

**UNDERFLOOR HEATING**

**GROUND SOURCE HEAT PUMPS**

**AIR SOURCE HEAT PUMPS**

**SOLAR THERMAL**



**INTEGRATED RENEWABLE HEATING SOLUTIONS**

design | innovation | expertise | service

The  
no-nonsense  
guide to  
**underfloor heating**  
**heatpumps**  
& solar

**£12.95**  
DVD

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Please contact Nu-Heat for a copy of  
'The No-Nonsense Guide to Underfloor Heating,  
Heat Pumps and Solar'.



#### **ABOUT NU-HEAT**

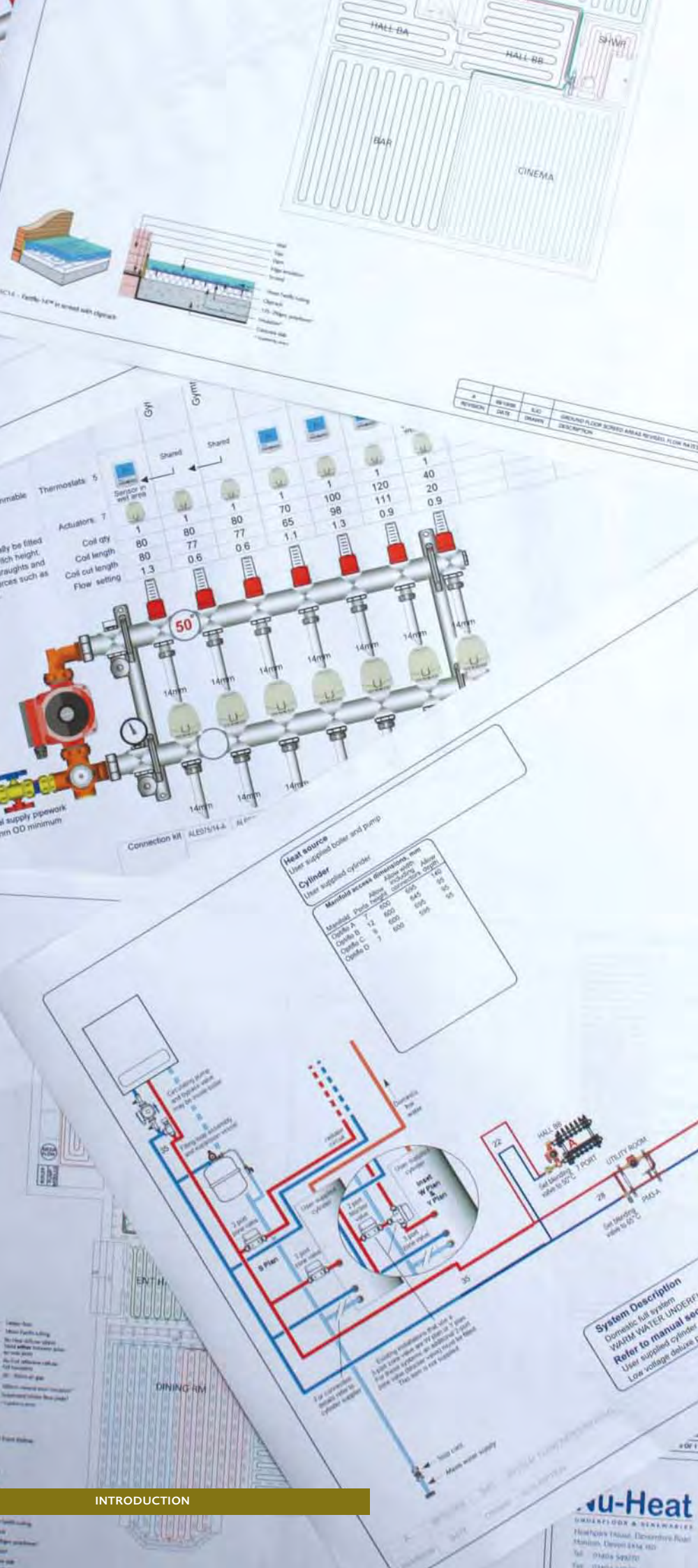
Today, Nu-Heat is the largest specialist supplier of warm water underfloor heating systems to the UK domestic market, delivering fully designed underfloor systems to housebuilders and installers nationwide.

With many years' experience in the integration of underfloor heating with heat pumps and solar panels and an increasing demand for even more energy-efficient systems, we are pleased to be able to design and supply a complete package with one source of responsibility and one point of contact.

The Nu-Heat range of warm water underfloor heating, ground source, air source, and exhaust air heat pumps as well as solar thermal collectors, all integrate seamlessly to provide a heating and hot water system tailored to the individual needs of each customer.

After gaining the coveted Investor in People award in 2002, Nu-Heat has invested further in training by opening a state-of-the-art Training Centre. Running NICEIC Approved courses in Heat Pump and Solar Installation as well as Underfloor Heating and associated Health & Safety, we believe Nu-Heat is in an excellent position to provide our customers with products, service, installation options and technical backup second to none.





Nu-Heat has achieved its leading position through adhering to four key principles:

**DESIGN**

Nu-Heat takes full design responsibility for every system. We do the complicated and time consuming calculations to ensure excellent system design and supply a complete set of components. This means we can be confident that all parts are compatible and our customers can be reassured that both the system and design are guaranteed by one company.

**INNOVATION**

Nu-Heat is at the forefront of technological innovation in underfloor heating and renewable technologies. This includes working with government regulatory bodies to design floor constructions that cater for different installation options including renovations and acoustic floors. Whatever the project, Nu-Heat can provide an up-to-date solution that fully complies with all current building and regulatory requirements.

**EXPERTISE**

Nu-Heat is an expert in the products it supplies. Our team of experienced Technical Support staff provides sensible, technically competent answers by telephone or email. Our award-winning installation manuals are simple to understand, ensuring problem free installations, from plumbing through to electrical integration.

**SERVICE**

Nu-Heat provides a bespoke service to all our customers, responding quickly and efficiently to enquiries. Our reputation is vitally important to us – we therefore discuss the details of each individual project with the customer to ensure that our systems meet the highest expectations.

## PRODUCT RANGE

With underfloor heating being the 'perfect partner' for low temperature renewable heat sources such as heat pumps, Nu-Heat is perfectly placed to save time and money as well as give you peace of mind by purchasing an integrated system from one supplier.

**Underfloor heating** – Nu-Heat supplies a complete package of high quality components including award-winning installation manuals and a full system design with bespoke CAD drawings showing all mechanical pipework and valves as well as electrical connections. Tailored manuals are provided to suit the heat source whether conventional boiler or heat pump.

**Heat pumps** – A full range of heat pump options is available from Nu-Heat. From ground source to air source or exhaust air, Nu-Heat can specify the correct heat pump model for each project. We can also advise on compliance strategies for the *Code for Sustainable Homes*.

**Solar** – With in-roof and bracketed flat panel models available for both tiled and slate roofs, Nu-Heat can specify the correct configuration of solar collectors to suit the project requirements for just domestic hot water or domestic hot water and heating combined.

## SYSTEM INTEGRATION

Because Nu-Heat supplies all of these technologies you can be sure they will integrate seamlessly as we provide all of the fittings necessary to complete the installation. However, if you should decide to buy some of the components from another supplier, that is not a problem – Nu-Heat has many years' experience of integrating our systems with a wide range of makes and models so you can be confident that our system will fulfil all expectations.



Nu-Heat supplies the  
**COMPLETE  
RENEWABLES  
PACKAGE** ensuring  
**SEAMLESS SYSTEM  
INTEGRATION**

## TYPES OF PROPERTIES SUITABLE



### NEW BUILD

#### UFH + HEAT PUMPS + SOLAR ✓

Over the last decade the level of insulation required by the Building Regulations in all new homes has steadily risen, meaning that all new buildings can easily enjoy the benefits of underfloor heating. Whatever the chosen style of decoration the underfloor heating is invisible so changing fashions can be followed without having to alter the specification of the heating system to match.

Where sufficient land is available, a ground source heat pump could be an alternative to traditional gas and oil boilers. Where land space is limited, boreholes, or an air source or exhaust air model may be the answer. Solar thermal panels are a cost-effective way of providing up to 60% of annual domestic hot water needs.

### RENOVATIONS

#### UFH + HEAT PUMPS + SOLAR ✓

To work efficiently both heat pump and underfloor heating systems typically require the building's insulation to conform to at least the current Building Regulations, in order to prevent excessive heat loss. Solar thermal panels can easily be fitted to a renovation project with a suitable solar cylinder.

In many renovations the use of traditional underfloor heating is effectively ruled out because of raised floor heights. In response to this Nu-Heat has developed a heating system using low profile panels that provides an ideal solution for renovations. The panels feature an extra-high density polystyrene base with an aluminium heat spreader plate. They are quick and easy to install over an existing floor and provide even distribution of warmth throughout each room with a fast response time. Alternatively, the panels can be installed between the joists causing no height build-up and allowing the existing floor to be re-laid.

### BARN CONVERSIONS

#### UFH + HEAT PUMPS + SOLAR ✓

Underfloor heating is the ideal option for barn conversions. Large, open spaces can be warmed by a gentle heat that is perfect for timber structures without the visual intrusion of radiators.

Nu-Heat's wide experience and comprehensive range of floor constructions means we are able to integrate the underfloor heating into almost any barn type on both ground and first floors with few restrictions on floor coverings.

Whether it is built of old timber, green oak, stone, brick or cob, as long as the barn meets current Building Regulations, we can heat it. And a heat pump and/or solar panels will be an efficient means of providing energy for both heating and domestic hot water.

Whether **NEW-BUILD** or **RENOVATION**,  
Nu-Heat will design a  
**PERFECT HEATING SYSTEM** for any  
**HOME**



## APARTMENTS

### UFH + HEAT PUMPS + SOLAR ✓

With the challenge of typically smaller floor areas, the impact of a radiator on the useable space is huge. Wall radiators immediately affect where furniture can be placed, creating real interior design challenges. The best solution to these problems is underfloor heating – removing the need for radiators and creating up to 15% more useable floor space, at no extra cost.

Nu-Heat offers a full range of acoustic floor constructions that conform to the relevant Building Regulations. Each successfully integrates underfloor heating into the fabric of the building without compromising heat output or acoustic performance.

Nu-Heat systems are fully compatible with a wide range of heat sources including the district heating systems frequently found in apartment blocks. Heat pumps are also eminently suitable and may help towards raising the level of SAP rating for the building and contribute to reaching Level 4 of the Code for Sustainable Homes when combined with Nu-Heat solar thermal panels.



## EXTENSIONS

### UFH + HEAT PUMPS + SOLAR ✓

In order to increase the amount of useable space as well as the value of the property, more and more people are extending their current home rather than moving house; which is why Nu-Heat has developed a home extension system specifically to integrate with any existing boiler and radiator system. It uses a centralised manifold complete with pump, zone valves and flow gauges. The manifold feeds pipework out to the new heating zones, maximising control, comfort and ease of installation.

The extension system offers all the options and flexibility of a Nu-Heat full house warm water underfloor heating system, using exactly the same Optiflo™ wiring board and high quality components supplied with all Nu-Heat systems.

Any of the Nu-Heat floor constructions can be used, enabling the best performing option for each individual property to be incorporated at the design stage. It is fully supported by Nu-Heat's Technical Support team and is supplied with a comprehensive installation manual and full set of CAD drawings for every project.



## CONSERVATORIES

### UFH ✓

ONEZONE® is an ideal heating solution for a single room extension or conservatory. It allows warm water underfloor heating to be installed into a single room whilst keeping traditional radiators elsewhere.

