



## Modern house uses renewable energy

A couple from Sweden decided to use renewable energy and installed an Inverter Mini, Thermia's latest and most advanced inverter-driven ground source heat pump.

Using heat pumps is an innovative and creative way of taking action to protect the environment and is a solution that will contribute positively to reducing CO<sub>2</sub> emissions in the years to come.



### New, modern house

Michael and Liselott decided to build a single-family home. It is located in the town of Arvika in Värmland in Sweden. The house was constructed from wood and very well insulated, resulting in low heat loss. It provides 132 m<sup>2</sup> of living space and has a 25 m<sup>2</sup> garage, giving a total area to be heated of 157 m<sup>2</sup>. Thanks to the well-insulated building envelope, this requires just 5.5 kW of heating energy. To maximize living comfort and keep running costs as low as possible, the couple chose to install a water-based floor heating system.



Michael and Liselott house

### Green solution from Thermia

The Inverter Mini installed in the house can provide both heating and domestic hot water and is Thermia's latest and most advanced inverter-driven ground source heat pump. In addition, the Inverter Mini offers the fastest and most cost-efficient hot water production in its segment. This is enabled by two technologies developed by Thermia: the inverter itself and tap water stratification with a built-in 180-liter water tank. In daily use, this means there is no problem meeting high hot



Living room and kitchen

*'...We don't notice the heat pump at all – just how warm and cozy our home is all the time...'*

**Michael Olofsson, owner**



Living room and kitchen



*'...my CO<sub>2</sub> contribution will be 96 % lower compared with gas or oil heating system. I'm proud and happy to be part of clean air in my town'*

- Michael Olofsson, owner

water demands in the morning or evening.

*"We don't notice the heat pump at all – just the fact that our home is always nice and warm. The heat pump's efficiency and very low sound level are two things that have especially impressed me",* commented house owner Michael Olofsson.

Petter Lykken, Thermia's product manager, explained more about these characteristics: *"The new heat pump can meet the requirements of the most*



Bathroom



Inverter Mini ground source heat pump

demanding homeowners and is in a class of its own in terms of hot water production. Moreover, the new mechanical design makes the Inverter Mini the quietest heat pump in its segment. During operation, the sound level can be as low as 29 dB, which is comparable to the noise of rustling leaves.”

When equipped with optional accessories, the Inverter Mini can provide pleasant cooling during the summer months. By taking advantage of the cool brine in the ground loop, cooling is created at a cost equivalent to the energy consumption of a 50-inch modern LCD television. Cooling produced by a ground source heat pump is significantly more cost efficient than traditional air conditioning. The Inverter Mini’s control system can be directly connected to the internet, allowing the user to monitor the heat pump from

any smartphone, computer or tablet. The ‘Thermia Online’ app that enables this functionality is available for both Android and iPhone operating systems.

#### Climate protection begins at home!

The new Inverter Mini provides extremely energy-efficient heating and guarantees comfort, all year round. Compared to a conventional installation based on gas or oil, the new system uses 70% less energy while reducing both costs and CO<sub>2</sub> emissions by over 50%. Michael is clearly convinced: *“In our house alone, we are saving around 12,500 kWh of energy every year. Bearing in mind that Swedish electricity comes from “green” sources, the amount of CO<sub>2</sub> we produce will be 96% lower compared with a gas or oil heating system. I’m proud and happy that we are actively contributing to clean air in our town.”*

## Fact Box

### Type of building:

Single-family house

**Location:** Arvika, Värmland in Sweden

### Building characteristics:

- Heat demand: 16 545 kWh
- Heat distribution system: floor heating 35/30°C
- Occupants: 2

### Applied solution:

Geothermal heating

- Thermia Inverter Mini 1.5 – 7 kW
- 120 m borehole as energy source
- Energy consumption (by heat pump): 3978 kWh
- Energy savings: 12 567 kWh
- SPF (Seasonal Performance Factor) 4.2
- CO<sub>2</sub> savings: 96 % compared with a gas- or oil-fired system\*

**Completion date:** 2017

\* CO<sub>2</sub> savings were calculated on [co2.myclimate.org](http://co2.myclimate.org) for Sweden (314 kg CO<sub>2</sub> emissions from the heat pump; 4628 kg CO<sub>2</sub> for natural gas and 5277 kg CO<sub>2</sub> for oil)

## THERMIA

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### 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. All components inside our ground source heat pumps are made in Europe by world-leading industry specialists.

