE BUILDING AVAILABLE ONLINE. SEE: "DOMY PRZYSZŁOŚCI ODCINEK 3" (HOUSES OF THE FUTURE – AVAILABLE IN POLISH) <sup>[1]</sup>**



**EXTREMELY HAPPY WITH THE BUILDING AND THE RUNNING COSTS.**

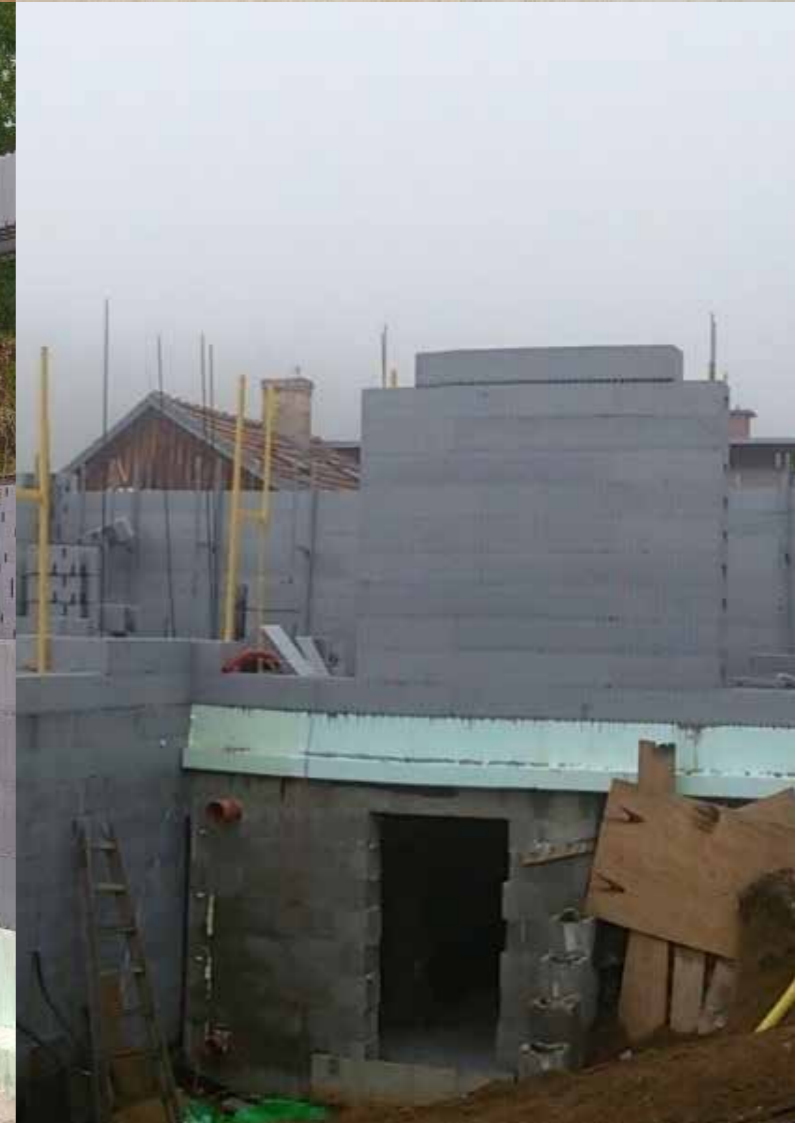
**CLIENT OPINION**

<sup>[1]</sup> Information about the building from the designer website [www.bxbstudio.com/project/14](http://www.bxbstudio.com/project/14) and from the TV program "Houses of the Future" ("Domy Przyszłości") at [www.youtube.com/watch?v=Ubk4mmNVIA](http://www.youtube.com/watch?v=Ubk4mmNVIA) (in Polish). <sup>[2]</sup> Available at: [www.bxbstudio.com](http://www.bxbstudio.com) <sup>[3]</sup> The estimate based on information provided by the client. <sup>[4]</sup> Costs for the entire building: PLN 1,300 (EUR 294). <sup>[5]</sup> Estimate based at [www.ag-dar.vaillant-partner.pl/kalkulatory-on-line/kalkulator-kosztow-ogrzewania-domu-i-podgrzewania-cieplej-wody-uzytkowej](http://www.ag-dar.vaillant-partner.pl/kalkulatory-on-line/kalkulator-kosztow-ogrzewania-domu-i-podgrzewania-cieplej-wody-uzytkowej) and [www.ogrzewanie.drewnozamiastbenzyny.pl/ogrzewanie-podlogowe](http://www.ogrzewanie.drewnozamiastbenzyny.pl/ogrzewanie-podlogowe) both available on 11.05.2016.

**CZECH REPUBLIC**  
**BRNO, MOKRÁ HORAKOV**

93%  
 savings on  
 hot water  
 and heating  
 bills

What: **Energy-efficient single-family house**  
 Function: **Residential**  
 Where: **Brno, Mokrá Horakov**  
 Client: **Martin Matyáš<sup>[2]</sup>**  
 Architect: **Ing. Petr Šoukal**  
 Area of the building: **80 m<sup>2</sup>**  
 Construction commencement: **July 2014**  
 Habited since: **construction not completed, uninhabited building**  
 Approximate construction costs (installations excluded): **N/A (building not completed)**  
 Man-hours necessary to build 1 m<sup>2</sup>: **N/A**  
 Time for Izodom construction of 1 storey<sup>[3]</sup>:  
 - Foundation – 2 days  
 - External walls – 3 days  
 - Floor – 2 days  
 Total construction time: **N/A**



**Izodom elements:**

**FPL** ( $U_0=0.14-0.09$  W/m<sup>2</sup>K) Peripor (ground slab)  
**STP** ( $U_0=0.26-0.32$  W/m<sup>2</sup>K) Neopor (floor)

**MC 2/35** ( $U_0=0.15$  W/m<sup>2</sup>K) Neopor (wall elements)

**MCFU 2/25** ( $U_0=0.28 - 0.10$  W/m<sup>2</sup> K) Neopor (wall elements)

**Outside walls:**

**$U=0.15$  W/m<sup>2</sup>K**

**Made of the Izodom system:**

- 10 mm plaster finish
- 35 mm fibre cement board
- 50 mm insulation (Neopor)
- 150 mm reinforced concrete
- 150 mm insulation (Neopor)
- 35 mm fibre cement board
- 20 mm plaster finish

**Basement floors to the ground:**

**$U=0.14$  W/m<sup>2</sup>K**

**Made of the Izodom system:**

- 10 mm floor finish
- 40 mm waterproof screed
- 50 mm floor heating system
- 250 mm insulation (Izodom ground slab)
- 100 mm reinforced concrete
- 150 mm compacted soil

**Basement wall (against soil):**

**$U=0.15$  W/m<sup>2</sup>K**

- 10 mm plaster finish
- 35 mm fibre cement board
- 50 mm insulation (Neopor)
- 150 mm reinforced concrete
- 150 mm insulation (Neopor)
- 35 mm fibre cement board
- 10 mm plaster
- DPM
- 200 - 500 mm gravel drainage backfill
- compacted soil

**Floor:**

**Made of the Izodom system:**

- 10 mm floor finish
- 40 mm waterproof screed
- 50 mm floor heating system
- 50 mm Izodom floor system (Neopor + reinforced concrete)
- 22 mm plaster board

