

RENEWABLE ENERGY

PERFECT FOR YOUR BUSINESS, PERFECT FOR THE ENVIRONMENT

Thermia heat pumps for commercial applications

thermia.com



Thermia - more than 90 years of **history, experience** and **innovation**

In 1973, at the height of the global fuel crisis, Thermia launched the world's first heat pump with its own integrated hot water tank. Ever since then, we have been 100% dedicated to developing, refining and manufacturing heat pumps.

We make heat pumps and nothing else. All our resources, expertise and experience are invested in what we believe is the future of renewable energy – for domestic and commercial use alike.

Thermia began life as one man's passion. Way back in 1889, Per Anderson began developing some of the world's first energy-efficient stoves for cooking, heating and hot water. By 1923, his business had matured sufficiently for him to found Thermia.

Ever since then, we have been guided by Per's original vision: "The products one releases must be not only the best of their time, but before their time, over time."

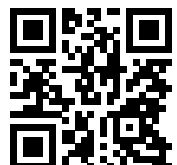
Today, we are producing some of the most technologically advanced and efficient heat pumps in the world. And we keep making them better.

Yet remarkably, perhaps, thousands of people across Europe are still using the very first heat pumps we manufactured in the mid-1970s. 50 years of constant use and they are still going strong – long after they repaid their owners' original investment.

That is part of our secret: to be constantly at the cutting edge of technology while knowing that every product we make today will be delivering value – and protecting the environment – far into the future. For Thermia and for our customers, sustainability is a way of life.

We are proud that the name Thermia is known across Europe for outstanding quality, innovation, comfort and sustainability. We look forward to writing the global future of Thermia in the years ahead.

Read our
Thermia story:



Welcome to **Thermia** the pioneers of geothermal energy



Thank you for your interest in our company. Choosing an energy solution for a commercial building is an important and complex decision. We hope this brochure will guide you through the process, answer your questions and inspire you to collaborate with Thermia – the pioneers of geothermal energy.

Thermia has been working with heat pumps and pioneering the field of geothermal technology since 1973. Over the decades, we have installed more than a quarter of a million systems, from domestic to major commercial installations.

All our heat pumps are designed and manufactured in Sweden using the latest technology and top-quality components. At our R&D center, we work continuously to take geothermal energy and heat pump technology to the next level in terms of energy efficiency, ease of use, sustainability and – not least – comfort for the people who benefit from our products.

If you are looking for the ultimate energy-efficient, high-power and reliable heat pump for your project, I believe you have come to the right place. But take your time and explore our solutions for yourself. If you have any questions, we are always here for you.

Welcome to Thermia's world of smart energy for large, public and private buildings.

*Hans Wreifält,
Sales Director Thermia Europe*

TABLE OF CONTENTS

page
5

Geothermal technology for commercial buildings

- Geothermal energy is the key to sustainable development
- “Being green” – the higher the building, the bigger its carbon footprint
- Geothermal heat pumps will work in any commercial building
- Heat pumps are ideal for all building types
- All Thermia heat pumps fully comply with the Ecodesign Directive

page
24

Renewable heating and cooling, across Europe - From the coldest north to the sunniest south

- Swedish housing association chooses the latest Thermia heating solution
- Modern ceramic tile-laying products and geothermal technology in one building, Spain
- Conference Center powered by Thermia geothermal solution
- Modern spa resort with a contemporary eco heating system, Sweden

page
11

Welcome to an energy-efficient world

- What to consider when choosing a commercial heat pump
- Four different sources of energy for your property
- Thermia Mega heat pump
- Thermia Robust Eco heat pump
- Thermia Solid Eco heat pump
- Finding the perfect heat pump for your building
- Why choose Thermia heat pumps?
- With Thermia solutions, each application can be tailored-made - hot water cylinders, buffer tanks and back up heaters

page
30

Born in Sweden, made for the world

- Thermia heat pumps are designed, tested and manufactured in one of the harshest climates in Europe.
- The geothermal energy experts since 1973
- One of Europe's leading R&D centers
- Unbeatable heating solutions for tomorrow



If we can achieve major savings for domestic homes,
imagine what we can do
for commercial buildings.

Geothermal technology for commercial buildings

Increasing the energy efficiency of buildings is a fundamental political and economic goal in many European countries. With their extreme energy efficiency, heat pumps will play a central role in achieving these goals in the years ahead.

Heat pumps combine heating, hot water and cooling in one economical and eco-friendly device. They are particularly suitable for buildings with high demands on heating, cooling and hot water.

The technology is well established and offers benefits ranging from increased comfort, reduced energy consumption and CO₂ emissions to significant savings on operating and maintenance costs.

Geothermal heat pumps – the best of the best

Geothermal heat pumps represent the most efficient heating and cooling equipment on the market today. This is because they simply move heat from one place to another, instead of generating it from a fuel source like oil or natural gas.

Geothermal heat pumps draw heat from the ground, raise its temperature and transfer it to the building's energy system. In the summer, the process can be simply reversed. The heat pumps collect heat from the building and deposit back it into the ground, effectively cooling the building.

Heat pumps reduce whole life cycle cost (LCC) and save you money – for years to come

Typical HVAC systems account for around 40% of total energy use in commercial buildings. Heat pumps provide as much as 75% of the energy you need “for free” while simultaneously heating and cooling your building to provide the highest possible level of comfort.

At the point of purchase, a heat pump system will cost more than a conventional fuel-based system of comparable capacity. But here's where it gets interesting. No matter how large or complex your system, heat pumps will pay back 100% of your

initial investment in less than 10 years. We will be happy to provide you with documented evidence.

From then onwards, your heat pump will be providing your business with a constant supply of endlessly renewable, ultra-cheap energy, reducing operating costs and increasing profitability. All day, every day, for as long as the system lasts.

In terms of total life cycle cost (LCC) of your system, nothing can beat a heat pump. Period.

