



## Elementary school in Estonia benefits from renewable energy

Public buildings are major users of energy. The use of heat pumps is an innovative and creative way of thinking green and is a solution that will contribute positively to reducing CO<sub>2</sub> emissions in the years to come. In addition, they are capable of achieving large cost savings.





Alatskivi elementary school

### Elementary school with history

Alatskivi elementary school is located in the Tartumaa region of eastern Estonia. The school teaches around 100 children, from preschool to 6th grade. It is beautifully situated close to lake Peipsi, the largest lake in Estonia, through which runs the border with Russia. The schoolyard is spacious and there is a gravel area used for football and other games. The school site is surrounded by greenery and there is a small lake nearby.

The beginnings of Alatskivi elementary school go back to 1920. The current building was constructed in 1962, since when it has been expanded through the addition of new rooms and functions. In 2016, the school's administration began looking into

upgrading the heating system, as finance manager Nikolai Josiptšuk explained: *"Because we live and work surrounded by nature, we were keen to find an alternative to our existing oil-fired system. The local municipality suggested that we install a geothermal heat pump and it proved to be a very good decision. As a result, our heating costs have fallen by 50%. We are very satisfied with the geothermal heat pump we chose and feel very comfortable."*

### Green solution from Thermia

The retrofitted heating system is based on the Thermia Mega XL (21 – 88 kW) model. This is a new commercial ground source heat pump with an inverter-driven compressor. The main advantage of this heat pump is that it continuously adjusts heating or cooling output to current demand,

which enables it to supply 100 per cent of the building's energy requirements. Hot gas technology provides a high volume of hot water and makes hot water production extremely cost-effective.

In all, three Thermia MEGA XL units with a 1000-liter buffer tank have been installed to produce heating and hot water. Heat is distributed via radiators. Renewable energy is extracted from a horizontal ground loop totaling 9,600 meters in length. The old oil-fired system has been retained to serve as an auxiliary heater and to provide back up during periods of peak demand.

A further benefit of the new system is that Thermia Mega can provide simultaneous heating and cooling as well. Having a cooling function in public buildings is often perceived as an expensive luxury, but not with the Thermia solution. The latest heat pumps can provide cooling as a standard feature and at no extra operational cost. In warm weather, when cooling is the primary function, any surplus heat is simply used to produce hot water. The system is able to swap between the hot and cold tanks without using energy from the boreholes. Today, passive and active cooling is the most energy-efficient and



Children during the lesson



Schoolboys in the gym

## Fact Box

### Characteristics of the building

- Heat demand: 240 kW
- Heat distribution system: 55/45 C
- Number of children: 100

### Applied solution:

- Geothermal heating
- Horizontal loop 9 600 m long
- 3 Thermia Mega XL 21-88 kW
- Cost and CO<sub>2</sub> savings: 50 % compared with oil system

**Completion date:** 2016

*'... our running costs fell by 50%! We are very satisfied with the geothermal heat pump we chose and feel very comfortable.'*

**Nikolai Josiptšuk. Finance Manager of Alatskivi Elementary School**



School entrance

cost-effective way of cooling large buildings.

### Environmental footprint awareness

The new energy solution has enabled the management of Alatskivi elementary school to provide an extremely energy-efficient heating system that is sustainable, renewable and guarantees comfort for everyone using the buildings. 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 50%. For major consumers of energy like schools and other public buildings, this represents a real breakthrough in terms of reducing their environmental footprint.



Heating room



AIR WAVE

# AIRWAVE OÜ – THE LEADING PARTNER FOR HEATING AND RENEWABLE ENERGY IN THE BALTIC STATES

Airwave LLC is one of the largest heating, ventilation and air conditioning systems suppliers in the Baltic States and has been active in this field since 1999. With head offices in Tallinn, Riga and Vilnius, the company distributes equipment throughout Estonia, Latvia and Lithuania. Airwave's product range includes heat pumps, air conditioners, ventilation machines, humidifiers, dehumidifiers, water chillers, installation accessories and tools. We are a major authorized distributor and service center for leading international brands in heating and air-conditioning. Our customers include professional cooling and ventilation equipment installation companies and the contractors of specialized equipment for HVAC applications. Airwave has over 200 regular customers across the Baltic region.



Maaküte OÜ is a leading installation company with vast experience in geothermal energy that offers its customers a complete solution. Maaküte can supply and manage all phases of the project, from design to drilling the borehole and installing the ground source heat distribution system, right up to the commissioning of the whole heating and ventilation system. Maaküte provides a comprehensive service for the entire system, enabling its customers to enjoy efficient, reliable and sustainable energy systems for many years to come.



Airwave OÜ

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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.