**Roof:**

**$U=0.10$  W/m<sup>2</sup>K**

- 60 mm gravel
- green roof system fabric and waterproofing (Filtec 300)
- 300 mm insulation (EPS Polystyrene)
- DPM
- 32 mm decking planks
- Load bearing roof joists 140 / 200

**Roof inclination:** 6 %

**Main heat source:** Floor heating

**Cooling system:** Ventilation with heat recovery system

**Ventilation:**

- Ventilation with heat recovery system

**Tightness:** N/A

**Energy consumption per year:**

<20 kWh/m<sup>2</sup>

**Energy cost per year:<sup>[4]</sup>**

2.74 €/m<sup>2</sup>

**Which means 93 % savings on heating and hot water costs when compared to a standard building of this type.**

**Standard heating costs for the building from that time:<sup>[5]</sup> 983.15 Kč/m<sup>2</sup> (36.35 €/m<sup>2</sup>)**

<sup>[1]</sup>As specified by the contractor (information provided by Vítězslav Fojtík). <sup>[2]</sup>The information about the specialist available at: <http://rejstrik.finance.cz/13669702-ing-petr-soukal>. <sup>[3]</sup>The works described in this section were executed by 4 workers. <sup>[4]</sup>For the entire building: EUR 219 (appropriate value based on the assumptions provided by Vítězslav Fojtík). <sup>[5]</sup>Standard costs for the building according to "D2.1a - Survey on the energy needs and architectural features of the EU building stock" from iNSPIRe, webpage: [www.inspire7.eu](http://www.inspire7.eu) (available on 10.03.2016) and [www.energie123.cz/elektrina/ceny-elektricke-energie/cena-1-kwh](http://www.energie123.cz/elektrina/ceny-elektricke-energie/cena-1-kwh) (available on 23.03.2016).

**CZECH REPUBLIC**  
**OSTRAVA, Nová Ves**

What: **Low energy single-family house**  
 Function: **Residential**  
 Where: **Ostrava-Nová Ves**  
 Client: **MBC Kudláček**  
 Architect: **STUDIO ATRIUM Lelek, Godlewski sp. j.** <sup>[1]</sup>  
 Area of the building: **117 m<sup>2</sup>**  
 Construction commencement: **August 2014**  
 Habited since: **building uninhabited**  
 Approximate construction cost (installations excluded):  
**79 534 € (2 150 000 Kč)**  
 Time for Izodom construction<sup>[2]</sup>: **3 weeks**  
 Total construction time: **N/A**



21 kWh/m<sup>2</sup>  
energy consumption per year <sup>[1]</sup>

92%  
savings on hot water and heating bills



**Izodom elements:**

**FPL** ( $U_0=0.14-0.09$  W/m<sup>2</sup>K) Peripor (ground slab)  
**MC 2/35** ( $U_0=0.15$  W/m<sup>2</sup>K) Neopor (walls)

**Outside walls:**

**$U=0.15$  W/m<sup>2</sup>K**

**Made of the Izodom system:**

- plaster rendering
- 150 mm polystyrene (Neopor)
- 150 mm in-situ cast concrete
- 50 mm polystyrene (Neopor)
- 12.5 mm plaster board
- finish

**Roof:**

**$U=0.12$  W/m<sup>2</sup>K**

- concrete folded roofing tiles
- 50 x 50 mm wooden battens
- safety waterproofing
- 60 x 200 mm truss system
- 200 mm insulation (mineral wool)
- steel frame
- 100 mm insulation (mineral wool)
- damp screen
- 12 mm gypsum board

**Roof inclination:** 42 %

**Basement floors to the ground:**

**$U=0.14$  W/m<sup>2</sup>K**

**Made of the Izodom system:**

- 15 mm laminate flooring
- Underlay foam pads
- 3 – 15 mm self-levelling compound
- 250 mm reinforced concrete foundation slab
- 250 mm insulation (the Izodom system – Peripor)
- protective geotextile
- 15 mm DPM
- 40 mm compacted sand
- 310 – 410 mm compacted gravel subbase

**Floor:**

**Made of the Izodom system:**

- 15 mm laminate flooring
- underlay foam mat
- 3 – 15 mm self-levelling compound
- 250 mm the Izodom system ceiling (polystyrene + reinforced concrete)
- lime plaster

**Main heat source:** Floor heating

**Additional heat source:** Fireplace (possible to connect with a heat distribution system)

**Cooling system:** none

**Ventilation:** gravitational

**Tightness:** N/A

**Energy consumption per year:**<sup>[3]</sup>

21 kWh/m<sup>2</sup>

**Energy cost per year:**<sup>[4]</sup>

76.92 Kč/m<sup>2</sup> ( 2.85 €/m<sup>2</sup>)

**Which means 92 % savings on heating and hot water costs when compared to a standard building of this type.**

**Standard heating costs for the building from that time:**<sup>[5]</sup> 983.15 Kč/m<sup>2</sup> (36.35 €/m<sup>2</sup>)



<sup>[1]</sup> S-GL-539-Roleks-Bis "STUDIO ATRIUM" ready project ([www.studioatrium.pl](http://www.studioatrium.pl)). <sup>[2]</sup> Work performed by 4 workers, with no experience in the Izodom system. <sup>[3]</sup> The value calculated from the energy bills provided by the contractor. <sup>[4]</sup> For the entire building: 9 000 Kč (EUR 333) – Building used as a reference model. <sup>[5]</sup> Standard costs for the building according to "D2.1a - Survey on the energy needs and architectural features of the EU building stock" from iNSPIRe, webpage: [www.inspirep7.eu](http://www.inspirep7.eu) (available on 10.03.2016) and [www.energie123.cz/elektrina/ceny-elektricke-energie/cena-1-kwh](http://www.energie123.cz/elektrina/ceny-elektricke-energie/cena-1-kwh) (available on 23.03.2016).

## DENMARK

### VEJLE

What: **Single-family house; new construction**  
 Function: **Residential**  
 Where: **Skorpionvej 4, 7100 Vejle, Denmark**  
 Client: **Anni og Jesper Steffensen**  
 Architect: **PlusEnergiByg A/S – Karolina Nesterowicz**  
 Energy calculations<sup>[1]</sup>: **Karolina Nesterowicz**  
 Building area: **331 m<sup>2</sup>**  
 Construction commencement: **November 2013**  
 Habited since: **May 2014**  
 Approximate construction cost (for handing over)<sup>[2]</sup>: **8 000 dkk/m<sup>2</sup> (1 071 €/m<sup>2</sup>)**  
 Man-hours necessary to build 1m<sup>2</sup> of the Izodom elements: **1.5 man-hour/m<sup>2</sup> of a wall (with additional works such as installations)**  
 Total construction time: **7 months (prolonged by winter and holidays)**



13 kWh/m<sup>2</sup>  
energy  
consumption  
per year

78 %  
lower  
than  
required

### Izodom elements:

MC 2/45 (U<sub>0</sub>=0.10 W/m<sup>2</sup>K) Neopor (wall elements)

ML 1/45 (U<sub>0</sub>=0.10 W/m<sup>2</sup>K) Neopor (wall elements)

OC Neopor (wall elements)

MCFU 2/25 (U<sub>0</sub>=0.28 W/m<sup>2</sup>K) Neopor (wall elements)

