RENEWABLE ENERGY

FOR YOU
FOR YOUR HOME
FOR OUR PLANET

THERMIA HEAT PUMPS

www.thermia.com

“

THE PRODUCTS WE RELEASE MUST BE NOT ONLY THE BEST OF THEIR TIME, BUT BEFORE THEIR TIME, OVER TIME.

– PER ANDERSON, FOUNDER OF THERMIA IN 1923 –

A LEADER IN GREEN ENERGY. SINCE 1923.

FFrom the very first patent, Thermia has been driven by our founder's philosophy to develop better products, ahead of their time. In fact, there are today more than 100 patents registered to Per Anderson and Thermia, and our vision remains unchanged.

For almost 50 years, we have developed Thermia heat pumps at our R&D centre in Sweden, pushing the boundaries and setting multiple new standards for heat pumps and sustainable energy.

And more importantly, gathering experience and insights that the Thermia team, along with our experienced resellers and installers, are happy to share with you: before, during and after the installation of your heat pump.

When properly designed and installed, heat pumps are among the most efficient and economical renewable energy systems available. Our aim with the Thermia heat pump book is to provide an overview about heat pump technology and help you choose the perfect solution for your home.

We are at your service.

Thermia Heat Pumps

GREEN CLEAN COMFORTABLE

An efficient heat pump can create a comfortable indoor climate in your home. While supplying your home with ambient heating in the cold season, pleasant cooling during summer and plenty of hot water throughout the year, it can reduce your energy consumption by up to 80 per cent.

On top of the immediate benefits, you can invest in sustainability and harvest affordable energy for heating, cooling and hot water at the same time.

Global warming is increasingly intrusive on our daily lives, and there is a general consensus that we need to take action and look for more sustainable solutions. By choosing a heat pump for your home, you can make a substantial personal contribution.

Comfortable

A Thermia heat pump will keep you warm in winter, help you stay cool in summer, and provide plenty of hot water for the whole household – or heat the swimming pool. It will take care of your heating and cooling requirements in the background, without you needing to do a thing. And if you do wish to change anything, you can adjust your comfort settings at the touch of a button.

Simple

A heat pump is quiet, doesn't create odors and usually only takes up about as much space as a refrigerator. It requires virtually no maintenance and it is our aim to make you forget about the heat pump altogether. Because it just works.

Reliable

Buying a heat pump is a long-term investment. After almost half a century of developing and supplying heat pumps for Europe, including the demanding Nordic climates, we can guarantee a reliable and cost-efficient solution that will stand the test of time.

Economical

Heat pumps cost more to install than investing in a conventional fuel-based system of comparable capacity. However, heat pumps are cheaper to operate and you can expect to recoup the initial investment cost in around 7 years, thanks to much lower energy bills. And with an expected lifetime of 20-25 years for a Thermia heat pump (it's usually far longer), you will be generating financial savings year after year, and reducing your personal CO2 emissions at the same time.

Sustainable

Every day, the sun sends 174,000 terawatts of free energy to earth. This radiation stores large amounts of energy in the air, in the ground and in ground water. It is an ample, never-ending supply of energy – and it is free. That is why heat pumps are much more effective than alternative energy solutions.

Eco-friendly

Because they extract far more solar energy than the amount of energy they require to run, the EU labelled heat pumps as a renewable source of energy back in 2009. With a Thermia heat pump, depending on the model you choose and how your heating system is designed, you can extract up to 6 times more energy than it consumes. The right choice of heat pump depends on your household, the insulation of your home and the local climate conditions. There are no other proven, tested energy solutions on the market that can match the efficiency of a heat pump.

Your choice

With a Thermia heat pump, you can radically reduce your carbon footprint or even make the energy consumption in your home carbon neutral. Your home is more often than not the single largest opportunity you have to contribute actively to reducing global warming. More importantly, you can create a warm and comfortable environment for you and your family – all year long, every year and for many years to come.

At Thermia, our aim is simple: to make you feel comfortable, save money and help the climate, all at the same time.

Four ways to collect energy

The air, bedrock, soil, and groundwater all contain stored solar energy which can be used for heating. A heat pump extracts this unlimited, eco-friendly energy and converts it into heating for your home.

Air source heat pumps

Air source

With an air source heat pump there is no need to dig or drill. Instead the energy is sourced straight from the surrounding air.

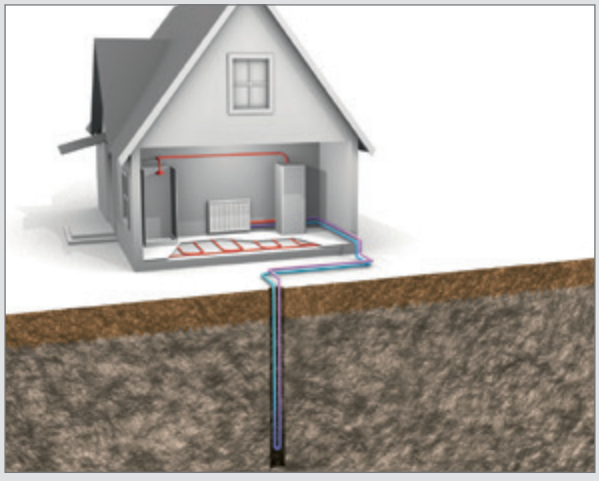
For a complete system that covers all your heating requirements, including hot water, you need an air/water heat pump. In comparison, an air/air heat pump is only capable of supplying partial heating, not hot water.

Benefits:

- Lower investment cost.
- No impact on the ground.
- No large plot needed.

Ground source heat pumps

Vertical ground loop



The vertical ground loop collects solar energy stored in the bedrock. A hole is drilled into the bedrock and a pipe is installed to a depth of between 100 and 200 metres. The exact depth depends on the house, size of heat pump and surrounding conditions.

A common myth about heat pumps is that they will not work if several homes in the neighbourhood have already drilled down to the bedrock. This is definitely not true! The earth's ability to store heat is almost endless – there's enough heat for everyone.

Benefits:

- A large plot is not necessary.
- Small impact on the plot.

Every day the sun heats our air, ground and waterways. A heat pump extracts this free source of energy very efficiently.

Horizontal ground loop

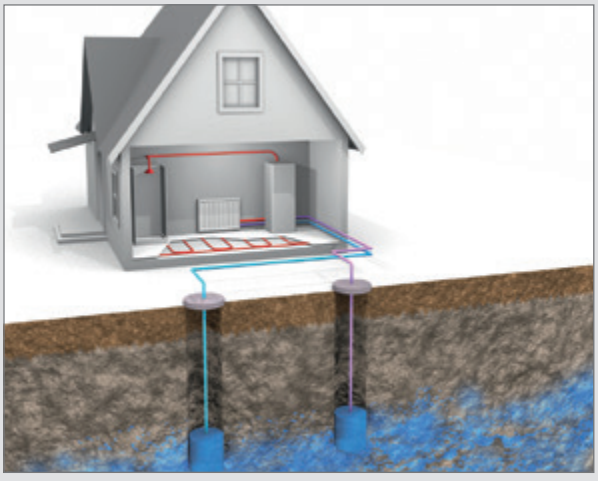
The horizontal ground loop collects solar energy stored in the ground, near the surface. If the bedrock is too deep down, or if you don't want to drill for other reasons, this is a good option.

The loop is buried about one metre below the surface, and energy is extracted from the ground. The length of the loop depends on the house, the size of the heat pump and local ground conditions.

Benefits:

- Lower installation cost compared to vertical ground loop.
- Can also be used to extract heat from lakes.

Groundwater



A groundwater heat pump collects energy from the groundwater. The water is pumped up from a water borehole to a heat exchanger, where the energy is recovered.

The water is then discharged back through another well. This solution can be the best choice when groundwater is readily available.

Benefits:

- Groundwater maintains a relatively high, even temperature, year round.