The ONEZONE® pack arrives pre-built, ready to install. Nu-Heat ONEZONE® is designed and produced to the same exacting standards as full house systems. It is available for areas up to 60m<sup>2</sup>, is suitable for new-builds and renovations, and has screed and floating floor options.

To order a ONEZONE® pack simply visit [www.nu-heat.co.uk/onezone](http://www.nu-heat.co.uk/onezone) and benefit from the online discount, or alternatively, telephone 0800 731 1976.

# UNDERFLOOR HEATING

## PRINCIPLE OF OPERATION

Underfloor heating works by pumping controlled flows of warm water from any heat source through plastic tubing embedded in the floor. Because the emitting area is large, sufficient warmth is provided even on a cold winter day with no need for supplementary heating.

The benefits of underfloor heating have been well documented and consist of...

## DESIGN FREEDOM

Whatever the style and size of the project – traditional, contemporary, large or small – the lack of obtrusive radiators will release valuable wall and floor space, allowing freedom to design layouts and make optimum use of each room.

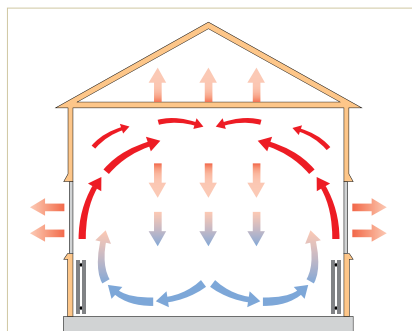
## LOWER HEATING BILLS

With fuel costs on the increase it is more important than ever to install an energy-efficient heating system. The low system water temperatures of underfloor heating will enhance the efficiency of condensing boilers and give fuel savings of typically 25–40% (source BSRIA). Even greater savings are achievable when a heat pump is used as they operate most efficiently when used in conjunction with underfloor heating.

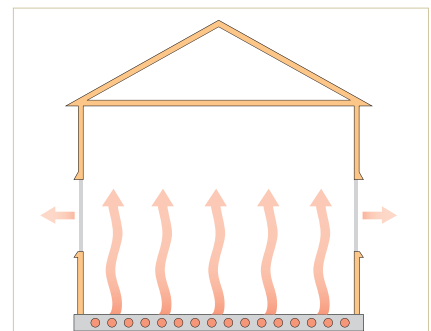
Nu-Heat's range of heating controls will optimise system performance and the latest generation of thermal store cylinder, the EnergyMaster2™ is available with solar coils to ensure maximum environmental benefit.

## COMFORT

Radiators heat the air by convection, drawing cold air across the floor and up to the ceiling. In contrast, underfloor heating produces mainly radiant warmth. The entire floor is heated meaning warmth is radiated evenly causing no stuffiness, draughts or cold spots. Feet are gently warmed whilst the head is cool – ideal comfort conditions.



*Radiators circulate heat inefficiently. The room temperature is highest at the ceiling, coldest at the floor. Excessive air circulation increases ventilation losses. Fuel costs are higher.*



*Nu-Heat underfloor heating provides an even warmth. Stuffiness and draughts are virtually eliminated creating ideal comfort conditions.*

The **TANGIBLE BENEFITS** of Nu-Heat  
underfloor heating  
**ENHANCE THE VALUE** of any  
**PROPERTY**



## CONFIDENCE

Nu-Heat has emerged as the market leader in domestic underfloor heating by taking full design responsibility and supplying complete systems with comprehensive documentation and technical support.

The company has built up a huge fund of experience over the years, much of which is embodied in its Optimiser™ computer software. This is a sophisticated calculation tool used by the company's designers to ensure that all new systems will fulfil the potential of underfloor heating and match customers' expectations.

Installers love Fastflo® tube because of its flexibility. It is fast and simple to fix but also, as more tube can be placed in the floor at closer spacing, it spreads heat more evenly and gives fast response.

Nu-Heat can select from a range of Fastflo® tube diameters: 10mm, 14mm, 16mm or 18mm dependent on the specific requirements of the project.

Fastflo® floor heating tube is manufactured in PE-Xc, a material that has been installed in floor heating systems throughout Europe for the last three decades and, according to BSRIA, is the UK market leader. The vast experience gained, together with accelerated testing, means Nu-Heat is confident that Fastflo® floor heating tube will last in excess of 50 years and is guaranteed for 25, the first 10 years being insurance-backed. Naturally, Fastflo® complies with all current European standards for underfloor heating.



Downward heat losses are  
**CAREFULLY**  
**CALCULATED** to ensure  
**REDUCED**  
RUNNING COSTS



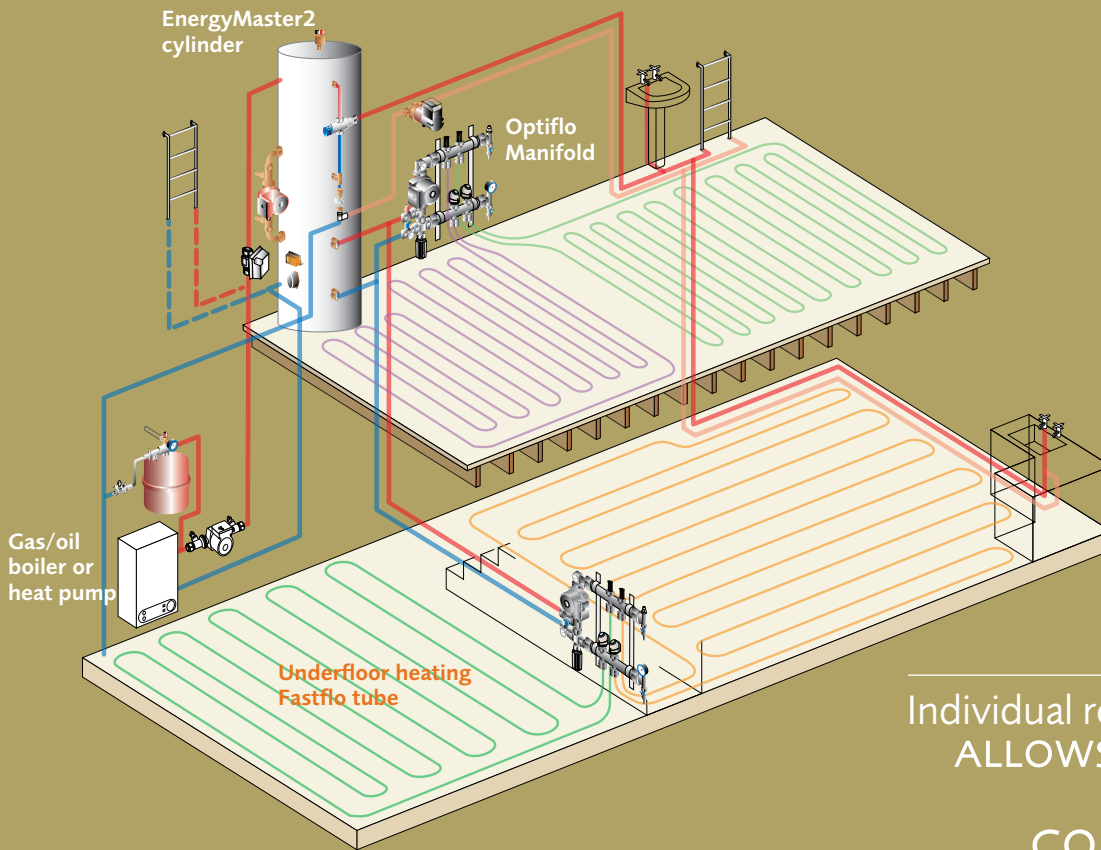
#### INSULATION

Levels of insulation within a building are of key importance, as the better insulated the house, the more efficient and cost-effective to run the heating system will be. At its simplest, the more insulation in a building, the lower its heating bills; and the colder the climate, the more important a high standard of insulation becomes. UK Building Regulations have progressively required higher insulation standards and it is easiest to achieve a high standard of insulation during building or major renovation work.

In practice, even a building insulated to well above the Building Regulation requirement will always need some level of heating; first, because there has to be some passage of air from the outside to maintain freshness and second, because insulation does not itself create warmth, it simply helps to retain it.

Because the warmth passes into the room from the floor, it is important to prevent downward heat losses into the ground or the floor below. In a new building that meets the regulations, there will always be an adequate level of floor insulation, but if a building is being refurbished it is important to increase the levels of insulation to at least current Building Regulation standard.





Individual room zoning  
**ALLOWS**  
**maximum**  
**CONTROL**

## SYSTEM ARCHITECTURE

### FULL HOUSE

Underfloor heating is an ideal way to heat the whole house. The flexibility of Fastflo<sup>®</sup> heating tube and Nu-Heat's ClippaPlate<sup>™</sup> system means that it can easily be installed in upper floors allowing the entire home to enjoy the benefits of underfloor heating.

For gas or oil boiler systems, individual room zoning gives maximum control over heating times and temperatures; every part of the house will be at optimum comfort levels exactly when wanted. Nu-Heat supplies a full Optiflo<sup>™</sup> manifold complete with wiring centre to enable zone and flowrate control.

The system will be optimised to use a minimal number of pumps. Pump modules with temperature blending valves are used with boiler systems to ensure a managed, safe flow temperature.

An optional EnergyMaster2<sup>™</sup> thermal store cylinder (also available in a solar version) can also be supplied to provide for all heating and domestic hot water needs.

Heat pumps are operated by weather compensated control. This ensures maximum efficiency from the heat pump. Most rooms are still designed with thermostat control to provide consistent comfort.

### GROUND FLOOR ONLY OPTION

Nu-Heat's flexible system design easily allows for installation of underfloor heating on just the ground floor of a property with traditional radiators on the first floor. Installation manuals clearly show how radiators can be easily integrated with main system plumbing and electrical components.

### EXTENSION

The same principle applies as for ground floor only systems; the underfloor heating system in the extension can easily be integrated with the existing radiator system. A separate timeclock is supplied to allow the underfloor heating to work independently.

### ONEZONE<sup>®</sup> SYSTEMS

Designed specifically for conservatories and single room extensions, the Nu-Heat ONEZONE<sup>®</sup> system can easily be added to an existing radiator circuit.

A ONEZONE<sup>®</sup> system is manufactured to the same exacting standards as all Nu-Heat products and is designed to 'bolt on' to the main house heating system. Room temperature and timing can be controlled by either using the existing heating timer as the master control, or bypassing existing system controls to give independent control over the underfloor heating.

PERFORMANCE is  
**GUARANTEED**



With over **60**  
**FLOOR CONSTRUCTIONS**  
 Nu-Heat has the  
**PERFECT**  
**SOLUTION**

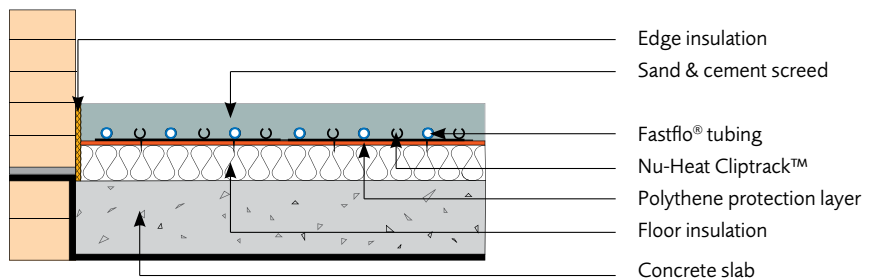
## FLOOR CONSTRUCTIONS

Installers choose Nu-Heat's Fastflo® heating tube for its flexibility which saves dramatically on installation time. When combined with innovative fixing systems and an extensive library of over sixty floor construction methods, there is a cost-effective solution for every project. To view the full range of floor constructions, visit [www.nu-heat.co.uk](http://www.nu-heat.co.uk)

### SCREED

As the simplest installation method, screeded floors are always popular. The heating tube is simply clipped through a polythene slip layer into standard insulation before the screed is poured. Where floor insulation meets Building Regulation

requirements, additional insulation is rarely needed. For easy installation and accurate control of the tube spacing Nu-Heat supplies Cliptrack™ to secure tube in place whilst the screed is laid.