#### Outside walls:

**U=0.08 W/m<sup>2</sup>K** <sup>[3]</sup>

#### Made of the Izodom system:

- 250 mm polystyrene (Neopor)
- 150 mm in-situ cast concrete
- 50 mm polystyrene (Neopor)
- 10 mm plaster rendering

#### Foundation and basement floor:

**U=0.08 W/m<sup>2</sup>K**

#### Sundolitt foundation system:

- compressed sand
- 350 mm polystyrene
- vapour barrier
- floor heating system
- 250 mm reinforced in-situ concrete
- floor finish

#### Roof:

**U=0.08 W/m<sup>2</sup>K**

#### Roofing system on wooden trusses:

- 2 x 12.5 mm plaster boards
- 21x100 mm wooden cross formwork
- pipes for ventilation
- 45x195 mm wooden roof battens; cavities filled with 195 mm mineral wool
- vapour barrier
- 45x295 mm truss beams (at 600 mm centres); cavities filled with 300 mm mineral wool
- roofing felt

#### Windows:

max U=1.16 W/m<sup>2</sup>K

Glass only U=0.6 W/m<sup>2</sup>K

Vrogum – Svarre triple glazed windows with stained glass edge, wooden frame

**Main heat source:** Electrical heating system – floor heating system

**Additional heat source:** Heat pump

(company: Nilan, model: Compact P JVP (JVP 105), type: duo, one unit) / Photo-voltaic panels (area: 40 m<sup>2</sup>, orientation: south, peak power: 0.16 kW/m<sup>2</sup>, system efficiency: 0.6)

#### Cooling system: None

**Ventilation: natural ventilation (system tightness<sup>[4]</sup>: 1.5 l/sm<sup>2</sup>)**

**Energy consumption<sup>[5]</sup> (per year):** 13 kWh/m<sup>2</sup>

**The building energy consumption is 78% lower than required.<sup>[6]</sup>**

**Energy frame requirements for:**  
 BR2010 - 58.4 kWh/m<sup>2</sup> | BR2015 - 33.6 kWh/m<sup>2</sup> | BR2020 - 20.0 kWh/m<sup>2</sup>  
**BR2020 requirements concerning minimum insulation are fulfilled.**  
**All energy consumption requirements are fulfilled.**

**Overall transmission losses: 8.2 W/m<sup>2</sup>**

**Overall heat loss without heat recovery unit: 19.8 W/m<sup>2</sup>**

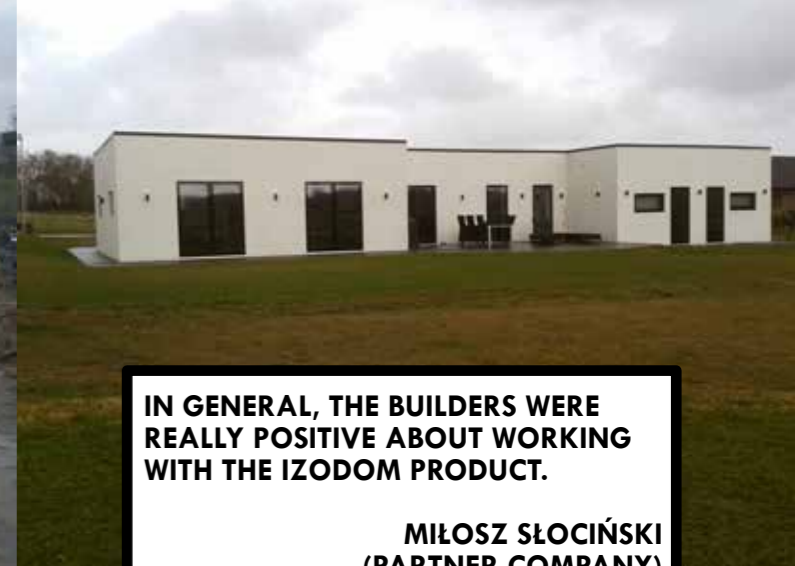
**Overall heat loss with heat recovery unit: 19.8 W/m<sup>2</sup>**

**Energy cost per year:<sup>[7]</sup>**

28.33 DKK/m<sup>2</sup> (EUR 3.80)

**Which means 81% savings on heating and hot water costs when compared to a standard building of this type.**

**Standard heating costs for the building from that time:<sup>[8]</sup> 148.24 DKK (EUR 19.87)**



IN GENERAL, THE BUILDERS WERE REALLY POSITIVE ABOUT WORKING WITH THE IZODOM PRODUCT.

MIŁOSZ SŁOCIŃSKI  
(PARTNER COMPANY)



<sup>[1]</sup> Calculated according to: Bygningsreglementet 2010, BR10 (Danish Building Regulations 2010). <sup>[2]</sup> Including installations and internal finishes. <sup>[3]</sup> Technical specification on the drawings; U= 0.10 W/m<sup>2</sup>K – according to Izodom). <sup>[4]</sup> Calculations made by Karolina Nesterowicz in an overall energy calculation. <sup>[5]</sup> Calculated with Rockwool Energy Design 4.0.92. <sup>[6]</sup> In comparison to: Bygningsreglementet 2010 (Danish Building Regulations 2010). <sup>[7]</sup> For the entire building: 9,380 DKK (EUR 1,257). <sup>[8]</sup> According to: SBI 2013:25 „Cost-optimal levels of minimum energy performance requirements in the Danish Building Regulations” and the information provided at www.energitilsynet.dk

## FINLAND VANTAA

What: **Single-family house; new construction**  
 Function: **Residential**  
 Where: **Vantaa, Finland**  
 Client: **Janne and Piritta Halttu**  
 Execution: **HRT Group Ltd.**  
 Energy calculations: **N/A**  
 Area of the building: **220m<sup>2</sup>**  
 Construction commencement: **2013**  
 Habited since: **2014**  
 Approximate construction cost (installations excluded): **N/A**  
 Total construction time: **6 months**



1.80 €/m<sup>2</sup>  
energy cost  
per year <sup>[3]</sup>

90%  
savings on  
hot water  
and heating  
bills

GENERALLY  
RECOMMENDED PRODUCT.

JORMA VILMUSENAHO  
(PARTNER COMPANY)



### Izodom elements:

MC 2/45 ( $U_0=0.10$  W/m<sup>2</sup>K) Neopor (wall elements)

#### Outside walls:

**$U=0.10$  W/m<sup>2</sup>K**

#### Made of the Izodom system:

- plaster rendering
- 250 mm polystyrene (Neopor)
- 150 mm in-situ cast concrete
- 50 mm polystyrene (Neopor)
- 12.5 mm plaster board
- finish

#### Roof:

**$U=0.062$  W/m<sup>2</sup>K**

- roof finish
- battens
- underlay
- 500 mm thermal insulation
- DPM
- 12.5 mm plaster board ceiling

#### Basement floors:

**$U=0.12$  W/m<sup>2</sup>K**

- floor covering
- 120 mm in-situ concrete
- 200 mm thermal insulation
- compacted gravel

#### Floor:

- floor covering
- hollow-core slab
- finish

Main heat source: N/A

Additional heat source: N/A

Cooling system: N/A

Energy consumption per year:<sup>[2]</sup>

<15 kWh/m<sup>2</sup>

Energy cost per year:<sup>[3]</sup>

1.80 €/m<sup>2</sup>

Which means 90% savings on heating and hot water costs when compared to a standard building of this type.

