Renewable energy products

Your heating and hot water in safe hands.

Central Heating Hub

WORCESTER
Bosch Group

Discover more with Worcester.

This brochure will put you in the picture about heating and hot water from renewable energy and help you make all the right product choices for your home and your lifestyle.

By Appointment to
Her Majesty The Queen
Boiler Manufacturer
Worcester, Bosch Group
T/A Bosch Thermotechnology Ltd.
Worcester

A percentage of the profits made by Worcester is donated to charities and good causes by the Robert Bosch Foundation, a non-profit charitable trust which owns 92% of the Bosch Group.

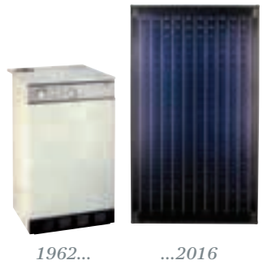
Worcester, Bosch Group headquarters based in Worcester, UK.

Why should Worcester be your choice for renewables?

Worcester is the choice for millions of quality and value focused homeowners. In a recent Worcester customer satisfaction survey it has been revealed that we are also the choice of professional tradesmen too, with 9 out of 10 heating engineers choosing Worcester to provide warmth and hot water for their homes and families.

UK based and proud

Dedicated manufacturing, training and support centre based in Worcester.



1962... *...2016*

50 years and counting

Manufacturing to the highest standards for over 50 years.

BOSCH
Invented for life

Part of the Bosch Group

All Worcester products are manufactured with Bosch levels of quality and reliability as standard.

Experts in every field

From design to manufacture, everyone at Worcester is an expert in their particular field.

10 year guarantee

Our renewable products are guaranteed up to 10 years*.

Royal Warrant

We are honoured to have received a Royal Warrant in recognition of supplying goods to Her Majesty The Queen.

* Terms and conditions apply.

Renewable energy technology can achieve energy efficiency levels as high as 500%, making a considerable difference to your energy costs and carbon footprint.

Heating and hot water from renewable sources: the key facts.

Having a warm home and hot water when we want them has been regarded as a basic requirement for UK homes since the early 1980s. The technology for delivering this heat and hot water comfort has come a long way since then, with the focus now on energy-efficiency and reducing running costs.

Until relatively recently, energy sources for powering heating and hot water in the home has mainly been limited to non-renewable resources, such as gas and oil. Unfortunately these are resources that can't be replaced once they run out. Today, there is a wide range of options for achieving these comforts using renewable energy; clean, green resources that won't run out and have minimal, if any, impact on the environment.

Optimum efficiency

With the UK government committed to an 80% reduction in carbon emissions by 2050, reducing energy consumption and increasing energy efficiency is becoming part and parcel of daily lives, both now and into the future.

High quality modern boilers, such as the efficient Worcester Greenstar range, utilise over 90% of the gas or oil that goes into them, leaving little scope for increased efficiency. Adding intelligent controls is a great way to boost your system's overall performance, however if you are relying entirely on gas or oil to provide your heating and hot water, then their cost as well as their environmental impact do limit how far you can go in terms of increasing the efficiency of your home.

Products that enable you to generate your own renewable energy, however, can make a dramatic difference. They typically use just a small amount of operating power to extract energy that is both green and free, making them up to 500% efficient.

All round benefits

Generating your own renewable energy is known as microgeneration and it has a host of potential benefits. It saves you money by considerably lowering your bills and means that you are less affected by rises in fuel prices. Using a green source of energy also means that you have a far lower impact on the environment, substantially reducing your carbon footprint.

EFFICIENCY COMPARISON	
Greensource air to air heat pump	up to 500%
Greenstore ground source heat pump	up to 400%
Greenskies solar thermal	up to 100%
Greenstar CDi Compact boiler	up to 90.9%
Old G rated non-condensing boiler	up to 60%

* Source: Energy Saving Trust.

Every product needs to be maintained and serviced so it makes sense to consider the lifetime running costs along with the initial purchase price.

How they work

Worcester's renewable energy products for your home utilise the thermal energy from the sun that's freely available from below the ground and the air.

Solar hot water heating systems absorb sunlight (even on a cloudy day) and can convert it into heat that is transferred to your hot water cylinder. Ground source heat pumps extract the energy trapped below the surface of the ground, which is then used to provide heating and hot water. Air to air heat pumps generate warm air for the home and can cool the air during the summer.

To ensure that renewable energy heating is fully effective, it's important to insulate and draught proof your home sufficiently before it's installed.

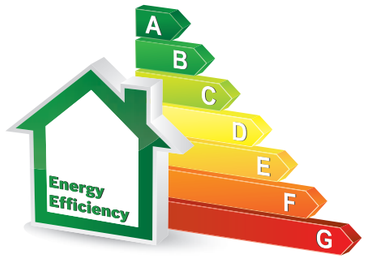
A perfect fit

Considerations such as the size of your property and its location, how well it's insulated, available external space and the number of bathrooms or showers you have all need to be taken into account when choosing products, which is why it's vital to talk to an expert. For example, the heat pump could be expensive to run if it is incorrectly sized and if it has to work too hard to heat your home. It is also important to consider how you use your heating and hot water and if it might change, such as if your family is growing.

Expertise from the right company, such as Worcester, will make sure of a perfect fit with your home and lifestyle as well as technology that delivers enduring benefits.

Wise choices

Installing renewable energy products will always have a positive impact on efficiency but it can be a sizeable investment, so it's important to choose wisely. Much like buying any other large appliance, it makes sense to look beyond the purchase price, and to consider the durability of parts and maintenance costs.



The better the quality, the more reliable it will be, so opting for products from an established manufacturer will ensure the highest possible energy efficiencies as well as choice. By discussing everything with your Worcester installer, you'll make certain of products that you can rely on year in, year out.

ErP labels are already a common sight on washing machines, televisions and other appliances in electrical retailers. From 2015 these labels now apply to heating products and systems.

Energy related Product (ErP) labelling.

The ErP Directive is a new regulation set by the European Union and is designed to drive improvements in the efficiency and performance of heating and hot water products.

Its purpose is to ensure that you as homeowners are aware of the energy efficiency levels of your heating appliances. The ErP Directive will help the UK and other European governments reduce carbon emissions. This will improve the overall efficiency of UK properties, whilst also helping you to reduce your energy bills.

The ErP regulations cover boilers, water heaters and other heating appliances, such as heat pumps, up to 400kW (a typical domestic boiler ranges from 9-40kW).

What is Energy Labelling?

Energy Labelling involves adding a label to a product. It is your installer's responsibility to ensure that you receive the energy label with the heating appliance they offer you and if they have a showroom that the Energy Label is visible on products.

The new Energy Labelling Directive will introduce new efficiency classes from A++ to G on top of the existing SEDBUK rating for products in the UK.

Most high efficiency boilers fall within the A band, which requires them to achieve more than 90% seasonal efficiency, while renewable technologies such as heat pumps typically sit within the A+ or A++ bands (depending on the temperature they deliver).

More details on ErP and the information which is included on a label can be found at: **worcester-bosch.co.uk/ErP**

What about controls?

The ErP Directive also includes controls, which are defined using 'classes'. These run from Class 1 (a simple on/off room thermostat) through to Class 8 (multi-sensor room control for use with modulating heating appliances).

Each control class equates to certain percentage uplift in system efficiency e.g. a Class 6 weather compensating control and room thermostat, such as the Worcester Wave smart phone enabled control, will improve your heating system's efficiency by 4%, giving you the potential to achieve an A+ system efficiency*.

A+ with the WAVE

To ensure you benefit from the highest levels of efficiency we always suggest you check that your quote includes an ErP compliant high efficiency renewable energy product.

*A+ applies to Greenstar i, Si Compact or CDi Compact combi boilers only.

Which renewable energy products are best for me and my home?

Deciding which renewable product will make a perfect fit with your home and lifestyle can be confusing. The following pages explain the main types, how they work, their advantages and the kind of homes they suit best.

Greenskies solar thermal hot water panels.

Go to page 17 to find out about Greenskies solar thermal

Solar hot water panels absorb energy from the sun and convert it into heat that is pumped directly into your hot water solar cylinder. As they are still effective even on a cloudy day, they can meet up to 60%* of your annual hot water needs.

TYPICAL CONSIDERATION					
New build project	Major refurbishment	Poorly insulated	Limited external space	High hot water demand	Mains gas available
•	•	•	•	•	•

*Source: Energy Saving Trust.

Greenstore ground source heat pumps.