Fastflo® in screed with Cliptrack™

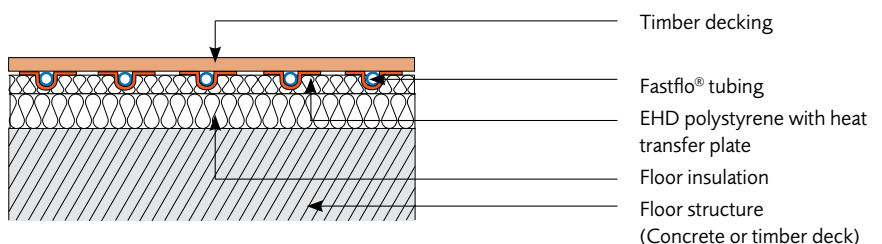


### FLOATING

Metal heat diffusers positioned in pre-tracked insulation material provide a versatile installation method. A floating chipboard decking may be used over it, or the insulation panels may be fitted between battens to take nailed timber. In upper floors the panels may be installed between the joists, working from above.

Other Nu-Heat diffuser floor construction systems enable a low-height build-up on top of existing decking or solid floors where adequate insulation is present.

Nu-Heat has also developed floating floor constructions that take into consideration the specific challenges of older properties and are ideal for use in renovation projects.

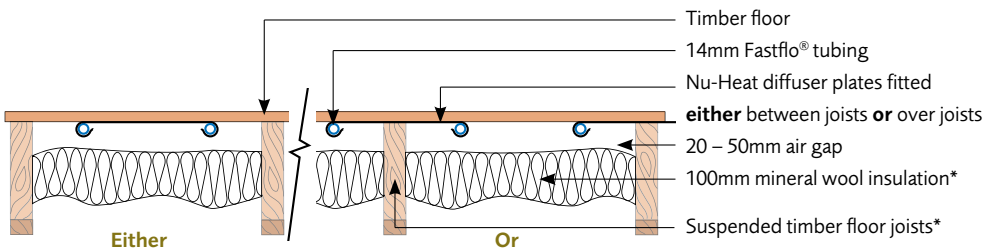


Fastflo® with diffuser panels in floating floor

### JOISTED

The flexibility of Nu-Heat's Fastflo® tubing allows installation in suspended timber floors from above before the deck is laid or from below after the deck has been laid, with no additional floor height build up. The tubing is fed through pre-notched or drilled joists and held in place with Nu-Heat aluminium ClippaPlate™, allowing the system to be fixed with a minimum of effort. Standard insulation, purchased locally is then inserted between the joists.

This method is particularly suitable for timber-frame houses and renovations as floor decks can be laid before installation of the underfloor heating system; but it is also useful for any timber floor where there is access from below. In all cases it provides a safer alternative to working over exposed joists.



Fastflo® in suspended timber floor using ClippaPlate™

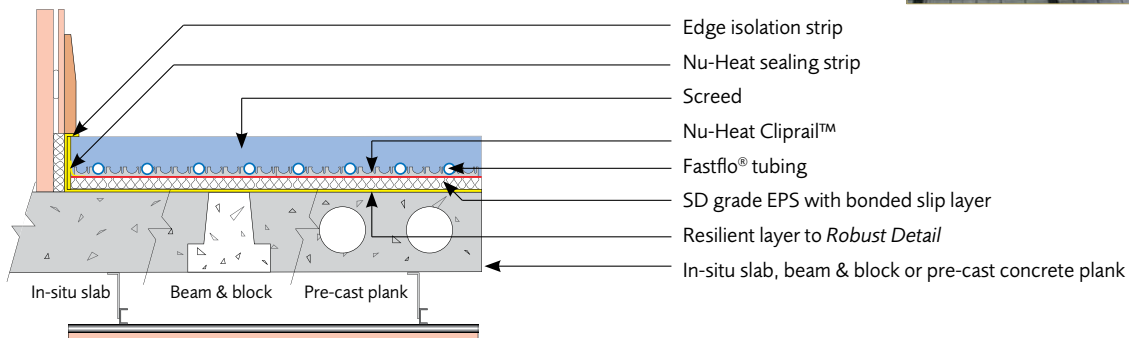
### ACOUSTIC

Changes to Part E of the Building Regulations mean that housebuilders now have to comply with far more stringent acoustic criteria than in the past.

Nu-Heat has worked closely with Robust Details, the regulatory body overseeing the changes, to ensure that we can offer a wide range of acoustic floor constructions that

fully integrate our warm water underfloor heating systems.

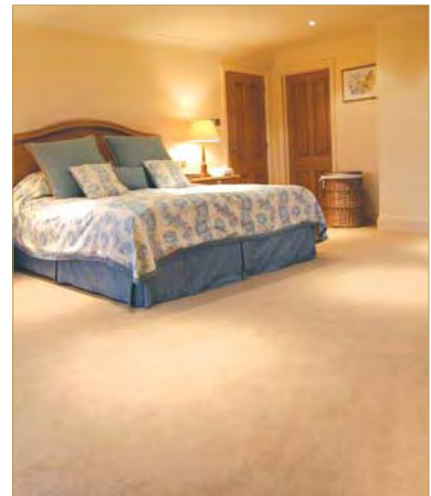
Wide experience of working with successful housebuilders, a sound knowledge of all relevant regulations and a dedicated Product Development team means that Nu-Heat is at the forefront of technological innovation.



Fastflo® in liquid screed, on pre-cast concrete slab, beam & block or plank acoustic separating floor

## FLOOR COVERINGS

One of the main questions asked by Nu-Heat customers is: "Will the floor covering affect the heating?" The answer is, "Well, yes", however, as part of our service, Nu-Heat designers use the company's unique Optimiser™ software program to consider the thermal resistance of each floor covering chosen to establish the quantity and spacing of heating tube required within each room. As a result, Nu-Heat can always be confident that our system will fully heat the house even if the floor covering is changed.



### STONE, SLATE AND CERAMIC TILES

Materials such as stone, marble, ceramic tiles and polished screed are ideally suited to underfloor heating as they conduct heat well and place little barrier on warmth reaching the room.

Traditionally laid in 'wet' rooms such as bathrooms and kitchens, tiled floors are increasingly being used in general living areas because underfloor heating allows surfaces to be easily cleaned whilst providing wonderful comfort underfoot.

### TIMBER PRODUCTS

The low surface temperature of underfloor heating presents no problems with timber floors provided that the timber is well seasoned or kiln-dried and sensible procedures are followed to prevent the wood from absorbing moisture from the building before the heating is first switched on. Most timber suppliers recommend a maximum floor temperature of 27°C which can easily be managed using Nu-Heat's range of floor limiting thermostats.

Engineered boards, with layers of cross-bonded ply faced with a thick layer of timber, are inherently more stable than solid wood boards; however, the gentle warmth of Nu-Heat underfloor heating means that most solid timbers can be used with equal success.

### CARPET

The majority of carpet can easily be used with underfloor heating, the exception being very thick carpet or felt underlays, which may act as an insulator. The maximum advisable tog value for carpet plus underlay is 2.5; most manufacturers can provide the tog value of their products which the Nu-Heat designer will use to calculate the amount of floor heating tube needed to heat the room.

Other overlays such as those listed below can also be used, as they rarely affect the performance of the underfloor heating.

## SUITABLE FLOOR COVERINGS

LIMESTONE | FLAGSTONES | SLATE | CERAMIC TILES | MARBLE | POLISHED SCREED | SOLID TIMBER  
ENGINEERED BOARD | LAMINATE | TRADITIONAL PARQUET | SOFTWOODS | CARPET | AMTICO | VINYL | CORK  
BAMBOO | COIR | RUBBER | MARMOLEUM | LAMINATE TILES





### COMPATIBLE HEAT SOURCES

Over the years Nu-Heat has been asked to design systems incorporating every conceivable type of heat source. As a result, we are considered market experts in the integration of underfloor heating with new and emerging technologies as well as standard boilers.

### DETAILED BESPOKE DESIGN

Nu-Heat recognises that every project is unique – which is why every customer is contacted by a system designer to discuss their requirements in detail, thereby ensuring a bespoke underfloor heating design tailored to meet all requirements and expectations.

ALL Nu-Heat systems are supplied  
with a FULL SET of  
HIGH QUALITY COMPONENTS  
ready for installation

Control options and complementary products such as Nu-Heat's EnergyMaster2™ thermal store cylinder and Aquastar™ instant hot water loop are most easily incorporated at the design stage, when the best position for both them and the main underfloor heating components can be agreed in advance.

System design complies with relevant standards including BS EN1264 and CIBSE Guide A 1999 / NHBC Standards 2008, 8.1, and with Building Regulations. Our expert designers produce a detailed Computer Aided Design drawing\* illustrating all relevant information to ensure the installation can take place to suit the build schedule.

\*Except for ONEZONE® systems



## Nu-Heat systems operate with TIME and TEMPERATURE CONTROL

### THE COMPLETE PACKAGE

All Nu-Heat systems, whether for an entire house, an extension or a single room, are supplied with a full set of high quality components ready for installation.

Fastflo® floor heating tubing with fixing clips is supplied in the correct quantities carefully calculated according to the heat losses of the building and the floor coverings specified. Where floating floors are being installed, insulated metal plates to carry the Fastflo® tube are supplied.

Fastflo® has been installed in floor heating systems throughout Europe for over thirty years. It is available in a range of sizes and is made up of cross-linked polyethylene (PE-Xc) with an internal oxygen diffusion barrier; it meets all relevant European standards and is manufactured in Europe to DIN 4726.

### SYSTEM CONTROL

Nu-Heat supplies a comprehensive range of thermostats to control the underfloor heating – from simple dial-type or brushed aluminium finishes to wireless thermostats and sophisticated self-learning options with add-on Internet connections.

The full range is detailed in the *Options* leaflet. Separate leaflets are available for the EnergyMaster2™ and Aquastar™.

Control of the underfloor heating system has a major effect on the energy efficiency of a building, therefore:

- All Nu-Heat gas/oil boiler systems operate with full time and temperature zone control.
- Ground and air-source heat pump systems are controlled by weather-compensation sensors that detect the difference between inside and outside temperatures and adjust the heating accordingly to optimise efficiency and comfort. Individual rooms are thermostatically controlled also.
- Nu-Heat's Deluxe Programmable thermostats have a self-learning internal optimising function that can also benefit the system's energy efficiency.



## HEAT PUMPS

### NU-HEAT & RENEWABLE ENERGIES

Heat pumps have been a common feature in the northern regions of Europe for many years where the severe climate has made energy saving a priority. With energy prices on an ever-increasing spiral and the reduction of carbon emissions a priority to many, including the UK Government, it is little surprise that heat pump technology is now gaining a significant foothold in the UK market.

Heat pumps work by extracting an inexhaustible free supply of solar energy stored naturally either in the ground, air or water and utilising it for domestic heating and hot water.

With fewer moving parts to go wrong, heat pumps have a life expectancy of over 25 years.