Standard heating costs for the building from that time: 18.11 €/m<sup>2</sup>



<sup>[1]</sup> Information provided by Jorma Vilmusena (contractor). <sup>[2]</sup> The building complies with the passive house standards (information provided by Jorma Vilmusena). <sup>[3]</sup> For the entire building: EUR 396 (appropriate value based on the assumptions provided by Jorma Vilmusena). <sup>[4]</sup> Standard costs for the building according to "D2.1a - Survey on the energy needs and architectural features of the EU building stock" from iNSPIRe, (www.inspirep7.eu - available on 10.03.2016) and documents provided by the contractor.

## FINLAND VANTAA

What: **Two-Apartment Buildings**  
(5 apartments in total); new construction  
Function: **Residential**  
Where: **Urheilutie 13**  
**01450 Vantaa, Finland**  
Client: **WW Invest Ltd.**  
Execution: **HRT Group Ltd.**  
Architect: **Seppo Saulamaa – Arkantti Ltd.**  
Sound calculations: **Eija-Halme Salo**  
– **Architects Alpo Halme Ltd.**  
Blower door test: **Hannu Järvi – Certek Ltd.**  
Area of the building: **450 m<sup>2</sup>**  
Construction commencement: **2013**  
Habited since: **2015**  
Approximate construction cost  
(installations excluded): **N/A**  
Total construction time: **12 months**



20 kWh/m<sup>2</sup>  
energy  
consumption  
per year <sup>[1]</sup>

EASY AND FAST TO BUILD  
EVEN IN WINTER

JORMA VILMUSENAHO  
(PARTNER COMPANY)



### Izodom elements:

**MC 2/35** ( $U_0=0.15 \text{ W/m}^2\text{K}$ ) Neopor (wall elements)

#### Outside walls:

**$U=0.10 \text{ W/m}^2\text{K}$**

#### Made of the Izodom system:

- plaster rendering
- 150 mm polystyrene (Neopor)
- 150 mm in-situ cast concrete
- 50 mm polystyrene (Neopor)
- 12.5 mm plaster board
- finish

#### Basement floors:

**$U=0.16 \text{ W/m}^2\text{K}$**

- floor covering
- 100 mm concrete slab
- 200 mm thermal insulation (polystyrene / urethane)
- 200 mm compacted crushed stone

#### Floor:

- floor covering
- 70 mm concrete screed
- 30 mm insulation
- 200 mm concrete slab

#### Roof:

**$U=0.07 \text{ W/m}^2\text{K}$**

- roof covering (sheet metal, dark grey)
- battens
- underlay
- ventilation gap
- 500 mm thermal insulation
- DPM
- 47 mm joists
- 13 mm plasterboard

**Windows:** N/A

**Main heat source:** air-water heat pump

**Cooling system:** none

**Ventilation:** mechanical supply and exhaust

#### Tightness:

- q50 air leakage figure  
Alip. 0.495 [ $\text{m}^3/\text{h}\cdot\text{m}^2$ ]
- n50 air leakage figure  
Alip. 0.545 [1/h]

**These results give the house  
tightness standard of a passive  
house (which is:  $q50 < 0.6$ )**

#### Sound insulation:

Property located at the area where  
traffic noise is a level of 60-65 dB.  
The building shell is everywhere at  
least 35 dB against traffic noise.

#### Energy consumption per year:

<20 kWh/m<sup>2</sup>

#### Energy cost per year:

2.40 €/m<sup>2</sup>

**Which means 87% savings on  
heating and hot water costs for the  
standard building this type.**

**Standard heating costs for the building  
from that time: 18.11 €**



<sup>[1]</sup> Information provided by Jorma Vilmusenaho (contractor). <sup>[2]</sup> All sound calculations done separately for each major area of the building by Eija-Halme Salo – AA-class acoustic designer (FISE); Dimensioning was based on absolute integrity of the structures. The inner envelope is sealed hermetically and windows are as air-tight as possible. The tightness of the system is achieved by using the Izodom technology. <sup>[3]</sup> For the entire building: EUR 1,080 (appropriate value based on the assumptions provided by Jorma Vilmusenaho). <sup>[4]</sup> Standard costs for the building according to "D2.1 a - Survey on the energy needs and architectural features of the EU building stock" from iNSPIre, (www.inspirefp7.eu - available on 10.03.2016) and documents provided by the contractor.

## FINLAND VANTAA

What: **Terraced house (2 floors, 9 apartments); new construction**  
Function: **Residential**  
Where: **Vantaa, Finland**  
Client: **Kisapolku building co-operative**  
Architect: **N/A**  
Energy calculations: **N/A**  
Building area: **723m<sup>2</sup> 11 flats 72 m<sup>2</sup> each**  
Construction commencement: **N/A**  
Habited since: **2012**  
Approximate construction cost (without installations): **N/A**  
Man-hours necessary to build 1m<sup>2</sup> of the building: **N/A**  
Total construction time: **N/A**



23 kWh/m<sup>2</sup>  
energy  
consumption  
per year <sup>[1]</sup>

85%  
savings on  
hot water and  
heating bills



### Izodom elements:

MC 2/45 ( $U_0=0.10$  W/m<sup>2</sup>K) Neopor (wall elements)

Outside walls: N/A

Foundation and basement floor: N/A

Roof: N/A

Windows: N/A

Main heat source: Geothermal heating

Ventilation: Mechanical with heat recovery unit

Tightness: no information available

Energy consumption per year<sup>[1]</sup>

23 kWh/m<sup>2</sup>

Total energy produced by the building:

220.241 kWh

Energy cost per year<sup>[2]</sup>: 2.73 €/m<sup>2</sup>

Which means 85% savings on heating and hot water costs when compared to a standard building of this type.

Standard heating costs for the building from that time<sup>[3]</sup>: 18.11 €



<sup>[1]</sup> Based on the energy bill issued by: "Vantaan Energia Sähköverkot OY", [www.vantaanenergiasahkoverkot.fi](http://www.vantaanenergiasahkoverkot.fi), contact: 09 8290 900 <sup>[2]</sup> For the entire building: EUR 1,981 <sup>[3]</sup> Standard costs for the building according to "D2.1a - Survey on the energy needs and architectural features of the EU building stock" from iNSPIRe, [www.inspirefp7.eu](http://www.inspirefp7.eu) (available on 10.03.2016) and documents provided by the contractor.

## LITHUANIA KAUNAS

What: **Multi-story block of flats (24 apartments); new construction**  
 Function: **Residential**  
 Where: **Verkių g. 48 Kaunas, Lithuania**  
 Client: **Būstuva, Ltd.<sup>[1]</sup>**  
 Architect: **VYTATANAS, Vytenis Andrenas**  
 Execution: **KA Projektai, Ltd.**  
 Energy calculations: **Andrew Kirklys**  
 Floor area of the building: **2,043.49 m<sup>2</sup>**  
 Construction commencement: **2015**  
 Habited since: **not habited yet**  
 Time for construction of 1 storey: **3 weeks**  
 Total construction time: **5.5 month**



1.25 €/m<sup>2</sup>  
energy cost  
per year

90%  
savings on  
hot water and  
heating bills

THE LABOURERS GOT BETTER AND BETTER, AND THE CONSTRUCTION WAS REALLY OPTIMIZED. BASED ON THE OPINION OF MY FOREMAN, THE CONSTRUCTION WILL BE EVEN „AS HALF EASIER NEXT TIME”.