Go to page 23 to find out about Greenstore GSHPs

Ground source heat pumps work by drawing renewable energy from the ground and converting it into low cost, low carbon heating and hot water. They can be the sole source for generating heating and hot water and come in a range of outputs.

TYPICAL CONSIDERATION			
New build project	Major refurbishment	Heating upgrade	High hot water demand
•	•	•	•

Greensource air to air heat pump.

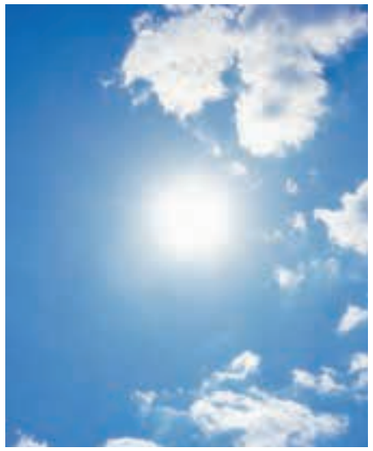
Go to page 29 to find out about Greensource AAHPs

Air to air heat pumps extract energy from outside, which is used to warm the air inside your home. They can heat your home to the comfort levels you want from external temperatures as low as -20°C and can also operate as an air cooler during the summer.

TYPICAL CONSIDERATION					
New build project	Major refurbishment	Heating upgrade	Poorly insulated	Limited external space	Mains gas available
•	•	•	•	•	•

If you need to discuss your renewable technology requirements, call our customer helpline on 0330 123 9229.

Solar water heating is a reliable and cost-effective way of generating hot water for your home.



Solar water heating explained.

Solar water heating (also known as solar thermal), uses clean, renewable and free energy from the sun to heat your water. Panels, known as solar collectors, absorb the energy and pass it into a fluid which is pumped down into your home and transferred directly into your solar hot water cylinder to heat your hot water.

Meeting up to 60%* of your annual hot water needs, this efficient technology will give you considerable savings on your energy bills and an all-important lower carbon footprint.

Solar thermal is different from solar PV, which uses the sun's energy to generate electricity. Worcester doesn't sell solar PV panels as we specialise in hot water comfort.

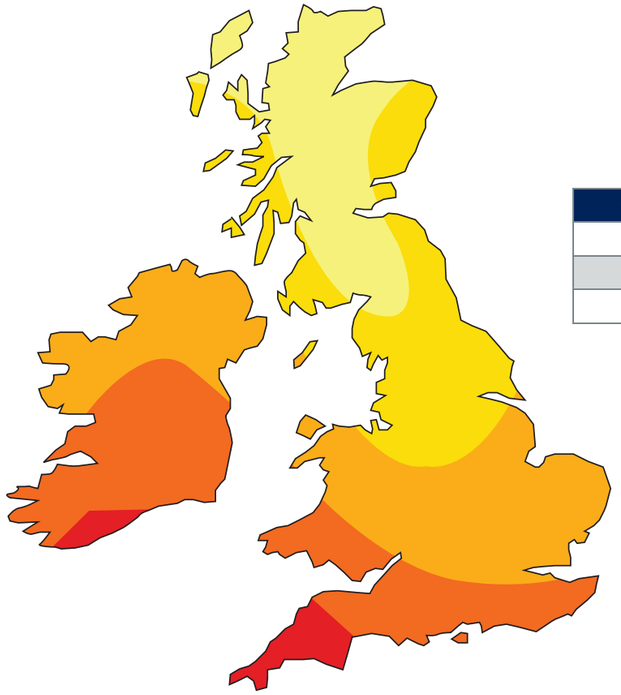
Ideal for the UK climate

Designed by Worcester and built by Bosch, Greenskies solar water heating systems are specifically developed for the UK climate. Special coatings on the collector plates enable them to absorb energy even on cloudy and cold days, as they don't rely on high temperatures or direct sunlight.

The longer the daylight hours and the higher the sun's intensity, the more energy the system can collect; subsequently in the summer months you receive the highest amount of free hot water. However, a Greenskies system will still make a substantial contribution throughout the year.

* Source: Energy Saving Trust.

Choices and considerations.



Map source: Solar Trade Association (STA)

SEASONAL % OF HOT WATER FULFILLED BY SOLAR	
Summer	80 - 90%
Spring & Autumn	40 - 50%
Winter	20 - 30%

Complementing your system
Greenskies solar water heating is designed to complement the hot water output of homes with a gas or oil-fired boiler or ground source heat pump. The boiler or heat pump makes up any shortfall in hot water requirements and also generates heating.

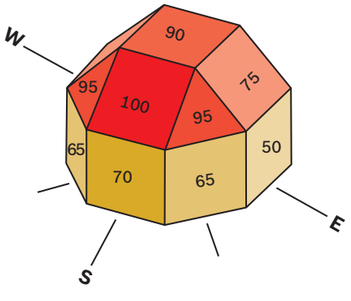
You will normally need to have a system or regular boiler linked to a solar-compatible hot water cylinder, such as a Greenstore solar compatible unvented cylinder. Solar cylinders have two heating coils, allowing one to be connected to the boiler central heating system and one to the Greenskies solar system. If you have a combi boiler, it may also be possible to connect it to solar water heating – talk to your installer about this. See page 35 for more information.

Solar water heating can also be used in conjunction with other renewable technologies such as ground source heat pumps. Please contact your local installer for advice.

A perfect match
Worcester offers the flat plate type of collector which heats up when exposed to solar energy.

Panels can be installed on a sloping, flat roof or the ground. Their ideal position is facing a southerly direction, angled between 30º and 45º towards the sun. However even if your property faces east or west, you can still collect solar energy for your home. Your installer will advise on the best type for you and your home as well as how many panels you need and the optimum panel positions.

Angles at which solar thermal panels are most productive.



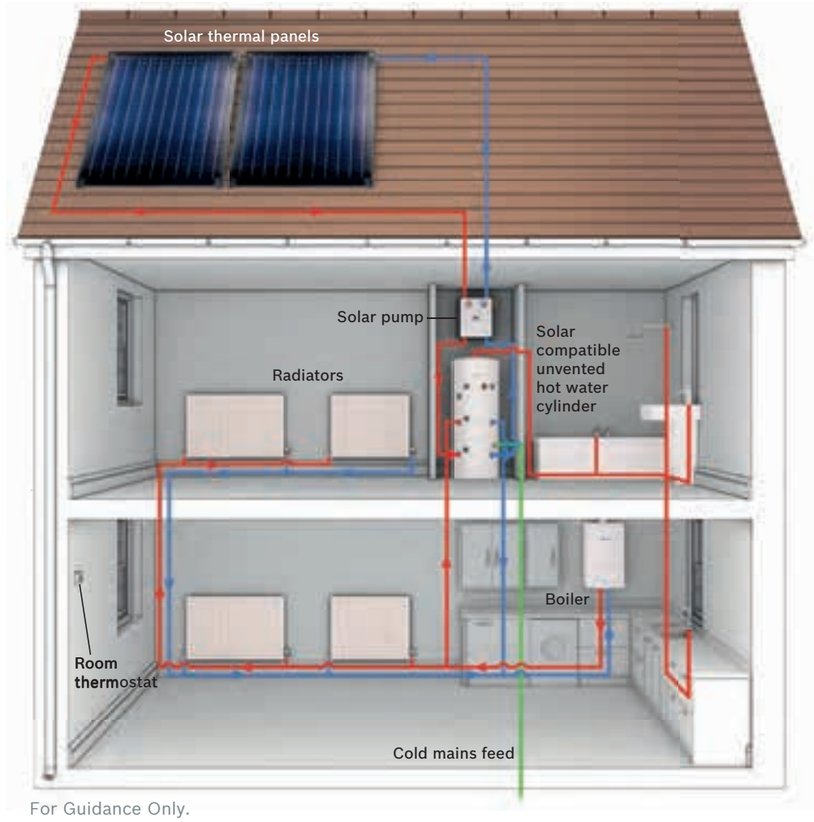
Unless your home is a listed building or in a conservation area, you probably won't need planning permission but there may be building regulations that you need to comply with, so it's important to check with your local authority.

Ultra durable
Greenskies solar thermal systems are built for quality and performance. Extensively tested to ensure their durability and effectiveness, they stand up to the most demanding environments and the harshest weather conditions, including hailstones, high winds, extreme temperatures and sea salt spray.

Designed with sophisticated, state of the art technology, they are highly efficient, fully controllable and have low maintenance requirements.