How a heat pump works

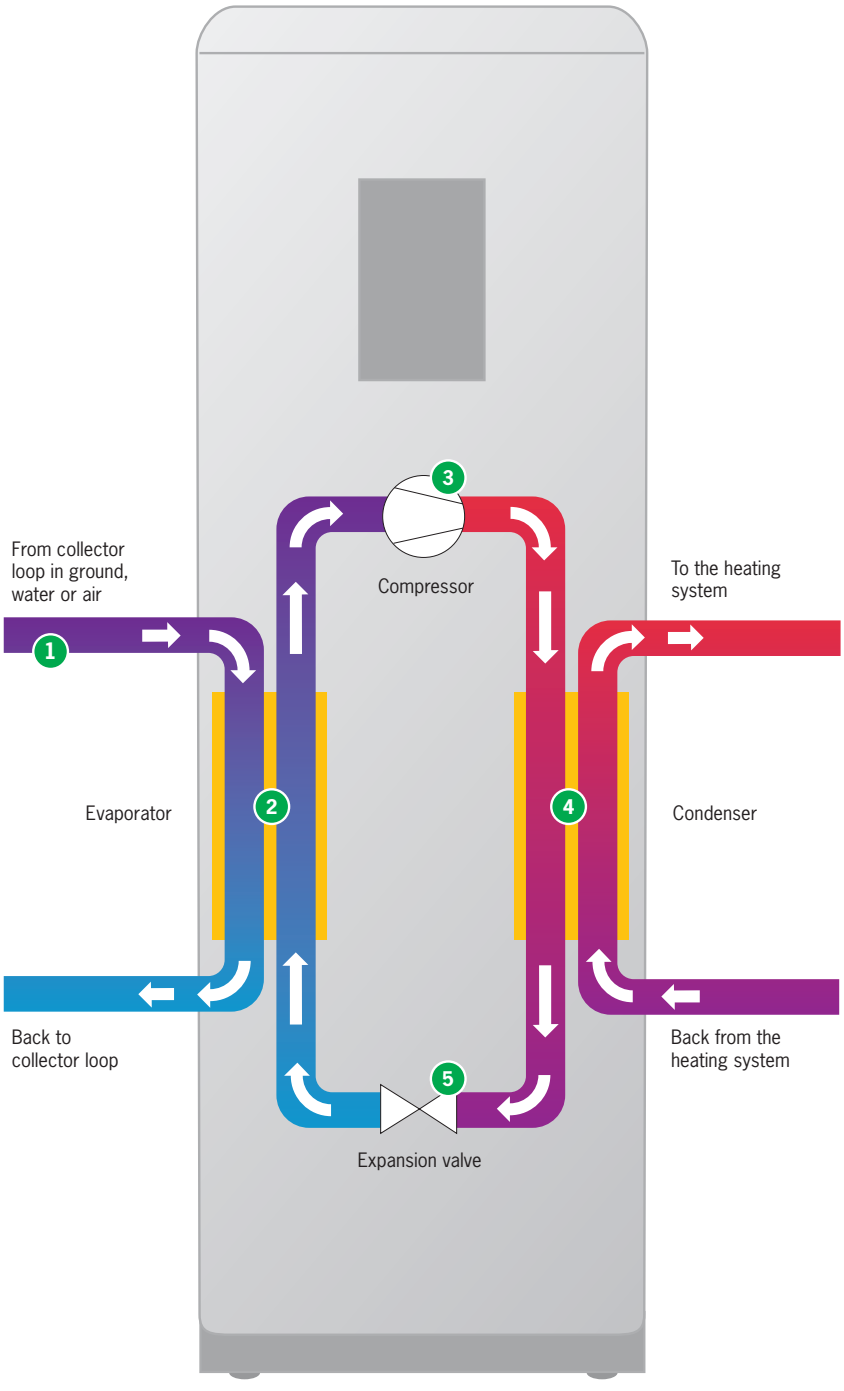
1. A brine* circulates in a collector loop and absorbs heat energy from the bedrock, ground, air or water.

2. In a heat exchanger (evaporator) the tepid brine in the collector loop meets the refrigerant** circulating in the refrigerant loop. The refrigerant absorbs energy, heats up and turn into gas.

3. A compressor increases the pressure of the refrigerant, and by doing so the temperature climbs to a required heating level.

4. In a second heat exchanger (condensor) the refrigerant releases its heat to the heating system in the house. As this occurs the refrigerant is cooled down.

5. The refrigerant continues to circulate. In an expansion valve its pressure falls. This reduces the temperature and the refrigerant returns to liquid form. The process recommences when the refrigerant again meets the brine.



* Brine is a fluid that cannot freeze, such as a mixture of water and alcohol or glycol.

** These days eco-friendly refrigerants such as carbon dioxide and hydrocarbons are used. Previously freon was used

Heat pumps are based on the principle that as a gas is compressed it heats up, while gas that expands becomes colder.

Heat pump – a profitable investment for everyone

Investing in a heat pump pays off, whether you're building a new house or renovating an existing one. You reduce your energy consumption while also increasing the value of your house. Plus, you help cut carbon dioxide emissions, a benefit for future generations.

May pay for itself twice

With a good heat pump, up to 75 per cent of your energy consumption for heating and hot water is for free. This saving means that the heat pump will pay for itself in time. Moreover you increase the value of your house when you install a heat pump which may mean that it pays for itself twice: firstly you recover the investment cost and secondly there is a good chance the sales price of the house will be higher the day you sell it.

The future volatile market situation of the earth's limited oil and gas resources is another strong reason for choosing a renewable energy solution.

New construction

When building a new house there are lots of decisions to make, and choosing the correct heating solution is one of the most important ones. With the right heat pump you can cover a range of applications, for instance heating, cooling and pool heating, in a single system. As a result you avoid investing in, and maintaining, separate solutions. Moreover, many countries have energy efficiency requirements for new construction, making it extra important to choose a future-secure energy source.

Replacement and renovation

The savings a heat pump can provide will depend on the house, existing heating system and geographical location. To find out how high the savings can be in your specific case, contact an authorized installer, who can help you with a calculation showing your savings based on your situation and requirements.

The heat pump can also be adapted to an existing heating system you may already have and be combined with different types of supplementary energy sources, such as solar, gas, wood or pellets.

Subsidies

Both within and outside the EU, considerable efforts are underway to reduce environmental impacts and increase the proportion of renewable energy used. In line with this, more and more countries make subsidies available to those who choose a renewable energy source. As the EU has classified the heat pump as a renewable energy source, these subsidies may be available to you. To find out which subsidies are available in your area, contact an authorized heat pump installer.

Three decisive issues when choosing a heat pump

Installing a heat pump is a long-term investment. You can rely on it to provide a comfortable indoor climate with the largest possible cost savings. Year after year, day by day, minute by minute.

When you choose a heat pump it's important to understand the basics.

The following pages will guide you through the three areas you need knowledge about to make the right decision.

① Annual efficiency

② Hot water production

③ Flexibility

Some heat pump manufacturers cite a COP (Coefficient of Performance) based on for instance an average spring day in April. This doesn't give a correct picture of the heat pump's total efficiency. It's more accurate to measure the efficiency over a whole year.

Here is a good way to see the difference between COP and annual efficiency: COP is similar to a car´s fuel consumption at a particular speed and rpm, e.g. 72 km/h and 3,000 rpm, while annual efficiency resembles the average fuel consumption at different speeds and rpm´s during a full year.

1 Annual efficiency

COP – efficiency in specific conditions

As a buyer it´s important that you find out how efficient a heat pump is. Most manufacturers present this information in terms of COP (Coefficient of Performance). In specific test conditions, an assessment is made of the heat pump's ability to supply heat, relative to the amount of electricity required to extract it. If a heat pump has a COP of 4, this means that in the specified test conditions it produces four times more energy than it consumes. Consequently the extracted energy makes up three quarters.

Be careful when comparing values

It's important to be conscious when comparing a heat pumps efficiency. Measuring the COP in specified test conditions, without calculating the energy consumption for all the components in the system (e.g. circulation pumps), can produce what seems to be very good values. But a measurement should not be done just to support a manufacturer's marketing. It should give homeowners like you a more correct picture of how efficient the heat pump is, over time.

Annual efficiency – the real measure

A far more accurate measure of a heat pump's performance is its annual efficiency (seasonal performance factor). This incorporates the whole year, including the warmest and the coldest periods, as well as the production of hot water. Other factors that affect the overall result include house size, geographical location and number of residents.

The annual efficiency is unique to every heating system's specific conditions. Therefore, it is not possible to specify a seasonal performance factor value as part of a standard technical data. This value must be calculated by an authorized Thermia installer on a case by case basis and based on your specific home's location and conditions.

2 Hot water production a key component

Roughly 20 per cent or more of the energy consumed by a heat pump is used to produce hot water. The availability of the hot water must be sufficient to meet the needs of the whole household, therefore it´s important to choose a heat pump that can meet the demand.

As our water consumption is increasing and our homes are better insulated, the hot water production represents a growing share of a home's energy needs. Therefore it becomes more and more important that the hot water is produced with the highest possible annual efficiency. At the same time the hot water tank must be replenished quickly to maintain the hot water comfort. It's also vital that the heat pump has a system that minimizes the risk of legionella bacteria breeding in the water.

- A good heat pump should produce sufficient hot water while maintaining a high annual efficiency. (That is, costs are kept as low as possible.)
- It's important not to focus excessively on how hot the hot water gets. The key is how quickly the hot water is produced in order to meet the needs of the entire household.

3 Flexibility

When investing in a new heating system it is important to examine the requirements of the entire house, before making a final decision. With a heat pump you can customize a solution that meets all your demands and requirements, including heating, cooling, pool heating, and additional heating sources.

Once you have decided to install a heat pump, it's important to select a supplier who can provide you with all the climate solutions you and your home would require. Ask yourself what you want your heat pump to supply, besides heating and hot water. For instance do you also want cooling? Perhaps you have a swimming pool that needs heating or a wine cellar that you want to cool. With a heat pump it's possible to combine these types of solutions with the basic heat pump functions. This means you don't have to invest in separate systems such as air conditioning or a cooling unit. Moreover, it's fully possible to combine a heat pump with other heating sources like solar panels, wood- or pellet-burning furnaces. In order to have all this flexibility, make sure you choose a supplier that can offer these more comprehensive solutions.

Thermia – a safe investment

Installing a heat pump is a long term investment that must provide a convenient and comfortable indoor climate with the maximum cost savings year by year, day by day, and minute by minute. A Thermia heat pump provides just that, with a minimum of attention required.