TADAS GUŽAUSKAS

### Izodom elements:

**MCF 1/30+** ( $U_o=0.28 \text{ W/m}^2\text{K}$ ) Neopor (wall elements)

**MC 2/45** ( $U_o=0.10 \text{ W/m}^2\text{K}$ ) Neopor (wall elements)

#### Outside walls:

**R=9.516 m<sup>2</sup>K/W / U=0.11 W/m<sup>2</sup>K**

#### Made of the Izodom system:

- min 10 mm structural plaster finish
- 250 mm polystyrene (Neopor)
- 150 mm in-situ cast concrete
- 50 mm polystyrene (Neopor)
- min 10 mm plaster rendering

#### Basement walls and floors to the ground:

**R=6.049 m<sup>2</sup>K/W / U=0.17 W/m<sup>2</sup>K**

- 150 mm polystyrene EPS (on the outside)
- 500 mm concrete
- 100 mm SPU insulation (on the inside;  $\lambda_{dec} < 0.023 \text{ W/mK}$ )

#### Floor construction against unheated parts of the building:

**R=8.032 m<sup>2</sup>K/W / U=0.12 W/m<sup>2</sup>K**

- 200 mm in-situ concrete
- 200 mm SPU insulation ( $\lambda_{dec} < 0.023 \text{ W/mK}$ )
- 60 mm in-situ concrete

#### Roof:

**R=9.900 m<sup>2</sup>K/W / U=0.10 W/m<sup>2</sup>K**

- 200 mm concrete slab
- 250 mm SPU insulation ( $\lambda_{dec} < 0.023 \text{ W/mK}$ )
- 60 mm concrete layer
- waterproof roof finish

#### Windows: U=0.73 W/m<sup>2</sup>K

Veka – Alphaline 90 MD+ plastic profile windows, triple glazed, air permeability class 4, light permeability coefficient 0.59. Windows installed at least 30 mm to the outside of concrete section on glass fibre pins (to avoid thermal bridges).

**Balconies** mounted as a separate structure, without linear thermal bridges

**Staircases** and doors in the basement:

U=1.3 W/m<sup>2</sup>K, air permeability class 3

**Main heat source:** Connected to district heating network

**Additional heat source:** Water heating unit in the building

**Cooling system:** None

**Ventilation:** Mechanical with heat recovery system in the apartments (system performance ratio: 0.93). Additional ventilation ductwork system for the staircases (efficiency coefficient: 0.80)

#### Tightness of the building must not exceed

0.6 times/h with the difference of 50 Pa pressure between the inside and outside.

The building leak test is executed as specified in LST EN 13829: 2002 "Thermal characteristics of buildings. Determination of air permeability of buildings. Pressure difference method (ISO 9972:1996, as amended)".

#### Energy consumption per year:<sup>[3]</sup>

12 kWh/m<sup>2</sup>

#### Non-renewable primary energy input:

134.83 W/m<sup>2</sup>K

#### Renewable primary energy input:

12.08 W/m<sup>2</sup>K

Indicators of the designed building meet the requirements for A+ energy efficiency class in accordance with STR 2.01.09:2012 from 15-09-2014.

#### Energy cost per year:<sup>[4]</sup> 1.25 €/m<sup>2</sup>

Which means 90% savings on heating and hot water costs when compared to a standard building of this type.

Standard heating costs for the building from that time:<sup>[5]</sup> 12.78 €

**The first apartment building in Lithuania to achieve energy class A+**

<sup>[1]</sup> More at: [www.bustuva.lt/nauji-butai-kaune](http://www.bustuva.lt/nauji-butai-kaune), address: Verkių g. 48, LT-44499 Kaunas, Lithuania; contact: [info@bustuva.lt](mailto:info@bustuva.lt) <sup>[3]</sup> Calculated with NRG3 3.1.0.3 software <sup>[4]</sup> For the entire building: EUR 2,550 <sup>[5]</sup> According to Energy Efficiency Action Plan (Official Gazette., 2007, no. 76-3024) - „Dėl Energijos efektyvumo veiksmy plano patvirtinimo“ (Žin., 2007, Nr. 76-3024) [www.e-tar.lt/portal/index.html](http://www.e-tar.lt/portal/index.html)