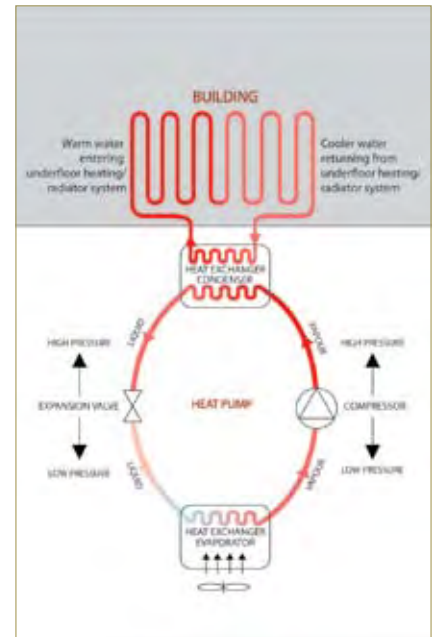
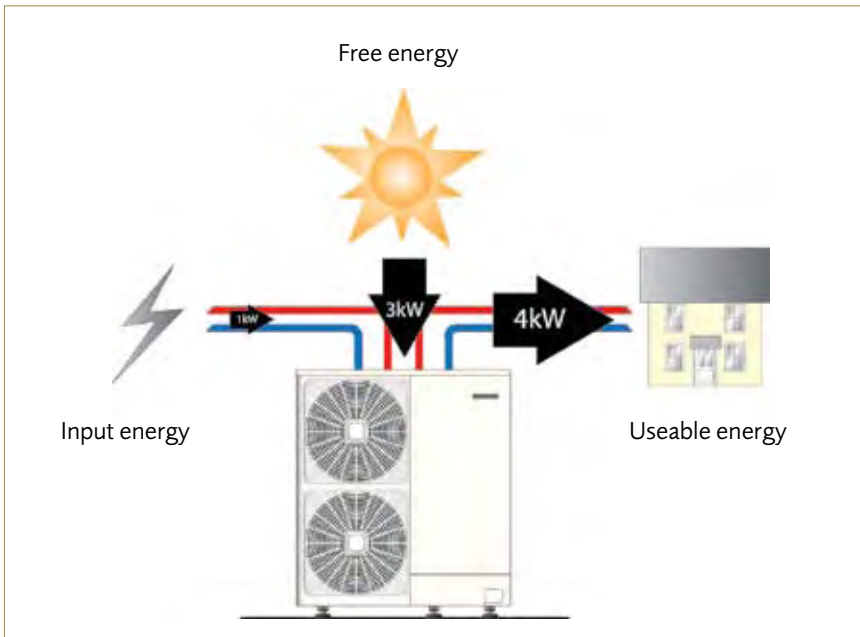
### UNDERFLOOR HEATING – THE PERFECT PARTNER

As the heating emitter is so much larger with underfloor heating than with radiators, water temperature within the system can be much lower. This ranges from typically 35 – 45°C, compared to 55 – 65°C for radiators and higher again in gas and oil fired installations. Low flow temperatures are ideal for heat pumps as they enable the maximum CoP to be achieved.

All heat pumps operate using similar principles – by harvesting the energy from the environment and 'compressing' it to a temperature that can be used in the home.

### BENEFITS

- 'Free energy' – up to 5 units of output energy for every unit input
- Proven and reliable technology with 25-year life expectancy
- Provides all underfloor heating and domestic hot water requirements
- No local carbon emissions
- Grants – Government support towards the cost of installation
- Increases the resale value of the property



### HOW DOES A HEAT PUMP WORK?

Heat pumps use the refrigeration process to transfer low grade energy from the air or ground outside into high grade energy used for heating and domestic hot water. Even at temperatures as low as  $-20^{\circ}\text{C}$ , a heat pump can supply significantly more energy than it uses – and with no local  $\text{CO}_2$  emissions, it helps reduce impact on the environment.

With fewer moving parts to go wrong, heat pumps have a life expectancy of up to 25 years.

### FREE ENERGY – THE THEORY OF HEAT PUMP TECHNOLOGY

In order to access this free environmental supply an energy input is required. In a well-insulated property, every 1 kilowatt of electricity used to power the heat pump can provide up to 3 kilowatts of free energy. This ratio is referred to as the Coefficient of Performance or CoP, in this case the CoP would be 4.

Looking at it another way, a CoP of 4 means the efficiency of the heat pump is 400%. Compare this to a boiler at 90% efficiency and the advantage is clear.

Due to the fluctuations in air temperature the CoP for an air source unit is constantly changing, however for comparison purposes most companies use an outside air temperature of  $7^{\circ}\text{C}$  and a heating water flow temperature of  $35^{\circ}\text{C}$ . The temperature below ground remains relatively constant, therefore the CoP of a ground source unit is calculated on an average brine temperature of  $0^{\circ}\text{C}$  and an average heating water flow temperature of  $35^{\circ}\text{C}$ .

### A TYPICAL HEAT PUMP CYCLE IS AS FOLLOWS:

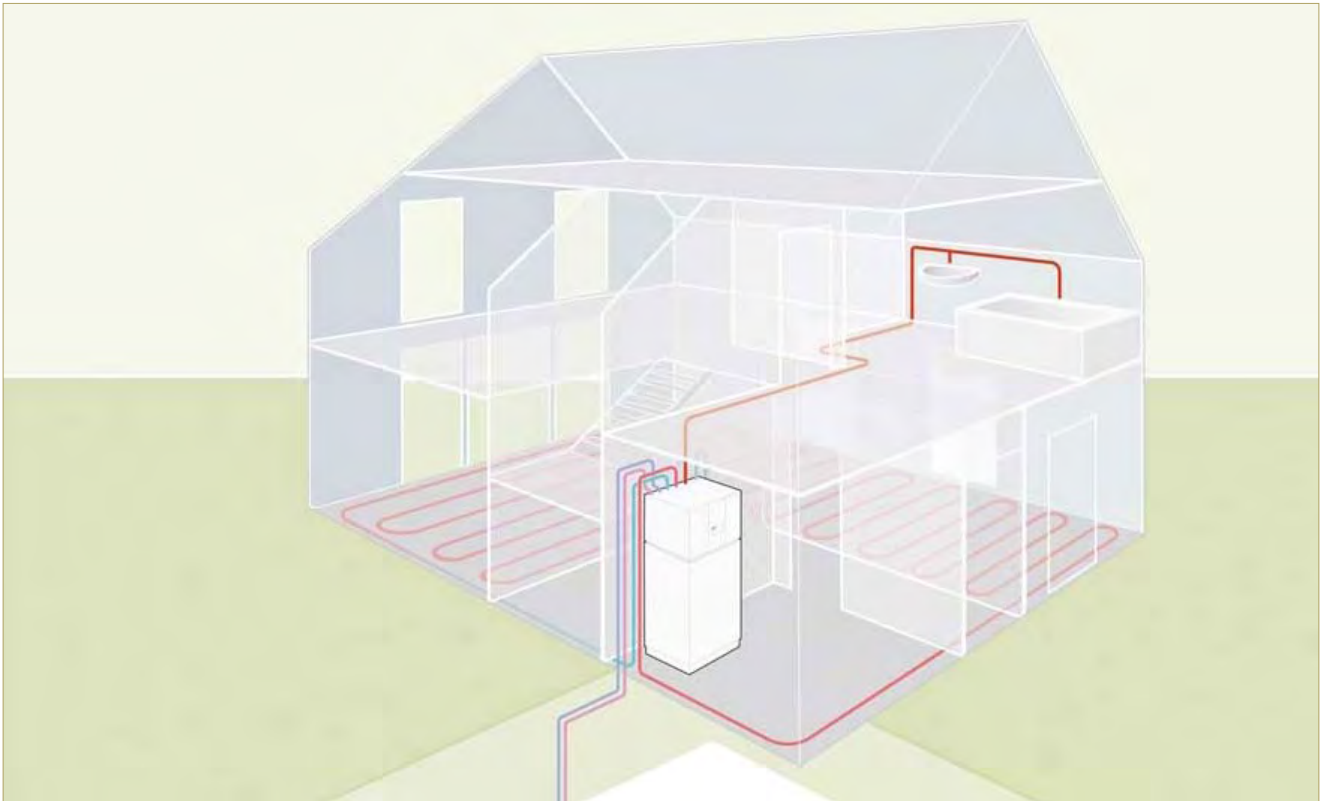
A **scroll compressor** is used to compress refrigerant within the unit to increase both its temperature and pressure.

The refrigerant then passes through a **condenser** where energy is transferred to the heating system water and the refrigerant is turned from a high pressure vapour into a high pressure liquid.

The liquid refrigerant then passes through an **expansion valve** that lowers its pressure and temperature.

With the refrigerant evaporating and at a very low temperature it passes through a **heat exchanger**. At this stage the refrigerant collects large amounts of low grade energy from the air or brine circuit, causing it to boil and return to a vapour form.

This continuous cycle of changing the state of the refrigerant from liquid to vapour allows the heat pump to extract the maximum energy from the air or ground.



### GROUND SOURCE HEAT PUMP – TRENCHES

If there is enough land available, then energy can be harvested by horizontal ground loops placed in 1-metre deep trenches spaced 600–800mm apart. Although Nu-Heat will precisely calculate the area required to meet the heating and hot water demand, as a 'rule of thumb', approximately 2.5 times the internal floor area to be heated is required; therefore a 200m<sup>2</sup> property requires 500m<sup>2</sup> of land for trenches.

#### ADVANTAGES

- Consistent temperature below ground throughout the year providing a high CoP
- No drilling required, minimising installation costs
- Full integration with Nu-Heat solar systems



### GROUND SOURCE HEAT PUMP – BOREHOLES

Vertical boreholes of between 40 and 120 metres deep are drilled. The number and depth of the boreholes varies depending on the heat load of the property. Each borehole carries tubing containing a liquid antifreeze mixture that flows in a loop to the heat pump where the heat is concentrated and available for use in the underfloor heating system and as domestic hot water. Nu-Heat has a number of drilling contractors throughout the UK.

#### ADVANTAGES

- Consistent temperature below ground throughout the year providing a high CoP
- A borehole requires a small ground area to harvest energy
- Low impact on the site
- Full integration with Nu-Heat solar systems

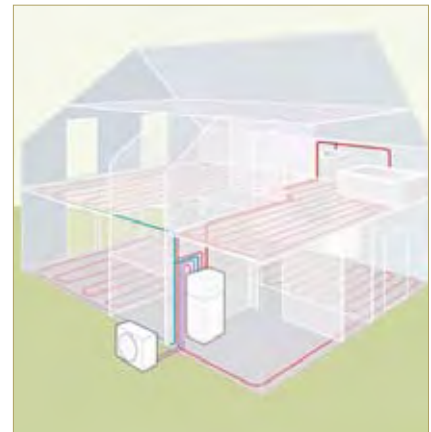


### AIR SOURCE HEAT PUMP

Air source heat pumps are often a practical alternative as they require no digging or drilling and fewer plumbing connections are used during installation, making them cost effective to install. The units extract energy from the air and will operate in temperatures down to -15°C. Inevitably the CoP for air source units will be slightly lower than for ground source heat pumps, however they will still make a considerable contribution to reducing energy consumption by up to 50% when compared to conventional boiler systems.

