



## Low-carbon heating and cooling system for a single family home



*“From the earliest stages of the project, the investor presented us with a list of challenging requirements for the new heating system. It was tough to meet them but we ultimately succeeded in satisfying the homeowner and providing all the requested functions. Moreover, when we measured the SPF again three years later, it was 4.17 – the perfect result.”*

*- Yasin Jodeh, Technical Manager, Atlas Trading d.o.o.*

### **New luxury private residence**

The investor was building a new house and decided to use a renewable energy source. The house has a living area of 235 m<sup>2</sup> and is located in the town of Domžale, central Slovenia, around 15 minutes from Ljubljana and the same distance from the Alps. The homeowner was very well informed about different

types of renewable energy sources, as well as about the energy demand of his new home. The basement features a home spa with sauna, fitness machines and a Jacuzzi, which requires heating throughout the year. The ground floor has large glass surfaces, meaning that it needs to be heated in winter as well cooled during the summer.

## Fact Box

**Type of building:** single-family semi-detached house

**Location:** Domžale near Lubljana, Slovenia

**Characteristics of the building:**

- Heated area: 235 m<sup>2</sup>
- Heating, domestic hot water and cooling

**Applied solution:**

Renewable heating

- Thermia Diplomat Optimum G3

**Heat distribution system:**

underfloor heating and wall heating

- Energy delivered by heat pump for heating 83,000 kWh / 3 years
- Energy delivered by heat pump for hot water 12,000 kWh / 2 years
- Energy consumed by heat pump 22,777 kWh / 3 years
- SPF (Seasonal Performance Factor) 4.17
- Up to 63% CO<sub>2</sub> savings\* compared with oil

**Installing contractor:** Atlas Trading d.o.o.

\* CO<sub>2</sub> savings were calculated on [co2.myclimate.org](http://co2.myclimate.org) for Slovenia (3,690 kg CO<sub>2</sub> emissions from the heat pump; 8,858 kg CO<sub>2</sub> for natural gas and 10,100 kg CO<sub>2</sub> for oil)

## Real operational savings – performance that speaks for itself

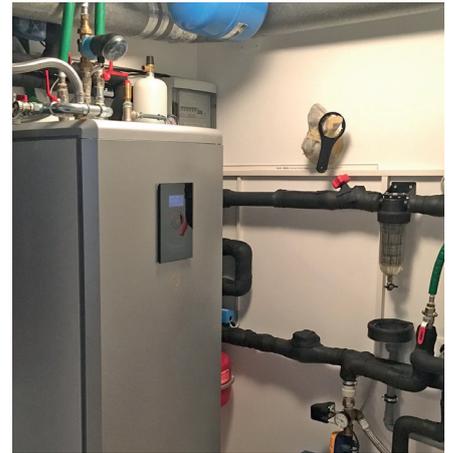
In the three years following installation, total energy production was 95,000 kWh. Over the same period, total energy consumption – including the system circulation pumps, submersible groundwater pump and passive cooling – was 22,777 kWh. This even included powering the pump used for watering the grass on the property. Taking account of all functions provided by the system, the SPF (Seasonal Performance Factor) is close to 4.17, which is an excellent result.

The first floor also required cooling and heating functions, as well as domestic hot water. *“The biggest challenge was to run the heating and cooling simultaneously between floor levels, depending on the operation mode, while at the same time setting up simple and user-friendly controls for the whole system”*, explained Yasin Jodeh, Technical Manager at Atlas Trading d.o.o., the company that designed and delivered the system.

### Low-carbon heating in a modern, energy-efficient home

After carefully examining all available options, the homeowner

decided on Thermia. The system proposed by Atlas Trading was based on the Thermia Diplomat Optimum G3 8kW ground-source heat pump with passive cooling module and met all the project requirements. Because the region is rich in clean groundwater, a decision was made to use ground water with a temperature of around 10°C as the energy source for the heat pump. Using the groundwater and a floor/wall heat distribution system enabled the project team to improve system performance as well as increase the energy capacity of the heat pump to 10 kW.



## Atlas Trading

– your experienced renewable energy partner in Slovenia



Atlas Trading I.l.c. is a leading Slovenian company in the distribution and installation of energy-efficient heating and cooling systems. A family company, it is known for its innovation and finding solutions outside the established frameworks. “A big advantage is the flexibility of our tailor-made solutions. Since the company

was founded in the late 1980s, we have repeatedly launched onto the market innovative, high-quality and efficient products. This remains the reason why we are a pioneer in the heating and cooling industry and why we represent some of the most well-known brands for energy efficient heating and cooling on the market

today”, explained Yasin Jodeh, Technical Manager at Atlas Trading d.o.o. Examining the existing situation, we recommend 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.

Atlas trading d.o.o., Celjska cesta 45, 3212 Vojnik, T: 00 386 03 425 54 00, [info@atlas-trading.si](mailto:info@atlas-trading.si) | [www.atlas-trading.si](http://www.atlas-trading.si)

## THERMIA

# THE ULTIMATE ENERGY PROVIDER SINCE 1923



### Pioneering heat pumps

For the last 50 years, we have dedicated all our resources and knowledge to developing and endlessly refining one product: the heat pump. Our focus on geothermal energy has given us world-leading knowledge in heat pump technology.



### Engineered with passion

Developing truly sustainable renewable energy solutions can only be achieved with passionate, dedicated and uncompromising experts. Some of Europe's most highly qualified engineers can be found in our own R&D center.



### Born in Sweden

All our products are designed, manufactured and tested in Sweden using the latest technology and the highest quality components. We are proud to count world-leading industry specialist, Danfoss, among our technology partners.