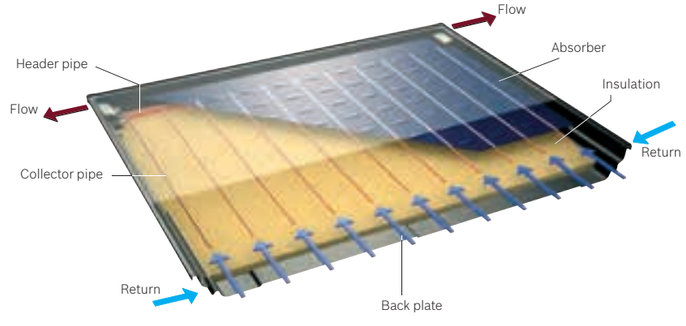
How solar water heating supplies your home.

Energy from the sun is transferred into the panel's pipe work, which is filled with a ready mixed liquid. The liquid is pumped to the hot water cylinder where it deposits heat then returns to the panel to absorb more free solar energy. The system incorporates a simple unit that controls the flow of energy from the panels to the storage cylinder.

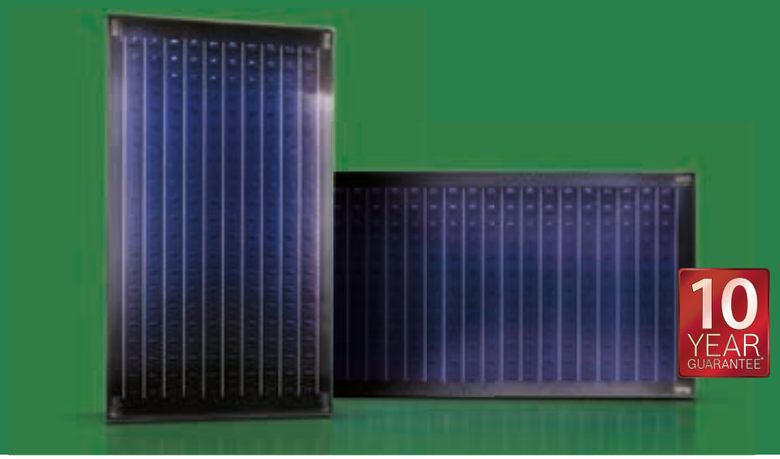


For Guidance Only.

Inside view



Flat plate collectors feature an absorber plate which heats up when exposed to solar energy, providing high levels of heat.



Greenskies Solar-Lifestyle flat panels

The highly efficient and versatile Greenskies Solar-Lifestyle flat plate panels incorporate industry-leading low heat loss technology, allowing optimal heat retention as soon as the sun rises.

With a modern, good looking one-piece panel design, the panels are available in portrait and landscape formats to suit your roof shape and space. They can be sited within a roof, on a pitched roof, on a flat roof or fixed to a wall.

- Stylish modern design
- High-efficiency collector for excellent heat retention
- Simple controls
- High performance output
- Landscape and portrait options to suit the available roof shape and space
- Compatible with Worcester Greenstore hot water cylinders
- MCS Solar Keymark certified.

* Terms and conditions apply.

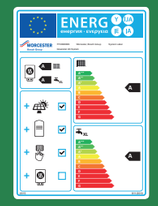
Why solar thermal panels?

1. The easiest renewable technology to integrate with an existing gas or oil-fired boiler or ground source heat pump
2. Meets up to 60% of your annual hot water requirements†
3. Tried and tested for over 20 years
4. Suitable for a range of roof surfaces and positions
5. Extremely robust with minimal maintenance
6. 10 year guarantee as standard

We always recommend you consult a qualified MCS registered installer prior to choosing your solar system.

†Source: Energy Saving Trust.

All Greenskies solar collectors are MCS Solar Keymark approved. For more information visit: **microgenerationcertification.org.**

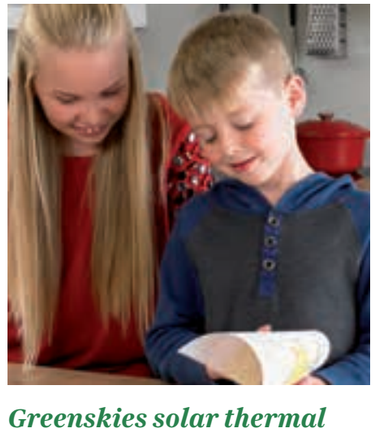


Further technical and ErP information for Greenskies solar collectors can be found on page 54.

Greenskies Solar-Lito flat panels

The Greenskies Solar-Lito range of flat plate collectors provides simple and affordable solar hot water comfort.

- Attractive one-piece design
- Year round performance
- Affordable solution
- Easy to use controller
- Ultra light aluminium frame
- Compatible with Worcester Greenstore hot water cylinders
- MCS Solar Keymark certified.



***Greenskies solar thermal panels and Worcester regular or system boilers** are perfect partners for efficient hot water. When used together, they can efficiently provide 100% of a home's hot water requirements.*

Enhance your system with a Greenstar boiler.

Greenstar gas or oil-fired boilers are designed with advanced condensing technology, they are over 90% efficient, helping to reduce your carbon footprint and your energy bills even further. These high performance boilers are ideal for meeting any hot water shortfalls during the winter months as well as providing reliable and consistent heating comfort for your home throughout the year.

Ground source heat pumps use the free renewable energy trapped below the surface of the ground to provide all the heating and hot water you need.

Ground source heat pumps explained.

Ground source heat pumps work by collecting the renewable energy that the ground has absorbed from the sun and converting it into low cost, low carbon heating and hot water all year round.

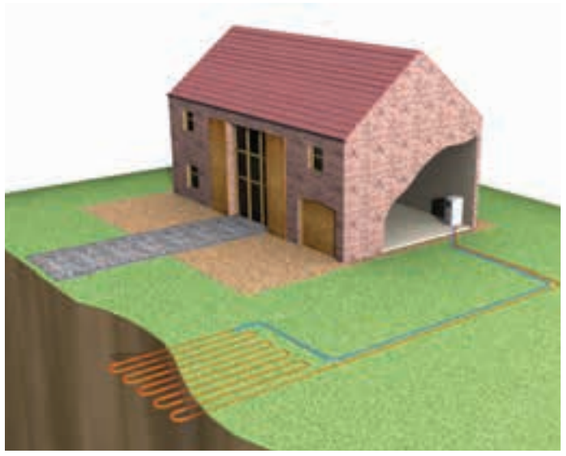
Fluid which is contained within a network of pipes buried in your garden, absorbs the ground's heat. This heat is then transferred via a pump to a hot water cylinder ready for meeting your heating and hot water needs.

A complete solution
Designed to be the sole source of heat generation for your home and hot water, ground source heat pumps are available as 'system' or 'combination' heat pump types. System versions need a separate compatible hot water cylinder (see page 27) that can also be linked to solar thermal panels. Our combination versions come with an integrated cylinder, however they are not solar compatible.

Efficient by design
Designed by Worcester for the UK and built by Bosch, Worcester Greenstore ground source heat pumps are highly efficient and exceptionally durable, delivering reliable, year round performance.

Requiring just a small amount of electricity to run, they can generate as much as four kilowatts of usable energy for every single kilowatt of electricity used to power them, which can mean significant savings on your energy bills and a considerable drop in your home's carbon emissions.

Choices and considerations.



Loop and bore hole collectors enable the ground source heat pumps to collect the latent energy from the ground.

As with any new heating system, the better insulated a home is the more efficient it will be.

The size of the ground source heat pump system that you'll need is directly linked to how much heat your home loses, so ensuring that it is as well insulated as possible before you start will make a difference to the cost of installation and to your energy bills.

Pipe network
The network of pipes, known as a ground loop, can be installed as horizontal or vertical systems. Horizontal systems comprise pipes set in trenches around two metres deep spanning a relatively wide area, whereas vertical systems comprise pipes buried in a borehole up to 100 metres deep. The type you choose will therefore depend on how much available outdoor space you have.