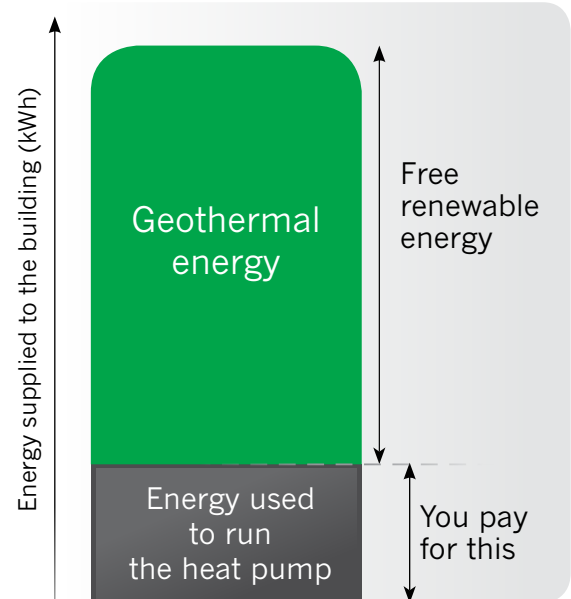
Comfort for building users and tenants

Because they can provide full heating and cooling capacity on demand, heat pumps offer superb comfort. Some installations can cover 100% of your heating requirements. This means you don't need to use back up heat or extra air conditioning. A geothermal heat pump can do the entire job on its own.

CO₂ reductions – meeting planning targets

Geothermal heat pumps require only a small amount of electricity to run, enabling you to significantly reduce both your consumption of oil or natural gas and your carbon footprint.

If you choose to get your electricity from a renewable source, your carbon footprint will virtually disappear.



This graphic shows the building's total energy consumption for heating and hot water. The grey area shows the energy used to run the heat pump. The calculation was made for a building of 1 000 m² in an average weather year.

Geothermal energy is the key to sustainable development

With the twin goals of reducing costs and minimizing waste, pressures on building design, operation and performance continue to grow. Based on a constantly renewable energy source – geothermal energy – Thermia solutions can help you successfully meet these challenges.

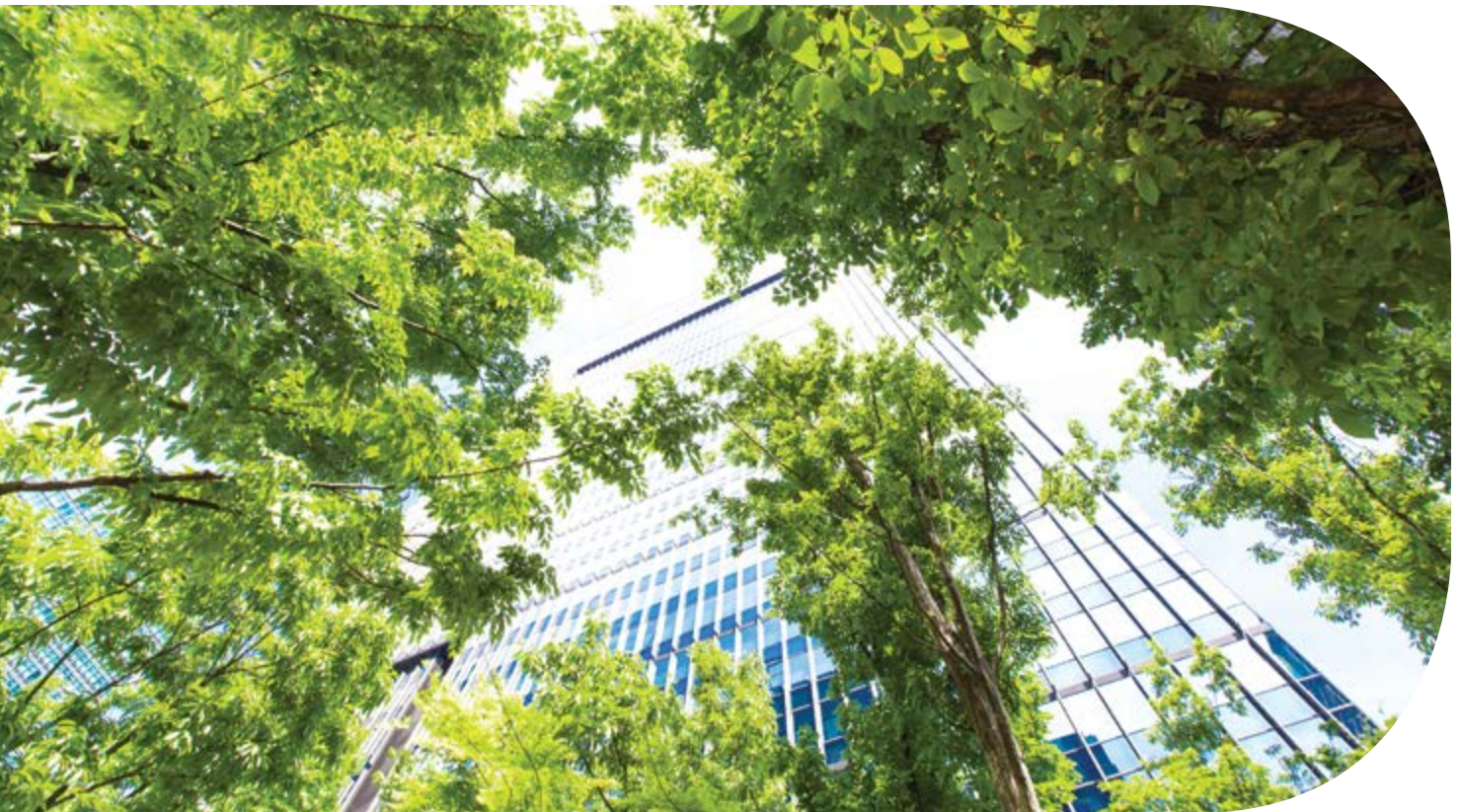
Today's trend towards low-energy building reflects radical changes

in the way buildings are being designed and constructed to reduce their environmental impact. For heating and cooling, the most efficient solution for large-capacity buildings is geothermal heat pump technology.

As an endlessly renewable energy source for any commercial building, heat pumps should be considered at the earliest design

stage. Incorporating geothermal heating and cooling into your project will significantly reduce annual energy consumption and operating costs.

Heat pumps allow greater flexibility in the interior layout of the building and the absence of external installations like cooling towers gives architects more freedom in the exterior design of the building.



“Being green” - the higher the building, the bigger its carbon footprint

Heat pumps harvest geothermal energy stored in the ground, air or water and convert it into an environmentally sustainable indoor climate for the building. Because no fossil fuels are burnt, heat pumps are extremely environmentally friendly and help you achieve your emissions targets.

Rather than using more of our increasingly scarce natural resources, heat pumps supply more energy than they consume by using the freely available, inexhaustible geothermal energy stored in the earth, air or water.

