NIBE

# A NEW GENERATION OF HEAT PUMPS

## NIBE Ground source

# UNDERGROUND SOLAR HEAT - A VAST RESERVE OF ENERGY JUST WAITING TO BE TAPPED!

Look out of your window and what do you see? The street? The house opposite? The trees and fields? What we at NIBE see is a free source of energy – the ground!

With the aid of a ground source heat pump, solar energy stored in the ground can be collected and used to heat your home. Here's how.

Warmth builds up underground from the first days of spring when the surface of the earth starts to thaw, to high summer, when the rays of the midday sun penetrate deep down into the ground. By the time the autumn leaves are falling, there's enough energy stored in the ground to heat up your house throughout the coldest winter. A heat pump captures and upgrades this naturally occurring warmth, so even if the summer is wet and cool, it can still provide enough energy to maintain a comfortable indoor temperature.

If at any point it gets too hot inside your house, the same system can be used for cooling. Drawing on the lower temperature underground (between 4 and 12 degrees) passive cooling also exploits nature's own resources – simply for cooling instead of heating.

It's amazing, but true. We know, because we've already been using heat pump technology in Sweden for over 30 years.

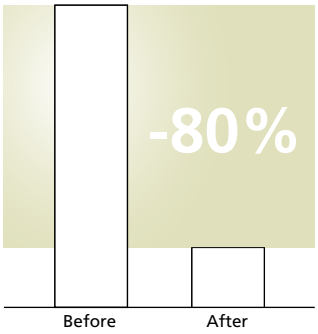
# WHY CHOOSE A GROUND SOURCE HEAT PUMP?

## You save money

Installing a ground source heat pump from NIBE can lead to a reduction in energy consumption of up to 80%*. The reason for this is that a ground source heat pump uses the ground, surface soil or nearby lake as its main energy source, and all these kinds of energy are free of charge.

Although the heat pump doesn't pay for itself in the first month, you will notice the financial benefits right away because your heating bills will be so much lower.

Moreover, the efficiency of NIBE's latest generation of ground source heat pumps (they have an especially high operating range) positively impacts the speed with which you recover your investment.




Enjoy a dramatic reduction in energy consumption and up to 80% off your heating bills when you install a NIBE ground source heat pump!

Efficient, safe and problem-free heating and hot water at a fraction of the alternative cost and a fraction of the environmental impact.

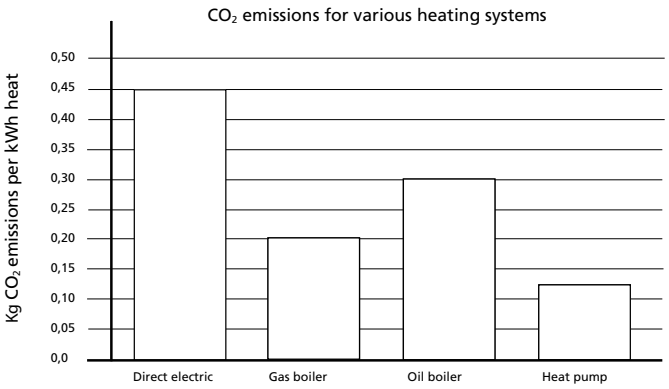
## You reduce your carbon footprint

The second reason for choosing a NIBE ground source heat pump is that it's so environmentally-friendly. By merely storing and converting solar energy from the ground to heat your home and hot water, a ground source heat pump leads to much lower $CO_2$ emissions than a traditional fossil-fuel based heating system.

Some governments and regional authorities offer subsidies to homeowners to switch from fossil fuel based heating to a more modern, renewable source of energy. Since ground source heat pumps are now officially classified as renewable energy, there couldn't be a better time to change!

## Consider this

If all the approximately 1 million new houses built in Europe installed heat pumps, by 2016, we would be emitting about 3 600 000 tonnes less $CO_2$ each year. That's the equivalent of taking about a million cars off the road!




* compared to direct electricity.

# FOUR KINDS OF GROUND SOURCE ENERGY

The term "ground source" covers four different heat sources: rock, surface soil, ground water and lake. The one that suits your location best is determined by factors such as the building's energy needs, your current heating system and the kind of terrain your house stands upon. Your local NIBE installer will be able to offer advice about which one is most appropriate for your home.

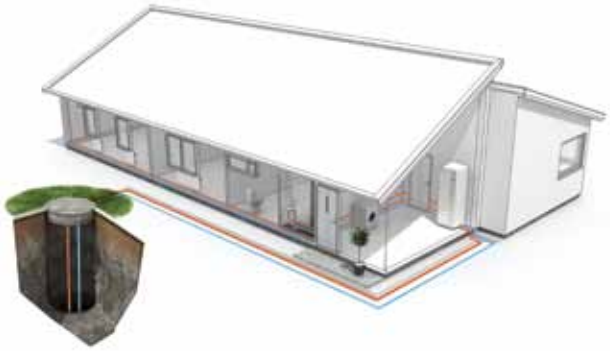
In all four cases, the heat pump concentrates the stored energy from one of these sources in such a way as to provide the hot water for radiators, underfloor heating, baths and showers.

### Rock - using a ground probe

Ideal for refurbishment or adaptation from a fossil fuel based heating system.

In the lower subsoil of the so-called "near-surface geothermal layer" lies a heat source with an almost constant temperature that can be utilised all year round. The heat pump collects stored solar energy from a collector in a hole drilled into the rock. The depth of the hole can vary between 90 – 200 metres, depending on the size of heat pump selected and on local building regulations.

This type of system can be used for all possible building types, large or small, public or private. It requires little space and the ground probe can be drilled in the smallest of gardens.

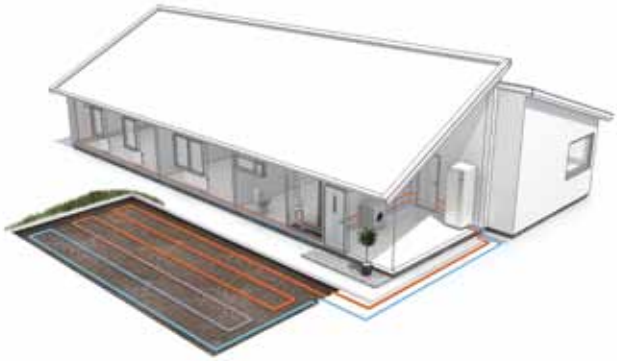


### Surface soil - using a surface collector

Cost-effective energy collection.

During the summer, solar heat is stored in the soil. This is either directly absorbed as insulation or as heat from rain and the air from the near-surface layer of the soil. The heat pump collects this stored solar energy from a buried collector. That is, a hose filled with anti-freeze, and buried at a depth of about 80 – 100 cm, the length of the hose varies between 250 and 400 metres, depending on the size of heat pump selected.

Using this energy for heating is a cost effective method. The highest yield can be obtained from soil with a high water content.



**Ground water**

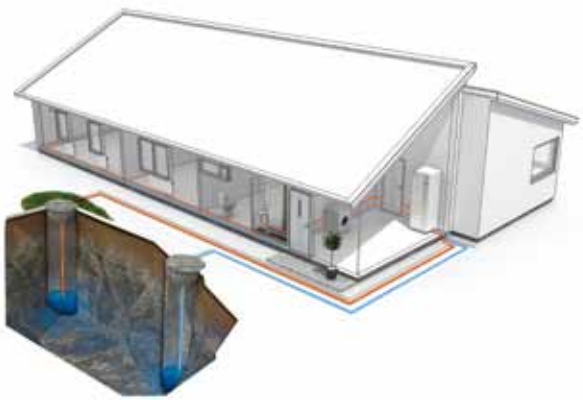
## A viable energy source for any building where ground water is easily accessible.

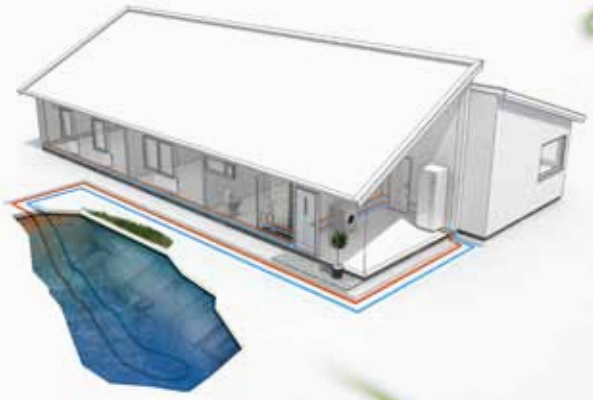
Ground water can also be utilised as a heat source since it has a temperature of between 4 and 12°C all-year round. The heat pump collects stored solar energy from the ground water. Normally, there is one well for drawing up water and one for returning it.