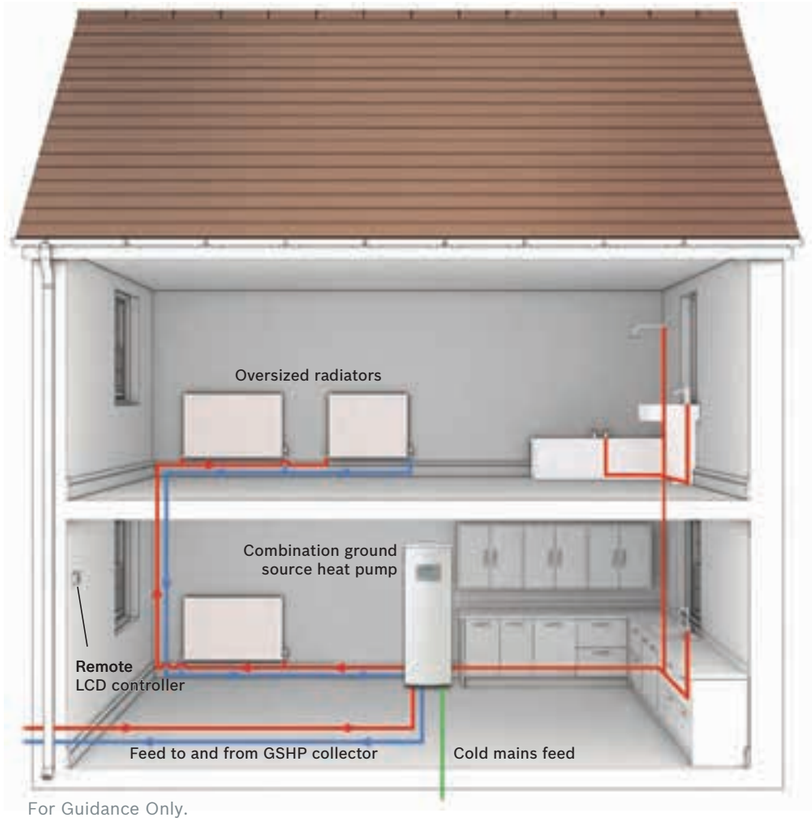
You may need planning permission for installing a ground source heat pump so it's important to check with your local authority.

Heating system
Unlike conventional gas and oil-fired boilers, heat pumps are designed to deliver heat at lower temperatures and over a longer period. This makes them best suited to heating systems that use lower water temperatures, such as underfloor heating, or for use with appropriately sized radiators. Current radiators may need to be changed to a bigger size when fitting a heat pump .

Measured efficiency
The efficiency of all heat pumps is measured as a Coefficient of Performance (CoP). This is the amount of energy the heat pump produces compared to the amount of electricity needed to run the pump. For example, a heat pump which uses 1kW of electricity and then produces 4kW of usable energy has a CoP of 4.

How a ground source heat pump supplies your home.

The fluid which is contained within the outdoor underground pipes absorbs energy. This is then transferred via a pump to the heat pump and converted via a process of compression into heated water which is made ready for circulation to warm your radiators or underfloor heating and for use with hot water at your taps. The cooled fluid (after passing its heat into the home's water and central heating system) continues back underground to absorb further energy in a continuous loop.



For Guidance Only.

Key steps when having a ground source heat pump installed.

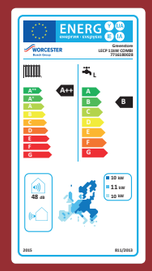
Optimum ground source heat pump efficiencies hinge on a system that is correctly designed and installed for an individual property, which is why it's important to use a qualified installer. To make sure of a system that perfectly matches your home and your heating and hot water needs, a professional installer will work to three key stages:

1. Pre-design assessment
This stage is to determine whether a horizontal or vertical system will suit your home best based on your available land. This stage will also find out what your heating and hot water requirements are and to measure how much heat is lost from your home. Your installer will also check the size of your radiators if you have them.

2. Detailed design
The detailed design stage utilises information gathered on the type of home you have and its location, available land and access to it, your home's energy efficiency and your usage requirements. Taking all these factors into account, accurate calculations are made to determine the correct type and size of heat pump system for your home.

3. Specification
Your installer will explain the recommended design, let you know what your energy consumption is likely to be and how it compares to your current system, and advise, where relevant, if you would benefit from having larger radiators or an underfloor heating system.

All Worcester renewable products are approved under the Government's Domestic Renewable Heat Incentive (RHI) scheme. For more information visit: **gov.uk.**



Further technical and ErP information for the Greenstore ground source heat pump range can be found on page 54.

Greenstore LECP ground source combination heat pump series

Worcester Greenstore Low Energy Circulation Pumps (LECP) will provide economical, low carbon energy to meet all of the heating and hot water needs in your home. With a selection of models available, the Greenstore LECP range offers outputs to suit most properties. The latest models feature Class A low energy circulating pumps and a controller to achieve higher energy efficiencies, resulting in an exceptional Seasonal Performance Factor (SPF) and high Coefficient of Performance (CoP).

Coefficient of Performance (CoP): 3.97

- High efficiency
- Low energy consumption pump
- Built-in 185 litre capacity cylinder
- Can be connected to heat a swimming pool
- Quiet operation
- Indoor room temperature controller
- Suitable for homes that have both radiators and underfloor heating
- Automatically selects optimum temperature
- Features weather compensation technology
- 2 year guarantee*.

Greenstore LECP ground source system heat pump series

Like the combination series, the Greenstore LECP ground source system heat pump series include all of the energy saving features of the combination version. In addition they also allow the opportunity to benefit from integration with solar thermal panels and the separate solar-compatible cylinder, enabling further energy savings to be made.

Coefficient of Performance (CoP): 3.97

- High efficiency
- Low energy consumption pump
- Can be connected to heat a swimming pool
- Can be linked to solar thermal heating
- Quiet operation
- Indoor room temperature controller
- Suitable for homes that have both radiators and underfloor heating
- Automatically selects optimum temperature
- Features weather compensation technology
- 2 year guarantee*.

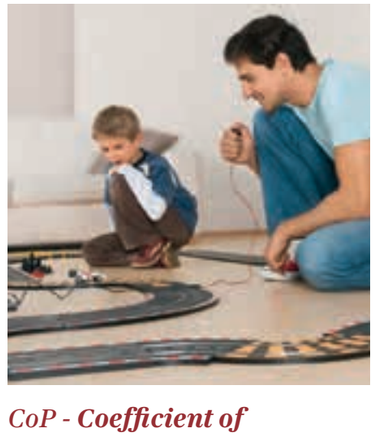
* Terms and conditions apply.

Greenstore ground source heat pump solar compatible cylinder

Designed for use with Greenstore system heat pumps, the 280-litre cylinder has a fast re-heat time and features a tank-in-tank design that optimises energy.

The cylinder can also be connected to Worcester Greenskies solar thermal panels, enabling you to benefit from solar water heating as well. The Greenstore ground source heat pump solar compatible cylinder comes with a 2 year guarantee*.

* Terms and conditions apply.



*CoP - **Coefficient of Performance** – is the rating for heat pump efficiency. It is a measurement of the amount of energy produced compared to the amount of electricity required for it to run.*

Why a ground source heat pump?

1. Standalone heating and hot water system
2. Lower carbon emissions than traditional systems
3. Reduced energy bills
4. Reliable heating and hot water all year round
5. Ability to adjust temperatures via a room controller
6. Minimal maintenance needed
7. High quality, robust and reliable
8. Designed specifically for the UK

We always recommend you consult a qualified MCS registered installer prior to choosing your ground source heat pump system.

Want hot water provided by the sun?

Greenstore ground source heat pumps work seamlessly with ***Greenskies solar thermal heating***, enabling you to take advantage of free, green solar energy to heat your hot water, such as during the summer months. The heat pump works at a lower flow temperature when the solar-powered system is generating hot water and automatically kicks in if additional water heating is required.

For more information on Greenskies solar thermal panels see page 17.

Air to air heat pumps explained.

Air to air heat pumps draw on the renewable energy that's in the air outside and convert it into warm air for distribution around the home. As an added benefit they can also act in reverse as an air cooler during the summer.

An air to air system comprises of an outdoor and an indoor unit, and works on the same principle as a refrigerator but in reverse. The outdoor unit absorbs the energy in the air and transfers this heat into a refrigerant liquid. Then, via a compressor, the temperature of this liquid is increased. The heat is then passed into the air of the indoor unit, which uses fans to circulate warm air around your home.

500% efficiency
Designed for low running costs and optimum performance, the Worcester Greensource air to air heat pump can generate up to five kilowatts of usable heat from every one kilowatt of electricity used to power it, making it up to 500% efficient. The system uses considerably less energy than conventional electric heating, allowing you to benefit from low energy bills and greatly reduced carbon emissions.

Designed for the UK
Designed by Worcester for the UK climate and built by Bosch to exceptional quality and durability standards, the Greensource heat pump produces reliable year round heating comfort, even when outdoor temperatures are as low as -20ºC.