When you choose one of our products, you get more than a heat pump. More than 35 years ago we produced the very first heat pump with a built-in warm water heater, and ever since we have taken upon ourselves to be more than just a supplier of heat pumps. As a Thermia heat pump owner you can expect the highest possible performance at the maximum savings, expert support when the unexpected happens, the safety of always having a home that is warm and comfortable, and enough hot water for the whole family.

On the following pages you can read more about what makes our heat pumps repeatedly receive top test results and how you proceed to choose the heat pump that is right for your needs.

Technology for highest annual efficiency

To ensure you get maximum performance and functionality, Thermia has developed a number of technologies, all contributing to increased annual efficiency, comfort, reliability and cost savings.

Controller for optimal operation

The controller coordinates all the various parts of the heating system to provide the best possible indoor climate and hot water production at the lowest possible cost. The controller also integrates any other functions that may have been added to the system, such as cooling or pool heating.

Thermia´s controller manages the supply of heat at the source rather than in the heating system itself. This solution, called floating condensation, can result in up to 15 per cent energy savings compared to traditional technologies.

Optimum technology for highest annual efficiency

Optimum technology keeps the heat pump working in ideal conditions at all times. This means maximum efficiency and minimum energy consumption, second by second.

Thermia´s Optimum technology uses automatic variable speed controlled circulation pumps to optimize conditions for the heat pump by controlling delta T in heating system and brine collector. The temperature difference between supply line water and return line water is kept constant between 7–10 °C. For the collector a difference of 3 °C between inlet and outlet is optimal. The Optimum technology reduces energy consumption and thus improves annual efficiency.

Demand-controlled defrosting for air source heat pumps

Outdoor air units require defrosting at low temperatures to ensure an unrestricted air flow through the fin coil. Thermia has developed a technology for defrosting that operates only when and as long as required, in contrast to standard solutions used by other brands which defrost even when it is not needed. Demand-controlled defrosting minimizes the energy consumption.

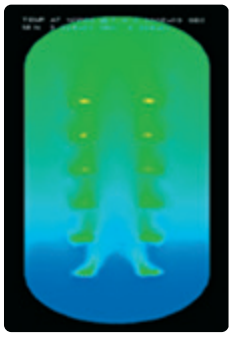
Inverter technology

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

Thermia's Research & Development department works continuously to develop, improve and refine heat pump technology. With TWS and HGW we have created market-leading technologies for hot water production. Here you can read more about these technologies, how they work and their benefits.

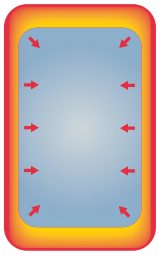
TWS technology for exceptional hot water production

Thermia's heat pumps produce hot tap water using the patented TWS (Tap Water Stratificator) technology. TWS provides more effective heat transfer and more efficient layering of the water in the hot water tank. The results are impressive. Heat pumps equipped with TWS are the best on the market, in terms of hot water production. TWS ensures a plentiful supply of hot water, quickly and at low operating cost, which means that a heat pump with TWS increases your annual efficiency. Thermia's heat pumps are factory-set to increase the water temperature to above 65 ºC once a week. This is to eliminate the risk of legionella bacteria. The normal temperature is sufficiently high to prevent bacteria growth, but this system provides extra safety.



TWS hot water tanks are specially designed for heat pumps. The technology layers the hot water in the hot water tank so that the heat can be used in the best way. (In the photograph, the hot water is represented by the green colouring and cool water by the blue.) The amount of energy used to create hot water by TWS could only create lukewarm water in a conventional hot water tank.

Traditional technology

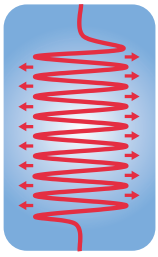


In a traditional water heater for heat pumps the heater is surrounded by the hot water from the heat pump. The resulting heat transfer is both poor and slow.

After a consumption peak that has drained the hot water tank, with traditional technology it takes 50 minutes* to refill the tank with hot water.

*Time calculated when heating from 40 °C.

TWS technology



In a TWS hot water tank, the hot water is led from the heat pump in a coil through the water that is to be heated. This delivers more effective heat transfer and more hot water.

After a consumption peak that has drained the hot water tank, it takes just 21 minutes* to refill the tank with hot water.

*Time calculated when heating from 40 °C.

Boosting annual efficiency with HGW technology

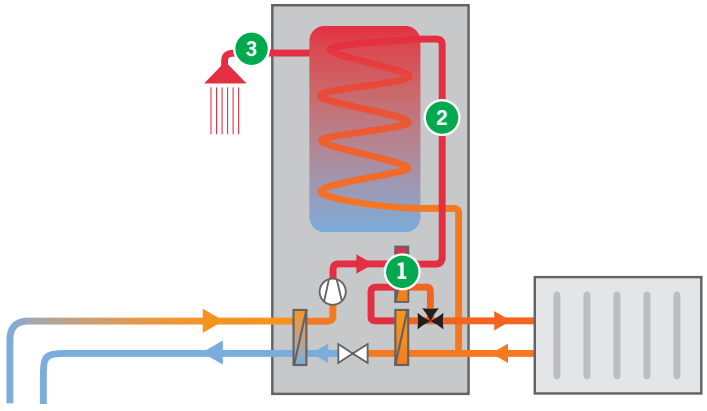
With HGW (Hot Gas Water heater), Thermia has developed a unique patent pending method for producing hot water. With this new technology we have solved a seemingly impossible equation: higher annual efficiency in combination with hot water production at higher temperatures and increased volumes. At the same time as water is heated for distribution through the house's heating system, hot water is produced at very high temperature through an extra de-superheater.

This means that during the part of the year when the house is heated, you get lots of hot water at a very low cost. The result is up to 20 percent higher annual efficiency. The COP for hot water production can be as high as five, which means that the production of hot water is five times as high as the supply of energy.

HGW technology is used in the Thermia Atlas and Diplomat Optimum G3 models.

		Showers
Thermia	Thermia Atlas with a 184-liter hot water tank supported by HGW and TWS technology.	
Other brand	A typical heat pump with a 200-liter traditional hot water tank.	

HGW technology



With HGW technology, the temperature in the hot water tank can reach 90 °C. This radically increases the volume of usable tap water.

1. A small portion of the heated water that is on the way to the house's heating system passes the extra de-superheater.
2. There it is heated up further, to between 50 °C and 90 °C, before going into the water heater.
3. The result is that, at no additional cost, you get more, and hotter hot water during the months of the year that the house is heated.

The Thermia Atlas model gives you 545 liters of hot water on tap at any time. To put this into context, it means you have enough hot water for up to nine people to shower at once.

Cool your house with a heat pump

A Thermia heat pump is a complete solution that provides a comfortable indoor climate all year round. Heat is produced during the cold season and you can get comfort cooling when it is hot outside.

By adding a cooling unit to your heat pump you get a comprehensive climate comfort system that gives you a perfect indoor climate all year round. It's also more economical both in terms of investment and running costs, compared to traditional solutions. There are two ways to cool your home with a heat pump: passive and active cooling.

Passive cooling

By taking advantage of the cool brine in the ground loop, cooling is created at a cost corresponding to the energy consumption of a couple of light bulbs. Passive cooling comes as standard on Thermia Comfort and is optional on all other Thermia ground source heat pumps by adding a separate passive cooling module. (Note: passive cooling is not available on air source heat pumps).

Active cooling

Passive cooling is normally sufficient, but if necessary, extra cooling can be achieved by using active cooling where cooling is produced using the compressor system. With this method, cooling produced by a ground source heat pump is more cost efficient than traditional air conditioning.

Active cooling is standard on Thermia Atec, and optional on Thermia ground source heat pumps.

Passive cooling can be used to cool a certain room or area, such as a wine cellar.

Let the heat pump heat your pool

The Thermia heat pumps can easily be supplemented to heat also your pool all year round. This way you can substantially lower the heating costs for the pool.

Indoor pool

For indoor pools the heat pump is dimensioned to heat the pool all year round. The heat pump then coordinates the heating of the pool with the home's current heating and/or cooling needs and ensures that the cost is kept at a minimum.