By installing a heat pump, you are playing a significant part in improving the climate, with sustainable reductions in CO₂ emissions of up to 49%.*

* “Heat pump technology and environmental impact”
Swedish Heat Pump Association



Geothermal heat pumps
will work in any commercial building

Heat pumps are ideal for all building types

Today, commercial heat pumps are being successfully used in virtually every building type, from schools, nursing homes and hospitals to hotels, offices, warehouses, swimming pools and more.

Public and office buildings typically benefit from the ability of heat pumps to provide heating and cooling at the same time. Residential buildings, hotels and spa facilities benefit from their ability to supply large quantities of hot water while sports, healthcare and leisure centers profit from their outstanding cooling function.

Low-energy buildings

A low-energy building is any type of building that uses less energy than a conventional one. The first step in sustainable, low-energy building is integrated planning. This takes the entire life cycle of a building into consideration from the very beginning.

The right heat pump can cover a wide range of applications in a single system, from heating and hot water to cooling and pool heating. This avoids investing in and

maintaining multiple systems. With many countries now making energy efficiency a standard requirement for new builds, choosing a future-proof energy source has never been more important.

Heat pumps also work in harmony with current trends like Thermally Active Building Systems (TABS). These systems integrate indoor climate management into the fabric of the building, minimizing the need for conventional technologies.

Replacement and renovation

The savings that a heat pump can provide depend upon the type of house, its geographical location and the existing heating system.

Heat pumps can be adapted to existing heating systems and even combined with different types of supplementary energy sources, such as solar or gas.

This makes them ideal for renovations, where they can be installed within the context of a partial retrofit. In these cases, the heat pump replaces the existing system, which can then be cost-effectively used as an auxiliary heating source, as required.



All Thermia heat pumps fully comply with the **Ecodesign Directive**

The European Energy Related Products Directive (ErP) sets out minimum efficiency standards for energy-using equipment. In September 2015, this was extended to include heat pumps and other heating sources.

The energy efficiency rating system for heat pumps classifies them into nine categories, with the best being A+++ . The labels are applied to heat pumps according to their intended use: as a single source of heating, combined with

domestic hot water preparation, or as part of an entirely integrated system that includes solar thermal power, domestic hot water preparation, temperature control, etc.



Process heat applications

Industrial and commercial processes create enormous amounts of waste heat that is often simply thrown away. From hydraulic presses and heavy machinery to dryers, cooking, food storage – even animal waste on farms or the tap water used

to heat water treatment plants – heat pumps can be used to recover and re-use waste process heat in many applications. The warmer the source, the more savings can be achieved.

Heat pumps – in a class of their own

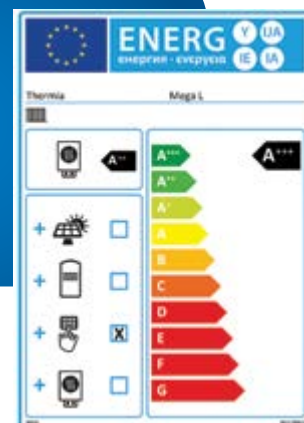
In their stand-alone form, heat pumps receive a maximum A++ rating. As part of integrated systems, they can be rated as high as A+++.

In contrast, no heating boiler (oil, gas, bio-mass) is rated higher than A. In some cases, they can be as low as C or D.

All Thermia large-capacity heat pumps come with the highest possible rating from A+ up to A+++ depending on the model of heat pump, the choice of heat receiver and the level of system integration.

Did you know?

All products intended for installations up to 70 kW and water heaters up to 500 liters must have energy labels.





Welcome
to an **energy-efficient world**

What to consider when choosing a commercial heat pump

Thermia commercial heat pumps are available in a variety of sizes and offer different functions, allowing them to be configured to precisely suit the needs of your building.

We work closely with system designers to help create a heating and cooling system that will maintain optimum comfort, achieve low operating costs and require almost no maintenance.

This handy checklist will help you in your discussions with your architect or consultant heating engineer.



How much energy do you need?



How much energy does your building need?

Are you planning a simple retrofit based on the existing heating system or installing a completely new system?

Do you plan to extend the building after a few years?



For small to medium buildings with simple systems or for retrofitting projects, choose *Thermia Solid Eco*.

For larger buildings with more advanced requirements – or if you plan to extend your building in the future – choose *Thermia Mega*.



Which functions do you need?



How many occupants/ tenants does the building have?

How much domestic hot water is needed (volume and temperature)?

Does your building need all functions – heating, hot water and cooling – or just heating?



If your building requires a stable source of heating with one type of heat distribution system, choose *Thermia Solid Eco*.

If you need heating and cooling – especially if you want to benefit from simultaneous heating and cooling – or if demand for domestic hot water is high, choose *Thermia Mega*.



Do you need an intelligent system?



Do you need to integrate the heat pump with other systems?

Do you need to control your heating system remotely?



All Thermia commercial heat pumps can be monitored via the internet: if you need to integrate the heat pump into the building management system, choose *Thermia Mega* or *Robust Eco*.

Four different sources of energy for your property

Energy is stored all around your property. Nature has provided three completely natural sources of energy that heat pumps allow us to efficiently extract. The energy is stored in the bedrock, the ground, the groundwater or lake water

and the air - it is a store that is constantly replenished by the heat of the sun. Thermia offers four different solutions to capture the stored energy and provide you heating, cooling and hot water.

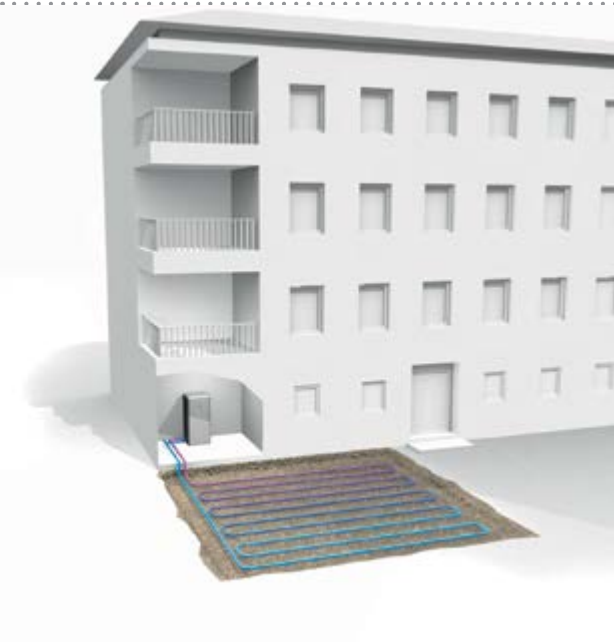


Ground source – boreholes

A geothermal pump uses the solar energy stored in the bedrock. Pipes are lowered into a number of boreholes, drilled to a depth of 100–200 meters.