Flexible and effective.

The Greensource air to air heat pump suits many types and sizes of homes, and is particularly effective in apartments and smaller properties.

It is also an excellent heating solution for areas such as an extension or a conservatory, where traditional radiators are not currently allowed under Building Regulations.

With the ability to heat an area of up to 100 square metres in a well insulated home, the heat pump can also complement existing gas-fired, oil-fired or renewable energy hot water systems, such as solar thermal.

Taking up only a small area of inside and outside space, the attractive and quiet indoor unit is easy to operate using a simple remote control.

The outdoor unit can be sited on the ground or fixed to a wall but needs sufficient space around it for airflow, to prevent cold air re-circulation and to allow access for service and maintenance. For optimum efficiency, it should be placed somewhere where it's sheltered from high winds and rain.

You may need planning permission for an air to air heat pump so it's important to check with your local authority. Your qualified refrigeration engineer should be able to provide guidance on this.

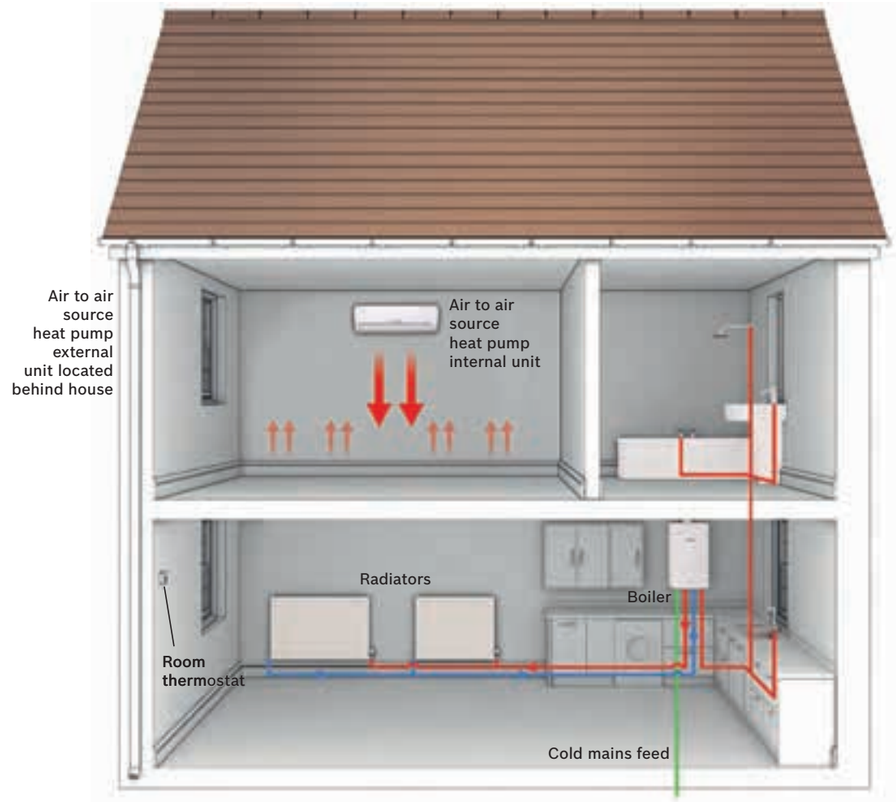
Air purification
The heat pump incorporates advanced air purification technology, making it particularly beneficial for allergy sufferers. As well as removing dust particles and unpleasant odours such as cigarette smoke, the unit can also combat airborne viruses, bacteria and allergens which are all quickly broken down into harmless substances.

Adaptable and responsive
Output from the heat pump automatically adapts to meet your usage patterns and both heating and cooling can be optimised at the touch of a button to provide a very even distribution of warm or cool air. In freezing temperatures, the unit can be set to stay on at 10ºC, a feature which is ideal overnight, as this will protect your home, improve comfort and ensure high energy efficiency.

Active air purification creates positive and negative ions which breakdown air pollutants.

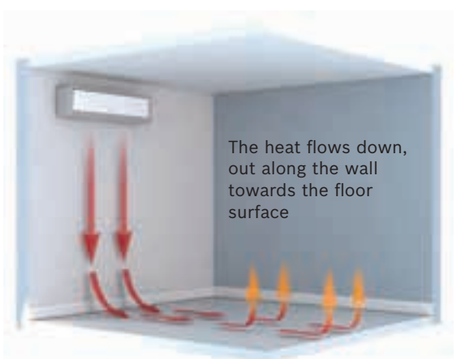
How an air to air heat pump supplies warmth in your home.

Energy drawn in from the outside air is transferred to the heat pump's refrigerant which is then compressed (increasing its heat). The refrigerant is then transferred from the external unit to the internal unit where the heat is passed into the internal air and circulated around your home via fans. Importantly the unit channels hot air directly down the wall onto the floor surface, ensuring that heat is evenly distributed throughout the room. In cooling mode, the chilled air is directed upwards for a uniform temperature with no draughty spots.



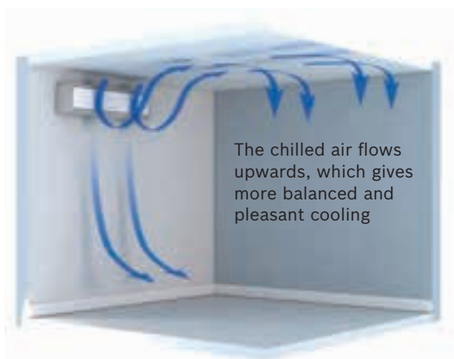
For Guidance Only.

Warm air distribution

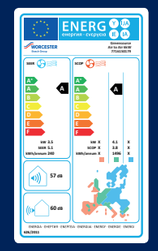


Warm air distribution in heating mode to prevent draughts.

Cool air distribution



Cool air distribution in cooling mode.



Further technical and ErP information for the Greensource air to air heat pump can be found on page 55.

Greensource air to air heat pump

The Greensource air to air heat pump absorbs the latent renewable energy in the outside air and converts it into warm air for heating your home. It can generate up to five times the amount of usable heat from each kilowatt of electricity used to power it, which makes it up to 500% energy efficient.

Purpose-designed for the UK climate, it can heat an area of up to 100 square metres in a well insulated home and can work as an air cooler in the warmer months, making it ideal for extensions, conservatories, apartments and smaller properties.

Coefficient of Performance (CoP): 4.6

- Highly efficient even in temperatures down to -20º C
- Can provide cooling in the summer
- Air purification makes it ideal for allergy sufferers
- Low running costs and low carbon emissions
- Quiet operation
- Compact design
- Straightforward installation and easy to maintain and operate
- 2 year guarantee*.

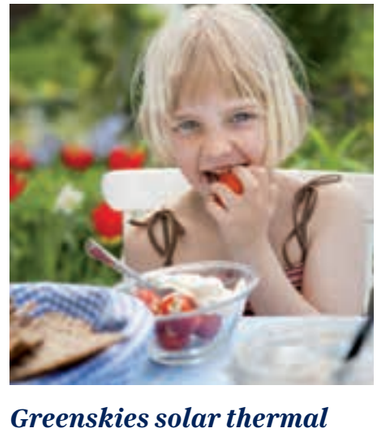
* Terms and conditions apply.

Greensource air to air heat pump remote control

The Greensource air to air heat pump is operated using a remote control unit. Offering a wide range of functions and settings, it gives you complete flexibility to run your system exactly as you require.

The simple to use control allows you to set different modes, such as automatic, heating, cooling and de-humidifying, as well as different fan speeds. The control also includes useful functions such as:

- 24-hour on/off programmable timer
- Convenient one-hour operation button
- Temperature control
- Rapid heating or cooling options
- Air direction control – vertical or horizontal
- Auto restart following a power cut.



***Greenskies solar thermal heating** enables you to heat water for your home using the sun's free, green energy. For more information see page 17.*

Why an air to air heat pump?

1. High efficiency for reduced energy bills
2. Provides both space heating and air cooling
3. Air purification technology for a healthier indoor environment
4. Effective even in the coldest winter temperatures
5. Uses renewable energy for lower carbon emissions
6. Straightforward installation
7. Designed for durability

We always recommend you consult a qualified MCS registered installer prior to choosing your air source heat pump system.

Enhance your system with a Greenstar boiler.