Outdoor pool

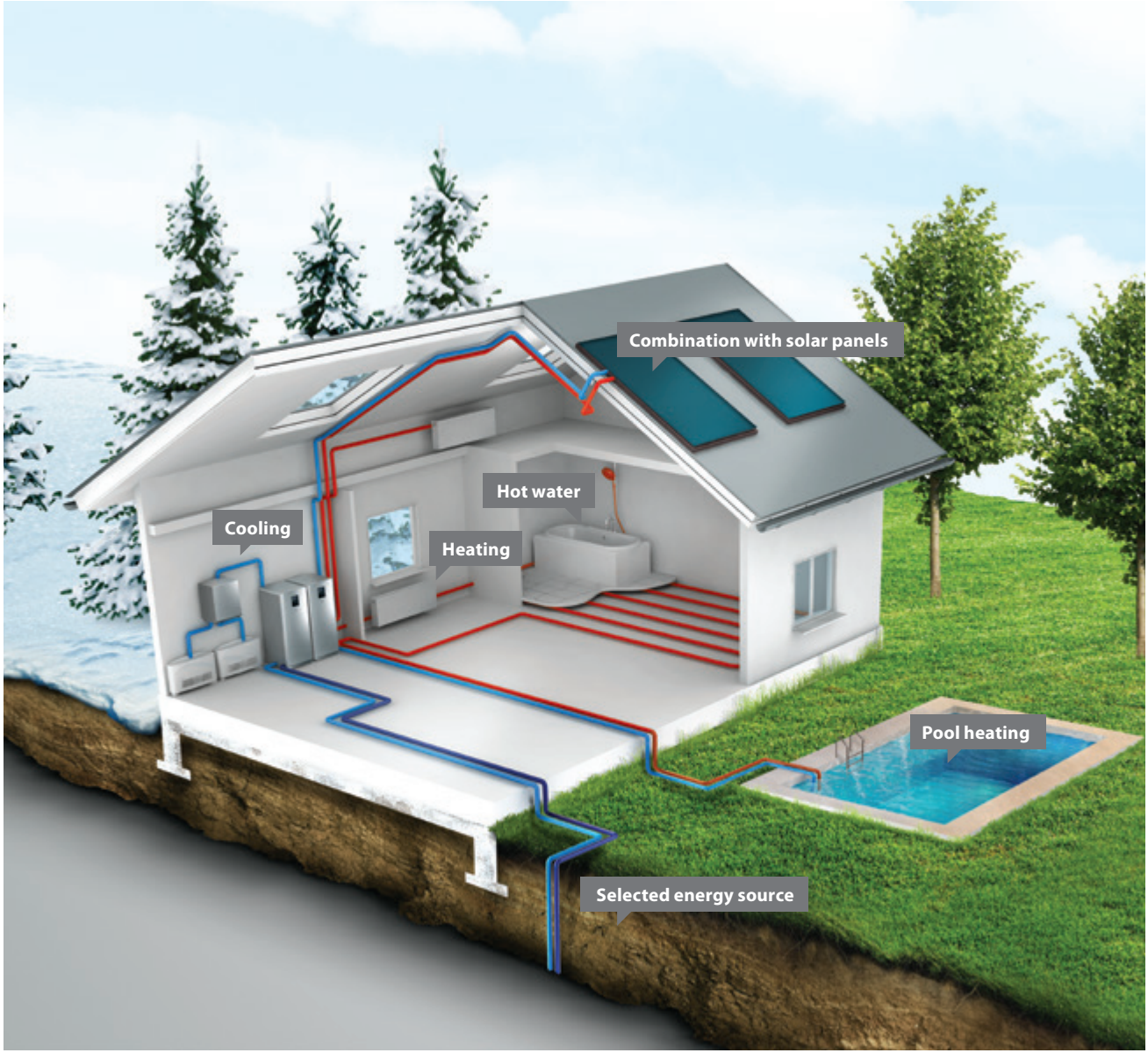
Many outdoor pools are used only during the summer and since the need for heating the house is low during this period there's plenty of capacity to heat the pool. By leveraging this unused capacity, the pool can be heated at a significantly lower cost than traditional pool heating systems.

Leverage the excess energy to heat your pool

When a house is cooled using an active cooling module, heating is produced as a bi-product. This excess energy is usually dumped back into the ground, but if you have a pool you can instead use this energy to heat the water.

One system – multiple functions

With a Thermia heat pump you get a flexible solution that can satisfy all your heating and cooling requirements in a single system.



Ultra-low-carbon heating, cooling and living.
Green, clean and endlessly renewable.

Which heat pump is best for you?

These tables provide an overview of the different technologies used in Thermia's products. On the following pages you can learn more about each product and determine which one is right for you.

All models are also available with a separate hot water tank, perfect for areas with low ceilings or if you need extra volume of hot water.

To read about how the technologies works, see the following pages:

- Optimum, page 15
- TWS, page 16
- HGW, page 17
- Cooling, page 18

Air source heat pumps

Product	Feature			
	Inverter technology	Optimum	TWS	Cooling
 Athena	●	●	●	●
 iTec Eco	●	●	Optional	●
 Atec		●	Optional	●

Ground source heat pumps

Product	Feature				
	Inverter technology	TWS	HGW	Optimum	Cooling
 Thermia Atlas	●	●	●	●	Optional
 Thermia Calibra Eco	●	●		●	Optional
 Thermia Calibra Cool	●	●		●	●
 Thermia Calibra	●	●		●	Optional
 Thermia Legend		●		●	Optional

Ground source heat pumps – Large capacity

Product	Feature			
	Inverter technology	Cascade option	Cooling	Online – remote control
 Mega	●	● up to 1400 kW	● Heating and cooling simultaneously	●


Thermia
Athena
Maximum
performance

- Air source heat pump
- Superior performance in heating
- Hot water comfort
- Active cooling option as standard
- Inverter with EVI technology
- Operate at temperatures as low as -20 °C
- Ultra-low sound levels
- Color touchscreen
- Online control via the Internet

THERMIA ATHENA

Maximum performance and comfort, year round.

Thermia Athena H and HC are air source heat pumps featuring inverter technology for people who want the best possible combination of quality and comfort. These heat pumps are perfect for ensuring that the home is always warm and cosy, and that there is plenty of hot water for the whole family.

Energy is collected from the outdoor air and is used to heat hot water and hydronic heating systems, delivering efficient energy savings at temperatures as low as -20 °C.

Inverter and TWS technology make Athena the fastest and most cost-efficient hot water producer in its segment. With one of the lowest sound levels on the market, Athena can also be placed wherever it's most convenient.

A built-in cooling function assures a pleasant indoor climate also during the hottest period of the year. The indoor unit features a modern design with an elegant glass panel, along with smart and intuitive control via a color touchscreen.

Athena is an excellent choice for new-build houses as well ideal for retrofitting projects.

Indoor unit

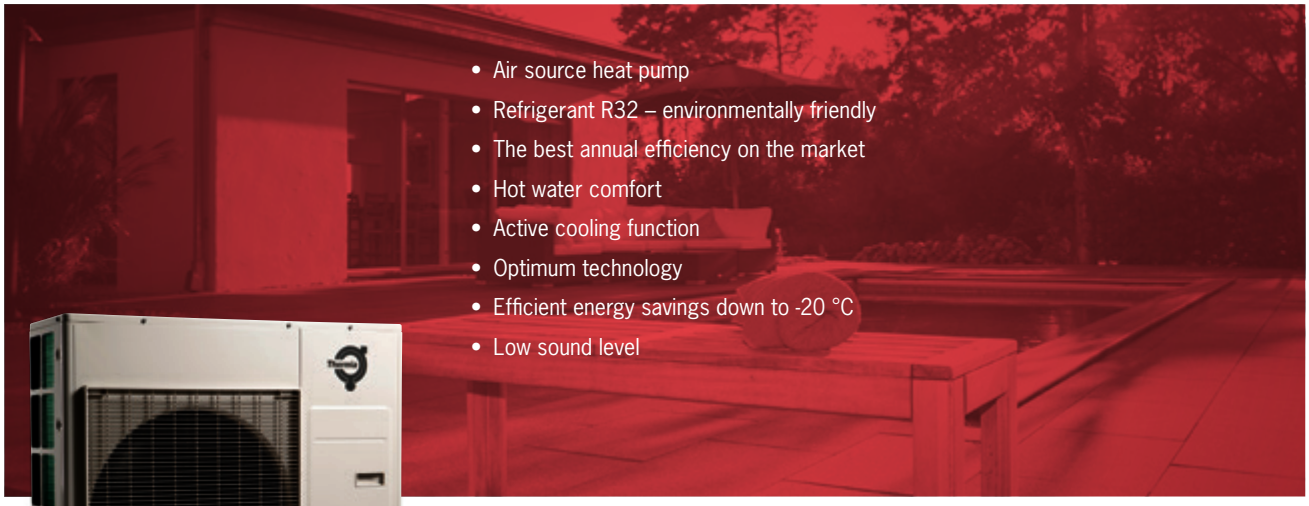
Each Athena is delivered with an indoor unit. Depending on your requirements, you can select one of three different indoor units and customize your installation.

Available in output sizes:	8-14 kW, 8-18 kW
Electrical connections:	400V 3N
Dimensions outdoor unit (DxWxH):	593 mm x 1490 mm x 1045 mm

A+++ • energy class when heat pump is part of integrated system

A+++ • eenergy class when heat pump is single heat generator

Energy class according to the Eco-design Directive 811/2013



- Air source heat pump
- Refrigerant R32 – environmentally friendly
- The best annual efficiency on the market
- Hot water comfort
- Active cooling function
- Optimum technology
- Efficient energy savings down to -20 °C
- Low sound level

iTec Eco

High performance and environmental awareness.

Thermia iTec Eco is an air source heat pump with inverter technology. The inverter-controlled compressor adjusts the heat load constantly according to the current heat demand. You never use more energy than is needed, and this of course reduces your energy bills further energy is collected from the outdoor air, and is used to heating of hot water and hydronic heating systems, delivering efficient energy savings at temperatures as low as -25 °C.