Advantages:

- You do not need a large plot of land
- The rock maintains an even temperature all year round
- Little affect on the plot of land
- Permits passive cooling



Ground source – horizontal loop

A ground source heat pump uses the solar energy stored in the ground. Plastic tubing is laid in loops at a depth of one meter. If the bedrock is too deep or you do not wish to drill on your land for some other reason, you can choose a ground source heat pump instead.

Advantages:

- No drilling needed
- Lower installation cost than geothermal
- The ground loop maintains an even temperature all year round
- Permits passive cooling



Groundwater

A groundwater heat pump uses the energy stored in the groundwater. The groundwater is pumped up from the bedrock and the energy is extracted by the heat pump before the water is returned to the bedrock.

Advantages:

- Lower drilling cost than geothermal
- Even and high temperature means improved efficiency
- Other types of process water can be used
- Permits passive cooling



Exhaust air

The heat pump recycles the warm exhaust air that is ventilated out of buildings. The system requires a mechanical ventilation system. Install a heat pump in the basement and an air/brine heat exchanger on the roof and connect these with two brine water pipes.

Advantages:

- Low investment and running cost
- Can be combined with other heat sources (rock, ground, etc. to further increase the efficiency level
- Works perfectly with inverter-driven heat pumps, as the heat pump can precisely adjust to the energy available in the exhaust air at the ventilation unit



NEW
Inverter
technology
inside!

Why choose Thermia Mega?

- ✓ Reduces heating costs by up to 80%
- ✓ Reduces energy consumption by over 30% compared to a fixed-speed compressor and heat pumps with tandem compressors
- ✓ Multiple functions in one device: heating, domestic hot water and cooling
- ✓ Simultaneous heating and cooling
- ✓ Capacity up to 1400 kW for the flexibility to expand your system as your needs grow
- ✓ Cascading up to 16 units
- ✓ Covers 100% of heat demand without the need for auxiliary/ back up heating
- ✓ Exceptional hot water performance thanks to hot gas and inverter technology
- ✓ Integration with other systems (Building Management System)
- ✓ Energy source control – heating capacity adapted to currently available energy source (boreholes or exhaust air)
- ✓ Online remote monitoring
- ✓ Acoustic performance (low noise)
- ✓ Designed and built in Sweden from top-quality European components

Authorized Thermia consultancy for system design

Thermia Mega

Geothermal heat pump for advanced applications with capacity up to 1400 kW



The Thermia Mega inverter-controlled commercial ground source heat pump is the ideal choice for all types of commercial buildings with advanced heating and cooling systems and very high demands on both energy-efficiency and functionality.



Heating capacity: 11-44 kW, 14-59 kW, 21-88 kW

Thermia Mega is available in three output sizes: 11-44 kW, 14-59 kW and 21-88 kW. It is also possible to “cascade-connect” up to 16 units to get up to 1400 kW capacity. Cascade-connected pumps start in sequence, depending on the energy need. This ensures that no more energy is used than is specifically required at any point in time, regardless of output.

Inverter technology adjusts precisely to real-time demand

Our inverter technology makes Mega extremely flexible and versatile, allowing it to be installed in all building types. Inverter technology continuously adjusts the heat pump’s output to current demand, enabling the heat pump to supply 100% of your energy requirements.

Powerful and user-friendly control system

For maximum ease of use, Mega features a color touchscreen and a web interface. The new controller supports an array of different functions, including passive/active cooling, water charging system (WCS), tap water control (TWC) or heat pump On/Off via the power grid.

Exceptional hot water production with hot gas technology

Thermia has developed a unique method for producing hot water. At the same time as water is heated for distribution through the building’s heating system, hot water is produced at very high temperature by an extra de-superheater. This means that during the part of the year when the building is heated, you get lots of hot water at a very low cost.

Online function and BMS integration

Thermia Mega’s online function allows you to remotely control and monitor the heat pump using a smartphone or computer. You can view current temperatures or set operating parameters whenever you like.

Building management systems are used to improve occupant comfort, maximize the efficiency of building systems and reduce energy consumption and operating costs. An effective BMS provides energy to rooms based on an occupancy schedule and monitors performance and device failures in all systems.

Mega can be easily connected to building management systems using a Modbus protocol.

5-year warranty

The quality of our warranties reflects the high standards of our manufacturing processes.

Mega is protected by a warranty on all functional parts, providing worry-free comfort without the unexpected cost of replacement parts.

If a covered repair is needed, an authorized reseller will respond promptly and make repairs using only original Thermia parts.



A+++ energy class when the heat pump is part of an integrated system in low-temperature applications

A++ energy class when the heat pump is the sole heat generator

Energy class according to Eco-design Directive 811/2013



The best technologies for **the most efficient** commercial heat pump

Condenser

The latest Micro Plate Heat Exchangers (MPHE) improve heat transfer and heat pump efficiency. Because they have been made smaller, they require less refrigerant, which in turn reduces the CO₂ footprint.

Frequency controlled low-energy circulation pumps

Hot Gas Water technology

Patented Hot Gas Water (HGW) technology produces hot water at higher temperatures than traditional alternatives and enables hot water to be produced at the same time as heating.

Acoustic performance

Acoustically engineered design ensures one of the lowest sound levels on the market.



Controller

The new controller in the Mega heat pump boasts a color touchscreen display and user-friendly icons that are easily understandable.



Inverter technology

At the heart of the Thermia heat pump is an inverter-controlled compressor. Inverter technology continuously adjusts the heat pump's output to the current heat demand. This means that the heat pump can supply 100% of your energy requirements without the need for auxiliary heating.

Electronic expansion valve

The electronic expansion valve delivers precise doses of refrigerant to the evaporator. Adaptive superheat control maximizes the efficiency of the refrigerant circuit and saves energy.