Greenstar gas or oil-fired boilers are perfect partners for a Greensource air to air heat pump. These high performance boilers are ideal for meeting all your hot water needs as well as providing reliable and consistent heating for areas of your home that are not warmed by the heat pump. Designed with advanced condensing technology, they are over 90% efficient, helping to reduce your carbon footprint and your energy bills even further.

Super efficient cylinders can help lower your energy bills and carbon emissions. They are highly insulated to reduce heat loss and energy wastage.

Greenstore cylinders – transforming hot water storage.

When a solar thermal or ground source heat pump system is installed, there is always a requirement for a hot water cylinder. Equally, if you opt for an air to air heat pump, you may also have a cylinder linked to a boiler for your hot water supply.

Older, non-insulated cylinders tend to lose a considerable amount of heat and are likely to have a build-up of limescale, which reduces efficiency and makes water heat-up times longer. Even insulated cylinders over 10 years old lose more heat than modern ones. Greenstore cylinders have been designed to offer significant performance improvements over traditional cylinders. They combine rapid re-heat times with high heat retention and are guaranteed for 25 years*. They also come in a wide range of capacities, from 90 to 300 litres, so you can be sure of a size that's exactly right for your home and lifestyle.

25 YEAR GUARANTEE*

Greenstore unvented solar cylinders: the future-proof choice

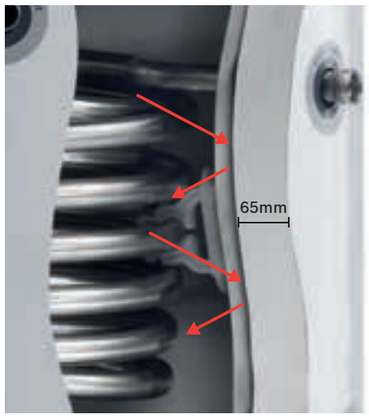
Greenstore solar-compatible unvented cylinders are purpose-designed to work with our Greenskies solar water heating systems. They are also ideal if you plan to install solar water heating at a later date, as it can be added without needing to change your cylinder again. Available in five capacities, from 150 to 300 litres, they provide highly efficient storage for both solar and boiler-heated hot water.

Greenstore ground source heat pump cylinders: the renewable energy partner

The 280-litre cylinder is specifically designed for use with Greenstore system ground source heat pumps. Its tank-in-tank design provides a large heat transfer surface area ensuring optimum re-heat times and best use of energy from the heat pump. It can also be linked to solar water heating, enabling you to maximise your renewable energy options.

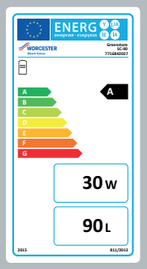
Greenstore unvented cylinders: made for modern living

The Greenstore unvented cylinder range is a perfect partner for a Greenstar regular or system boiler that supplies hot water to complement a Greensource air to air heat pump.



With 65mm of Expanded Polystyrene, the insulation level on Greenstore cylinders is one of the thickest in the UK market.

* Terms and conditions apply.



Further technical and ErP information for Greenstore cylinders can be found on page 55.

Greenstore unvented cylinders

With fast re-heat times, hot water is supplied at mains pressure for powerful showers and fast bath filling. With a Greenstore cylinder multiple taps can be used without the hot water flow reducing.

A choice of seven capacities from 90 litres to 300 litres

- Hot water delivered at mains water pressure
- Excellent re-heat performance
- Highly insulated for high heat retention
- 100% recyclable components
- 25 year guarantee*.

Greenstore solar compatible unvented cylinders

Designed to link with solar thermal water heating systems, the high efficiency cylinders deliver hot water quickly at mains pressure, with fast re-heat times ensuring that you have all the hot water you need, when you need it.

A choice of five capacities from 150 litres to 300 litres

- Hot water delivered at mains water pressure
- Excellent re-heat performance
- Highly insulated for high heat retention
- 100% recyclable components
- 25 year guarantee*.

* Terms and conditions apply.

Greenstore GSHP cylinder

Designed for use with Greenstore system ground source heat pumps, this ultra efficient, large capacity cylinder ensures a continual and reliable supply for all your heating and hot water needs. It can also link to solar water heating systems, enabling you to benefit from an additional renewable energy source.

Capacity: 280 litres

- Tank-in-tank design for excellent energy efficiency
- Optimum re-heat times
- Solar-compatible for additional renewable energy options
- 100% recyclable components
- 2 year guarantee*.

Greenstore buffer tank

The Greenstore buffer tank is a very highly insulated cylinder which stores excess heat generated by a ground source heat pump, such as when demand for heating is low. By storing heat in the buffer tank ready for use, the heat pump turns on and off less often helping it to operate more efficiently and preventing energy from being wasted.

Capacity: 120 litres

- Highly insulated for high heat retention
- Enables highest possible levels of efficiency
- 2 year guarantee*.

* Terms and conditions apply.

Why a Greenstore cylinder?

1. Built for exceptional energy efficiency
2. Designed for durability
3. High heat retention
4. Wide range of capacities to suit all homes and lifestyle
5. Options for solar thermal water hot water
6. Excellent re-heat times

For further cylinder technical details, please see page 55.

We always recommend you consult a qualified MCS registered installer prior to choosing your cylinder.

Worcester keeps you in control.

Worcester's range of built-in and room-operated controls for renewable energy products ensure that your system is fine-tuned to your home and needs with the best possible energy efficiencies being achieved.

Convenience and efficiency
Clever controls for your Greenskies solar water heating system make sure that the pump that transfers fluid (containing heat) between the panels and the cylinder only comes on when the solar panels are hot enough, keeping energy consumption as low as possible.

If your solar thermal panels work alongside a new or existing Greenstar boiler, using a boiler control such as the Wave, will give you scope to boost your system's overall performance even further. Full details of all our gas and oil-fired boiler controls are in our boiler brochures and at **worcester-bosch.co.uk.**

The Greensource air to air heat pump remote control has an extensive range of operating features and functions, helping you to maximise your comfort whilst minimising your energy use.

Linked to an outdoor sensor, a built-in control unit for Greenstore ground source heat pumps ensures efficient operation. It achieves this by sensing when heat is required and by stopping the pump when there is no demand.

An optional room controller also gives you flexible control from inside your living space, rather than accessing the heat pump directly.

①

②

③

④

⑥ ⑤

Solar thermal controls

These controls enable optimum on/off settings for the pump that transfers fluid between the panels and the cylinder, conserving energy use. The controls are set by your installer and can be mounted on a wall or built into a solar pump station, which is usually situated in a loft.

① **TDS100-2**
Used when all the panels are connected together on one side of the roof and where there is only one storage cylinder.

② **Sense II with MS100**
The combination of a Sense II intelligent control with our MS100 solar module is perfect for any typical solar thermal and boiler system. With a clear, stylish, back-lit display and touch sensitive buttons the Sense II control enables you to optimise the benefit received from your solar thermal panels and boiler by utilising the heat from your panels when the sun is shining, whilst ensuring your boiler provides any additional heat when required.

③ **CS200 with MS200**
With additional sensors and a more detailed menu, this control and Intelligent Solar Module combination is used within advanced solar thermal systems, e.g. when panels are split across east and west facing roofs and for properties with swimming pools that are partly heated by solar panels.

Ground source control

LCD controller

④ **Room sensor – LCD controller**
In addition to an outdoor sensor, which relays the outside temperature to the heat pump so it can match the temperature to the room temperature you want, the room sensor allows you to compare the internal and external temperatures and achieve the best possible energy savings.

Boiler only controls

Smart control

⑤ **Worcester Wave**
- Operated using a compatible smart device or from the wall mounted unit
- Intelligently interacts with your boiler to provide load and weather compensation features
- Uses online data to determine local weather conditions so no outdoor sensor needs to be installed.

Digital, wireless programmers and room thermostats

⑥ **Greenstar Comfort series**
- Simple menu navigation
- Heating programme visualisation bar
- Control heating and hot water 7 days a week
- Extremely reliable Radio Frequency (RF) signal*
- 6 adjustable heating temperatures per day*†.

* Greenstar Comfort I only. † Greenstar Comfort II only.

Why renewables controls?

1. Fine-tuned to suit your home and your lifestyle
2. Optimum energy savings
3. Enhanced efficiency and durability
4. Maximum comfort
5. Correct balance between indoor and outdoor temperatures
6. Prevents energy being wasted

Why boiler controls?