With iTec Eco you can save a lot of money with reduced environmental impact. iTec Eco uses refrigerant R32 which is a more environmentally friendly alternative than traditional refrigerants for air heat pumps. The cooling function assures a pleasant indoor climate also during the hottest period of the year. And if you have a swimming pool, you can reduce the heating cost significantly as Thermia iTec is prepared for heating of pools. With a high seasonal performance Thermia iTec allows you to reduce your energy consumption by up to 75%.

Thermia iTec Eco is available in four output sizes: 5 kW, 8 kW, 12 kW and 16 kW. It consists of two parts: the heat pump itself, which is installed outdoors, and an indoor unit. The choice of unit depends on the set-up of your heating system, to ensure you never pay for more than you actually need.

Indoor unit

Each iTec Eco is delivered with an indoor unit. Depending on your requirements, you can select one of five different indoor units and customize your installation.

Available in output sizes:	1-5 kW, 2-8 kW, 3-12 kW, 3-16 kW
Electrical connections:	iTec Eco 5 230V 1N other models 230V 1N or 400V 3N
Dimensions outdoor unit (DxWxH):	iTec Eco 5 880 x 310 x 798 mm iTec Eco 8 940 x 330 x 998 mm iTec Eco 12/ iTec 16 940 x 330 x 1420 mm

A+++ • energy class when heat pump is part of integrated system

A+++ • energy class when heat pump is single heat generator

Energy class according to the Eco-design Directive 811/2013

- Air source heat pump
- The best annual efficiency on the market
- Active cooling function
- Optimum technology
- Efficient energy savings down to -20 °C
- Calendar function
- Low sound level
- Class-A circulation pumps

THERMIA ATEC

Optimum performance and comfort, year round.

Thermia Atec sets a new standard for air source heat pumps. With a superior annual efficiency Thermia Atec delivers maximal energy savings. By a unique acoustic design, it is developed to be the quietest on the market. The cooling function assures a pleasant indoor climate also during the hottest period of the year.

And if you have a swimming pool, you can reduce the heating cost significantly as Thermia Atec is prepared for heating of pools.

Thermia Atec is developed using the latest technology. The energy consumption is put to a minimum by continuously optimizing the three key performance parameters of air flow (variable-speed EC fan), heating circuit flow (electronic expansion valve) and heat distribution flow (Optimum technology). Energy is extracted from the outdoor air, and is used for heating of hot water and hydronic heating systems, delivering efficient energy savings at temperatures as low as -20 °C. This means you can reduce your energy consumption for heating by up to 75 percent.

Indoor unit

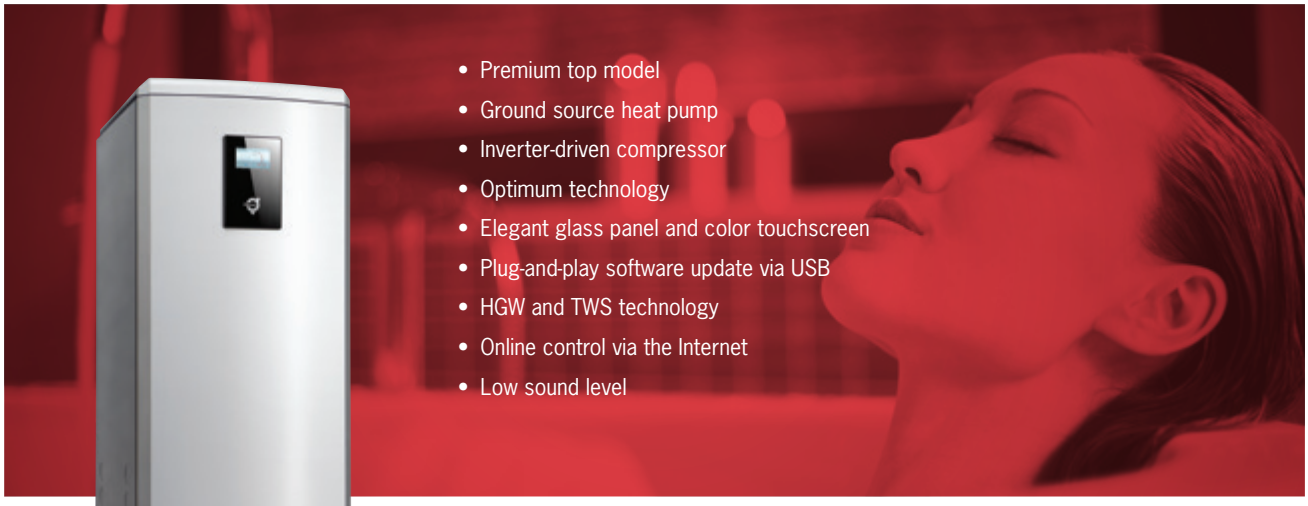
Each Atec is delivered with an indoor unit. Depending on your requirements, you can select one of four different indoor units and customize your installation.

Available in output sizes:	6, 9, 11, 13, 16, 18 kW (up to 36 kW through cascading)
Electrical connections:	230V 1N (≤16 kW) or 400V 3N
Dimensions outdoor unit (DxWxH):	Atec 6 and 9: 856 x 510 x 1272 mm Atec 11 and 13: 1016 x 564 x 1477 mm Atec 16 and 18: 1166 x 570 x 1557 mm

A++ • energy class when the heat pump is part of an integrated system, applies to Atec 13

A++ • energy class when the heat pump is the sole heat generator, applies to Atec 13

Energy class according to Eco-design Directive 811/2013



- Premium top model
- Ground source heat pump
- Inverter-driven compressor
- Optimum technology
- Elegant glass panel and color touchscreen
- Plug-and-play software update via USB
- HGW and TWS technology
- Online control via the Internet
- Low sound level

THERMIA ATLAS

Superior performance in every respect

The Atlas ground source heat pump is constructed using the very latest technology and equipped with all the latest features. With no compromises and perfection in every detail, Atlas is the most efficient and complete heat pump on the market today.

Unmatched performance

Atlas features inverter technology, modulated heating capacity, an advance control system and the highest energy savings and best seasonal performance on the market. Inverter technology continuously adjusts the heat pump's output to match current demand. This means that the heat pump can supply 100% of your energy requirements without the need for auxiliary heating. Atlas is the world's first geothermal heat pump with a SCOP value > 6.0 (SCOP 6.15 – see page 11).

Extra hot water at low cost

With TWS and HGW technologies, we have achieved market-leading hot water production. Working together, HGW and TWS enable even faster replenishing of the hot water tank, while the higher temperatures achieved by HGW increases the volume of hot tap water available. The Thermia Atlas supplies you with more hot water than any other heat pump on the market (see page 17).

Quiet and best Scandinavian design

During the development of Atlas, a great deal of emphasis was placed on acoustic performance. The goal was to create the quietest heat pump on the market. As well as its incredibly quiet operation, Atlas features a modern design with an elegant glass panel, along with smart and intuitive control via a color touchscreen. Our Thermia Online solution is included as part of the package and enables you to control and monitor your Atlas heat pump via smartphone, tablet or computer.

Thermia Atlas Duo

Available in output size:	3–12 kW, 4–18 kW
Electrical connections:	400V 3N, 230V 1N (only model 3–12 kW)
Dimensions (DxWxH):	703x598x1863 mm

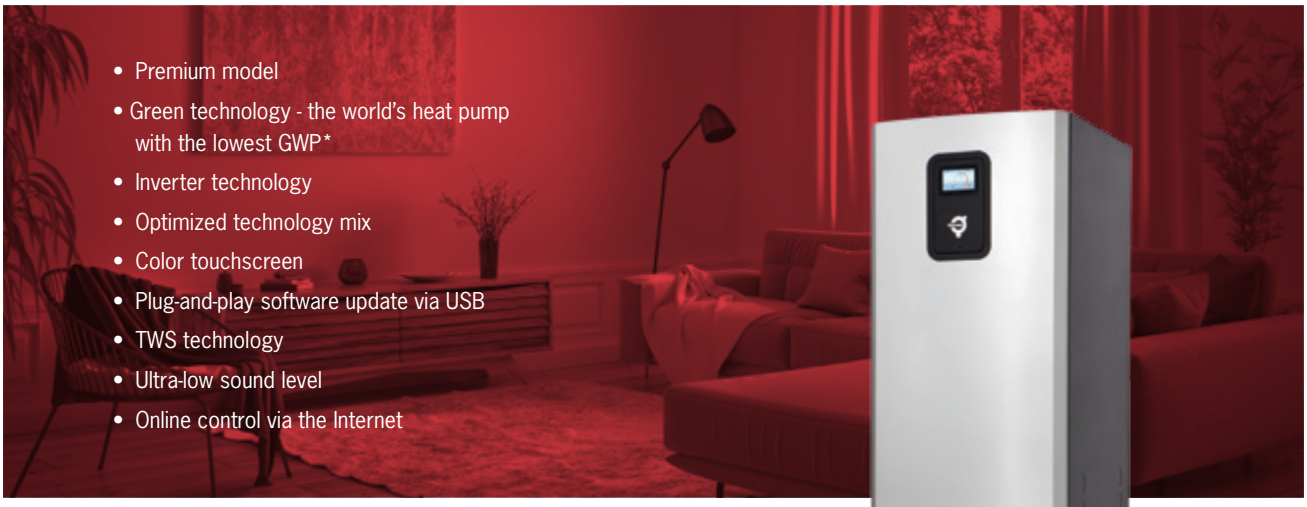
A+++ • energy class when the heat pump is part of an integrated system

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

Energy class according to Eco-design Directive 811/2013


THERMIA
ATLAS
THE WORLD
CHAMPION
Thermia


THERMIA
CALIBRA ECO
THE GREENEST
ENERGY
Thermia



- Premium model
- Green technology - the world's heat pump with the lowest GWP*
- Inverter technology
- Optimized technology mix
- Color touchscreen
- Plug-and-play software update via USB
- TWS technology
- Ultra-low sound level
- Online control via the Internet

THERMIA CALIBRA ECO

High performance and green champion

A smart choice for the future, Calibra Eco is the best step towards a better environment and a sustainable society. With Calibra Eco, we are setting trends in geothermal technologies and at the same time meeting the tough criteria of European Union's environmental policy.