**Lake collector**

## Cost-effective installation for lakeside homes.

If your home is built beside a water source such as a lake, heat from the lake water can be extracted using a surface soil collector anchored to the bottom of the lake.





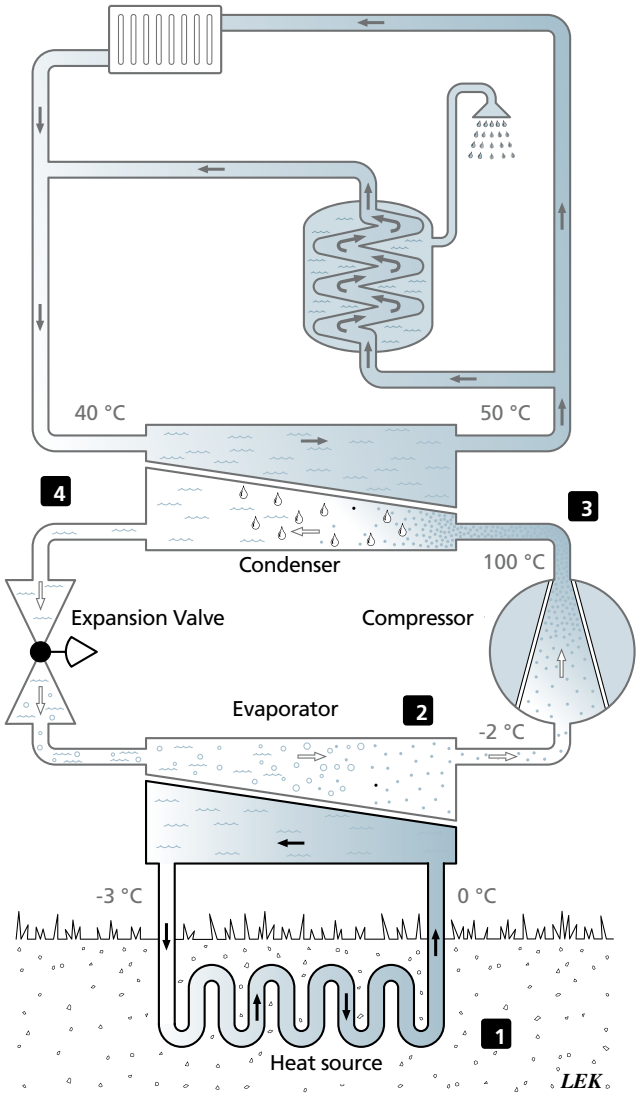
# HOW DO GROUND SOURCE HEAT PUMPS WORK?

The earth absorbs and stores heat from the sun year after year, providing us with a constant source of naturally renewed energy. Just a few feet under the ground, there is a fairly constant average temperature of 4°C to 12°C. This trapped energy represents a vast reserve of low grade heat waiting to be tapped.

The ground source heat pump gathers heat from the solar energy stored underground, either using collectors buried at a shallow depth, or from boreholes which are drilled deeper underground.

The heat is transferred from the ground to the heat pump using a mixture of water and an environmentally-friendly anti-freeze solution. It circulates through the closed loop, absorbing thermal energy from the earth and carrying it to the heat pump.

The refrigerant circulates in the heat pump and thus the heat from the ground is retained and converted into high-grade heat to be released into your home via an underfloor heating system, water based radiators and into your hot water tank.




1. Using a hose filled with liquid, known as a collector, you can bring up solar energy stored deep down in the rock, at the bottom of the lake or a metre or so beneath your lawn. The liquid in the collector circulates and is heated up by the stored solar heat down in the ground or in the lake.

2. When the liquid passes up into the heat pump, it meets another closed system. This contains a refrigerant that can turn into gas at a very low temperature.

3. Under high pressure, a compressor considerably increases the temperature of the refrigerant. Then, using a condenser, the heat is transferred to the water-based heating system in the house.

4. Meanwhile, the refrigerant reverts to liquid form, ready to turn into gas once more and to collect new heat energy.

THE DILEMMA:

Home owners, architects and builders are looking for more environmentally-friendly ways to regulate the indoor climate.

There is an obvious trend away from natural gas and oil based solutions due to the pressures of cost and availability of fossil fuels. Long term planning is called for.

The pressure is on from governments and societies to behave in a more environmentally responsible way, specifically in the choice of heating systems for buildings.

NIBE'S ANSWER:

When compared to alternative heating solutions, heat pumps have a very low environmental impact.

Designed for domestic use, NIBE ground source heat pumps are easy to install, operate and maintain. They are built to last and can be driven by a variety of different energy sources, depending on availability and price.

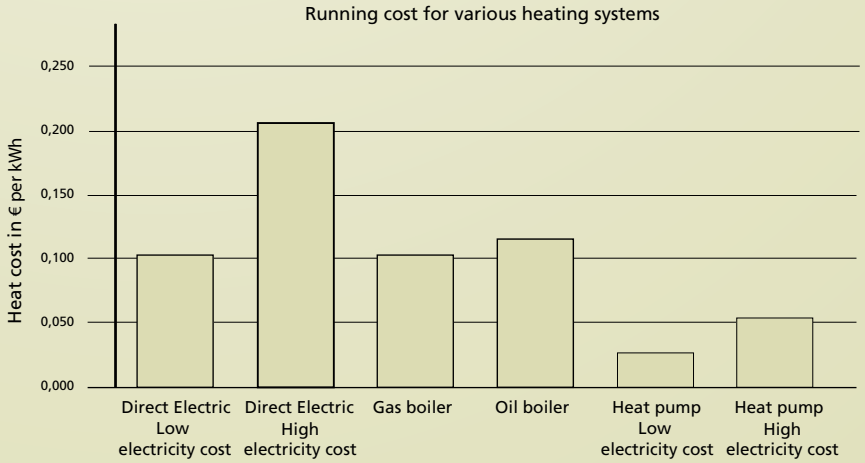
There is no combustion process involved in the operation of a NIBE ground source heat pump. It merely upgrades energy from the ground, surface soil or lakewater near your home. Ground source heat pumps are now officially classified as a renewable energy source.

# WHAT IMPACT DOES A NIBE GROUND SOURCE HEAT PUMP HAVE ON YOUR ENERGY CONSUMPTION?

It reduces energy consumption for heating and hot water by up to 80%!

Thanks to a series of efficiency-enhancing innovations, such as low energy circulation pumps (class A), an especially well-insulated hot water tank and indeed, to the design of the tank itself, NIBE's ground source heat pumps offer a particularly high Seasonal Performance Factor (SPF). That is, their average performance calculated over an entire year, taking into account the changing weather conditions and the household's fluctuating energy needs.

A heat pump's efficiency is often given as COP (coefficient of performance) i.e. the amount of heat it produces in relation to the amount of electricity needed to run it. However, to give a complete picture of the efficiency of our new generation of heat pumps, we prefer to use SPF.



More good reasons to exchange your conventional boiler for a NIBE ground source heat pump:

- NIBE ground source heat pumps are ideal for underfloor heating and water-filled radiators. They tap into highly stable temperatures below the earth's surface to provide a consistent source of energy all year round.
- Most NIBE heat pumps also include a cooling function.
- You no longer need to worry about the availability of fossil fuels.
- No natural gas supply, flues or ventilation are needed.
- A NIBE heat pump gives you a clean, discreet heating, eliminating the need for a chimney.
- The noise level is extremely low and there's no visual impact on the garden since the collectors are buried out of sight.
- The heat pump is simple to install and operate, with a user-friendly display.

# NIBE GROUND SOURCE HEAT PUMPS & ACCESSORIES

Presenting the new generation.

# THE NEW GENERATION OF NIBE GROUND SOURCE HEAT PUMPS

The principle behind ground source heating is basically very simple, but at NIBE we have developed the technology over the years, leading to increasingly sophisticated and advanced products.

Our new generation of ground source heat pumps is packed with sophisticated technology, but at the same time incredibly simple to install and operate. Designed for connection to a heat distribution system such as radiators, convectors or underfloor heating, these new heat pumps offer astonishing savings and big environmental benefits.

### Now, even more efficient!

NIBE's new heat pumps achieve a reduction of up to 15% in energy consumption compared to earlier models. This overall figure takes into account factors such as increased compressor performance savings from the use of low energy circulation pumps and hot water tank insulation. Further reducing $CO_2$ emissions as well as energy costs, this efficiency gain is good news for home-owners and the environment!