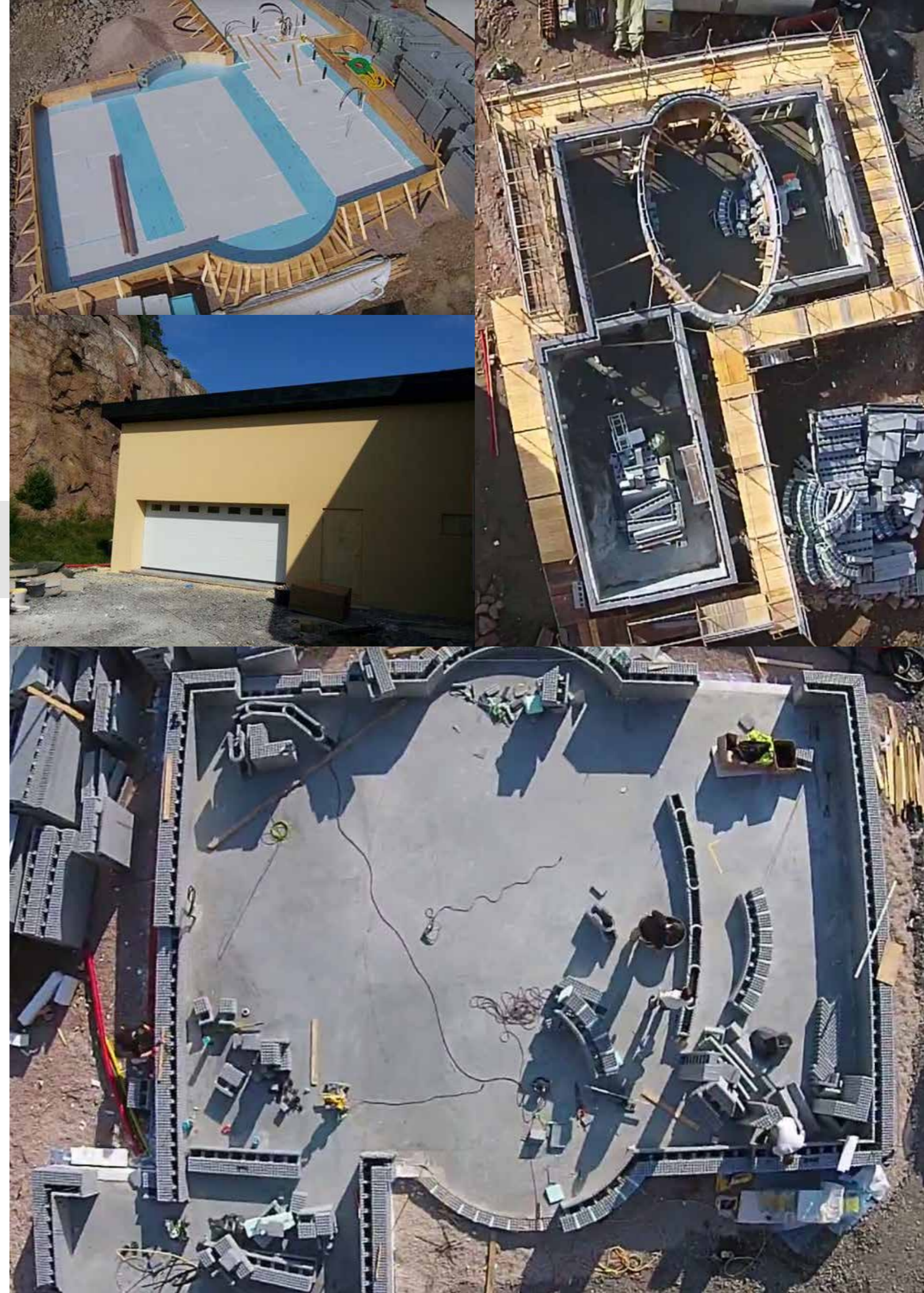
**NORWAY**  
**OSLO**

What: **Single-family house (2 storey); new construction**  
 Function: **Residential**  
 Where: **Oslo, Norway**  
 Client: **Private Customer**  
 Architect: **Kentenstina Design**  
 Execution: **Stokker Bygg AS** <sup>[2]</sup>  
 Total area of the building: **200 m<sup>2</sup>**  
 Construction commencement: **June 2014**  
 Habited since: **June 2015**  
 Approximate construction cost (installations excluded): **N/A**  
 Total construction time: **10 months**



15 kWh/m<sup>2</sup>  
energy consumption per year<sup>[1]</sup>

90% savings on hot water and heating bills



**Izodom elements:**

**MC 2/45** (U=0.10 W/m<sup>2</sup>K)  
 Neopor (wall elements)

**FPL** (U=0.14-0.09 W/m<sup>2</sup>K)  
 Peripor (ground slab)

**Outside walls:**  
**U=0.10 W/m<sup>2</sup>K**

**Made of the Izodom system:**

- 250 mm polystyrene (Neopor)
- 150 mm in-situ cast concrete
- 50 mm polystyrene (Neopor)
- 10 mm plaster rendering

**Basement floors to the ground:**  
**U=0.09 W/m<sup>2</sup>K**

**Made of the Izodom system:**

- compressed sand and gravel
- 120 mm auxiliary ground slab insulation (Izodom system – Peripor)
- 250 mm ground slab insulation formwork (Izodom system – Peripor)
- DPM
- 250 mm reinforced concrete
- floor finish

**Roof:**  
**U=0.08 W/m<sup>2</sup>K**

**Made of the Izodom system:**

- 21 mm panels of roof sheathing
- 73 mm ventilation gap
- wind foil
- 48 x 400 mm battens
- 400 mm insulation
- 36 mm barge board
- 25 mm gypsum board

**Main heat source:** electrical  
 – floor heating

**Additional heat source:** N/A

**Cooling system:** none

**Energy consumption per year:**  
 <15 kWh/m<sup>2</sup>  
**Energy cost per year**<sup>[3]</sup>: N/A  
 15 NOK/m<sup>2</sup> (1.60 €/m<sup>2</sup>)  
**Which means 90 % savings on heating and hot water costs when compared to a standard building of this type.**  
**Standard heating costs for the building from that time**<sup>[4]</sup>: 148 NOK/m<sup>2</sup>

**VIDEOS FROM THE CONSTRUCTION PROCESS AVAILABLE AT THE IZODOM'S YOUTUBE PAGE**

<sup>[1]</sup> As specified by the contractor (information provided by Jakub Jaworski). <sup>[2]</sup> Information available at [www.stokkerbygg.no](http://www.stokkerbygg.no) <sup>[3]</sup> For the entire building: 3000 NOK (EUR 320). <sup>[4]</sup> Standard costs for the building according to "Energy consumption in households, 2012" at [www.ssb.no/en/energi-og-industri/statistikker/husenergi/hvert-3-aar/2014-07-14](http://www.ssb.no/en/energi-og-industri/statistikker/husenergi/hvert-3-aar/2014-07-14) (available on 10.05.2016) and "Electricity prices Q4, 2015" [www.ssb.no/en/energi-og-industri/statistikker/elkraftpris/kvartal/2016-02-25](http://www.ssb.no/en/energi-og-industri/statistikker/elkraftpris/kvartal/2016-02-25); (counts in all energy commodities).

## POLAND BYDGOSZCZ

What: **Single-family house**  
 Function: **Residential**  
 Where: **Bydgoszcz, Poland**  
 Client: **Andrzej Kielpiński**  
 Architect: **Ready-made project<sup>[1]</sup>**  
 Area of the building: **126 m<sup>2</sup>**  
 Construction commencement: **November 2013**  
 Total construction time: **8.5 months**  
 Habited since: **November 2014**  
 Approximate construction cost  
 (installations excluded): **N/A**



19 kWh/m<sup>2</sup>  
energy  
consumption  
per year<sup>[1]</sup>

78%  
savings on  
hot water and  
heating bills

### Izodom elements:

**FLP** ( $U_0=0.14-0.09 \text{ W/m}^2\text{K}$ )  
 Peripor (ground slab)

**MC 2/35** ( $U=0.15 \text{ W/m}^2\text{K}$ )  
 Neopor (wall elements)

**MCFU 2/25** ( $U=0.28 - 0.10 \text{ W/m}^2\text{K}$ )  
 Neopor (wall elements)

### Outside walls:

**$U=0.15 \text{ W/m}^2\text{K}$**

### Made of the Izodom system:

- plaster rendering
- 150 mm polystyrene (Neopor)
- 150 mm in-situ cast concrete
- 50 mm polystyrene (Neopor)
- 12.5 mm plaster board
- finish

### Basement floors to the ground:

**$U=0.14-0.09 \text{ W/m}^2\text{K}$**

### Made of the Izodom system:

- floor finish
- 250 mm reinforced concrete foundation slab
- 250 mm insulation (the Izodom system – Peripor)
- 3 mm DPM
- 40 mm compacted sand
- 310 – 410 mm compacted gravel subbase

**Floor:** Wooden Floor (dimensions not specified)

### Roof:

**$U=0.11 \text{ W/m}^2\text{K}$**

- Roof finish
- 50 x 50 mm wooden battens
- 60 x 200 mm truss system
- 300 mm insulation (mineral wool)
- DPM
- 12 mm gypsum board

**Main heat source:** electrical heating  
**Additional heat source:** wood burning stove (with heat distribution channels)  
**Cooling system:** none

### Energy consumption per year<sup>[2]</sup>:

19 kWh/m<sup>2</sup>

### Energy cost per year<sup>[3]</sup>:

11.66 PLN/m<sup>2</sup> (2.65 €/m<sup>2</sup>)

**Which means 78% savings on heating costs when compared to a standard building of this type.**

**Together with other electricity costs (electrical utilities and lighting) the costs per year amount to: 15.15 PLN/m<sup>2</sup> (3.43 €/m<sup>2</sup>)**

**Standard heating costs for the building from that time<sup>[4]</sup>: 53.27 PLN/m<sup>2</sup> (12.11 €/m<sup>2</sup>)**



<sup>[1]</sup> Adjusted by: Ryszard Kowalski, construction engineer and Mariusz Kończal, engineer. <sup>[2]</sup> The energy consumption is an estimate based on the information provided on the website: [www.inez.com.pl/2015/01/22/jakie-placi-sie-rachunki-za-prad-przy-ogrzewaniu-energia-elektryczna-2014-rok](http://www.inez.com.pl/2015/01/22/jakie-placi-sie-rachunki-za-prad-przy-ogrzewaniu-energia-elektryczna-2014-rok). Heating energy usage was provided by the client together with total electricity usage. <sup>[3]</sup> Energy costs include all electricity costs (electrical utilities and lighting). The costs calculated on the basis of: [www.murator-dom.pl/instalacje/ogrzewanie-domu/koszt-ogrzewania-domu-energia-elektryczna-bedzie-drozej,222\\_9384.html](http://www.murator-dom.pl/instalacje/ogrzewanie-domu/koszt-ogrzewania-domu-energia-elektryczna-bedzie-drozej,222_9384.html), available on 19.05.2016. <sup>[4]</sup> Information to be found at: [www.ag-dar.vaillant-partner.pl/kalkulatory-on-line/kalkulator-kosztow-ogrzewania-domu-i-podgrzewania-ciepłej-wody-użytkowej](http://www.ag-dar.vaillant-partner.pl/kalkulatory-on-line/kalkulator-kosztow-ogrzewania-domu-i-podgrzewania-ciepłej-wody-użytkowej), available on: 19.05.2016.