Powerful and unique control system

- Menu and algorithms developed by Thermia
- New color touchscreen
- User friendly, intuitive menu with icons and info-graphics
- Full overview of temperatures from refrigerant circuit
- Compressor “envelope” visualization
- Heat curve with 7-point adjustment
- Plug-and-play software update via USB slot
- Ready for BMS via Modbus

New inverter technology

- Premium quality compressor and inverter – the functional core of the heat pump – supplied by industry leader Danfoss
- Continuously adapting heating capacity to heat demand means increased energy savings
- No need for a back-up heating source
- Energy source control – heat pump can adjust heat load to available or limited energy source
- Power grid friendliness – soft start and lower starting current
- Can combine large heating demand in winter and smaller hot water demand during summer (no need for big hot water tanks)



Please visit our website
www.thermia.com
to find out more about
Thermia Mega

Thermia Robust Eco

Geothermal heat pump for advanced applications with capacity up to 336 kW



Thermia Robust Eco is the natural choice for larger buildings with advanced heating and cooling systems.



Why choose Thermia Robust Eco?

- ✓ Reduces heating costs by up to 75%
- ✓ Multiple functions in one device: heating, domestic hot water and cooling
- ✓ Simultaneous heating and cooling
- ✓ Capacity up to 336 kW for the flexibility to expand your system as your needs grow
- ✓ Cascading up to 8 units
- ✓ Built-in web server and online remote monitoring
- ✓ Integration with other systems (Building Management System)
- ✓ Acoustic performance (low noise)
- ✓ Designed and built in Sweden from top-quality European components
- ✓ Authorized Thermia consultancy for system design

Heating capacity: 22, 26, 33, 42 kW

Thermia Robust Eco is available in output sizes 22, 26, 33 and 42 kW. It is also possible to “cascade-connect” up to 8 units to get up to 336 kW (8x42 kW). Cascade-connected pumps start in sequence depending on energy need, minimizing energy consumption regardless of output.

Advanced control and ease of use

You can control up to 9 separate heating systems in the same building and cool certain areas of the building at the same time as other areas are heated. Simultaneous heating and cooling offers a number of energy-saving benefits. For example, as a hotel conference room is cooled, the excess heat removed is re-used to produce hot water for the swimming pool or spa.

Integrated web server – online function

Robust Eco’s integrated web server enables you to control and monitor settings such as alarm management, operational data and temperature from anywhere in the world. In the unlikely event of an error, you or your installation engineer will receive a text or e-mail alert. Online control and monitoring optimizes energy efficiency for property owners with buildings in different locations.

Integration – ready for BMS

The advanced control system of this large-capacity heat pump constantly monitors all functions, providing you with a reassuring overview. Robust Eco can communicate with other control systems. It can also be controlled and monitored via a management system that gathers information on alarms, ventilation and other systems in the same building.

A+++

A++

A+++ energy class when the heat pump is part of an integrated system in low-temperature applications

A++ energy class when the heat pump is the sole heat generator
Energy class according to Eco-design Directive 811/2013



Thermia Solid Eco

Geothermal heat pump for stand alone applications with capacity up to 42 kW



Thermia Solid Eco is an economical choice that still provides all the most important functions. It is the perfect solution for less complex commercial buildings that do not need special applications.



Why choose Thermia Solid Eco?

- ✓ Reduces heating costs by up to 75%
- ✓ Two functions in one device: heating and domestic hot water
- ✓ Optional function: cooling
- ✓ Online remote monitoring
- ✓ Acoustic performance (low noise)
- ✓ Designed and built in Sweden from top-quality European components
- ✓ Authorized Thermia consultancy for system design

Heating capacity: 22, 26, 33, 42 kW

Thermia Solid Eco is available in output sizes 22, 26, 33 and 42 kW. Cost-effective and economical, Solid Eco is ideal for meeting basic heating and cooling needs at a minimum cost without sacrificing performance. It is perfect for larger buildings that don't need advanced extra functions, such as schools, churches, business premises, sports halls and more.

Simple control and ease of use

Solid Eco can control 2 separate heating systems in the same building at the same time. The intelligent controls make it easy to monitor and control other parts of the system, such as supplementary heat, hot water, cooling, etc. The system can be fine-tuned at any time to suit current needs and conditions, creating optimum efficiency and energy savings.

Online function

The heat pump can be equipped with Thermia Online, a function that allows remote control and monitoring using a smartphone or computer. You can view current temperatures and set operating parameters whenever you like. Thermia Online also has a user-friendly calendar function and an alarm function, which automatically alerts you in the unlikely event of an error.

A+++

A+++ energy class when the heat pump is part of an integrated system in low-temperature applications

A++

A++ energy class when the heat pump is the sole heat generator
Energy class according to Eco-design Directive 811/2013



Finding the perfect heat pump for your building

Designing your ideal system

Factors to consider in making your choices include the size of the building, any existing heating system and additional requirements such as a swimming pool or cooling.

The table below gives you an overview of the different technologies used in large-capacity Thermia heat pumps.

Heat pump functions	Your benefits	Mega	Robust Eco	Solid Eco
Inverter technology - variable speed compressor	Precise adjustment to current heat demand. 100% of heating needs can be provided without an auxiliary heater.	●		
Fixed-speed compressor	Outstanding efficiency in fixed-speed range.		●	●
Newly designed color touchscreen display and USB slot for software update	Easy and convenient software upgrade.	●		
Energy source control	Heat pump capacity load can be adjusted to the capacity (temperature) of the ground source.	●		
Full overview of the refrigerant system	Compressor 'envelope' visualization reassures you that the heat pump is working efficiently	●		
Cascade function (master/slave)	A single control unit switches multiple heat pumps on and off in sequence, optimizing efficiency and keeping costs as low as possible.	●	●	
Simultaneous heating and cooling	Enables you to cool certain parts of the building at the same time as other parts are heated.	●	●	
BMS communicates with other control systems via Modbus	Heat pump can be controlled and monitored via a management control system (along with others parts of the building, such as ventilation, etc.)	●	●	
Online remote control	Remote control simplifies operation and assists with support or service needs. The alarm function informs you if something requires attention.	●	●	●
Intelligent controls monitor all system functions	User-friendly, intuitive navigation via the control menu ensures optimum energy saving and comfort.	●	●	●
Ability to control different heating/cooling systems (zoning via sub-shunt groups)	Define individual temperatures and heating systems for different parts of the building.	●	●	●
Cooling (passive and active)	By using free cooling from the borehole, buildings can be cooled much more cheaply than with conventional cooling systems.	●	●	●
Control of external heat source (back-up heater)	Existing heat source can be used to provide supplementary heating for very cold periods.	●	●	●
De-superheater - hot gas heat exchanger for extremely effective hot water production	Hot water production is 13% cheaper than traditional systems. Cost-effective protection against legionnaires' disease.**	●	●	●

*Some functions described in the table are built into the heat pump controller. Some are available only with optional accessories.