### Colour display

With the arrival of the new generation of heat pumps, the concept of user-friendliness has reached a whole new level. A large, easy-to-read multicolour display features clear information about status, operation time and all temperatures in the heat pump; an easily navigated control unit enables users to get the best performance out of the heat pump and maintain a comfortable indoor temperature at all times.

### User convenience

You need never run out of hot water again! Equipped with a high output heating coil and a 180-litre tank, any of our heat pumps which feature an integrated water heater now give you even more efficient water heating and rapid replenishment of hot water supplies.

You can save even more energy by scheduling your heat pump to provide for the varying energy needs of your household, on a daily, weekly or longer term basis. What's more, our new heat pumps are so quiet you can hardly hear them!

### User-friendliness

Our new generation of heat pumps have an intuitive interface, which benefits both the end user and the installer. For example, an automatically activated guide leads you through the set-up process quickly and correctly. There is a help function where you can turn for more information about each function, and an alarm which highlights problems and suggests how to solve them.

An easily removed compressor module and a clearly organised internal design facilitate installation and service. The inclusion of USB ports make software updates and operating data downloads quick and simple to perform.

### Multi-purpose

With the addition of various accessories, our new heat pumps can do much more than merely heat your home and hot water. For example, they can be used to cool your home in summer, ventilate it cost-effectively, or even heat your swimming pool. The relevant accessories are dimensioned to fit neatly together, giving the appearance of a single streamlined system. And since all accessories are controlled via the heat pump, you only have to learn to use one operating system. Find out more about accessories on page 22.

NIBE™ F1145

NIBE™ F1245

# NIBE GROUND SOURCE HEAT PUMP INSTALLED IN YOUR HOME

**Four functions in one:**
HEATING COOLING, DOMESTIC HOT WATER AND VENTILATION WITH ONE HEAT PUMP
Using your NIBE ground source heat pump, all these functions are possible. Water-borne distribution of heating takes place via radiators or an underfloor heating system; cooling takes place via fancoils or the same underfloor system.

**Zero visual impact:**
ALL OUTDOOR ELEMENTS OUT OF SIGHT
Since the bore hole, surface or underground water collectors are hidden beneath the ground, there is no visible evidence of the heat pump in your garden.

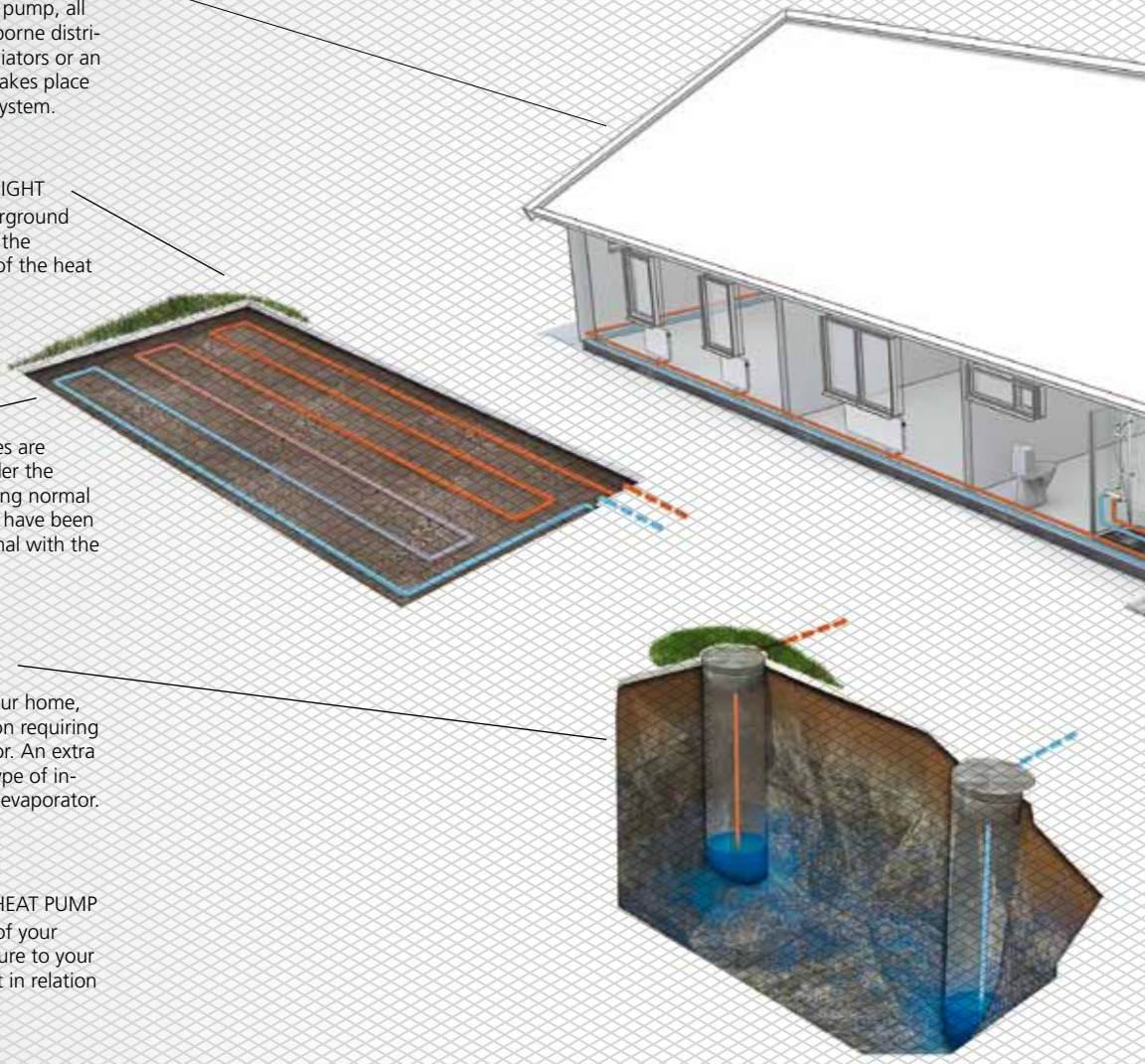
**Surface soil collector:**
TAKE ADVANTAGE OF A LARGER GARDEN TO COLLECT ALL THE ENERGY YOU NEED
With a surface soil collector, the pipes are buried approximately one meter under the ground, which is simply achieved using normal digging equipment. When the pipes have been laid, your garden is returned to normal with the system neatly hidden underground.

