



Klimabloc in the first low-energy residential buildings in Serbia Experience from the field

Milena Gojković-Mestre
Director of Beodom



Amadeo (July 2009)

Amadeo II (August 2010)





Amadeo (July 2009)

1st low-energy residential
building in Serbia

Gross surface : 844 m²

11 apartments



Amadeo II (August 2010)

2nd low-energy residential
building in Serbia

Gross surface : 840 m²

12 apartments

Two sides of low-energy

Energy efficiency

Use less primary energy

Renewable energy

Use less energy from fossil fuels

Energy efficiency

Wall system

Better thermal insulation (floor-roof)

Care of thermal bridges

Good windows, low-e glazing

Insulation of pipes

Ventilation

Choice of a wall system

Essential component

Impact on buildability and durability

Impact on thermal performance

Impact on interior well-being

Financial considerations

Monolithic wall with Klimabloc 38



Klimabloc 38 evaluation

- Excellent buildability
- Superior durability
- Thermal performance
 $U = 0.33 \text{ W/m}^2\text{K}$
- Consistency in performance
- Fantastic thermal inertia
- One natural material, breathable
- Competitive in price



Klimabloc construction system we use on Amadeo II

Klimabloc 38 for exterior walls

Corner elements

Klimabloc 25 for load bearing interior walls

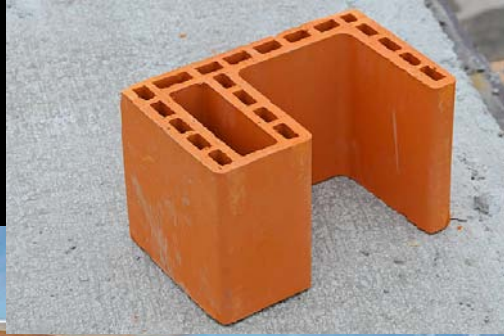
Klimabloc 12 for partition walls

Lintels

Klimabloc 38



Corner elements



Klimabloc 25 (interior walls)



Klimabloc 12 (partition walls)



Complementary solutions we use



Load bearing thermal break for balconies

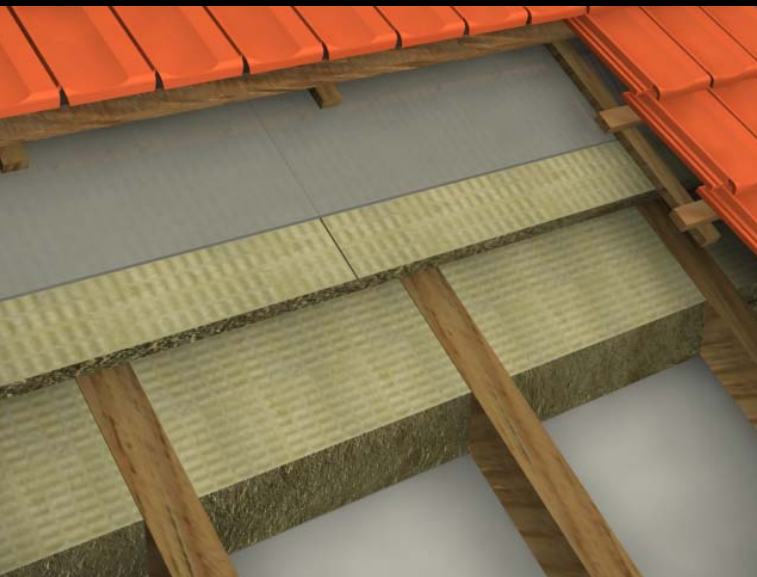


Industrial cork boards for sound insulation of interior walls



Thermo-mortar 4cm on the facade for improved thermal performance (perlite)

Others aspects of energy efficiency



Increased thermal insulation of roof and floor



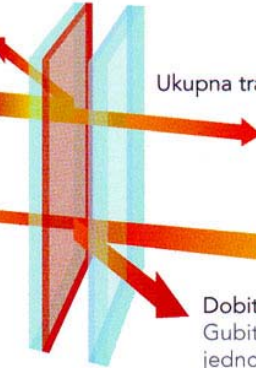
Summer / Leto

Ulazeca sunčeva energija 100%



Gubitak toplotne energije 22%

Winter / Zima



Ukupna transmisija sunčeve energije 42%

Dobitak toplotne energije 78%
Gubitak toplotne energije kod jednostrukog stakla = 100%

**6-chambers PVC windows,
SunGuard Climaguard Solar, soft low-e coating, argon fill
 $U = 1,1 \text{ W/m}^2\text{K}$ / $R = 0,91 \text{ m}^2\text{K/W}$**

Insulated shutter, low-e glazing, argon fill



Insulation of pipes (thermal and noise protection)