**Based on a comparative study of the risk of legionnaires' disease via a hot gas system compared to a traditional system with an electric heater, conducted by Thermia R&D Center in November 2009.

Why choose Thermia heat pumps?

For the last 50 years, we have developed unique technologies that ensure you enjoy maximum performance, functionality, energy efficiency and cost savings. Added to that is Thermia's legendary reliability.

Many of our first-generation heat pumps from the mid-1970s are still in use today. When you consider that it takes less than 10 years for a heat pump to repay its cost in energy savings, it's easy to see the enormous long-term value that a Thermia heat pump can deliver.

Controller: brain of the heat pump



The main controller is responsible for overall heat pump operation. In all Thermia heat pumps, the controller has been specifically designed for the purpose of controlling that heat pump.

Dedicated control software developed in-house reduces operating time while start-stop operation of the compressor ensures excellent durability and energy efficiency.

Inverter technology



Inverter compressor technology is the latest and most effective way to control heating capacity in heat pumps.

By continuously adapting to heating demand – matching power input with heating capacity – it also provides increased energy savings.

Energy bills can be reduced by over 30% compared to a fixed-speed compressor.

Passive and active cooling – year-round comfort at the lowest cost



The large areas of glass in many modern buildings are great during the darker months of the year but often lead to overheating in summer. Passive cooling ensures a perfect indoor climate all year round. If necessary, this can be supported with active cooling using the heat pump's compressor. Both passive and active cooling are far more economical than traditional air-conditioning systems.

Remarkable efficiency with simultaneous heating and cooling



Simultaneous heating and cooling enables you to reduce operating costs even more. To achieve this, multiple heat pumps are connected in parallel between hot and cold buffer tanks. The hot tanks connect to the heating zones and the cold tanks to the cooling zones. The heat pump then simply exchanges hot for cold, depending on the needs of the building. For example, as a hotel conference room is cooled down, the excess heat removed is re-used to produce hot water for the swimming pool or SPA.

Hot gas technology for on-demand hot water



Thermia has developed a unique method for producing hot water.

At the same time as water is heated for distribution through the building's heating system, hot water is produced at very high temperature by an extra de-superheater.

This means that during the part of the year when the building is heated, you get lots of hot water at a very low cost.

Integration with other systems (BMS)



Traditional building management systems typically have stand-alone applications with separate monitoring and control stations for HVAC, energy metering or power management. The key is to manage them as one intelligent integrated unit. Heat pump controllers can monitor the entire heating system, using internet monitoring to give you full control. Thermia heat pumps can be easily integrated into BMS via Modbus™.

With **Thermia solutions**, each application can be tailored-made

Getting the most out of your Thermia energy solutions:
hot water cylinders, buffer tanks and back up heaters

From providing supplementary heating to delivering a fully integrated single heating-cooling system, Thermia offers remarkable flexibility. If you need larger volumes of hot water or buffer tanks, we offer variety of cylinders that are fully compatible with our heat pump range. Moreover, all of them are tested in commercial applications in the tough Northern European climate.



WT-T

Stainless steel hot water cylinder with a TWS coil

Thermia WT-T is a hot water cylinder with a TWS coil. The hot water cylinder is made with pickled stainless steel, which makes it extra resistant to corrosion and consequently no sacrificial anode is needed in the tank.

Thermia WT-T has an outlet for an immersion heater and hot water circulation. It can be used as a final heater in property solutions to guarantee the right temperature of outgoing domestic hot water. The WT-T cylinder fits perfectly to hot gas technology available with Mega, Robust and Solid heat pumps.

Thermia WT-T is available in 300 and 500 liter sizes and can be cascade-connected if greater volumes are required.



WT-S

Stainless steel hot water cylinder for large hot water requirements

Thermia WT-S is a single-wall stainless steel hot water cylinder for heating domestic hot water via a heat pump or other heat source. Heating is achieved via a heat exchanger or by means of an immersion heater.

The hot water cylinder is made with pickled stainless steel, which makes it extra resistant to corrosion and consequently no sacrificial anode is needed in the tank. Thermia WT-S has an outlet for an immersion heater and hot water circulation. It is available in 500 and 1,000 liter sizes and can be cascade-connected if greater volumes are required.



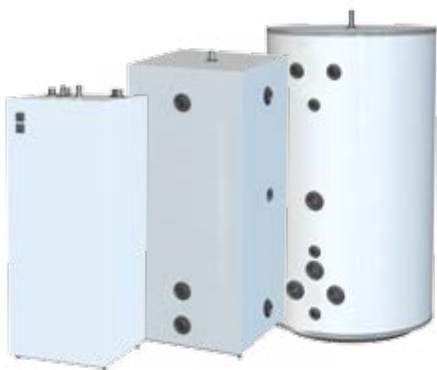
WT-C

Hot water cylinder for effective heating of domestic hot water

Thermia WT-C is a coil water heater for effective heating of domestic hot water. Available in 500 and 750 liter sizes, it can also be cascade-connected if greater volumes are required.

Domestic hot water is heated via finned coils through direct exchange with the radiator water. WT-C 500 contains 4 coils and WT-C 750 contains 6 coils (each coil is 12 meters in length).

A benchmark is that WT-C 500 will be able to cover the hot water needs of up to 10 apartments and WT-C 750 the needs of up to 15 apartments.



WT-V

Buffer tank specially designed for heat pump operation

Thermia WT-V constitutes a series of buffer tanks that can be used to increase volume, for flow equalization and the reduction of any fluctuations in heating systems.

WT-V 100, 200 and 300 have four connections while WT-V 500 and 1000 have six connections. WT-V 300, 500 and 1000 can be connected to an immersion heater.



Peak conditions only occur occasionally throughout the year.

A simple back-up system will ensure that you always have sufficient energy.

Normally, geothermal heat pumps can deliver 100% of the required energy. However, on the coldest days, the heat pump may need to be supported by a secondary heat source from time to time. Peak conditions can be covered by any available source of energy, such as district heating, gas or oil.

When installation time, investment and running cost are important, the most effective solution will be electric heaters. The cost of installing an electric heater is low and the job is fast and easy. Thermia can supply electric back-up heaters that offer smooth output control. Back-up heaters feature a compact design, high reliability and are specifically designed to support water-based systems.