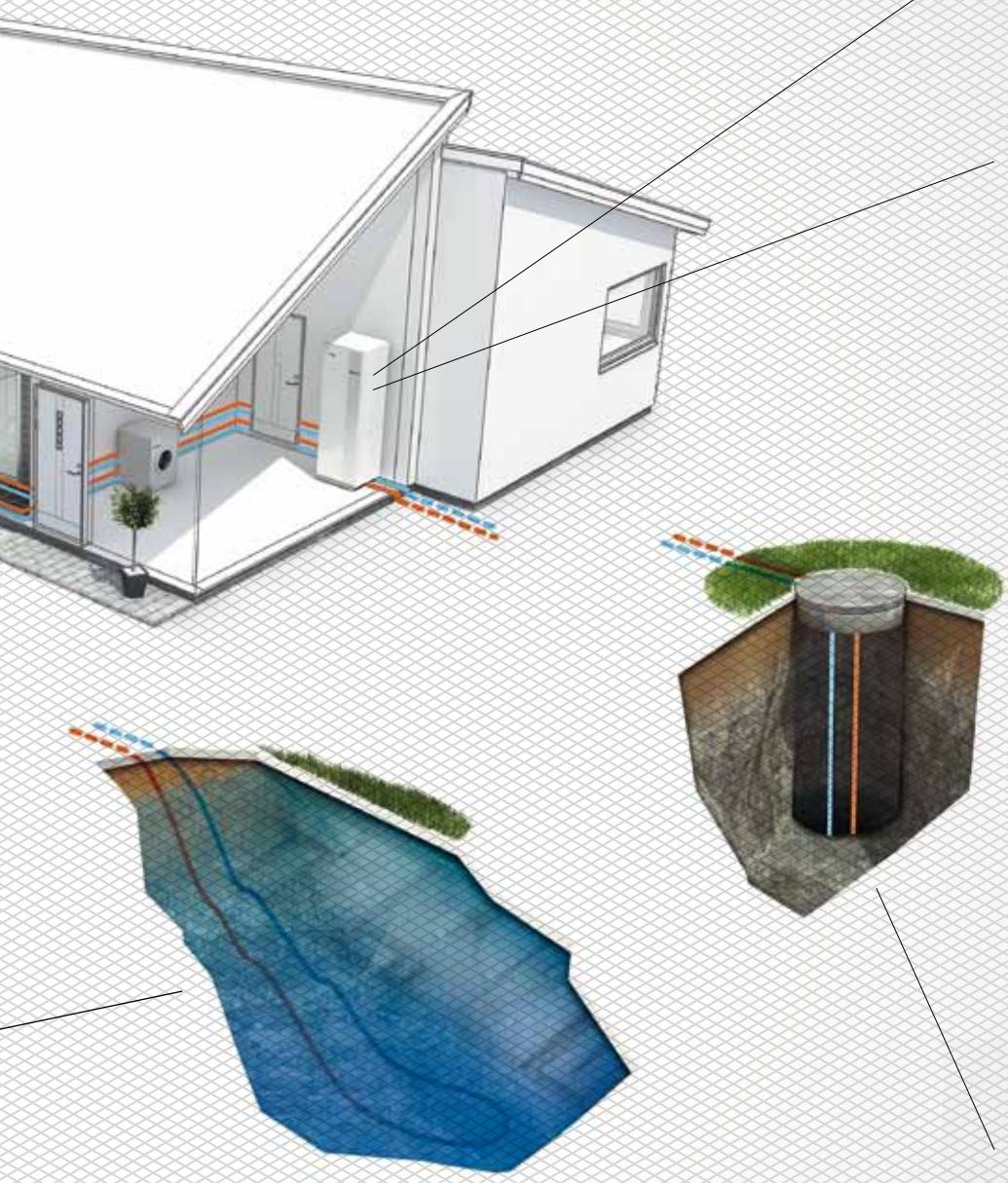
**Ground water collector:**
SHALLOW DRILLING ON LAND WITH GROUND WATER BENEATH IT
If there is a water source beneath your home, this can be a cost-effective installation requiring less deep drilling than a rock collector. An extra exchanger is recommended in this type of installation to prevent clogging of the evaporator.

**Outdoor sensor:**
MINIMISES WASTE AND ENSURES ECONOMICAL OPERATION OF THE HEAT PUMP
A sensor placed on an exterior wall of your house reports the outdoor temperature to your heat pump so that it can vary output in relation to need.

**No-freeze transport pipes:**
FOR SAFE AND RELIABLE OPERATION ALL YEAR ROUND
The pipes for transporting heat from the energy source to your home contain a solution of water mixed with anti-freeze. This means that even in the depths of winter, you can rest assured the heat pump will keep doing its job!

**Lake collector:**
COST-EFFECTIVE INSTALLATION FOR LAKESIDE HOMES
If there is a water source such as lake beside your home, it is possible to employ a surface soil collector anchored to the bottom of the lake.





**Indoor unit:**
NEUTRAL APPEARANCE,
ADAPTED TO ANY INTERIOR
An attractive but discreet design makes our ground source heat pumps easy to place in your utility room or cellar. Since the design is pleasing to the eye, it can even be positioned in a more visible area such as a hallway.

**Compatibility:**
CONNECTS EASILY WITH
OTHER ENERGY SOURCES
When you need an additional energy source, your NIBE heat pump can be hooked up to e.g. an existing boiler. Note that complementing supplies with a green energy source such as wind power would result in a system that's almost emission free.

**Ventilation:**
INCREASE ENERGY SAVINGS
Enjoy the benefits of good ventilation and lower heating bills by adding an FLM module to your heat pump. It captures the heat from the stale air exiting your home and feeds it back into the heat collection system. The FLM's low energy fan consumes very little electricity.

**Pool heating:**
ECONOMICAL POOL HEATING
When the weather is warm, and you do not need the heat pump's full capacity to supply your home's energy needs, why not use it to heat an outdoor swimming pool economically instead? The accessory NIBE Pool 40 is a control unit for this function. If you are planning on using the pump to heat up your pool, remember to inform your supplier from the start, as this will influence the size of collector needed.

**Passive cooling:**
FOR LOW ENERGY, LOW COST COOLING
The same system can be used to cool your home. Passive cooling circulates fluid that has been cooled underground into your underfloor system or fancoils, lowering the indoor temperature in the most natural, energy-efficient way.

**Bore hole:**
COLLECT ALL THE ENERGY YOU NEED, EVEN ON A SMALL PLOT OF LAND
By means of one or several bore holes, it is possible to collect enough energy from the bedrock to satisfy the needs of any home. This is a one-off investment since the same borehole can be used even if you decide to change the pump at some point in the future.

# WHAT MAKES THE NEW GENERATION OF NIBE GROUND SOURCE HEAT PUMPS SO EFFICIENT AND USER-FRIENDLY?

Below, we've highlighted some of the key features of our best seller, the NIBE F1245 ground source heat pump. Thanks to a combination of advanced engineering and numerous efficiency enhancing features, the NIBE F1245 gives you unrivalled annual average energy savings and makes it possible to maintain a comfortable indoor climate all year round, regardless of the weather.

What's more, you don't need to be a technical genius to make it work for you. A large, easy-to-read multicolour display gives everyone the chance to maximize the energy saving potential of this exciting green technology!

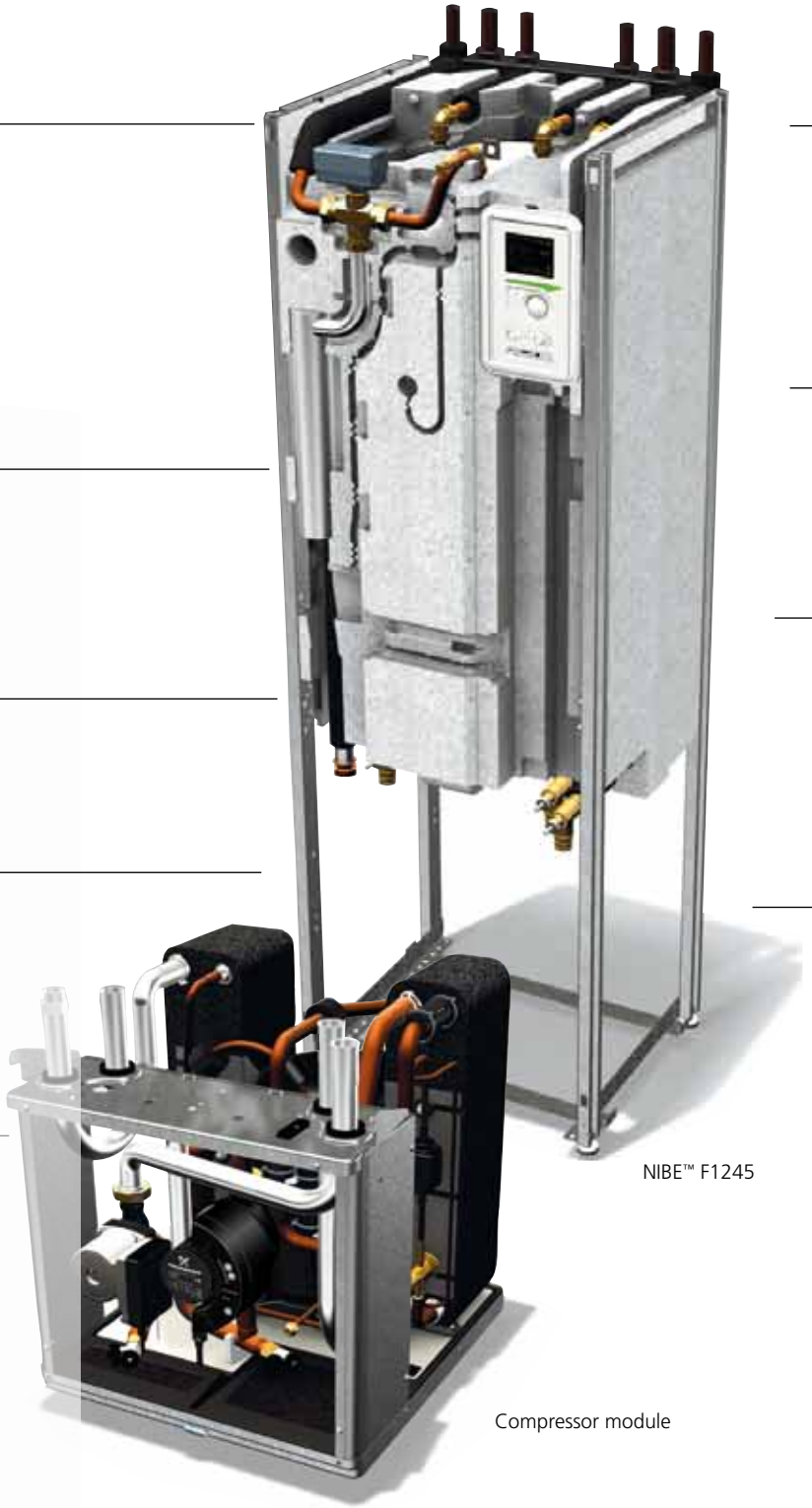
**Modular design**
FOR EASY ADDITION OF ACCESSORIES
This heat pump and its accessories are designed to be placed together and create a streamlined appearance with any unsightly piping neatly tucked away. Whether you choose a heat pump with integrated hot water tank and add-on ventilation unit, or combine a heat pump with a standalone hot water tank, the overall effect is that of a single, neat system.