Calibra Eco is the first ground source heat pump on the market that uses the more climate-friendly refrigerant R452B. This has a very low GWP value* and, thanks to its unique design Calibra Eco, requires less refrigerant than other heat pumps, giving it a very low CO_2 equivalent.

Calibra Eco has a very high performance (SCOP 5.96 – see page 11), which keeps energy consumption at a minimum throughout the year. Based on inverter technology, Calibra Eco is an excellent choice for energy-efficient new builds and provides the opportunity to meet additional energy needs, such as a swimming pool or future extensions to the house. It is also ideal for retrofitting projects, where Calibra Eco can be precisely adjusted to the specific heat demand. and available energy source.

A special feature is how quietly Calibra Eco operates. Depending on size and power capacity, the sound level ranges from just 29 to 46 dB(A), making it currently the quietest heat pump on the market. In addition, the integrated Thermia Online tool allows you to remotely monitor your heat pump via a computer, tablet or smartphone.

Calibra Eco uses TWS technology and a variety of other technical innovations provide excellent hot water comfort for its size class. Calibra Eco is also available in a Duo variant with dedicated MBH Calibra 200 or 300 hot water tank.

Calibra Eco Duo

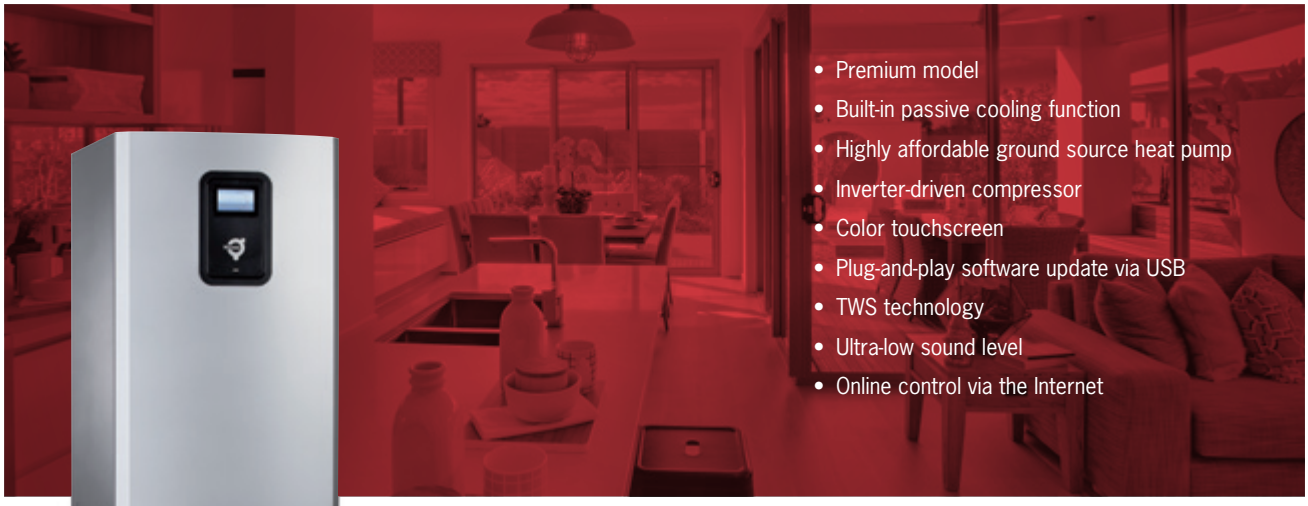
Available in output sizes:	2-8 kW, 3-12 kW, 4-16 kW
Electrical connections:	230V 1N (≤3-12 kW) or 400V 3N
Dimensions (DxWxH):	703x598x1863 mm

A+++ • energy class when the heat pump is part of integrated system

A+++ • energy class when the heat pump is the only heat generator

Energy class according to the Eco-design Directive 811/2013

* GWP, Global Warming Potential, is the amount of heat a greenhouse gas traps in the atmosphere compared to the heat trapped by the same amount of CO_2, which is the reference gas with a GWP of 1.



- Premium model
- Built-in passive cooling function
- Highly affordable ground source heat pump
- Inverter-driven compressor
- Color touchscreen
- Plug-and-play software update via USB
- TWS technology
- Ultra-low sound level
- Online control via the Internet

THERMIA CALIBRA COOL

The complete climate control system

Thermia Calibra Cool is a comprehensive energy system that ensures a pleasant indoor climate all year round. Calibra Cool covers the power range 1.5-7 kW and includes features that have been optimized to provide maximum energy savings when heating or cooling homes. Based on inverter technology, Calibra Cool is an excellent choice for energy-efficient new-build houses as well as being ideal for retrofitting projects, where Calibra Cool can be precisely adjusted to both heat demand and available energy source.

Calibra Cool has a built-in passive cooling function. In passive cooling, the cold brine circulating in the underground loops is used to produce natural cooling to the house. Cooling can be distributed in different ways, such as certain under floor heating systems or by fan coils. Using a heat pump to provide passive cooling is significantly more cost efficient than traditional air conditioning in terms of both initial investment and running costs.

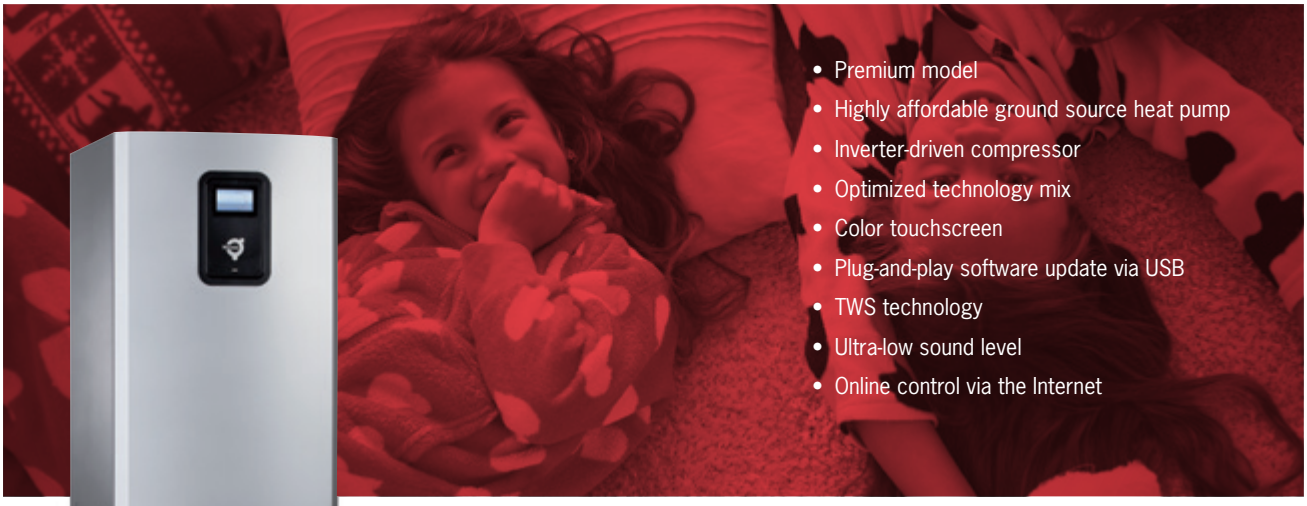
Calibra Cool produces hot water faster and at higher temperatures than can be achieved using traditional systems, Calibra Cool is using TWS* technology, while a variety of other technical innovations provide excellent hot water comfort for its size class. Using the integrated Thermia Online app, you can remotely monitor your heat pump via a computer, tablet or smartphone.

Available in output sizes:	1,5-7 kW
Electrical connections:	400V 3N
Dimensions (DxWxH):	703x598x1863 mm

A+++ • energy class when the heat pump is part of integrated system

A+++ • energy class when the heat pump is the only heat generator

Energy class according to the Eco-design Directive 811/2013



- Premium model
- Highly affordable ground source heat pump
- Inverter-driven compressor
- Optimized technology mix
- Color touchscreen
- Plug-and-play software update via USB
- TWS technology
- Ultra-low sound level
- Online control via the Internet

THERMIA CALIBRA

High performance for a more energy-efficient home

The Thermia Calibra is a new inverter-driven ground source heat pump where the power capacity and features have been optimized to achieve maximum energy savings and cost efficiency. By focusing on core functional technologies, we have been able to make Calibra highly cost-effective for both new builds and renovations without compromising performance.