From the coldest north to the sunniest south
Renewable heating and
cooling, across Europe



Swedish housing association chooses the latest Thermia heating solution

In Sweden, temperatures regularly drop to -25°C

HSB Fabriken is a Swedish housing association that represents 11 buildings from the mid-1980s, which are home to around 200 people. The rising cost of district heating inspired the residents to start looking for a new heating solution. The main challenge was whether the new system would be able to cope with the very lowest winter temperatures.



Thermia Mega
– a reliable choice!

After careful consideration, the decision was made to entirely replace the district heating system with geothermal energy. The new heating solution is supported by three Thermia Mega inverter-driven ground source heat pumps, each with a capacity of 88 kW. In addition, a 33 kW Robust Eco heat pump was integrated into the system to convert waste heat into hot water. The renewable energy is drawn from a total of 20 boreholes.



Up to 65 000 Euros saved every heating season

Anders Johansson from the housing association was delighted with the results. “Most residents confirm that room temperatures are just as before and we are even experiencing more even temperatures in all apartments. All tenants are cozy and warm in winter and the housing association is also able to save up to 65 000 Euro during every single heating season. That’s a remarkable outcome.”

Modern ceramic tile-laying products and **geothermal technology** in one building



Butech – faithful to its environmental commitment

Butech supplies a wide range of materials and construction systems for homeowners, installers, builders and architects.

In 2008, they decided to build a new headquarters facility. Given the company's commitment to environmentally friendly technologies, using geothermal energy for heating and cooling was a natural choice.



Thermia heat pumps – heating and cooling in one system

The new HQ extends to over 3 200 m² and the Thermia system comprises 36 boreholes 120 meters deep, which feed the building's HVAC system throughout the year. Heating and active cooling are provided by seven independent Robust heat pumps operating in master/ slave mode.

During the summer, the heat pumps remove surplus heat from the office buildings and transfer it into the ground. This means that the summer heat can be used as ground source recovery before the winter season starts. Heating and cooling are provided simultaneously from the same source. This advanced geothermal solution is able to supply 100% of the facility's heating and cooling needs.

Energy efficiency, comfort and environmental awareness

An evaluation of the building's energy needs and consumption revealed remarkable results. Energy requirements for the whole year were 462 805 kWh and total electricity consumption, including circulation pumps, was 116 870 kWh. This represents an SPF of 3.96 and savings of 345 935 kWh per year, equal to a total saving of 74.75%!



Conference Center powered by **Thermia geothermal solution**

Rakvere Smart House
Competence Center
– the Estonian way to
sustainable and energy-
efficient solutions

Rakvere Smart House Competence Centre is a regional competence center in Estonia that focuses on developing intelligent and smart technologies for the use of home and office equipment, automated building systems and building management. In addition to being a local center of expertise, it also actively participates in different European sustainable energy initiatives and advocates energy efficiency through innovative and smart buildings.

Different sustainable energy sources, such as solar panels and geothermal heating pumps, have been used to heat the building. A unique demo and testing environment has been set up inside the center that enables the development and testing of different building automation systems. The new building of the Competence Centre is the first public near-zero-energy building in Estonia.



Smart Houses must have smart heating and cooling systems

The Competence Centre building itself is and must be smart in the way it uses energy. Heating and cooling for the building is provided by Thermia Mega inverter-driven ground source heat pumps with a capacity of 44 kW, controlled via the BMS system. Geothermal energy comes from groundwater, two wells that yield 16 m³ of water per hour. *"We benefit from the latest geothermal technology and at the same time can present the heat pumps to our visitors who want to learn about renewable technology and see it in practice"* – Rasmus Lindmaa, member of the board at Rakvere Smart House Competence Center.



Modern spa resort with a contemporary **eco heating system**



24 000 m² of hotel rooms, SPA, offices, shops and apartments heated by Thermia heat pumps

Quality Spa & Resort Strömstad is a modern spa resort situated on the west coast of Sweden, only a few minutes from the Norwegian-Swedish border and around an hour's drive from Oslo.

Strömstad Spa includes 232 rooms and extended spa services, covering 2 000 m² across two floors. The hotel is located just ten meters from the sea and the harbor and offers a variety of activities such as sea rafting, boat trips and lobster trapping.



Year round comfort from Thermia

The entire hotel and spa is heated by Thermia ground source heat pumps. 18 Robust heat pumps provide heating, cooling and hot water to 24 000 m² of hotel rooms, spa, offices, shops and apartments.

The heating system was commissioned in 2007 and features the very latest heat pumps, which use seawater as a source for both heating and cooling. The system has a total heating capacity of 715 kW.



Choose **geothermal energy** for your business and enjoy a greener future





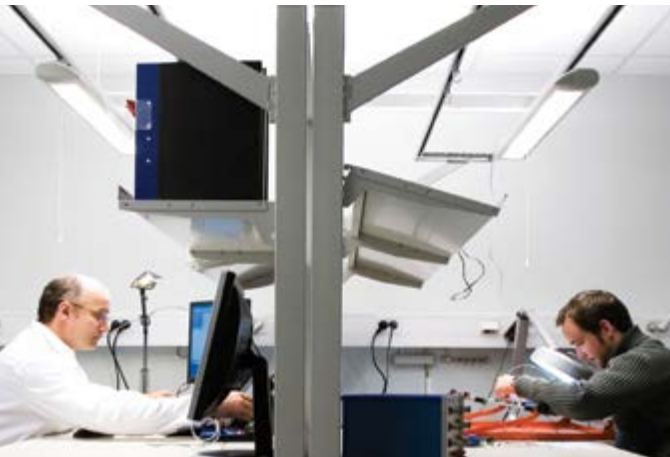
Born in **Sweden**, made for the world

Thermia heat pumps are designed, tested and manufactured in one of the harshest climates in Europe.

Swedish winters can be very harsh. February is usually the coldest month, with temperatures dropping as low as -30°C or even lower in the north. The first snowfall comes as early as October and heating is essential from September to May.

The geothermal energy experts since 1973

Thermia manufactured the very first heat pump with an integrated hot water tank back in 1973. Many of our very earliest products are still in use today. By concentrating solely on geothermal energy over the last four decades, we have gathered an unparalleled wealth of experience in energy extracted from the ground and related heating applications.