**Design of the hot water tank**
FOR ECONOMICAL AND EFFICIENT HOT WATER PRODUCTION
Water is heated using heating coils placed *inside* the tank, making it possible to produce twice as much hot water in the same amount of time.

**Insulation of the hot water tank**
MINIMISES HEAT LOSS AND SAVES MONEY
An extra thick and efficient layer of insulating material made of Neopore retains the heat inside the tank, which in turn saves you money.

**Low energy circulation pumps**
REDUCES ENERGY CONSUMPTION AND COSTS
Steered by software in the heat pump, the circulation pumps can run faster or slower, depending on the building's energy requirements and the outdoor temperature. This is highly economical as it means only the correct amount of energy is produced.

**Removeable compressor module**
FACILITATES TRANSPORT, INSTALLATION AND MAINTENANCE
The compressor module can be removed quickly and simply from the heat pump. This makes it a far less heavy and cumbersome item to carry and install. Moreover, should the compressor module require servicing it can be removed and serviced independently of the heat pump.



NIBE™ F1245

Compressor module

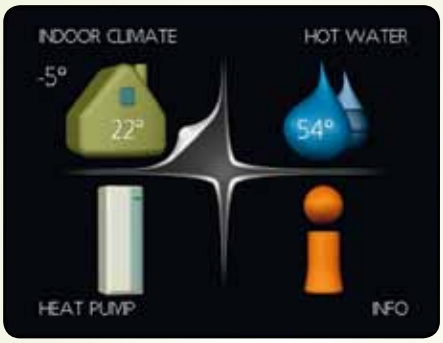
**Well structured interior**
REDUCING THE NEED FOR A USER MANUAL
Our heat pumps come with a user manual handily positioned in a special pocket inside the aluminium door. However, installers will find that the inside of the heat pump is so neatly and clearly organised that they rarely need to refer to the manual.

**USB ports**
FOR UPLOADING AND DOWNLOADING DATA
Having USB ports give several advantages. For example, end users can download historic operating data onto a memory stick and give it to their local NIBE specialist, instead of arranging a home visit.

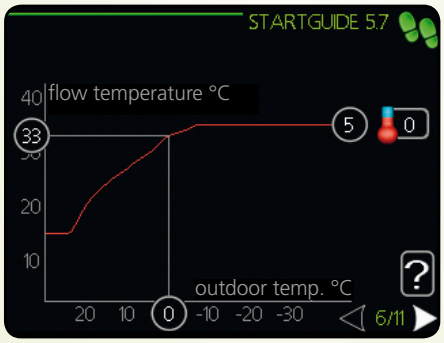
**Exterior design**
AN ATTRACTIVE PIECE OF EQUIPMENT IN YOUR HOME
The main body of the heat pump is plain white, which means it fits into your cellar or utility room without any problem. The F1245 also has an attractive, brushed aluminium flap door with a window through which the digital display is visible.

**Integrated circulation pumps**
KEEPS YOUR HEAT PUMP QUIET!
The noise level of our ground source heat pumps have been further reduced by placing the circulation pumps inside the compressor module. The result is an almost silent operation.

# THE DISPLAY




**Colour display**
FOR A QUICK OVERVIEW OF THE HEAT PUMP'S OPERATION
The unique colour display shows four icons representing the house temperature, the heat pump, the hot water and "information". You can choose to see selected icons when the aluminium door of the heat pump is closed.




**Start-up guide**
FOR EASY COMMISSIONING
The start-up guide on the display is automatically activated during installation. It poses a series of questions such as which language should be used and which, if any, accessories will be hooked up to the heat pump. In this way, the installer is guided quickly and correctly through the set-up process.


**User interface**
MAKING IT EASY TO GET THE MOST OUT OF YOUR HEAT PUMP
Open the aluminium door and select which one of the four areas you want to view in more depth. With just three commands to choose from – select, return and scroll – navigation could not be more straight forward. Yet behind this simple exterior lies a sophisticated control system, enabling you to adjust the climate in your home, boost hot water capacity, switch to economy mode before a weekend away …and much more besides.

# NIBE GROUND SOURCE PRODUCT RANGE

## NIBE™ F1145

One of a new generation of heat pumps, designed to supply your home with inexpensive and environmentally friendly heating. The unit features an circulation pumps and a control system and the heat production is both safe and economical. Connect to an optional low temperature heat distribution system such as radiators, convectors or underfloor heating. Add accessories, such as a hot water heater, passive cooling, ventilation recovery, pool and other heating systems.

The F1145 has no integrated water heater, which is an advantage if there is a low ceiling or if a larger volume of hot water is required. Suitable for use with NIBE VPB 200.

A control unit helps you maintain a comfortable indoor climate, both cost-effectively and safely. Clear information about status, operation time and all temperatures in the heat pump are shown on the large and easy-to-read display.

**NIBE F1145**

| | |
|---|---|
| Sizes | (1-phase) 5, 8, 12 kW<br>(3-phase) 15, 17 kW |
| Integrated water heater 180 litres | No |
| Delivery temperature | 65°C |
| Soft starter | Yes |
| Immersion heater | Yes |
| Height/ Width/ Depth | 1500/ 600/ 625 |

## NIBE™ F1245

One of a new generation of heat pumps, designed to supply your home with inexpensive and environmentally friendly heating and cooling. The unit features an integrated immersion heater, circulation pumps and a control system and the heat production is both safe and economical. Connect to an optional low temperature heat distribution system such as radiators, convectors or underfloor heating. Add accessories, such as extra hot water heater, ventilation recovery, underfloor heating, pool and/or solar panels and other heating systems.

The integrated water heater of F1245 is available in three different protective finishes (stainless steel, enamel and copper).

A control unit helps you maintain a comfortable indoor climate, both cost-effectively and safely. Clear information about status, operation time and all temperatures in the heat pump are shown on the large and easy-to-read display.

**NIBE F1245**

| | |
|---|---|
| Sizes | (1-phase) 5, 8, 12 kW |
| Integrated water heater 180 litres | Yes |
| Delivery temperature | 65°C |
| Soft starter | Yes |
| Immersion heater | Yes |
| Height/ Width/ Depth | 1800/ 600/ 625 |

## NIBE™ F1330

Featuring two large scroll compressors, the NIBE F1330 is the ideal ground source heat pump for multi-occupancy buildings, industrial premises, churches and other large heat-consuming buildings. The compressors collaborate and engage as necessary and give better power control, less wear and greater operational reliability. The NIBE F1330 is a flexible product with advanced control equipment and can be adapted to several system solutions. It can give two different flow temperatures/double heat curves, for example, for a lower flow temperature in underfloor loops than in radiators. It is also prepared for control of oil, gas, pellet fired or electric boilers.

As many as nine NIBE F1330s can be connected together to achieve an output of up to 540 kW. It is also possible to cool via brine on hot summer days.

**NIBE F1330**

| | |
|---|---|
| Sizes | (3-phase) 22, 30, 40, 60 kW |
| Integrated water heater | No |
| Delivery temperature | 65°C |
| Soft starter | 22, 30, 40 kW Yes<br>60 kW Accessory |
| Soft starter | Accessory |
| Immersion heater | Accessory |
| Hight/Width/Depth | 1645/600/625 mm |

# FURTHER USES FOR YOUR HEAT PUMP

A NIBE ground source heat pump is not just for heating your home and hot water. With our broad range of accessories, you can, for example, control your heat pump remotely, heat the pool and cool the house. Your NIBE installer can give you more information.


NIBE VPB 200 with NIBE F1145.

### Recycle heat from ”used” air

## NIBE™ FLM

The addition of this exhaust air module further reduces your heating bills.