#### ADVANTAGES

- Lower capital expenditure to achieve energy savings
- No ground works required
- Full integration with Nu-Heat solar systems

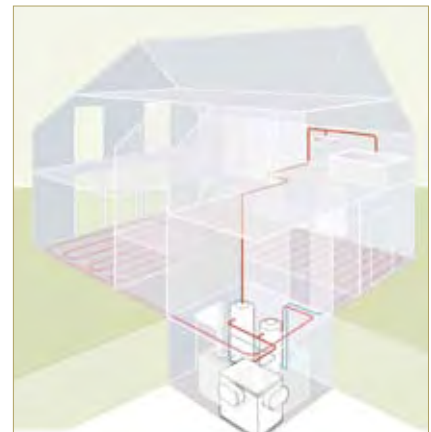


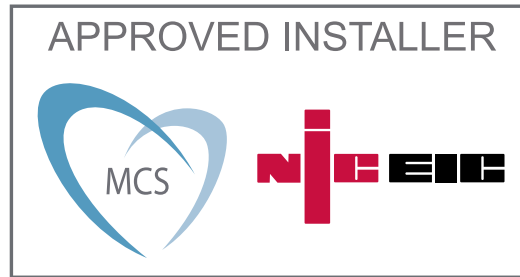
### EXHAUST AIR HEAT PUMP

These units extract the latent energy from the internal air of a property and use the recovered heat to recharge both the underfloor heating and domestic hot water. In doing so they also provide a means of controlling ventilation within the dwelling. The exhaust air unit is best suited to apartments and houses with very low heat loss and will often provide an excellent solution for housebuilders wanting to meet the requirements of *The Code for Sustainable Homes*.

#### ADVANTAGES

- The heat pump sits inside the house
- Controls the ventilation
- Helps achieve Level 3 of *The Code for Sustainable Homes* in apartment dwellings and Level 4 when linked to solar.





CERTIFICATE NUMBER NIC1097

## A micro-processor ensures **OPTIMAL HEAT PUMP** operation

### SYSTEM ARCHITECTURE

Nu-Heat heat pump systems come with straightforward installation instructions and a set of comprehensive mechanical and electrical 'docking' drawings that illustrate how the various parts fit together and integrate with the heating system and any solar collectors. A heat pump commissioning service, undertaken by one of our qualified engineers, is part of the Nu-Heat package.

Nu-Heat's experience, built up over many years, has allowed us to develop a sophisticated and unique database of installation options that allows us to ensure that the system meets your requirements whilst delivering optimum performance.

All Nu-Heat heat pumps are the perfect partner for Nu-Heat warm water underfloor heating, giving comfort, low running costs, long life and minimal maintenance.

### SYSTEM CONTROL – HEAT PUMPS

All models are supplied with the most appropriate system control for the application. Most systems are run using weather compensation control, allowing the heat pump to vary its operation based on the temperature requirements of the house and the outside air temperature.

### FEATURES

Control panels are specially designed for ease of operation and have a range of features including:

- Weather compensated control for energy-efficient operation and easy user adjustment
- Easy solar integration
- Can be configured with a back-up oil or gas boiler if necessary



# TECHNICAL information

## GROUND SOURCE HEAT PUMPS

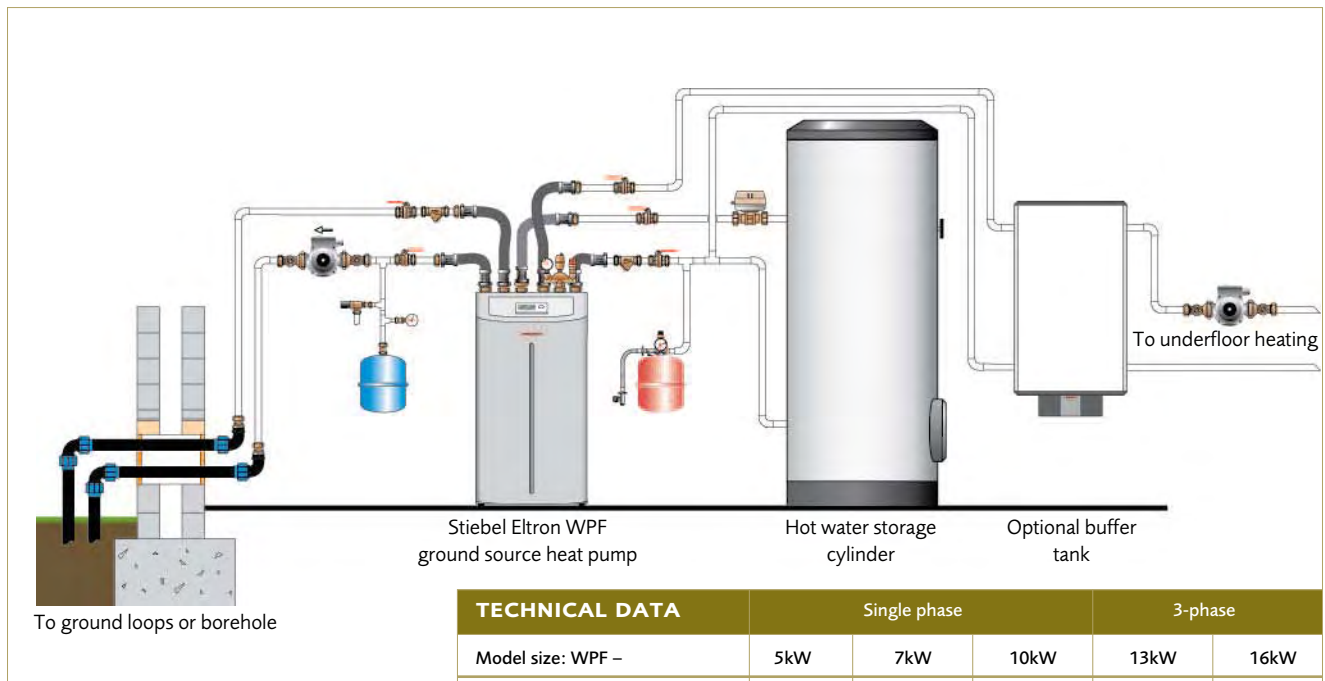
### STIEBEL ELTRON WPF – GROUND SOURCE HEAT PUMP

Usually specified for larger properties, the advanced control system of the WPF heat pump makes it the ideal choice for houses, large apartments and industrial buildings. There are five versions available between 5 and 16kW each with a factory fitted backup immersion heater as standard.

The WPF is a powerful energy provider for both domestic hot water and heating. With its integral heating control unit, circulation pump, safety valve and integral heating element, the unit is ideally suited to whole house projects. Its compact design means the WPF is just as efficient in its use of space as it is in its use of energy.

Thanks to a highly efficient compressor, the efficiency of the WPF is excellent – with a CoP of up to 4.5 when the incoming cooling liquid is at 0°C and the outgoing heating liquid temperature is 35°C (excludes circulation pumps).

**WARRANTY** – 2 years + 5 year optional extension.



**STIEBEL ELTRON**

TECHNICAL DATA	Single phase			3-phase	
	5kW	7kW	10kW	13kW	16kW
Model size: WPF –	5kW	7kW	10kW	13kW	16kW
CoP at B 0/W 35*	4.3	4.4	4.5	4.4	4.5
Height	1110mm				
Width	510mm				
Depth	680mm				
Net weight	107.5kg	113.5kg	120.5kg	128.5kg	131.0kg
Start current	29A	32A	41A	28A	29A
Running current (max)	12.6A	16A	19.6A	14.8A	16.5A

\* In accordance with EN 255 for heat source entry at 0°C / hot water flow at 35°C. The electric input for circulation pumps is not included.

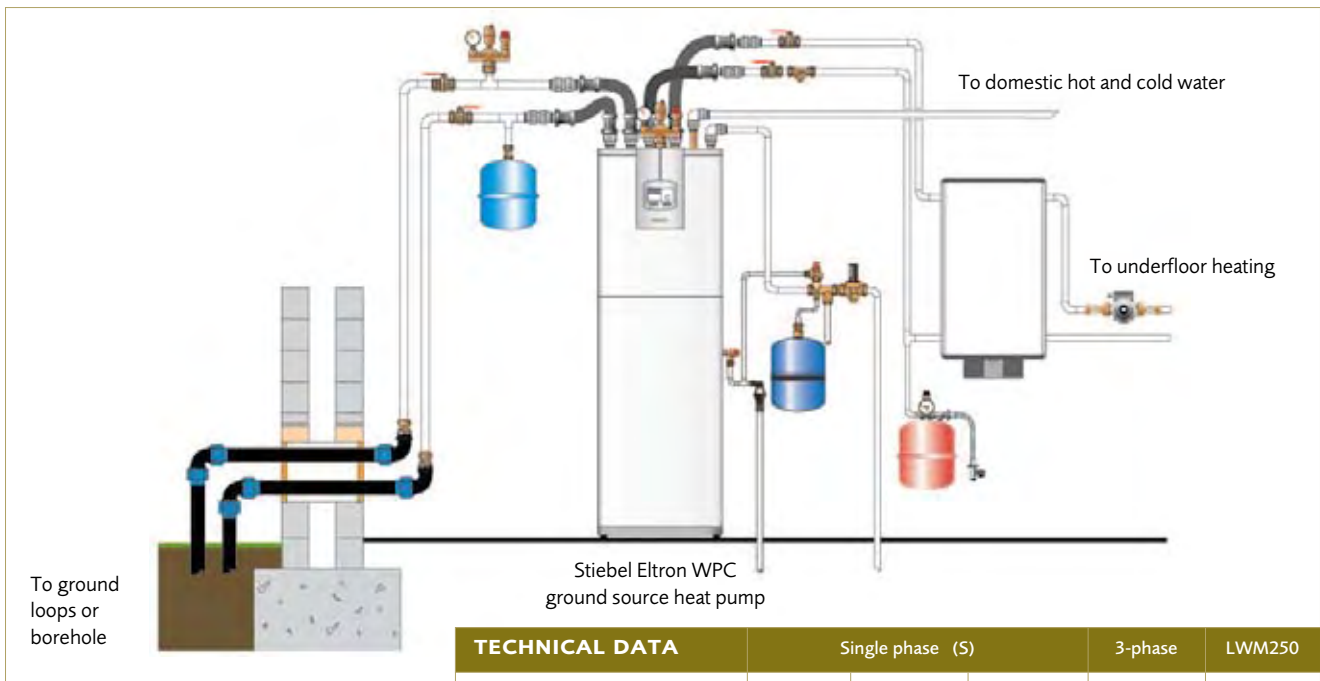


### STIEBEL ELTRON WPC – GROUND SOURCE HEAT PUMP

The WPC ground source heat pump with integral cylinder is a complete solution for both domestic hot water and heating.

The unit is available in four sizes with varying output levels to suit a range of projects. Each has an integral 200 litre domestic hot water cylinder and fully automated controls within its sound-proof casing. A flow temperature of up to 60°C is achievable. The unit requires only minimum effort to install and has a small footprint of just 600 x 650mm.

**WARRANTY** – 2 years + 5 year optional extension



**STIEBEL ELTRON**

TECHNICAL DATA	Single phase (S)			3-phase	LWM250
Model size: WPC –	5kW	7kW	10kW	13kW	–
CoP at B 0/W 35*	4.3	4.4	4.5	4.4	–
Height	2100mm				360mm
Width	600mm				600mm
Depth	650mm				420mm
Net weight	275kg	285kg	295kg	305kg	31kg
Start current	29A	32A	41A	30A	–
Running current (max)	13A	16A	20A	15A	–

\* In accordance with EN 255 for heat source entry at 0°C / hot water flow at 35°C. The electric input for circulation pumps is not included.