Because the inverter technology continuously adjusts the heat pump's output to match current demand, Calibra can supply 100 percent of your energy requirements without the need for auxiliary heating.

Thanks to TWS technology, Calibra produces a great deal of hot water for its size – faster and at higher temperatures than can be achieved by traditional techniques. The new controller features a sleek touchscreen color display and user-friendly icons to make operating your system a breeze.

A special feature is how quietly Calibra operates. Depending on size and power capacity, the sound level ranges from just 28 to 46 dB(A), making it currently the quietest heat pump on the market. In addition, the integrated Thermia Online tool allows you to remotely monitor your heat pump via a computer, tablet or smartphone.

Both Thermia Calibra 7 and Calibra 12 are available in gray or white. Calibra can also be ordered in a Duo variant, which means that it comes with a separate 200-liter MBH series hot water tank featuring TWS technology.

Calibra Duo

Available in output sizes:	1.5–7 kW, 3–12 kW
Electrical connections:	230V 1N or 400V 3N
Dimensions (DxWxH):	703x598x1863 mm

A+++ • energy class when the heat pump is part of integrated system

A+++ • energy class when the heat pump is the only heat generator

Energy class according to the Eco-design Directive 811/2013

- Ground source heat pump
- Optimum technology
- TWS technology
- Low sound level
- Class-A circulation pumps
- Can be controlled over the Internet

THERMIA LEGEND

Optimum performance and minimum energy consumption

Based on reliable and well-established technology, Legend is an efficient heat pump for people who are looking for an easy-to-maintain heating system with a low operating cost.

Legend uses the climate-friendly refrigerant R452B. This has a very low GWP value* and, thanks to its unique design, Thermia Legend requires less refrigerant than other heat pumps. In fact, the CO_2 equivalent is 85% lower than traditional refrigerants in similar heat pumps.

The technology inside Optimum uses automatic variable speed-controlled circulation pumps that optimally match output to the real-time temperature and heating demands. This reduces the amount of electricity used and ensures that the heat pump is always running at maximum efficiency.

The hot water tank is fitted with our TWS technology, which means that hot water is produced faster and at higher temperatures than with traditional techniques.

Thermia Legend Duo

is also available with a separate hot water tank, perfect for areas with low ceilings or if you regularly need extra volumes of hot water.

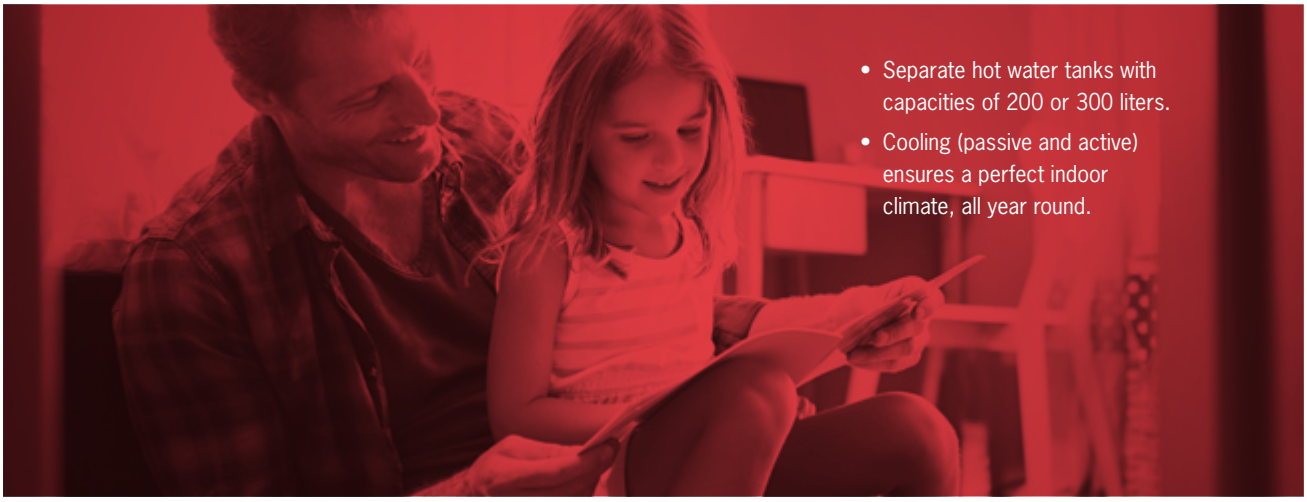
Available in output sizes:	4, 6, 8, 10, 13, 17 kW
Electrical connections:	400V 3N or 230V (8 kW, 10 kW)
Dimensions (DxWxH):	703x598x1863 mm

A+++ • energy class when heat pump is part of integrated system

A+++ • energy class when heat pump is single heat generator

Energy class according to the Eco-design Directive 811/2013

* GWP, Global Warming Potential, is the amount of heat a greenhouse gas traps in the atmosphere compared to the heat trapped by the same amount of CO_2, which is the reference gas with a GWP of 1.



- Separate hot water tanks with capacities of 200 or 300 liters.
- Cooling (passive and active) ensures a perfect indoor climate, all year round.

THERMIA MBH

Separate hot water tank

Thermia MBH is a hot water tank for those who require larger volumes of hot water, or who prefers a separate tank. MBH is compatible with Thermia's Duo models as well as the rest of the heat pump range.

Just like Thermia's built-in tanks, MBH is equipped with TWS technology (see page 16). This means it can produce high volumes of hot water, quickly and efficiently. Energy consumption is low and the hot water supply can handle high demands.

The tank is available with capacities of 200 or 300 litres with stainless steel tank. The cabinet design can be selected to match the corresponding heat pump.

THERMIA COOLING MODULE

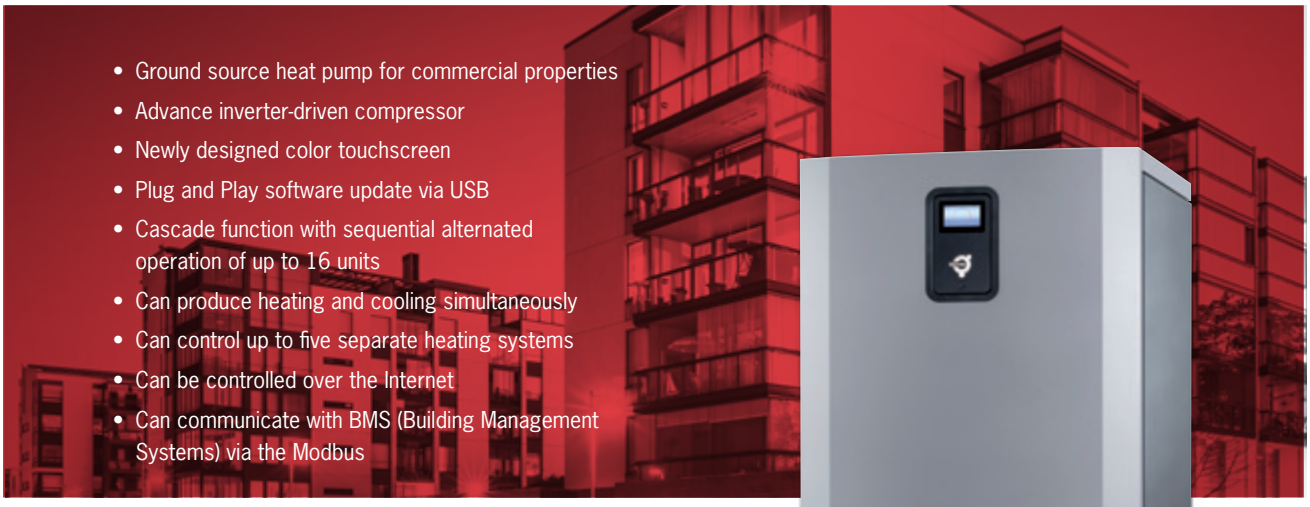
Turns the heat pump into a climate control unit

Thermia Cooling module Passive/ Active enables your heat pump to also produce cooling, cost- and energy-efficiently. You get a complete climate control system that delivers a comfortable indoor climate all year round – heat in the winter, cooling in the summer and hot water throughout the year.

Thermia Cooling module Passive/ Active has a compact design and can be installed right next to the heat pump. It is compatible with all Thermia ground source heat pumps.

For those who only require passive cooling there is a solution with only this function: Thermia Cooling module Passive.


NEW!
MEGA



- Ground source heat pump for commercial properties
- Advance inverter-driven compressor
- Newly designed color touchscreen
- Plug and Play software update via USB
- Cascade function with sequential alternated operation of up to 16 units
- Can produce heating and cooling simultaneously
- Can control up to five separate heating systems
- Can be controlled over the Internet
- Can communicate with BMS (Building Management Systems) via the Modbus

THERMIA MEGA

Superior performance with advanced features

Mega is a new, commercial ground source heat pump that is the pinnacle of innovation, not only for the highest energy savings, but for the best total cost of ownership for a high number of applications in the commercial sector. Mega is a heat pump with an inverter-controlled compressor, with a total output of up to 88 kW and one of the highest SCOP on the market.