Developed to work in conjunction with NIBE ground source heat pumps the FLM module recycles old, stale air from the house, extracts the energy from it and reuses it to heat new, clean air from outside. Air quality is improved while warmth is maintained – all at no extra cost!

NIBE FLM also has an integrated DC fan, so you can adjust the fan’s speed and thus vary the degree of ventilation required. It can be fitted directly to the heat pump or hung up on the wall.

### Enjoy extra hot water

## NIBE™ VPB, VPA/VPAS, UKV

If your heat pump does not have a built-in water heater, or if your household consumes a particularly large quantity of hot water, a separate storage tank can be connected to the system. It provides the hot water you need, or boosts the capacity of an existing system.

NIBE VPB is the new generation of accumulator tank. It can be docked in several different ways, e.g. to another heat pump such as the NIBE F1145.

NIBE VPA is intended for F1150 but also suitable for use with other heat sources. VPAS has a 2.3 $m^2$ solar coil.

NIBE UKV is a surge vessel that is used together with heat pumps to increase the volume of water in the system for more even operation



### Heat your swimming pool

## NIBE™ POOL 40, NIBE™ POOL 11

Using ground source heating to heat the water in your pool saves money and makes those breath-taking icy cold dips a thing of the past!
The NIBE POOL 40 / POOL 11 is an accessory that we have developed to make it easy to control the heating of your pool.

Whether you already have a pool or are planning to build one, it’s a good idea to tell your heat pump installer about this at the start. That way you can be sure to get the right sized heat pump and bore hole depth that’s adequate for the pool’s heating requirements.

POOL 40 enables pool heating with NIBE F1245 and POOL 11 with NIBE F1250.



### Cool your home

## NIBE™ HPAC, NIBE™ PCM, NIBE™ PCS 44

A ground source heat pump is not just for heating up your home and hot water. You can also use it to cool your house. There are various ways of doing this. The simplest way is to supplement your heat pump with a fan convector.

The NIBE PCM is a cooling module that makes it possible to receive passive cooling from your heat source.

The NIBE HPAC is a climate switching module that together with F1145, F1245 or F1330 creates at complete climate system - enabling you to both heat and cool your home.

The addition of a convection fan enables the passive cooling function, which is steered from your heat pump NIBE F1145 or F1245 with the PCS 44 accessory.



### Distribute heat to more than one system

## NIBE™ ECS 40, NIBE™ ESV 21

Using the ECS 40 (for F1145/1245) or ESV 21 (for F1150/1250) accessory, you can choose to share out the heat from your heat pump to up to four different heating systems. This is the ideal solution if you have, for example, underfloor heating on the ground floor and radiators upstairs.



### Steer the heat pump from your mobile phone

## NIBE™ SMS 40, NIBE™ RCU 11

GSM remote control lets you steer the heat pump remotely via mobile phone so you can e.g. raise the indoor temperature on the way home from vacation.

NIBE F1145/1245 can be controlled an monitored externally with accessory SMS 40 and NIBE F1150/1250/1330 with accessory RCU 11.

# NEW TIMES CALL FOR A NEW APPROACH

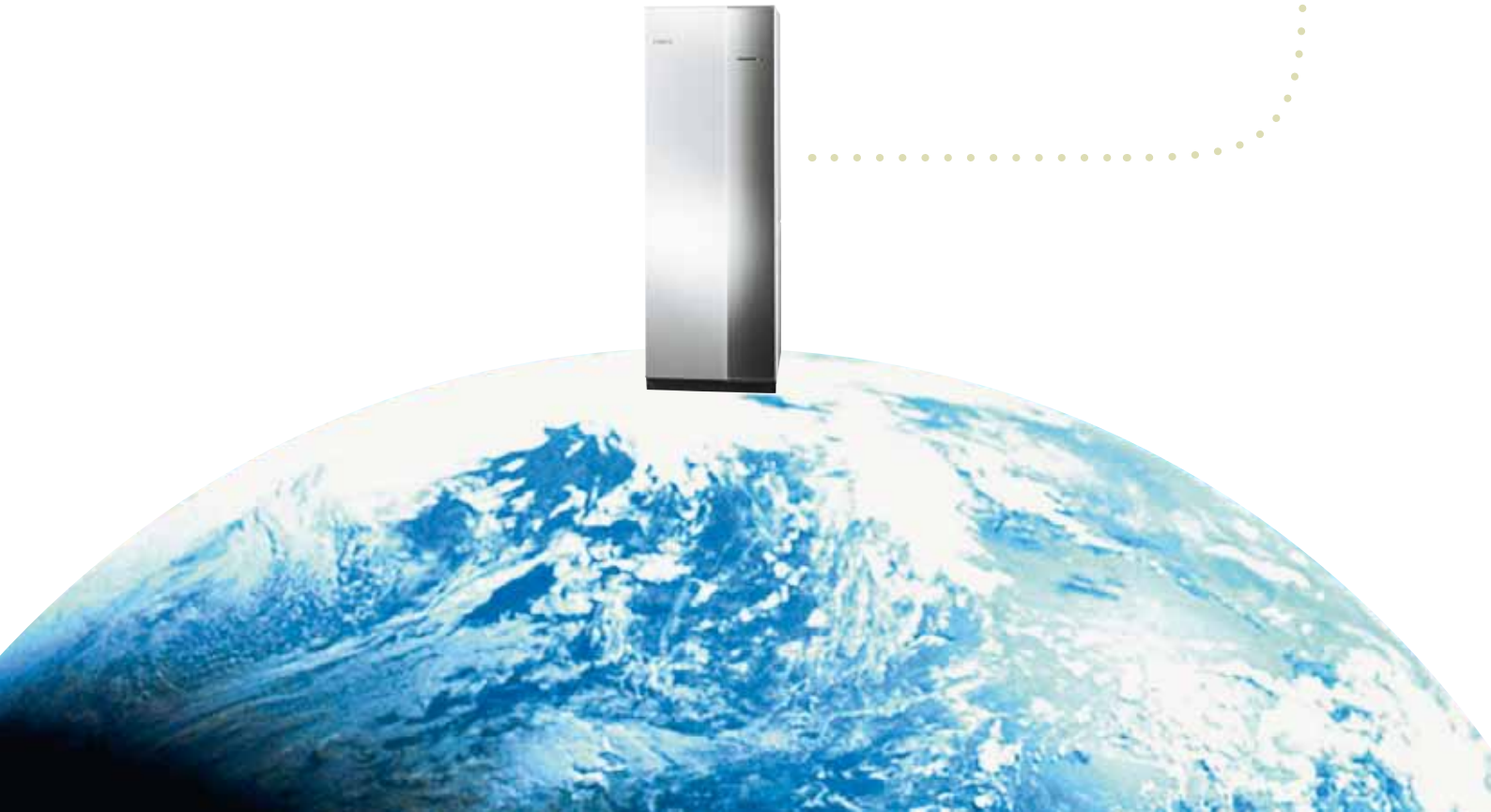
## We all know we've got to reduce emissions. The question is how?

"Green" thinking might once have been a luxury, but lately it has become a necessity that none of us can afford to ignore. Increasingly, the reduction of $CO_2$ emissions is becoming a legal requirement as well as an environmental necessity.

Over 70% of an average home's $CO_2$ emissions are caused by its heating and hot water systems. In order to reduce this figure, we need to start implementing greener, more sustainable technologies across the board. Only then, will we see a significant reduction in $CO_2$ emissions.

Meanwhile the prices of traditional energy sources are rising steadily, with the result that more and more people feel inclined to consider alternative, more efficient energy sources.

Now their customers have started demanding a solution, builders, architects and property developers can no longer ignore the need to employ alternative technologies that make better use of the world's energy resources.



# START WITH A HEAT PUMP!

Heating your house with a heat pump is the proven best option for the environment.

### There are a number of reasons for this

One obvious factor is that a heat pump does not use any combustion process or other energy to generate heat. It simply extracts the heat that already exists in the air, ground or water source, and puts it to use to heat your home. This means lower emissions.

Secondly, in comparison with other heating systems, the amount of electricity needed is relatively low. That's because electricity is not the main energy source, it's only needed to run the heat pump and enable the heat extraction process. While the exact energy saving varies according to what you benchmark against, it generally measures between 60% and 80%.

Another interesting point to consider is that heat pumps, like every manufactured item contains what we call "embedded energy". That is, the energy required to make the product and transport it from the factory to the site where it will be used. By continually improving its own processes, NIBE seeks to minimise the amount of embedded energy in its products; to build and transport them in the most environmentally friendly way.