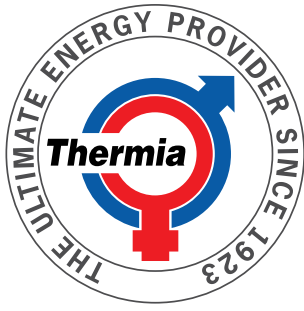
One of Europe's leading R&D centers

Thermia's facility in Sweden includes our 3 000 m² global R&D center for heat pumps. The centre has a state-of-the-art climate chamber where any type of climatic condition can be simulated for testing purposes.

The R&D center has special sound rooms where heat pump noise levels are tested with the goal of removing all low-frequency noise. Thermia's engineers also collaborate with designers to ensure that our products achieve the best possible balance between form and function.

Unbeatable geothermal energy solutions for tomorrow

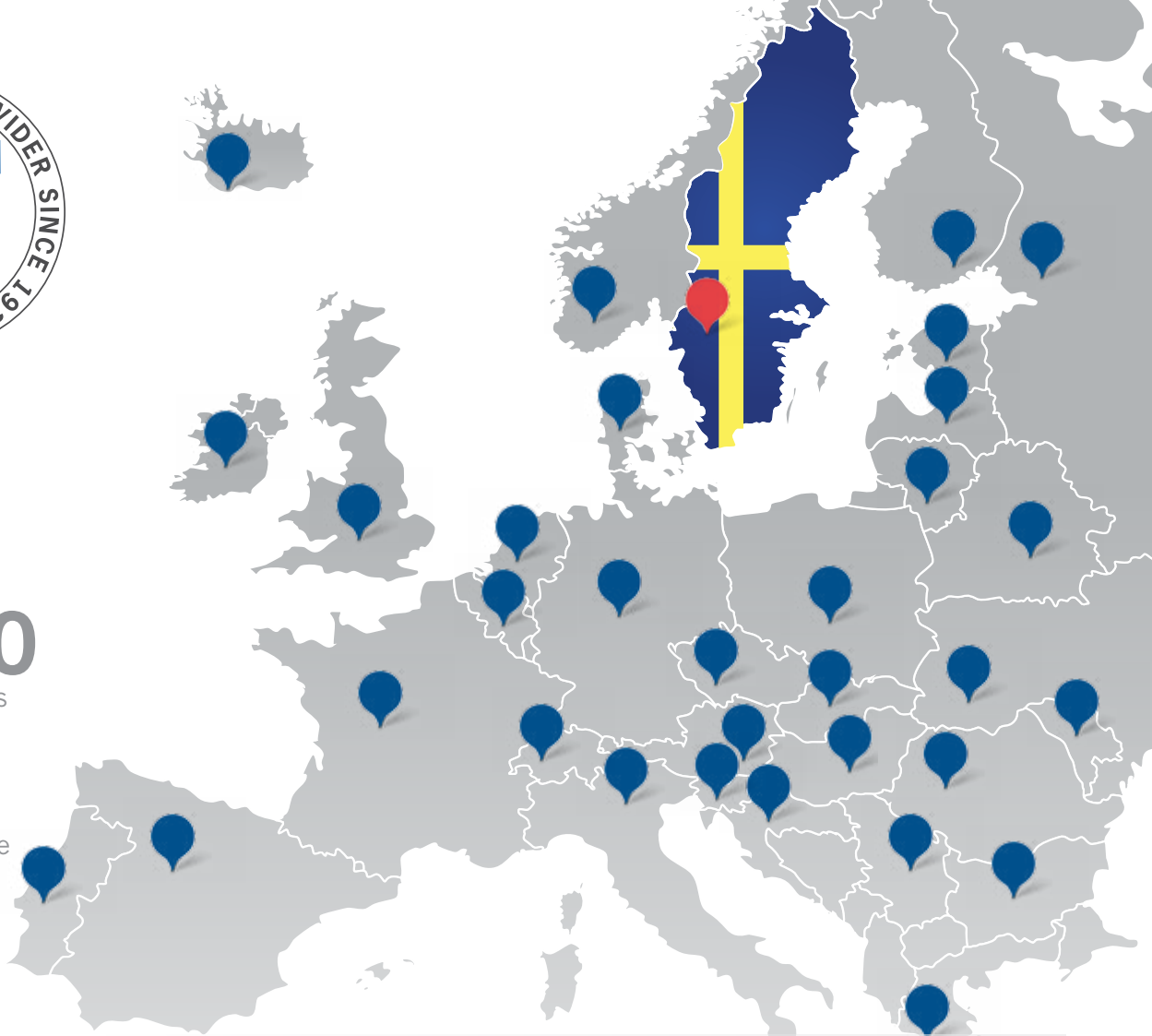
With 50 years of experience, Thermia is a market leader in heat pumps. Our latest Thermia Mega series combines advanced capabilities with an intelligent approach to creating ever more versatile and flexible answers to complex building requirements.



Over
30
countries

Over
2 500
trained installers

Over
90
years experience



Thermia - The choice of professional installers

“

It is a pleasure working for Thermia. They have some of the best heating solutions on the market and an expert team you can always rely on. Choosing a Thermia heat pump gives you a top quality product that will serve you for many years to come.

Andreas Kiiveri,
Värme & Kylteknik AB, Sweden

“

Thermia has everything you look for in a heat pump – performance, efficiency and reliability – with the bonus of smart design and a user-friendly interface. We have supplied hundreds of Thermia heat pumps and have 100% customer satisfaction.

Yasin Jodeh,
Atlas Trading d.o.o., Slovenia

“

Since its foundation, our company has sold different kinds of heat pumps. More than 10 years ago we began cooperating with Thermia. They have proved themselves a great partner with excellent products and outstanding experience with heat pumps.

Peter Michalzik,
Multitherm Handels GmbH, Germany

We look forward to **discussing your project** with you

Talk to us or to one of our authorized resellers about finding the ideal solution for your planned installation.

Installing a heat pump in a commercial application is very different from a simple domestic project. Our many years of experience involving thousands of projects is your guarantee of expert advice. That and our precious reputation.

With over four decades invested in becoming a world leader in heat pump technology, we can ensure that you make the right choices. So you can enjoy ultra-efficient, endlessly renewable heat for many years to come.

Visit our website to find your nearest authorized reseller.

We will be pleased to arrange a meeting with you to discuss what you need.



www.thermia.com



Thermia Heat pumps reserves the right to make any changes to our range and technical solutions after the publication of this brochure. Photo: Thermia, Danfoss, iStockphoto, Shutterstock, March 2017

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.