Result on Amadeo II



Renewable energy

Geothermal heating/cooling

Amadeo geothermal system



Grouping of the probes before connecting to the heat pump



Vaillant GeoTHERM VWS 300/2 geothermal heat pump and storage buffer



Connection of the vertical geothermal probes to the underground parking



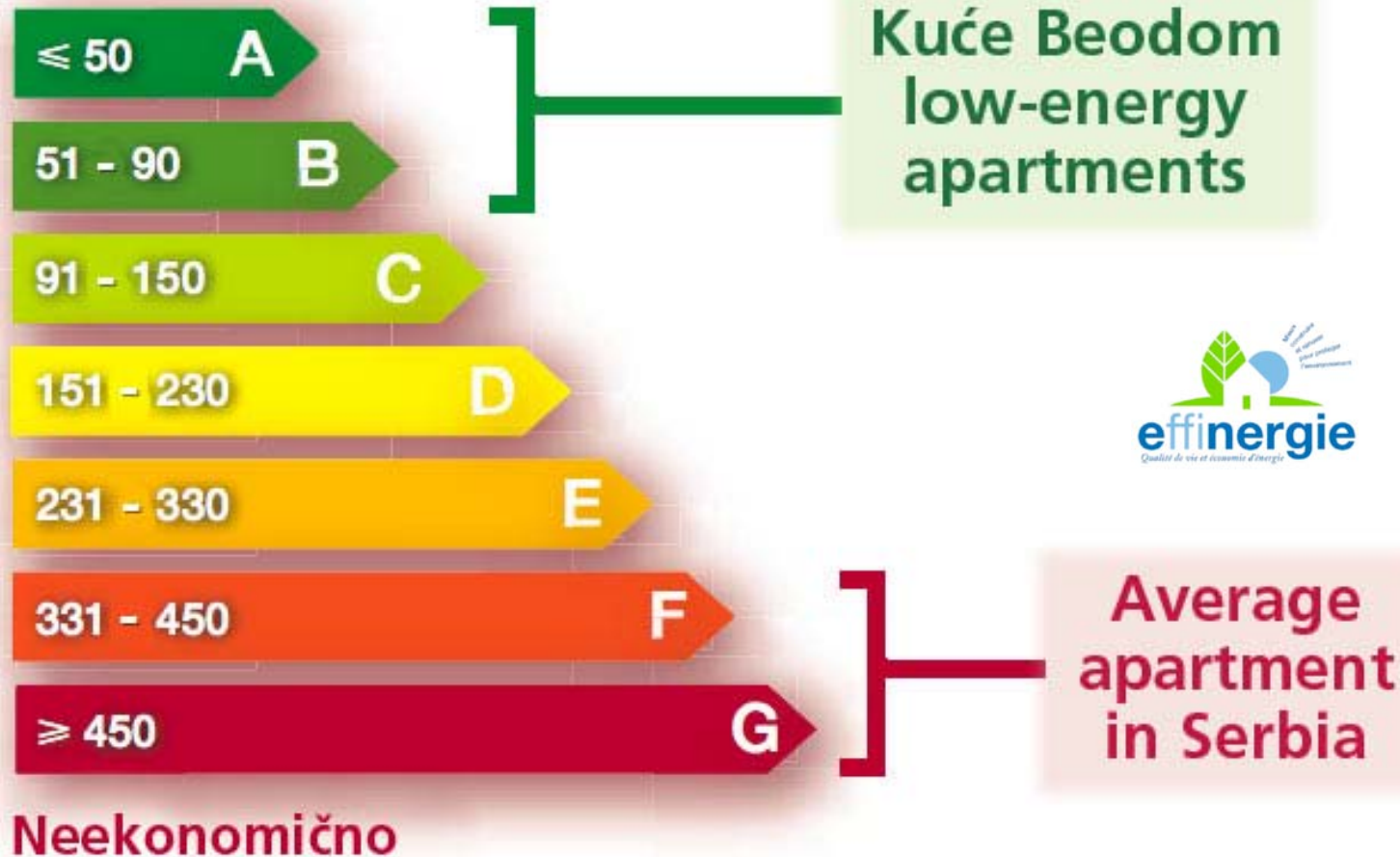
5 vertical geothermal probes going 100m underground

Heat pump
powering
underfloor
heating and
cooling
Save up to
75% of electric
energy

What do we expect?

Energy spending in dwellings in kWh_{pe}/m².year*

Ekonomično



*Kilowatt hour of primary energy per square meter and per year for heating, cooling, sanitary hot water, ventilation and lights.

Conclusion

Serbia needs energy efficient buildings

Klimabloc 38 can be used to implement them

Positive experience (people perception)

Regulations in Serbia have to be updated

www.beodom.com