Inverter technology - adjusting precisely to your demand

Our inverter technology makes Mega an extremely flexible and versatile product, which can be installed and used in all types of property, whatever the conditions. Each solution can be tailored to meet your full heating, cooling and hot water needs. The inverter technology, which continuously adjusts the heat pump's output to the current demand, means that the heat pump can supply 100 per cent of your energy requirements.

Cascade-connecting and capacity up to 1400 kW

Connecting 16 Mega units together, the customer can achieve a total heating effect of up to 1400 kW. Cascade connected pumps start one after the other depending on the energy need, thus ensuring minimum energy consumption regardless of the output. Model Mega S-E features an exchange valve for hot water production and a built-in auxiliary heater.

New control system and touchscreen color display

Our main aim when developing Mega was to create a new powerful control system. The new controller in the Mega heat pump boasts a touch-screen color display in addition to user friendly iconic symbols that are easily understandable giving the user stress free control, additionally on the Mega control board below the display can be found a USB port for the updating of software.

The new controller features different functions often used in large heating systems like: Passive/Active cooling, interface to BMS (Modbus), Smart Grid or Energy source control.

Available in output sizes:	Mega ^{S} 10–33 kW, Mega $^{S-E}$ 10–33 kW, Mega ^{M} 11–44 kW, Mega ^{L} 14–59 kW, Mega ^{XL} 21–88 kW
Electrical connections:	400V 3N
Dimensions (DxWxH):	850x900x1744 mm

A+++ • energy class when the heat pump is part of an integrated system

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

Energy class according to Eco-design Directive 811/2013

THERMIA ONLINE

Control your heat pump remotely no matter where you are

With the Thermia Online accessory, you can control and monitor your heat pump from any smartphone, computer or tablet, wherever you are in the world. For example, you can lower the temperature when you are on holiday, and increase it for when you come back. If you come home earlier than expected; no problem – using Online, you can easily ensure that your house is warm and comfortable whenever you need it to be.

At any time of day, you can use Online to check that your heating system is working properly and what temperature your home is at. If anything unexpected comes up and needs to be fixed, you – or your installation engineer, where agreed – will immediately receive this information via Online. You can also control and monitor several locations if you need to; for example, if you have a holiday cottage with a heat pump or have relatives who need assistance.

Thermia Online connects the heat pump to your existing home broadband. If there is no internet connection available, it is possible to connect using a mobile 3G/4G modem (provided by your local mobile service provider). The Online app is available for both Android and iPhone.

Take a demo and see how it works:

Go to www.online.thermia.se
and on homepage click
"**Enter demo mode**"

www.thermia.com/online

Professional installer

Heat pumps are amongst the most efficient and economical renewable systems available, but only as long as the systems are properly designed and installed. Through our authorized resellers, we are committed to ensuring installations are delivered to the highest possible standards, to maximise energy savings and customer satisfaction.

Visit www.thermia.com and find Your local reseller.

This is Thermia

Thermia's history starts back in 1889 with the development and production of energy-efficient kitchen stoves. Ever since, Thermia's core business has been energy-saving heating solutions. As a result we're now one of Europe's leading heat pump producers.

Pioneers in the heat pump business

In 1973 Thermia manufactured the very first heat pump with an integrated hot water tank. Over the years Thermia has continued to develop new solutions in its quest to create better and more efficient heat pumps, providing a more comfortable life in thousands and thousands of households around Europe.

Thermia and Stiebel Eltron

Today Thermia is part of Stiebel Eltron, a global company headquarted in Germany with more than 3700 employees. Thermia is the core of Stiebel Eltron' ground source heat pump development, with a plant and research centre in Arvika, Sweden. Here, work is constantly underway to create the heating and cooling solutions of the future for customers all over the world. Stiebel Eltron with Thermia is one of Europe's top three heat pump manufacturers.

Testing in one of the R&D climate chambers, set to severe weather conditions.

One of Europe's foremost R&D centres

Thermia's facility in Sweden includes the company's 3,000 square metres global R&D centre for heat pumps. Here, engineers and technicians work to meet future global demands for high-tech, energy-efficient heating solutions.

The centre has a state-of-the-art climate chambers where conditions varying all the way from tropical to arctic can be simulated. This enables the heat pumps to be tested in all types of climates, which is necessary when the aim is to develop heat pumps of the future, for use worldwide.

When planning the climate chambers, Thermia sent the tender request documentation to recipients all over Europe. However no company could match Thermia's strict requirements on machinery and equipment. As a result, Thermia decided to build the climate chambers themselves.

Achieving low noise levels are a crucial part of the R&D work. The R&D centre has special sound rooms where the heat pumps' noise levels are tested. It's important to analyze and minimize the noise levels, and to remove all low-frequency noise.

Design is another important feature of heat pumps used in household settings, therefore Thermia's engineers collaborate with designers to ensure that the products have the best possible balance between form and function.

Driven by innovation

Thermia's history starts with its founder, Per Andersson, born 1861. Just ten years old he started his career as an apprentice black smith, and he later began his own production of kitchen stoves. The driving force behind his business was his desire to always develop better and better products. The stoves had to be more efficient, easier to use and more fuel efficient. When one model was ready, work began immediately to develop one that was even better.

The same core values

In time the range expanded to include wood-burning boilers, coke-fired boilers, hot water tanks, radiators and numerous other products used for heating. Always with the same basic philosophy: to have the market's best products. Or in the words of Per Andersson himself:

"The products one releases must be not only the best of their time, but before their time, over time."

To this day, long after Per Andersson's passing in 1942, this philosophy is alive and well at Thermia. And even if Thermia's focus since 1973 has been on heat pump production, the same drive and passion still inspire the company to advance – to constantly develop, with the aim of continuous improvements.

Milestones in Thermia's heat pump development

This timeline demonstrates Thermia's pioneering role in the evolution of the heat pump over the past four decades.

1973

The very first heat pump with integrated hot water tank is developed by Thermia as a result of a collaboration project.

1977

Thermia's training school for retailers is started. No one is permitted to be a Thermia retailer without having documented product knowledge. All to ensure quality and reliability for the customers.

1980

A revolutionary heat exchanger is developed, with significantly increased heat transfer and reduced amounts of refrigerant. The latter is a benefit from an environmental point of view. One of the key persons behind the innovation is Thermia's head of development.

1984

Control computer for fully automatic control of the heat pump, hot water and additional heater is introduced in the Thermia range.

1994

A scroll compressor with high efficiency, great reliability and low noise level is introduced in Thermia products.

2000

Remote control/monitoring of the heat pump becomes possible. This lays the foundation for the Internet-based service that we today call Thermia Online.

2005

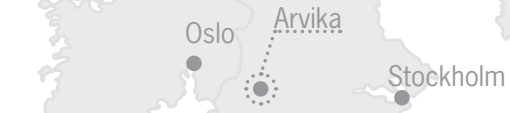
The launch of the first air/water heat pump, Thermia Atria, which operates efficiently at temperatures down to -20 °C. This groundbreaking technology, that makes air source a viable option, is introduced during the spring.

The Thermia Diplomat Optimum is introduced. It is the first ground source heat pump with automatic variable speed control, which adjusts the operation of the circulation pumps according to the prevailing heating requirements.

2007

Thermia's heat pump R&D centre in Arvika is opened by the Swedish prince Carl Philip. The centre develops heat pumps for climates ranging from tropical to arctic, allowing Thermia to satisfy demands from around the world.

The Thermia museum in Arvika opens. Boilers, ovens and wood-fired water heaters from the last century sit alongside modern heat pumps in the premises used by Thermia between 1923 and 1968.



The products one releases must be not only the best of their time, but before their time, over time.

Per Andersson (1861–1942), Thermia's founder.

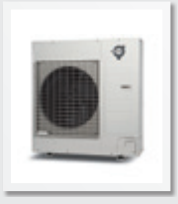
2012

With a new and more efficient compressor, new refrigerant and the latest generation of heat exchanger, the G3 is now more efficient than its predecessor the G2.

With the Thermia Online accessory, you can control and monitor your heat pump from any smartphone, computer or tablet.

2017

Thermia launch iTec, a new inverter-driven air source heat pump. Thanks to its superior annual efficiency, it achieves maximum energy savings.



2021

Thermia launch Calibra Eco, the world's greenest and most environmentally friendly ground source heat pump.

2011

Thermia Atec is launched, instantly setting a new standard for air/water heat pumps.

2015

Thermia launch Mega, a new commercial ground source heat pump. Thermia Mega feature inverter technology, a completely new control system and a newly designed color touchscreen.

2019

Thermia Calibra and Thermia Altas are launched a new inverter-driven ground source heat pumps. Heat pumps with a superior annual efficiency, hot water comfort and lowest sound level.

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

Production: Ord&Bild Reklambyrå **Photo:** Öyvind Lundh, Naturbild AB, Johnér Bildbyrå, Photos.com, iStockphoto, Colorbox, et al.

Thermia