Once installed in your home, a NIBE heat pump immediately starts to deliver an environmental "payback" in the form of reduced energy consumption and emissions.

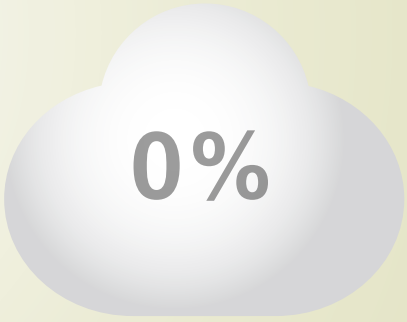
### Working towards a zero carbon future

The drive to reduce energy consumption and the impact its use has on the environment is crucial and increasingly important to us all. Why not take a step closer towards a zero carbon future and power your heat pump using a renewable energy source such as wind, solar or hydro energy?

### Classified as renewable energy

Some governments and regional authorities offer subsidies to home owners to switch from fossil fuel based heating to more modern, renewable energy source such as wind, solar or hydro power? Since ground source heat pumps are now officially classified as renewable energy, there couldn't be a better time to change!

*See www.nibe.co.uk for more information.*



# AN INVESTMENT IN THE FUTURE

NIBE heat pumps are ideal for use in a variety of house sizes and their carefully developed control system is designed to work perfectly to provide hot water to either traditional radiators or underfloor heating systems.

More than anything, a NIBE heat pump is an investment in the future. Developers, builders and home owners want to be assured that the technology they purchase today will be relevant and useful for many years to come. Our heat pumps have been designed with the future very much in mind.

Already, legislation is forcing builders and home owners to consider energy use in their properties. NIBE is at the cutting edge of low energy performance and will enable homes to meet energy consumption and emissions targets long after they are built.

# CASE 1

## EASTFIELDS FARM

## The background

Eastfields Farm extends over 230 acres on the fringes of the beautiful North Yorkshire Moors National Park. The farmhouse itself has five bedrooms and three bathrooms and, being several hundreds of years old, has a heat loss of around16.5kW. Underfloor heating had been installed some years before with an oil-fired boiler fuelling both the ufch and domestic water heating.

Owners Mike and Rita Corrigan decided to replace this with a more eco-friendly system, at the same time hoping to reduce their very substantial fuel bill and called on HT Energy Ltd. in nearby Swainby to design a suitable system..

## Solution

HT Energy suggested a NIBE ground source system since vacant ground space was no problem on the farm, with the addition of a subsidiary solar system to preheat the mains supply cold water and ensure the utmost cost efficiency. Seven hundred metres of horizontal ground looped plastic piping were dug in beside the farm house to a depth below the frost level and the latent ground heat this gathered was harnessed by a NIBE F1140 12kW Heat Pump to heat the water in a VPA300/200 double jacketed hot water tank for supply to the central heating circuit and to meet domestic hot water needs. The original oil-fired boiler was retained as a back-up for times of exceptional demand.

## Results

The system has now been running for two years and Mr. & Mrs. Corrigan, who have monitored costs very carefully, report savings of £3,000 per year compared with use the oil-fired boiler

As far as the top-up system is concerned they started with a full tank of 900 litres of oil and estimate that only about 90 litres has been consumed in the two years. The Corrigans were so impressed with this success story that they have since installed NIBE Heat Pumps in four luxury holiday lodges at Blackthorne Gate in the farm grounds, again using HT Energy for system design and installation.

# CASE 2

## WALTON HALL

## The background

Built in 1742 near Wakefield in West Yorkshire, then extended in the early 19th Century by the traveller, naturalist and eccentric Charles Waterton, Walton Hall is beautifully situated on a man made island in a 26 acre lake with the only access from the mainland by an elegant cast iron footbridge. In the 20th Century the Hall hit hard times being used variously as a Maternity Home and a Country Club before falling derelict in the 1970s. It was bought in 1980 and converted into a luxury hotel, now being part of the prestigious Waterton Park Hotel with 65 luxurious bedrooms, restaurants, bars, a leisure centre and a 39,000 gallon swimming pool.

The leisure centre and the swimming pool plus a few bedrooms, a bar and conference rooms were still sited on the island and heated by an oil fired boiler of 1980s vintage. This was generating a horrific fuel bill of around £5,000 per month and the Waterton Park Hotel's Directors called in Barnum Construction to design a system that would drastically reduce the heating cost and also satisfy the Hotel's aim to use ecologically sound energy wherever possible.

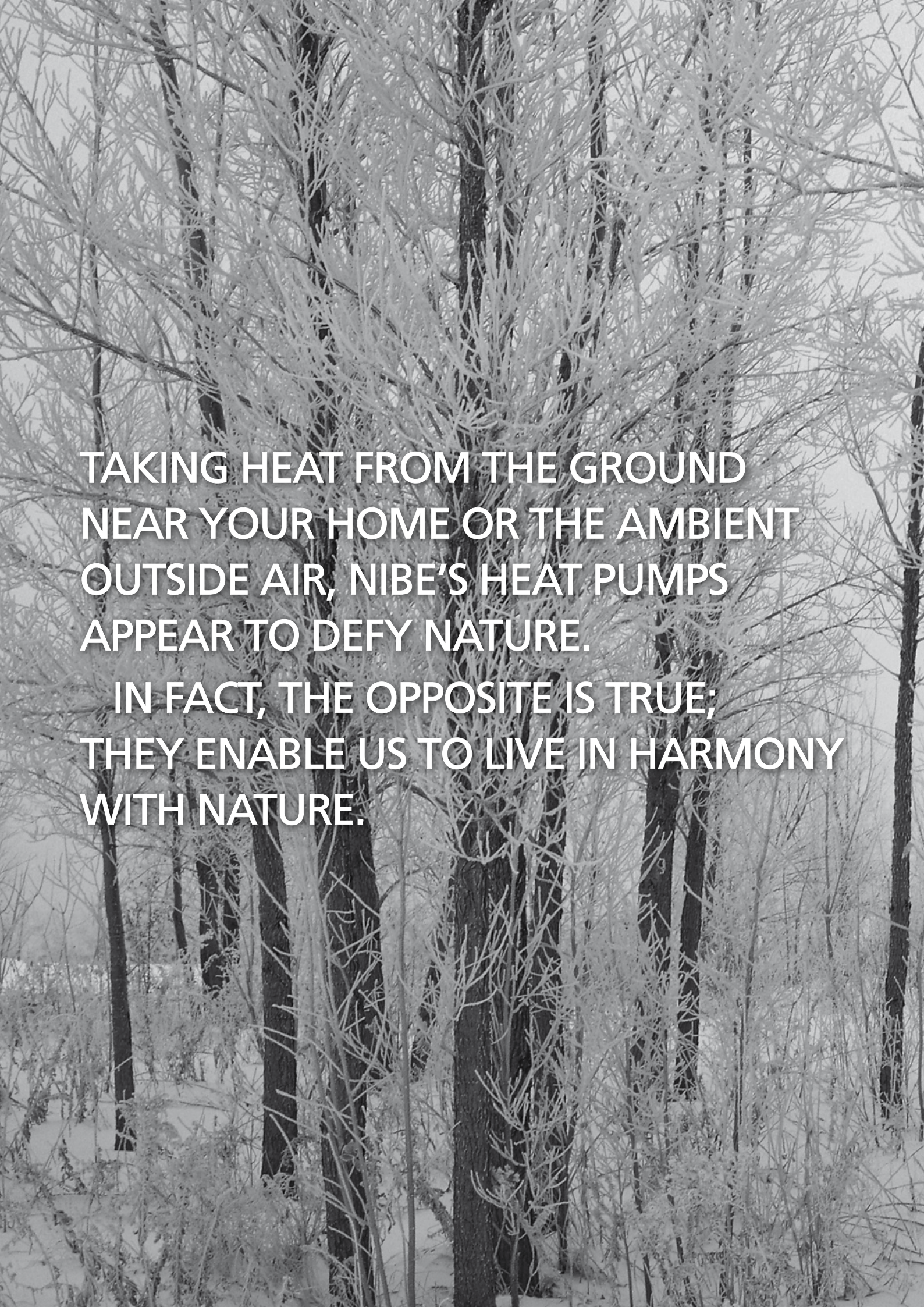
## Solution

Barnum Construction turned to Retherm Ltd. of Stoke-on-Trent, experts in renewable energy systems of all types. Retherm's immediate reaction was logical: "If you've got a lake, use it". They devised a system harnessing the latent heat in the water, processed by a NIBE Fighter 1330 60kW. The design involved eight 400metre loops of MDPE piping weighted and' buried' under the lake's surface at a depth of 1.5 metres, deep enough to protect against anglers' hooks.

