



## Thermia plays a vital part in a wonderful passive building construction project in Ljubljana, Slovenia



Passive building construction is a building design strategy that uses natural sources of heating, cooling, and ventilation to create comfortable, environmentally friendly, and affordable buildings. A critical part of this is a modern and sustainable heating and cooling system, which Thermia provided for "Zelena rašica", 3 villa blocks with a total of 12 apartments.





View from Šmarna Gora mountain, a popular recreation area near the apartments.

### **Luxury apartments built to the highest specification**

When the developer began a project to build luxury apartments in a fantastic location in Spodnje Gameljne on the outskirts of Ljubljana, he was committed to the highest possible standards. The apartments were built to the highest possible specifications according to the principles of passive construction, with wooden vertical cladding from Siberian larch and sheet metal cladding.

They boast clean lines, minimalist style, modern design and an elevator that takes you directly to your apartment. The apartments range from 105 m<sup>2</sup> to 120 m<sup>2</sup>, offer spacious and bright living spaces and a beautiful adjoining atrium or terrace.

The apartments also include two parking spaces in the basement

garage, two additional outdoor parking spaces and a storage room in the basement.

### **Stunning location**

The apartments are in a stunning location, in a tranquil village in a beautiful natural environment, with wonderful views of Šmarna Gora and St Mary's Hill very close by, yet the city center of Ljubljana, one of

the smallest and greenest capitals in Europe, is only a few kilometers away.

### **Thermia was involved from the start**

Right from the start, the developer was clear that he wanted a leading edge energy system to provide sustainable heating and cooling for the new apartments.



View from the top on apartments with terraces





Apartment building "Zelena rašica"

Energy efficiency and sustainable construction are key values for the developer and important motivators for buyers choosing this type of housing. That is why the developer brought Atlas, a Thermia reseller, together with the architects during the planning phase. Our team analyzed the developer's objectives and wishes, and then we recommended a solution, which was immediately

embraced and incorporated as part of the project.

The new energy system needed to fit into the beautiful and peaceful natural environment, without creating visual impact or noise. In order to avoid placing any disturbing elements on the outside of the buildings, we proposed a geothermal system with no visible external parts.



Sample living room visualisation

## Fact Box

**Name:**

Villa block Zelena Rašica

**Place:**

Spodnje Gameljne in Slovenia

**Type of construction:**

multi-apartment building

**Energy source:** borehole

**Year of installation:** 2021

**Size of the building:**

12 residential units with a total area of 1,800 m<sup>2</sup>

**Building insulation:**

solid wood construction according to required building standards

**Heat pump model:**

Thermia Mega M (11-44 kW)

**Energy distribution:**

underfloor heating and cooling, convector cooling



Bojan O. - apartments developer

We drilled eight boreholes with a total depth of 800 m along the property boundary, and connected them to a common machine room in the basement, where the garages are also located, with a Thermia Mega M ground source heat pump with a modulated capacity of 11 - 44 kW.

#### **A smooth installation process**

Because we were involved from the start, at the conceptual design stage of the new project, we were able to recommend the most efficient, aesthetic and practical solution, with all parts of the new system in the best possible places.

Before the main construction work began, we drilled the boreholes and installed ground collectors and ground source manifold chambers. During the construction phase of the basement, we connected the manifolds to the

machine room, which was the first step in creating a permanent supply of renewable energy from the ground to the building.

We chose the Thermia Mega M heat pump (11-44 kW) to heat and cool the building and provide hot water. We used Muovitech's TurboCollector as the ground collector.

#### **Superbly efficient system**

One of the most special features of the system is the technology it uses to recover waste heat during cooling. During the summer months, this provides a large amount of free hot water, because, instead of discharging it into the environment, the energy is used to heat domestic hot water. The system also benefits from hot gas technology, which reaches up to 90°C at the compressor outlet. This heat is used to raise the

temperature of the domestic hot water to over 70°C.

#### **Easy to commission and easy to use**

When construction was complete, the electricians followed simple instructions to make the rest of the control connections. We then switched on functions including the hot water heating, hot water circulation and floor and convector cooling. We set the system up so that it operates automatically, with automatic switching between functions and no downtime. The developer and their team were introduced to the system, shown how to adjust the controller settings and how to deal with any alarms. To date, they haven't needed any support from us since commissioning.

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Yasin Jodeh, Managing Director at Atlas Trading d.o.o.

Examining the existing situation, Atlas Trading recommends a system solution with correct sizing,

a comprehensively prepared execution plan and a complete operational test run, with all the work carefully supervised to bring the system into full operation.



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