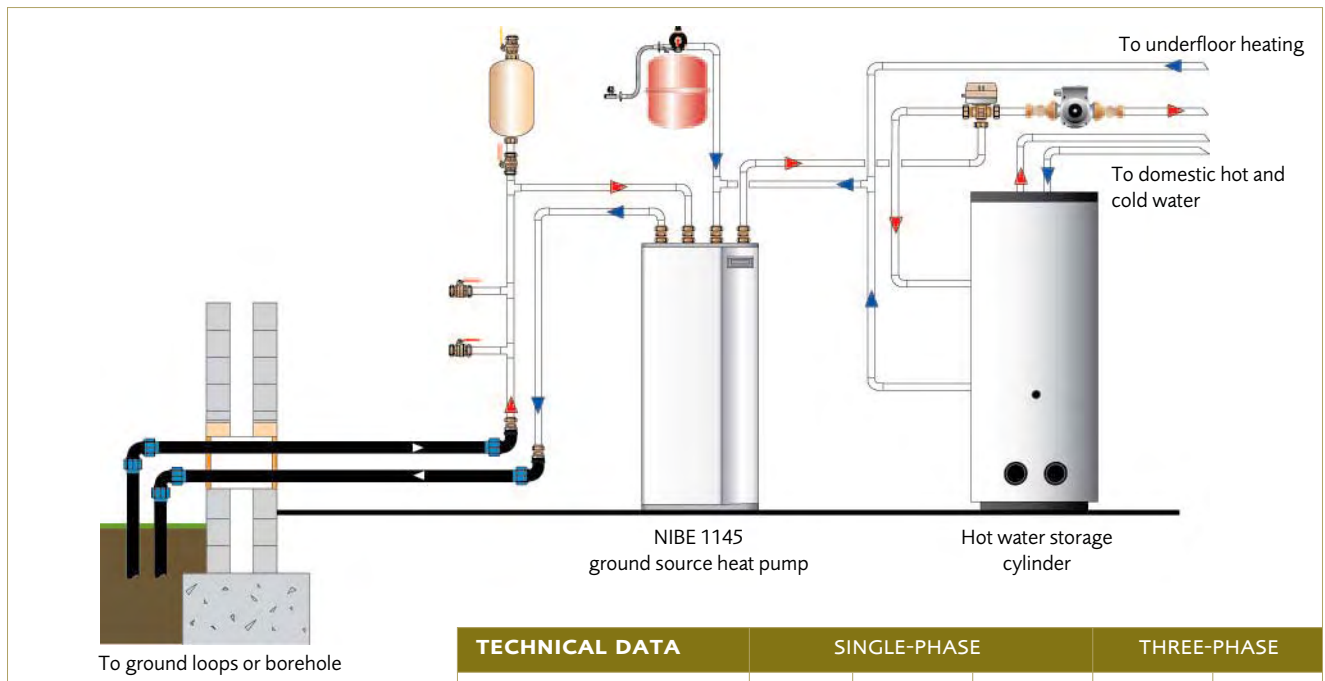
## NIBE F1145 – GROUND SOURCE HEAT PUMP

One of a new generation of heat pumps designed to supply the home with inexpensive and environmentally friendly heating. The unit features a circulation pump and a control system with heat production that is both safe and economical. For optimum performance connect to a low temperature heat distribution system such as underfloor heating.

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.

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

**WARRANTY – 2 years**



TECHNICAL DATA	SINGLE-PHASE			THREE-PHASE	
Model size: 1145 –	5kW	8kW	12kW	15kW	17kW
CoP at B 0/W 35*	4.1	4.4	4.3	4.3	4.1
Height	1500mm				
Width	600mm				
Depth	625mm				
Net weight	140kg	165kg	178kg	191kg	199kg
Immersion heater	Yes				

\* In accordance with EN 14511 for heat source entry at 0°C / hot water flow at 35°C.



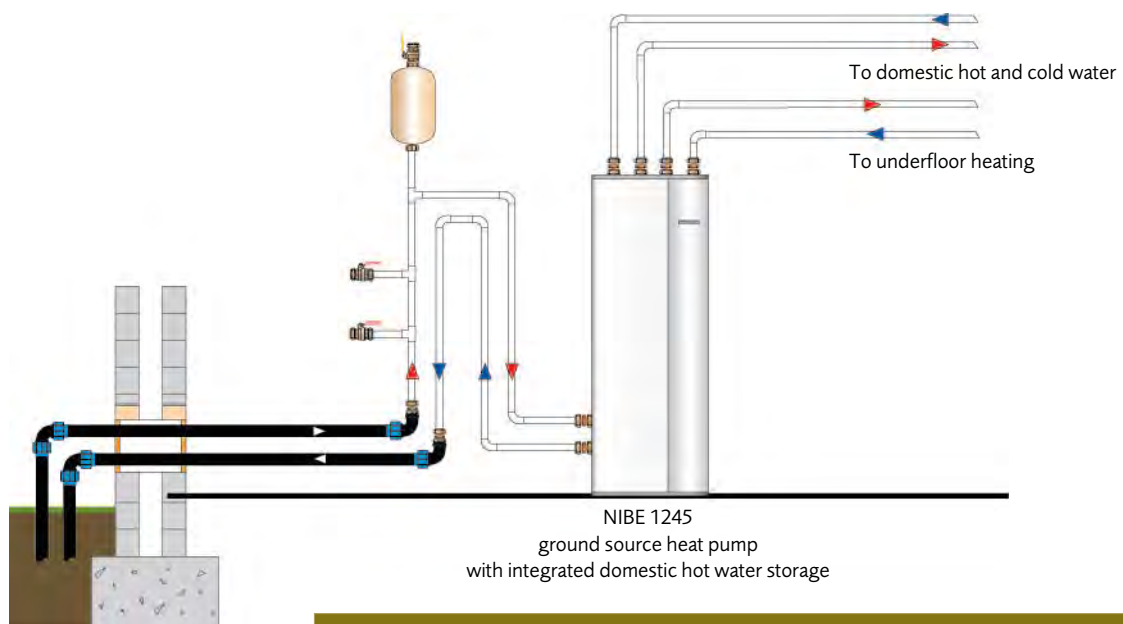
### NIBE F1245 – GROUND SOURCE HEAT PUMP WITH INTEGRATED DOMESTIC HOT WATER

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 with heat production that is both safe and economical. For optimum performance connect to a low temperature heat distribution system such as underfloor heating. The 1245 can also be connected to solar panels.

The integrated water cylinder of the F1245 is manufactured in stainless steel as standard.

A control unit helps to 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.

**WARRANTY – 2 years**



To ground loops or borehole



TECHNICAL DATA		SINGLE-PHASE	
Model size: 1245 –	5	8	12
CoP at B 0/W 35*	4.1	4.4	4.3
Width	600mm		
Depth	625mm		
Net weight	310kg	325kg	335kg
Headroom needed for installation	1800mm (1950mm)		
Hot water tank capacity	180 litres		

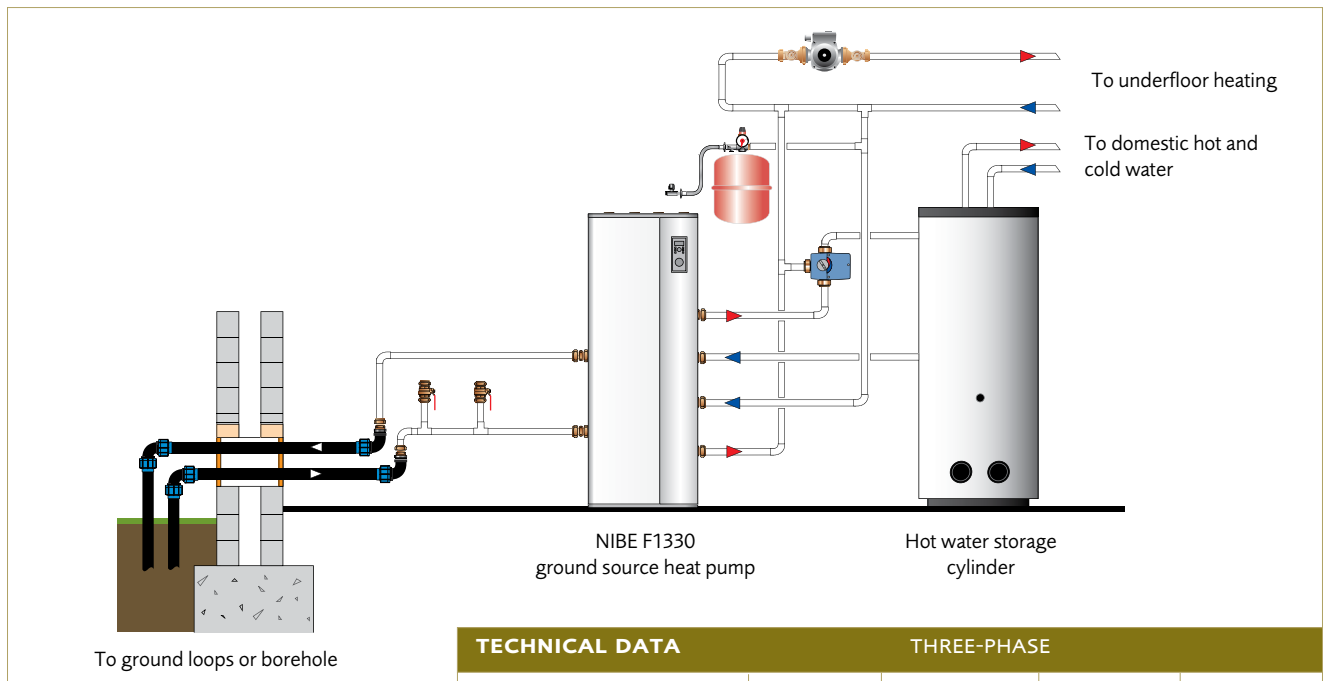
\* In accordance with EN 14511 for heat source entry at 0°C / hot water flow at 35°C.

## NIBE F1330 – GROUND SOURCE HEAT PUMP

The F1330 is an advanced ground source heat pump for large residential and commercial installations such as apartment blocks and large industrial plants. Horizontal ground collectors or boreholes can be used as an energy source. The F1330 is a flexible product with advanced control equipment that offers a multitude of system solutions. The unit can run at two different flow temperatures – if necessary with double heat curves. This ground source heat pump can be controlled in a heating system as either a "master" or "slave".

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

WARRANTY – 2 years



TECHNICAL DATA	THREE-PHASE			
Model size: F1330 –	22	30	40	60
CoP at B 0/W 45*	3.4	3.4	3.3	3.3
Height	1625 without adjustable feet (30–50mm)			
Width	600mm			
Depth	625mm			
Net weight	315kg	338kg	356kg	350kg

\* In accordance with EN 14511 for heat source entry at 0°C / hot water flow at 45°C.

# TECHNICAL information

## AIR SOURCE HEAT PUMPS

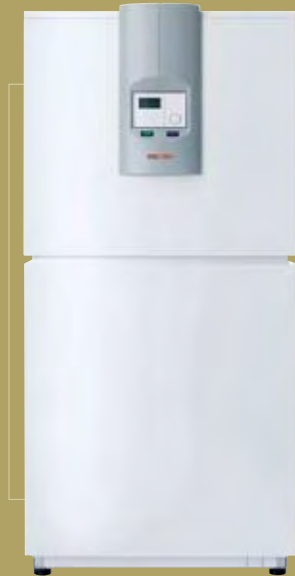
### STIEBEL ELTRON

#### STIEBEL ELTRON WPL IK COMPACT SERIES – INDOOR AIR SOURCE HEAT PUMP

The WPL IK air source heat pump is ideally suited to energy-efficient new-build houses with a floor area of up to 160m<sup>2</sup>. Its modern design, quiet operation and high performance mean it is easy to live with and makes the most of available space.

This complete package is supplied with: air hoses, heating circuit pump, expansion vessel, integral electric backup heater, safety modules and control systems. It can provide a heating flow temperature of up to 60°C and is quick and easy to install.