## POLAND ŁÓDŹ

What: **Single-family House**  
Function: **Residential**  
Where: **Łódź, Poland**  
Client: **Private customer**  
Architect: **Atrium Studio, project GL 128<sup>[1]</sup>**  
Execution: **Self-built (with additional support e.g. carpenter team)**  
Energy calculations: **N/A**  
Area of the building: **114 m<sup>2</sup>**  
Construction commencement: **April 2004**  
Habited since: **October 2004**  
Approximate construction cost (installations excluded): **N/A**  
Time for construction of Izodom elements: **3 weeks (including window carpentry)**  
Total construction time: **7 months**



1.07 €/m<sup>2</sup>  
energy cost  
per year

### Izodom elements:

**MC 2/35** ( $U_0=0.15 \text{ W/m}^2\text{K}$ ) Neopor (wall elements)  
**STP** ( $U=0.27 \text{ W/m}^2\text{K}$ ) EPS (floor)

#### Outside walls:

**$U=0.15 \text{ W/m}^2\text{K}$**

#### Made of the Izodom system:

- plaster rendering
- 150 mm polystyrene (Neopor)
- 150 mm in-situ cast concrete
- 50 mm polystyrene (Neopor)

#### Basement floors to the ground:

**$U=0.13 \text{ W/m}^2\text{K}$**

- compacted gravel
- 250 mm reinforced concrete
- 250 mm heat insulation (EPS)
- 100 mm concrete screed
- floor finish

#### Roof<sup>[3]</sup>:

**$U=0.11 \text{ W/m}^2\text{K}$**

- roofing tiles
- 45 x 45 mm wooden battens
- truss system
- 250 + 50 mm heat insulation (mineral wool)

**Windows:** N/A

**Main heat source:** solid fuel stove with water collar

**Cooling system:** none

**Ventilation:** none

**Tightness:** N/A

#### Energy consumption per year<sup>[4]</sup>:

<20 kWh/m<sup>2</sup>

**Energy cost per year<sup>[5]</sup>:**

4.73 PLN/m<sup>2</sup> (1.07 €/m<sup>2</sup>)

**Which means 60% savings on heating costs when compared to a standard building of this type<sup>[6]</sup>**

**Standard heating costs for the building from that time<sup>[7]</sup>:** 11.84 PLN/m<sup>2</sup> (2.69 €/m<sup>2</sup>)



<sup>[1]</sup> Project [www.studioatrium.pl/projekty-domow/S-GL-128-Vox,139.html](http://www.studioatrium.pl/projekty-domow/S-GL-128-Vox,139.html) <sup>[2]</sup> The value estimated on the basis of standard values for the products (exact numbers may vary). <sup>[3]</sup> The value estimated on the basis of standard values for the products (exact numbers may vary). <sup>[4]</sup> The estimate based on information provided by the client. <sup>[5]</sup> Costs for the entire building: PLN 540 per year (which is assumed based on the declaration from the client, usage 5-7 m<sup>3</sup> burning wood). <sup>[6]</sup> Information verified for the same heat source. <sup>[7]</sup> According to: [www.ag-dar.vaillant-partner.pl/kalkulatory-on-line/kalkulator-kosztow-ogrzewania-domu-i-podgrzewania-cieplej-wody-uzytkowej](http://www.ag-dar.vaillant-partner.pl/kalkulatory-on-line/kalkulator-kosztow-ogrzewania-domu-i-podgrzewania-cieplej-wody-uzytkowej), available on 28.04.2016

**POLAND**  
**ZGORZELEC**

What: **Single-family house**  
 Function: **Residential**  
 Where: **Zgorzelec, Poland**  
 Client: **Robert Gruszecki**  
 Architect: **Ready-made project<sup>[1]</sup>**  
 Execution: **self-built**  
 Area of the building: **185 m<sup>2</sup>**  
 Construction commencement: **March 2013**  
 Total construction time: **6 months**  
**(the construction of Izodom elements took around 60 days)**  
 Habited since: **January 2014**  
 Approximate construction cost (installations excluded): **N/A**



1.00 €/m<sup>2</sup>  
energy cost  
per year

80%  
savings on  
hot water and  
heating bills

**Izodom elements:**

**MC 2/35** ( $U_0=0.15 \text{ W/m}^2\text{K}$ )  
EPS (wall elements)

**STP** ( $U_0=0.26-0.32 \text{ W/m}^2\text{K}$ )  
EPS (floor)

**DPL GLT/ZIG** ( $U_0=0.15 \text{ W/m}^2\text{K}$ )  
EPS (roof)

**Outside walls:**  
 **$U=0.15 \text{ W/m}^2\text{K}$**

**Made of the Izodom system:**

- 10 mm gypsum finish
- 50 mm thermal insulation (EPS)
- 150 mm reinforced concrete
- 150 mm thermal insulation (EPS)
- 20 mm external finish

**Basement floors to the ground:**  
 **$U=0.10 \text{ W/m}^2\text{K}$**

- 200 mm compacted gravel
- 3 x 100 mm thermal insulation (EPS)
- 250 mm reinforced concrete
- floor finish

**Floor construction:**  
 **$U=0.30 \text{ W/m}^2\text{K}$**

**Made of the Izodom system:**

- 25 mm gypsum board
- 50 mm floor in the Izodom system (EPS and in-situ reinforced concrete beams)
- floor finish

**Roof:**  
 **$U=0.15 \text{ W/m}^2\text{K}$**

**Made of the Izodom system:**

- ceiling made out of gypsum board
- wooden roof truss
- thermal insulation (Izodom EPS elements)
- roofing tiles

**Main heat source:** solid fuel stove  
**Additional heat source:** fireplace  
**Cooling system:** no  
**Ventilation:** system with recuperation

**Energy consumption per year:<sup>[2]</sup>**  
**<25 kWh/m<sup>2</sup>**

**Energy cost per year<sup>[3]</sup>:**  
**4.32 PLN/m<sup>2</sup> (1.00 €/m<sup>2</sup>)**

**Which means 80% savings on heating costs when compared to a standard building of this type<sup>[4]</sup>**

**Standard heating costs for the building from that time<sup>[5]</sup>: 21.51 PLN/m<sup>2</sup> (5.01 €/m<sup>2</sup>)**



I AM VERY SATISFIED WITH THE IZODOM SYSTEM AND I THINK IT IS AN EXCELLENT SOLUTION.