1. Significant improvements to your system's overall performance
2. Efficient management of your energy usage
3. Potential to lower energy bills
4. Heating and hot water precisely when you want them
5. Freedom to choose times and temperatures to suit your lifestyle
6. A choice of clever features to optimise system performance
7. Options to control your heating and hot water away from home

See our YouTube channel for more information – youtube.com/WorcesterBoschGroup

In addition to fitting a system filter, if you are installing a new boiler in conjunction with renewable energy products, Building Regulations always recommends that your central heating system is flushed and cleansed beforehand to remove any system contaminants.

Keeping your system working efficiently.

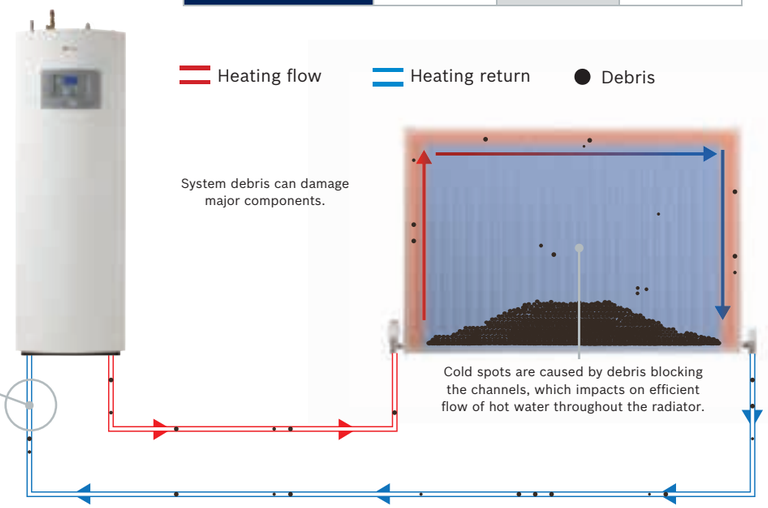
Over time, system water accumulates harmful dirt and debris, such as rust and solder fragments shed by older radiators and boilers, and limescale deposits from mains water. If you complement your renewable energy products with a boiler or if you have a ground source heat pump, then these contaminants can cause considerable problems.

Reduced efficiency
Condensing boilers and ground source heat pumps are precision-engineered and designed to run with a clean system. When system water becomes contaminated it can quickly cause blockages as well as damage to key components in the heating system. This leads to a loss of radiator heat, increased system noise and potentially failures. It also means a shorter life for the overall system and a dramatic reduction in efficiency, which affects comfort and adds to your energy bills.

A perfect safeguard
The Worcester Greenstar System Filter has been specifically designed to combat the damaging effects of system debris and pollutants by capturing contaminants before they reach your system. Using powerful and innovative magnet-based technology, it instantly works to protect the performance of your heating and hot water system, ensuring that it's warmer, quieter and blockage-free.

	RENEWABLE SYSTEM TYPE		
	Solar thermal	GSHP	AAHP
System filter required?	✔	✔	✕

The Greenstar System Filter simply connects to pipework and filters out debris and dirt before they cause damage or radiator blockages.



This image illustrates how debris in a system can build up in the bottom of radiators and block the efficient flow of water around the system, eventually affecting the radiator's heat distribution and your comfort.

See our YouTube channel for more information – youtube.com/WorcesterBoschGroup

With thousands of professionally qualified installers in the UK, finding a local professional installer is simple.

How can I get a Worcester renewable product installed?

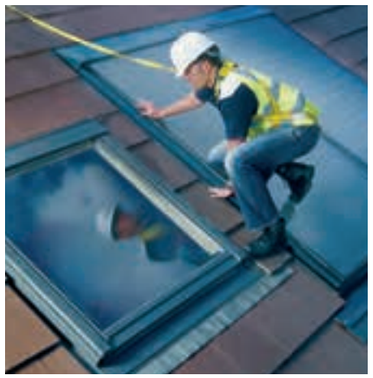
Systems for generating heating and hot water from renewable source are sophisticated and complex. It's therefore vital to have them professionally installed, which is why **we don't sell our products direct to householders**.

There are three straightforward ways to find local professional installers...

The internet
You can do a general search for local certified installers on the internet.

Some might have a showroom, giving you the opportunity to see products and meet them first before you make a home visit appointment.

For your peace of mind, MCS certified installers should provide you with a copy of their certificate on request.



MCS registered installers
You can search for local MCS certified professional installers by entering your postcode on the MCS website at **microgenerationcertification.org**.

You can also search for individuals or companies by name and by renewable product type.

If you are looking to benefit from the Government's Renewable Heat Incentive (RHI) then you must choose a certified MCS installer.

Worcester Accredited Installers
Worcester Accredited Installers are installation companies that we consider to be reputable and quality-conscious, and provide value for money.

They must have attended our training courses and hold all the required approvals for carrying out work at your home, such as MCS certification, before we list them. As well as advising, installing and providing servicing and maintenance, some also offer extended guarantees on our products.

To find a local Worcester Accredited Installer simply go to the 'Find an Installer' page at **worcester-bosch.co.uk** and enter your postcode.

* MCS is an internationally recognised quality assurance scheme for renewable energy products and is supported by the Department of Energy and Climate Change.

Guaranteed products as well as the help and advice you need for complete peace of mind.

Supporting you from the start.

When you choose Worcester, you'll be in the company of millions of people across the UK who value the quality, reliability and comfort of our products.

Our guarantee

Every one of our products is manufactured to the highest quality standards and undergoes stringent and continuous testing.

We want you to have the same confidence in our renewable energy products as we do, which is why they come with guarantees of up to 10 years* as standard.

When you buy one of our renewable energy products, don't forget to register your guarantee, which you can do quickly and easily online at **worcester-bosch.co.uk/registration** or by telephone on **0330 123 2552.**

Service and support

If you are thinking about buying a Worcester renewable energy product or if you own one we are always here to help. Our award-winning support team can advise you on any aspect of your product or project.

Friendly and knowledgeable, they'll give you all the help you need, from choosing the right renewable system to technical queries such as combining it with your boiler. We also have over 300 service engineers working across the country to ensure that our products always deliver high performance year after year.

To help you with your system in general, we also publish a useful heating and hot water 'handy hints' guide, which includes helpful tips for boilers, radiators, controls and system care. You can download the guide at **worcester-bosch.co.uk/handyhints** or call our brochure line on **0330 123 9119** for a printed copy.

10 YEAR GUARANTEE*

Greenskies solar thermal collectors come with a 10 year guarantee* as standard.

* Terms and conditions apply.

Other technologies from Worcester for your home.

Greenstar gas-fired boilers

Greenstar condensing boilers are more than 90% efficient, so over 90p of every £1 you spend on gas for your boiler is used for your heating and hot water. Designed for exceptional performance, a choice of combi, system and regular boilers ensures a perfect match with your needs.

All Greenstar gas-fired system and regular boilers can be used in conjunction with Greenskies solar water heating systems and are compatible with Greenstore unvented cylinders.

Best Buy Which? Gas Boilers September 2015

"Quality build and great aftersales service – extremely reliable products across the range."

Which? annual boiler report 2015/2016.

Greenstar oil-fired boilers

Our energy-efficient Greenstar condensing oil-fired boilers have all the benefits of our gas-fired range. Available as combi, system or regular boilers, they are at least 90% efficient, with options for installation inside or outside your home.

All Greenstar oil-fired system and regular boilers can be used in conjunction with Greenskies solar water heating systems and are compatible with Greenstore unvented cylinders.

Worcester's range of products can be viewed on our website at worcester-bosch.co.uk
Brochures can be downloaded or ordered by calling 0330 123 9119.

Other products from Bosch for your home and garden.

White goods

Bosch appliances are built with precision German engineering to deliver quality and efficient performance. From large home appliances such as washing machines and ovens to small appliances from kettles to vacuum cleaners, Bosch has consistently been recognised for the highest levels of quality and reliability.

This year and for the 4th year running Bosch has received the prestigious award of Which? Best Home Appliance Brand.

See more at bosch-home.co.uk

Lawn and garden

Bosch is the largest brand within the Garden Power market and is at the forefront of driving forward product innovation and development. With a complete range of tools and accessories to suit most gardening needs, you can be sure to experience effortless gardening that will help you make your outdoor living area your own.

See more at bosch-garden.com

Power tools

The Bosch Group is the world leader for power tools. By continually innovating and launching new power tools for DIY'ers and professionals alike, Bosch has become renowned for quality, reliability and precision.

With many new tool introductions every year, including award-winning cordless tools and lightweight lithium-ion technology, you can be sure to find the right tools for your next project.