**WARRANTY** – 2 years + 5 year optional extension.



#### STIEBEL ELTRON WPL AS COMPACT SERIES – OUTDOOR AIR SOURCE HEAT PUMP

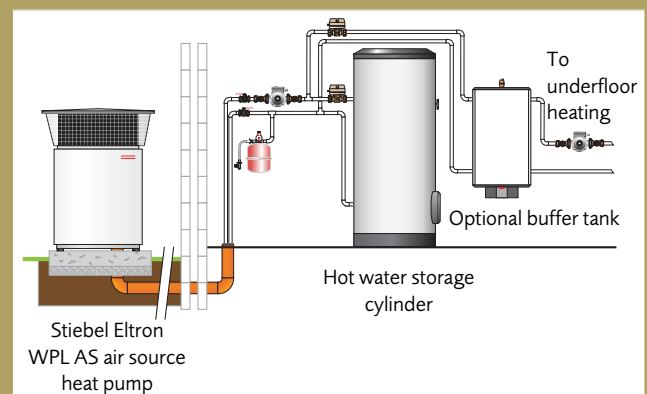
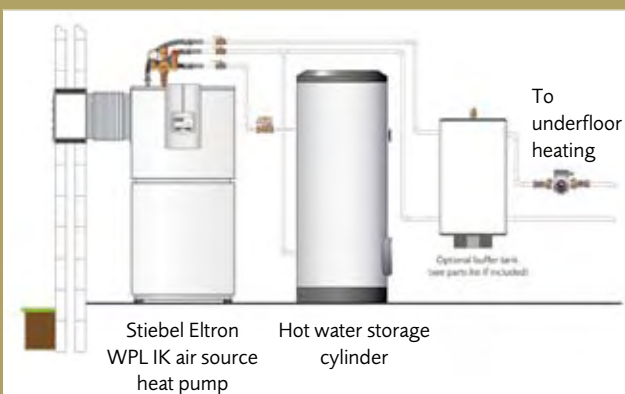
The WPL AS air source heat pump is the outdoor variant of the Compact Series ideally suited to energy-efficient new-build houses with a floor area of up to 160m<sup>2</sup>. Its quiet operation means it is unlikely to disturb occupants and the modern design and high performance make it easy to live with.

Under its clean external lines the WPL AS hides innovative technology, with an electronic expansion valve to ensure optimum control of all internal processes. Electrical and plumbing connections are made through the base.



The unit operates in temperatures as low as -20°C and as high as 30°C and can provide flow temperatures of up to 60°C. It also has a factory-fitted immersion heater as standard.

**WARRANTY** – 2 years + 5 year optional extension



TECHNICAL DATA	WPL 7 IK (internal)	WPL 10 IK (internal)
Model size: WPL IK –	3kW	6.7kW
CoP at A7/W 35*	3.6	3.3
Height	1245mm	1668mm
Width	967mm	778mm
Depth	1122mm	925mm
Net weight	212kg	212kg
Start current	35A	43A
Running current (max)	6.6A	9.2A

TECHNICAL DATA	WPL 7 AS (external)	WPL 10 AS (external)
Model size: WPL IK –	3kW	6.7kW
CoP at A7/W 35*	3.3	3.3
Height	1245mm	1245mm
Width	967mm	967mm
Depth	1122mm	1122mm
Net weight	182kg	182kg
Start current	35A	30A
Running current (max)	6.6A	9.2A

## STIEBEL ELTRON WPL COMFORT SERIES – INDOOR AIR SOURCE HEAT PUMP

The WPL can be fitted either inside or outside of the property and, in either case, its quiet operation means it is unlikely to disturb occupants. The internal version has a robust top casing to which ductwork is connected before being routed through a wall to the outside.

Under its clean external lines the WPL hides innovative technology, with an electronic expansion valve to ensure optimum control of all internal processes.

The unit operates in temperatures as low as -15°C and as high as 40°C and can provide flow



temperatures of up to 60°C. It also has a factory-fitted backup immersion heater as standard.

**WARRANTY** – 2 years + 5 year optional extension.

## STIEBEL ELTRON WPL COMFORT SERIES – OUTDOOR AIR SOURCE HEAT PUMP

The WPL can be fitted either inside or outside of the property and, in either case, its quiet operation means it is unlikely to disturb occupants. The external version (as illustrated) has a robust casing to direct the air flow and electrical and plumbing connections are made through the base.

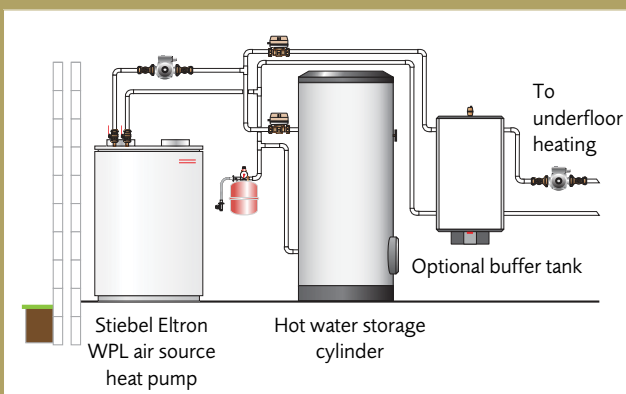
Under its clean external lines the WPL hides innovative technology, with an electronic expansion valve to ensure optimum control of all internal processes.

The unit operates in temperatures as low as -15°C and as high as

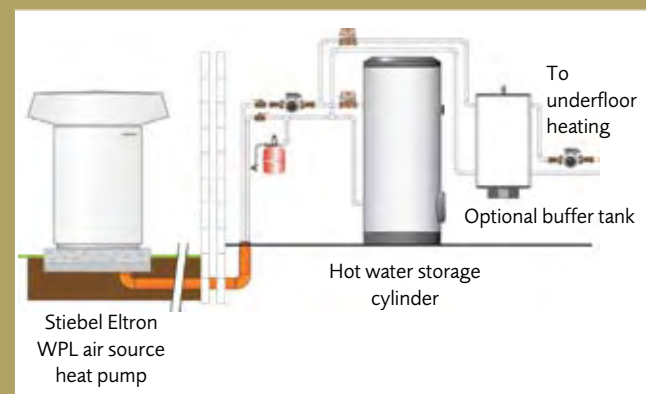


30°C and can provide flow temperatures of up to 60°C. It also has a factory-fitted backup immersion heater as standard.

**WARRANTY** – 2 years + 5 year optional extension



TECHNICAL DATA	Single phase		3-phase
Model size: WPL –	13 (7kW)	16 (9kW)	23 (12kW)
CoP at A7/W 35*	3.4	3.7	3.5
Height (with ducts)	1160mm (2070mm)		
Width	800mm		
Depth	1240mm		
Net weight	210kg	220kg	225kg
Start current	35A	45A	30A
Running current (max)	10.5A	12.2A	10A



TECHNICAL DATA	Single phase		3-phase
Model size: WPL –	13 (7kW)	16 (9kW)	23 (12kW)
CoP at A7/W 35*	3.4	3.7	3.5
Height (with cowling)	1434mm		
Width	1280mm		
Depth	1240mm		
Net weight	210kg	220kg	225kg
Start current	35A	45A	30A
Running current (max)	10.5A	12.2A	10A

\* In accordance with EN 255 for heat source entry at 7°C / hot water flow at 35°C. The electric input for circulation pumps is not included.



### HITACHI YUTAKI – AIR SOURCE HEAT PUMP

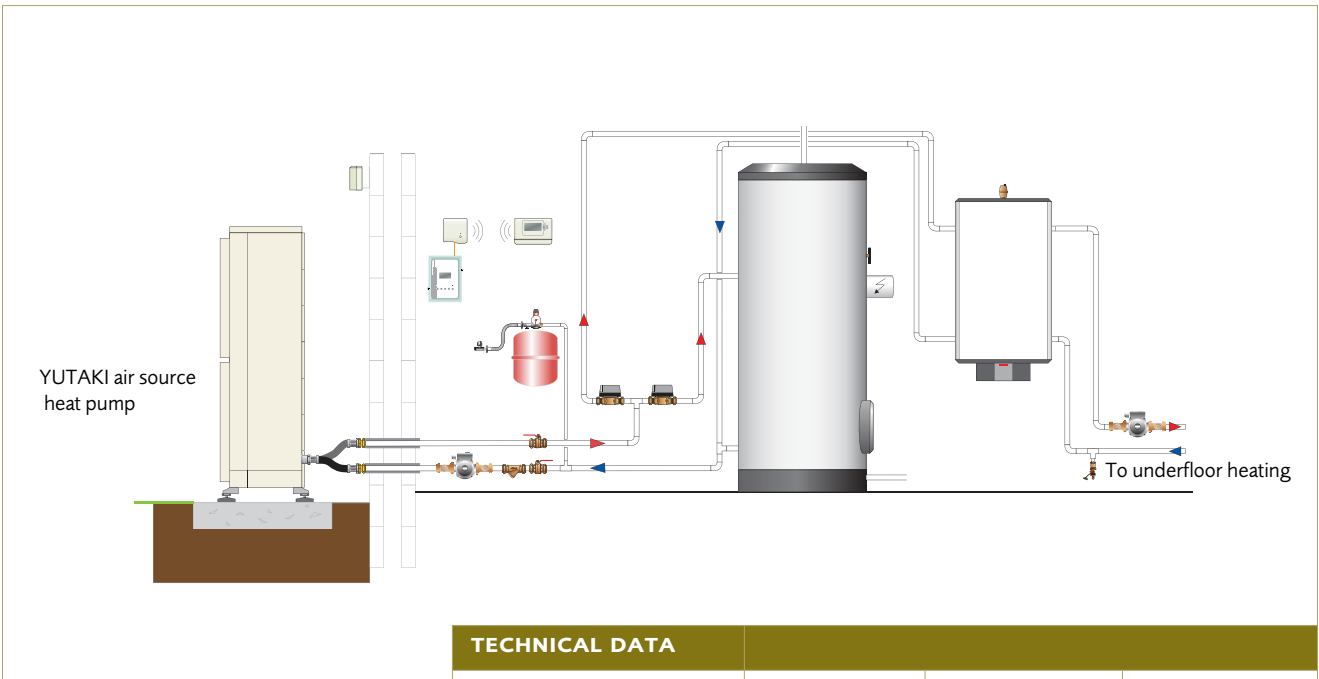
The YUTAKI unit is made from quality materials and manufactured to the highest British and European standards.

As an air source heat pump, the YUTAKI transforms a natural resource into cost-effective heating energy able to supply different types of heating systems such as underfloor heating and radiators.

The unit incorporates the latest inverter compressor technology. This ensures that the compressor at the heart of the unit is modulated to give optimum performance and reduced energy consumption by producing only the exact amount of heat required at the time. By reducing on/off 'cycling' the life of the internal compressor is extended.

The YUTAKI is available with 7kW, 9kW and 11kW outputs to suit a range of properties.

**WARRANTY – 5 years**



**HITACHI**  
Inspire the Next

TECHNICAL DATA			
Model size:	7kW	9kW	11kW
CoP at A 7/W 35*	4.28	4.06	4.06
Height	1480mm		
Width	1250mm		
Depth	444mm		
Net weight	150kg	150kg	155kg
Running current (max)	14A	19A	27A

\* In accordance with EN 255 for heat source entry at 7°C / hot water flow at 35°C. The electric input for circulation pumps is not included.