ROBERT GRUSZECKI  
(CLIENT)



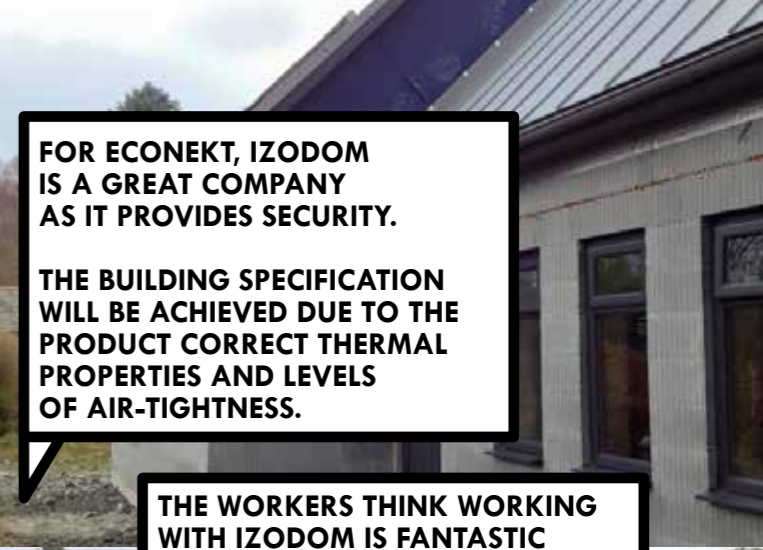
<sup>[1]</sup> To be found at: [www.horyzont.com/projekty/1088-sielanka-100-mdm-wersja-a-z-podwojnym-garazem.html#.VxdoOjB974Y](http://www.horyzont.com/projekty/1088-sielanka-100-mdm-wersja-a-z-podwojnym-garazem.html#.VxdoOjB974Y) <sup>[2]</sup> The estimate made based on the data provided by the client. <sup>[3]</sup> Total heating costs: PLN 800. Approximate cost estimated by the client. <sup>[4]</sup> Information checked for the same heating source. <sup>[5]</sup> Information can be found at: [www.ag-dar.vaillant-partner.pl/kalkulatory-on-line/kalkulator-kosztow-ogrzewania-domu-i-podgrzewania-cieplej-wody-uzytkowej](http://www.ag-dar.vaillant-partner.pl/kalkulatory-on-line/kalkulator-kosztow-ogrzewania-domu-i-podgrzewania-cieplej-wody-uzytkowej), available on 07.04.2016.

**UNITED KINGDOM**  
**LOCH LOMOND**

What: **Single-family House**  
 Function: **Residential**  
 Where: **Loch Lomond, United Kingdom**  
 Client: **Mrs B Crook / Mr T Hesse**  
 Architect: **Econekt**  
 Execution: **Econekt**  
 Building area: **179 m<sup>2</sup>**  
 Construction commencement: **April 2014**  
 Habited since: **not habited yet**  
 Approximate construction costs (installations excluded): **£130.000 (EUR 165.083)**  
 Man-hours necessary to build 1m<sup>2</sup> of the building: **0.1 man-hour/m<sup>2</sup>**  
 Total construction time: **6 weeks (nearly 3 of which were spent on ground works)**



15 kWh/m<sup>2</sup>  
energy consumption per year

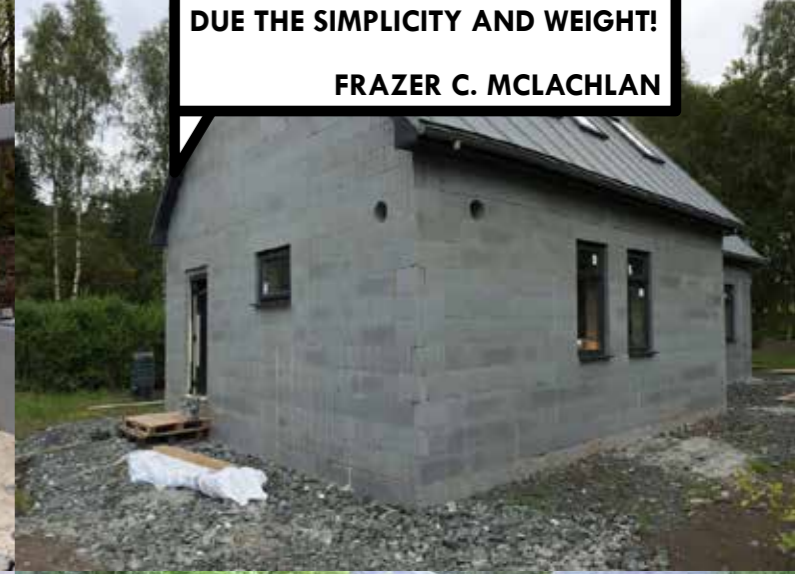


FOR ECONEKT, IZODOM IS A GREAT COMPANY AS IT PROVIDES SECURITY.

THE BUILDING SPECIFICATION WILL BE ACHIEVED DUE TO THE PRODUCT CORRECT THERMAL PROPERTIES AND LEVELS OF AIR-TIGHTNESS.

THE WORKERS THINK WORKING WITH IZODOM IS FANTASTIC DUE THE SIMPLICITY AND WEIGHT!

FRAZER C. MCLACHLAN



**Izodom elements:**

**MC 2/35** ( $U_0=0.15 \text{ W/m}^2\text{K}$ )  
 Neopor (wall elements)

**Outside walls:**  
 **$U=0.15 \text{ W/m}^2\text{K}$**

**Made of the Izodom system:**

- 25 mm Siberian larch (on 25 x 50mm timber battens) or stone slips (depending on level)
- 150 mm polystyrene (Neopor)
- 150 mm in-situ cast concrete
- 50 mm polystyrene (Neopor)
- 12.5 mm plasterboard (on 47x19 mm battens at 600 mm centres)

**Foundation and floor:**  
 **$U=0.13 \text{ W/m}^2\text{K}$**

**"SpanTherm" system:**

- 22 mm V313 chipboard flooring (on battens)
- 100 mm concrete
- 175 mm insulation (SpanTherm Slab)
- 100 mm void under the slab
- polythene DPM
- min 150 mm well compacted sand

**Roof:**  
 **$U=0.09 \text{ W/m}^2\text{K}$**

- zinc roof cladding (RHEINZINK Standing seam roofing in dark grey)
- vapour control layer (VLC)
- 22 mm sarking felt
- min 50 mm ventilated air space behind
- 120 mm rigid insulation between rafters
- 150 mm glass wool insulation
- 12.5 mm plasterboard (painted inside with gypsum top coat)

**Windows:** Low energy triple glazed UPVC windows

**Main heat source:** Log burner

**Cooling system:** None

**Ventilation:** Mechanical ventilation with heat recovery unit

**Tightness:**

Tightness of the building must not exceed 0.6 times/h with the difference of 50 Pa pressure between the inside and outside.

**Energy consumption per year<sup>(1)</sup>:**

<15 kWh/m<sup>2</sup>

**Energy cost per year:**

Unable to be estimated because of the uncommon heating source – log burner (no real data, as the building is not habited yet)



<sup>(1)</sup> No actual data available; building constructed to passive house standards.



**izodom 2000 polska**

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GPS: N 51°35'37.75"  
E 18°58'28.55"