See more at bosch-do-it.com

The Government's Renewable Heat Initiative scheme is expected to continue until 2021.

Funding and incentive schemes.

Domestic Renewable Heat Incentive (RHI)
The RHI scheme was introduced by the UK government to encourage people to install renewable energy products as part of its commitment to a reduction in the country's carbon emissions by 2020.

Under the scheme, if you install an eligible renewable heating system, such as solar thermal water heating or a ground source heat pump, you could receive regular payments every quarter for seven years. Some homes that already have a renewable heat system may also qualify for payments.

The amount you receive will depend on a range of factors including the size of your property, what you install and the latest tariffs for each technology. In some cases, metering may be required. You can use the RHI calculator tool at **gov.uk** to find out what payments you could receive.

The RHI scheme covers homes in England, Scotland and Wales. For details of an equivalent scheme for Northern Ireland visit **nidirect.gov.uk.**

Find out more
Find out how you could benefit from RHI by calling the Energy Saving Advice Service on **0300 123 1234**, or go to **energysavingtrust.org.uk**

Greenskies solar thermal hot water panels technical information

	GREENSKIES SOLAR THERMAL HOT WATER PANELS		
	GREENSKIES SOLAR-LIFESTYLE	GREENSKIES SOLAR-LIFESTYLE	GREENSKIES SOLAR-LITO
Orientation	Portrait	Landscape	Portrait
Height	2,017mm	1,175mm	2,026mm
Width	1,175mm	2,017mm	1,032mm
Depth	87mm	87mm	67mm
Aperture area	2.25m^2	2.25m^2	1.94m^2
η0 efficiency	76.6%	76.6%	75.6%

Greenstore ground source heat pump technical information

	GREENSTORE LECP COMBI GROUND SOURCE HEAT PUMPS			
	GREENSTORE 6 COMBI	GREENSTORE 7 COMBI	GREENSTORE 9 COMBI	GREENSTORE 11 COMBI
Height	1,800mm	1,800mm	1,800mm	1,800mm
Width	600mm	600mm	600mm	600mm
Depth	645mm	645mm	645mm	645mm
Weight – dry	200kg	202kg	210kg	218kg
Heating output (B0/W35)[1]	5.4kW	6.6kW	8.7kW	10.2kW
CoP (B0/W35)[1]	3.96	3.82	3.84	3.97
Volume domestic hot water	185 litres	185 litres	185 litres	185 litres
Power supply	230V 1N~50Hz	230V 1N~50Hz	230V 1N~50Hz	230V 1N~50Hz
ErP – Seasonal Space Heating energy efficiency class – medium temp (measured at flow temperature of 55ºC)	A+	A+	A+	A++
ErP – Water Heating energy efficiency class (declared load profile)	B (L)	B (L)	B (L)	B (L)

1 With internal pump according to EN 14511

	GREENSTORE LECP SYSTEM GROUND SOURCE HEAT PUMPS			
	GREENSTORE 6 SYSTEM	GREENSTORE 7 SYSTEM	GREENSTORE 9 SYSTEM	GREENSTORE 11 SYSTEM
Height	1,520mm	1,520mm	1,520mm	1,520mm
Width	600mm	600mm	600mm	600mm
Depth	645mm	645mm	645mm	645mm
Weight – dry	150kg	155kg	165kg	175kg
Heating output (B0/W35)[1]	5.4kW	6.6kW	8.7kW	10.2kW
CoP (B0/W35)[1]	3.96	3.82	3.84	3.97
Power supply	230V 1N~50Hz	230V 1N~50Hz	230V 1N~50Hz	230V 1N~50Hz
ErP – Seasonal Space Heating energy efficiency class – medium temperature (measured at flow temperature of 55ºC)	A+	A+	A+	A++
ErP – Seasonal Space Heating energy efficiency class – low temperature (measured at flow temperature of 35ºC)	A++	A++	A++	A++

1 With internal pump according to EN 14511

We always recommend you consult a qualified MCS registered installer prior to choosing your renewable system.

Greensource air to air heat pump technical information

	GREENSOURCE AIR TO AIR HEAT PUMP	
	OUTDOOR UNIT	INDOOR UNIT
Height	540mm	292mm
Width	780mm	860mm
Depth	265mm	205mm
Weight	39kg	9kg
Min./max. heat output	4.1kW	0.9 - 6.0kW
Min./max. cooling effect	3.5 kW	0.9 - 4.0kW
CoP [1]	–	3.8
Air flow	30.2m^3/min	–
Air flow – cooling	–	6.9 - 10.6m^3/min
Cooling SEER	–	5.1
Sound level – cooling	47dB(A)	–
Sound level – low fan speed cooling	–	28dB(A)
Power supply	220 - 240V	220 - 240V
ErP – Energy Efficiency Heating Class	–	A
ErP – Energy Efficiency Cooling Class	–	A

1 ErP – Air Conditioning Lot 10

Greenstore cylinder technical information

	GREENSTORE UNVENTED CYLINDERS						
	GREENSTORE SC-90	GREENSTORE SC-120	GREENSTORE SC-150	GREENSTORE SC-180	GREENSTORE SC-210	GREENSTORE SC-250	GREENSTORE SC-300
Height	835mm	1,035mm	1,285mm	1,490mm	1,665mm	1,860mm	2,155mm
Diameter	570mm	570mm	570mm	570mm	570mm	570mm	570mm
Weight – dry	26kg	31kg	36kg	40kg	44kg	48kg	54kg
Volume domestic hot water	93 litres	123 litres	161 litres	191 litres	216 litres	246 litres	292 litres
Standing heat loss – 24hr	1.008kWh/24hrs	1.296kWh/24hrs	1.632kWh/24hrs	1.824kWh/24hrs	1.944kWh/24hrs	2.136kWh/24hrs	2.304kWh/24hrs
ErP energy efficiency class/ Standing heat loss	B / 42W	C / 54W	C / 68W	C / 76W	C / 81W	C / 89W	C / 96W

	GREENSTORE SOLAR COMPATIBLE UNVENTED CYLINDERS				
	GREENSTORE TC-150	GREENSTORE TC-180	GREENSTORE TC-210	GREENSTORE TC-250	GREENSTORE TC-300
Height	1,285mm	1,490mm	1,665mm	1,860mm	2,155mm
Diameter	570mm	570mm	570mm	570mm	570mm
Weight – dry	41kg	45kg	50kg	54kg	60kg
Volume domestic hot water	157 litres	187 litres	211 litres	241 litres	287 litres
Dedicated solar volume	65 litres	65 litres	105 litres	115 litres	115 litres
Standing heat loss – 24hr	1.632kWh/24hrs	1.824kWh/24hrs	1.944kWh/24hrs	2.136kWh/24hrs	2.304kWh/24hrs
ErP energy efficiency class/ Standing heat loss	C / 68W	C / 76W	C / 81W	C / 89W	C / 96W

We always recommend you consult a qualified MCS registered installer prior to choosing your renewable system.

Central Heating Hub

Central Heating Hub
146B New Road, Aston Fields,
Bromsgrove B60 2LE

Useful numbers

Consumer Technical Helpline
(Pre & Post Sales)
Tel: 01527 910345
Email: sales@centralheatinghub.co.uk

Customer Service

Service Enquiries
Email: customerservice@centralheatinghub.co.uk
or telephone 01527 910345

Share

We would love to see your new
boiler and heating system.

Follow us on: **@centralheatinghub**

We are also on:

centralheatinghub.co.uk

WORCESTER
Bosch Group

Worcester, Bosch Group,
Cotswold Way, Warndon,
Worcester, WR4 9SW

Useful numbers

Renewables Technical Helpline
(Pre & Post Sales)
Tel: 0330 123 9229
Email: renewable-advice@uk.bosch.com

Brochures
Email: brochure-request@uk.bosch.com
or download instantly from our website
or telephone 0330 123 9119

Customer Service

Service Enquiries
Email: service-enquiries@uk.bosch.com
or telephone 0330 123 9559

Guarantee Registration
To register your Worcester guarantee,
please visit our website
worcester-bosch.co.uk/registration
or telephone 0330 123 2552

Share

We would love to see your new boiler and heating system.

Follow us on: **@Heatingyourhome**

Tag your boiler pictures with: **#WarmAtHeart**

We are also on:

worcester-bosch.co.uk

8 716 115 755 L 01/16

By Appointment to
Her Majesty The Queen
Boiler Manufacturer
Worcester, Bosch Group
T/A Bosch Thermotechnology Ltd.
Worcester