The liquid within the pipes absorbs heat from the lake water, which is circulated to the exceptionally powerful Fighter 1330 for maximum energy extraction. The resulting heat is passed to a NIBE VPAS 300/450 double-jacketed accumulator tank whose highly efficient insulation ensures that virtually no energy is wasted. An electric boiler is available as back up for times of exceptional demand.

## Results

Barnum Construction carried out the installation in close co-operation with Retherm and the operation went without a hitch. Retherm's estimates were for fuel savings in the region of £22,000 per year and, equally important in ecological terms, a saving of around 168 tonnes of carbon per annum. These estimates seem if anything conservative for the first few months of operation saw a reduction in the fuel bill for the island's facilities from £5,000 to around £1,500 per month. Despite heavy peak demands, especially to heat the pool when temperatures drop, the back up boiler has hardly been used.



TAKING HEAT FROM THE GROUND NEAR YOUR HOME OR THE AMBIENT OUTSIDE AIR, NIBE'S HEAT PUMPS APPEAR TO DEFY NATURE.

IN FACT, THE OPPOSITE IS TRUE; THEY ENABLE US TO LIVE IN HARMONY WITH NATURE.

# NIBE OF SWEDEN

## Living in harmony with nature

The Swedes have a long and impressive track record of clever, money-saving innovations that use resources sparingly. The simple reason for this is that Sweden was historically a poor agrarian country. A harsh winter climate made food scarce for many months, necessitating careful forward planning. Today, Sweden is a technologically advanced country with a successful economy, so this is no longer necessary. However, the mindset continues to be manifested in the form of fabulous, cost-saving innovations.

NIBE is a perfect example of the economical Swedish mind at work! The company was founded by Nils Bernerup in 1952, after a particularly cold winter. And over the last 60 years it has become Sweden's leading supplier of domestic heating products, continually driving the development of ever-more efficient heating methods.

Early products included water heaters and pressure vessels. In the 1970s these were supplemented by electric boilers. Later, heat pumps and a wide range of other heating products that meet the needs of the European markets, were added to the mix.

Nowadays, NIBE is a leading player in heating solutions around Europe, which is partly due to the fact that our heat pumps are designed to cope with the very coldest Swedish nights.

# THREE KINDS OF HEAT PUMPS FROM NIBE

### Exhaust air heat pumps

Ideal for heating domestic premises and tap water. An exhaust air heat pump ventilates the building and recovers the energy in the warm air, reusing it to warm up your sanitary water and fuel a central heating system.

### Ground source heat pumps

Drawing heat from surface soil, bedrock or the water in a nearby lake, this is a great option for heating houses, multiple-unit properties and other larger buildings. Available with or without an integrated water heater.

### Air/water heat pumps

These pumps extract heat from the ambient outside air. In contrast to simpler types of air-to-air heat pumps, they are connected to the building's heating system and are able to produce both heat and hot water.

### European Directive 20/20/20

The 20/20/20 European directive imposes compulsory targets on the EU's 27 member states, specifying that 20% of energy consumption must be met by renewable sources by 2020. Since ground source heat pumps are now classified as a renewable energy source their installation will help member states reach this ambitious target. And in many cases, local or regional authorities are offering home owners subsidies to switch their existing heating systems to a renewable source such as a heat pump.

20/20/20

Exhaust air heat pumps

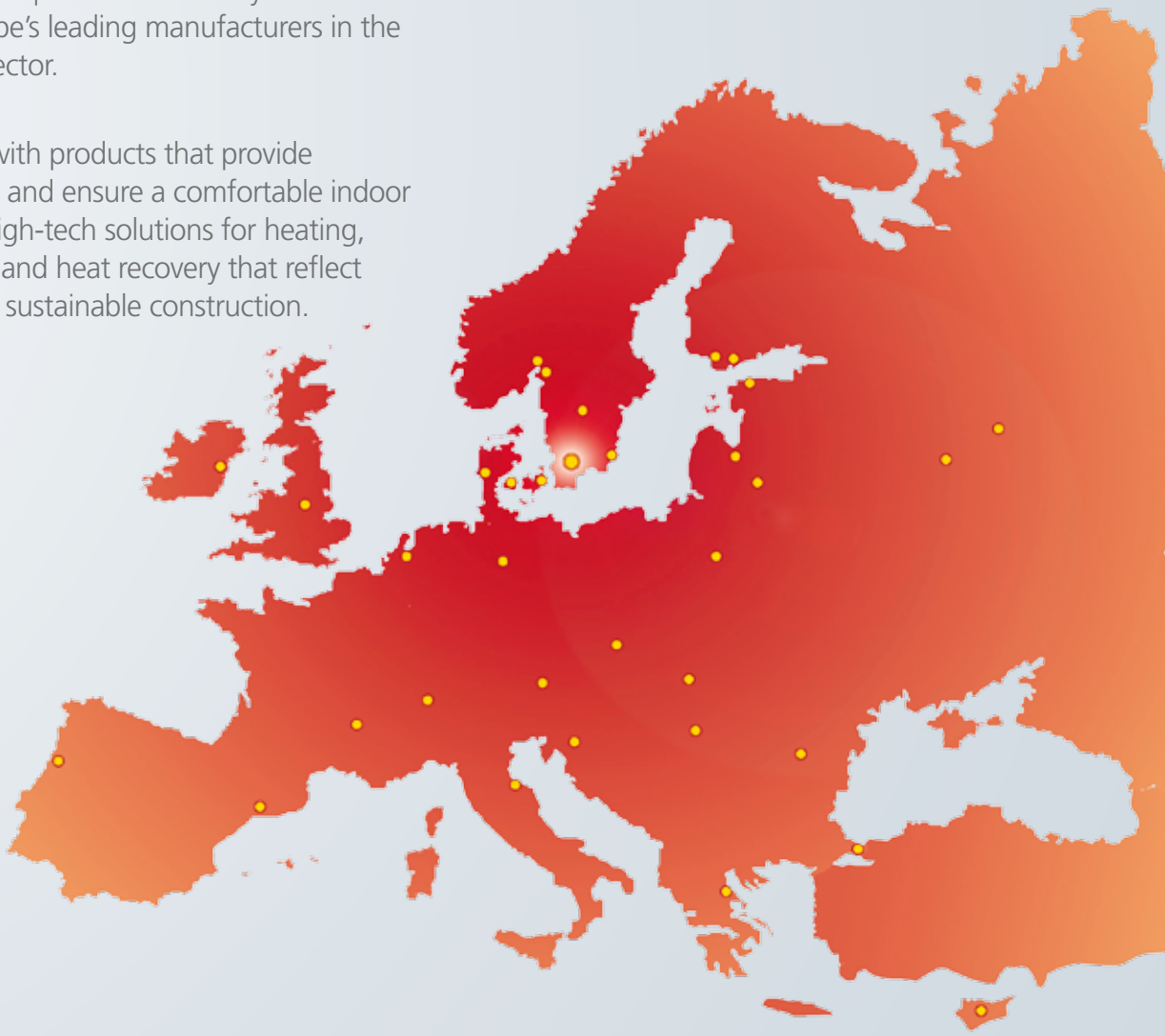
Ground source heat pumps

Air/water heat pumps

# MADE IN SWEDEN

NIBE Energy Systems Limited is a subsidiary of NIBE Heating with its headquarters in Markaryd in Sweden. NIBE is one of Europe's leading manufacturers in the domestic heating sector.

We supply homes with products that provide domestic hot water and ensure a comfortable indoor climate. We offer high-tech solutions for heating, ventilation, cooling and heat recovery that reflect today's demand for sustainable construction.



A new generation of heat pumps
DESIGNED FOR EARTH

## What do we mean by "A new generation of heat pumps – designed for earth?"

**Our products are designed to USE THE EARTH.**
The main energy source for NIBE heat pumps is the earth, or the ambient air or a nearby water source – one or more of which occur naturally all over the planet and are provided free by Mother Earth.

**Our products are relevant ALL OVER THE EARTH.**
Since we now offer a system with both heating and cooling functions, you can use a NIBE heat pump anywhere, regardless of your geographic location.

**Our products are designed with the HEALTH OF THE EARTH in mind.**
NIBE products have a very low environmental impact compared to other heating systems currently available. They do have some impact, as do all manufactured goods, but we are continually working to minimise this and to deliver an environmental payback in the form of reduced emissions.

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NIBE


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