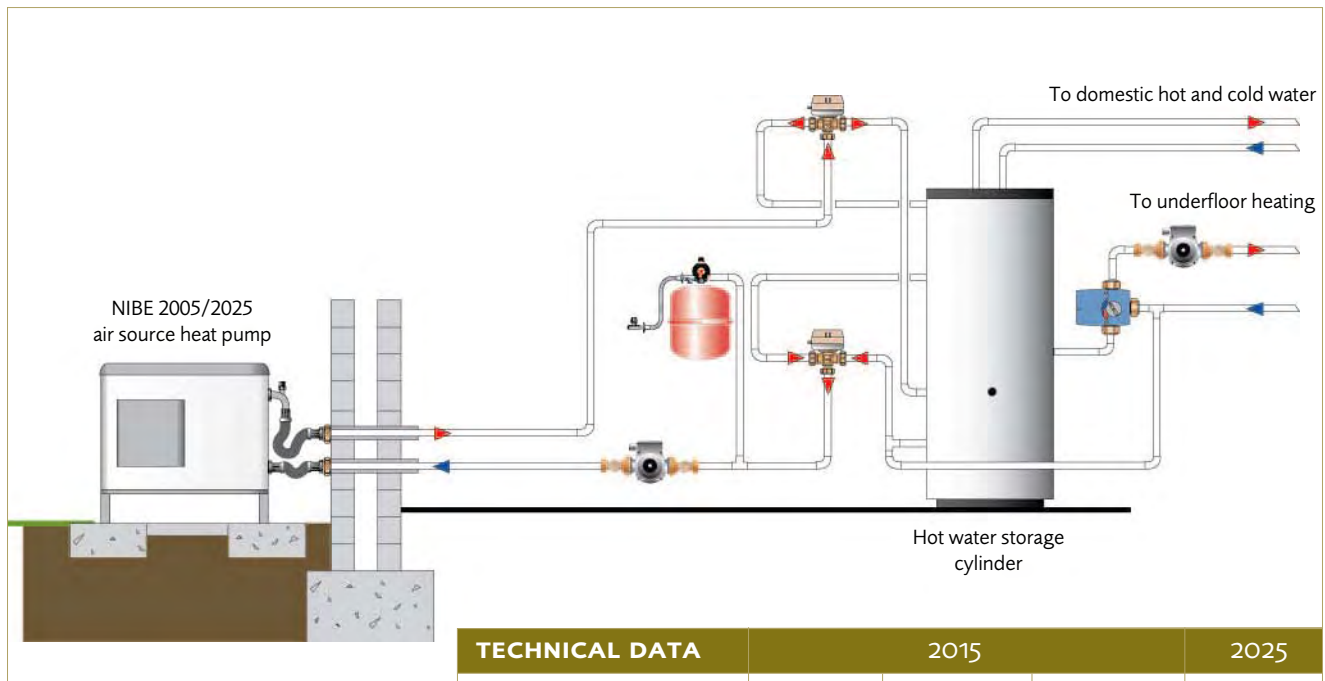
## NIBE F2015 AND F2025 – AIR SOURCE HEAT PUMPS

NIBE F2015 and F2025 can both heat hot water and provide space heating even at very low outdoor temperatures.

The units are designed for water based heating systems such as underfloor heating and can be used in conjunction with most electric, gas or oil-fired boilers. The heat pump includes an integrated, advanced control system for optimal control. NIBE air source heat pumps work in conjunction with an indoor controller, the SMO10, or the VVM300 combined cylinder and controller. The exceptionally efficient scroll compressor operates at temperatures down to -15°C for the 2025 and -10°C for the 2015.

Accessories such as extra shunt group and pool control can be connected if the SMO is present. Using accessory KVT 10, the condensation water that is created can be collected and routed to a suitable drain.

WARRANTY – 2 years



TECHNICAL DATA	2015			2025
	Single Phase 6kW	Single Phase 8kW	Single Phase 11kW	Two Phase 14kW
CoP at A 7/W 35*	4.21	4.15	3.95	3.91
Height with adjustable feet	1045mm			
Width	1200mm			
Depth	520mm			
Net weight	120kg	126kg	132kg	140kg

\* In accordance with EN 14511 for heat source entry at 7°C / hot water flow at 35°C. The electric input for circulation pumps is not included.



## NIBE 200P & 360P – EXHAUST AIR HEAT PUMPS

Nu-Heat's exhaust air heat pumps combine  
**HEAT RECOVERY & CONTROLLED VENTILATION**  
 into a **COMPACT, ENERGY-SAVING UNIT**  
 for **ALL** your **HEATING**  
 & **DOMESTIC HOT WATER** needs



### BENEFITS OF EXHAUST AIR HEAT PUMPS

- No complications or costs associated with the installation of oil or gas services
- No boiler flue requirements
- No skilled maintenance requirements
- Controls ventilation
- All the convenience of direct electricity but with heat pump efficiency
- Complies with Building Regulations' SAP calculations
- Ideally suited to large apartments and smaller houses
- Provides hot water for all heating and domestic use.



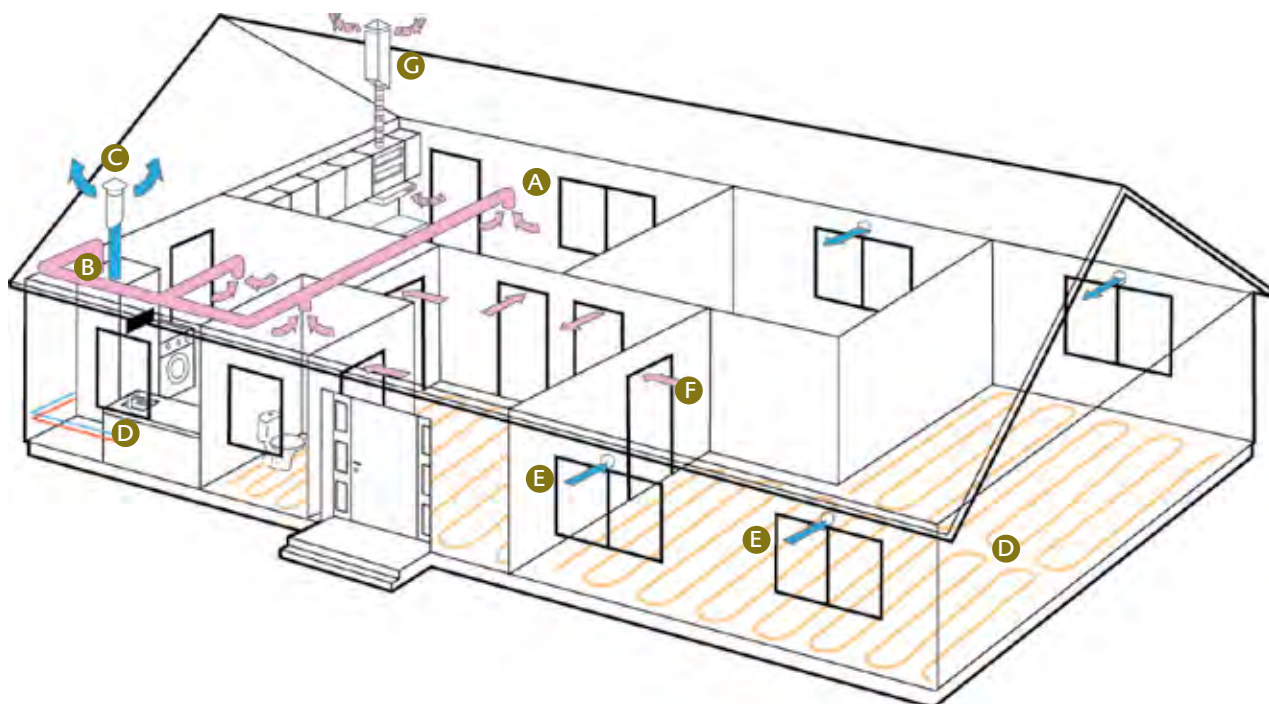
TECHNICAL DATA	200P	360P	410P
Height (excl. feet 15-40mm)	2095mm	2095mm	2095mm
Required ceiling height	2185mm	2185mm	2185mm
Width	600mm	600mm	600mm
Depth	615mm	615mm	615mm
Net weight / Operating weight	195kg / 435kg	205kg / 445kg	205kg / 440kg
Total water volume	240 litres	240 litres	240 litres



THE EXHAUST AIR HEAT PUMP  
 SATISFIES **10-20%** renewables  
 requirement for

**PLANNING  
 CONSENT**

# EFFICIENT HEATING, domestic hot water and CONTROLLED VENTILATION



## PRINCIPLE OF OPERATION

- A. The warm inside air (extraction) is drawn into the ventilation system.
- B. Warm extract air is supplied to the unit for heat recovery.
- C. When the inside air has passed through the heat pump the discharge air is released outside. Before this, the heat pump has extracted so much energy from the exhaust air to produce heating and domestic hot water that the temperature of the discharge air is only about 0°C (depending on the system).
- D. The exhaust air heat pump supplies the house with domestic hot water and water for underfloor heating.
- E. Fresh outside air is supplied to the house through window trickle vents or external vent holes.
- F. Replacement air to the main extract rooms is supplied under the door or through overflow vent holes.
- G. Separate cooker extract duct.

# A CYLINDER for every SYSTEM

Nu-Heat supplies a comprehensive range of cylinders and buffer tanks to perfectly suit the system configuration and the expectations of the homeowner.

Models are available for straightforward underfloor heating systems, heat pump systems, solar thermal systems and any combination of the three.

Whether the requirement is for domestic hot water, heating or both, Nu-Heat will supply the correct product – ensuring that there is always sufficient hot water to meet demand.

All cylinders and buffer tanks supplied by Nu-Heat meet strict British and European standards and are covered by comprehensive guarantees.

The Nu-Heat Sales Team will be happy to discuss requirements and make recommendations based on individual projects.





### NU-HEAT CYLINDERS

#### ENERGYMASTER2™ THERMAL STORE FOR GAS/OIL BOILERS

Reduce heating bills, improve energy efficiency and experience a faster performing, more responsive underfloor heating system with a Nu-Heat EnergyMaster2™ thermal store cylinder.

Its mains pressure hot water means the flow from the hot water tap is as powerful as that from the cold and there is no need for a storage tank in the roof.

#### HOT WATER

- Supplies safe domestic hot water at mains pressure high flowrate showers
- Fast recovery rate
- Instant hot water available from every outlet with the optional Aquastar™ hot water loop

#### HEATING

- Faster performing underfloor heating
- Improved boiler efficiency
- Improved energy efficiency
- Only 2.5kWh/day heat loss to improve a building's DER figure for Part L 2006 Building Regulations.

#### PERFORMANCE

- 210 cylinder yields at least 210 litres of water at an average temperature of 50°C and a flow rate of 27 litres/minute
- 300 cylinder yields at least 300 litres of water at an average temperature of 50°C and a flow rate of 40 litres/minute
- **25 Year Guarantee**



#### ENERGYMASTER2™ SOLAR FOR GAS/OIL BOILERS

Nu-Heat supplies a range of solar hot water cylinders suitable for use with its collector systems. From the sophisticated EnergyMaster2 Solar™ cylinder to more traditional dual coil cylinders, we will advise you on the model that best suits your requirements for both heating and domestic hot water.

The EnergyMaster2™ Solar has an integrated coil enabling indirect connection to one or more solar panels. It is available in 210 and 300 litre versions, both of which have dual thermostats for optimum control.

The EnergyMaster2™ Solar can also be fitted with an Aquastar2™ hot water loop.



#### AQUASTAR™ HOT WATER LOOP

The design of the Aquastar™ hot water loop allows easy connection to all cylinders supplied by Nu-Heat. This simple addition gives the luxury of instant hot water from every outlet, irrespective of its distance from the cylinder.

#### ADDITIONAL BENEFITS

- No water is wasted waiting for it to run hot when a tap is opened
- Offers improved economy on metered water supplies
- Environmentally friendly

**REDUCE** heating bills, **IMPROVE** energy efficiency & experience a **FASTER PERFORMING MORE RESPONSIVE** underfloor heating system with a **NU-HEAT ENERGYMASTER2™** thermal store cylinder

## STIEBEL ELTRON

### STIEBEL ELTRON SBB WP & SBB WP SOL – CYLINDERS

Available in 300, 400 and 500 litre versions, the SBB WP cylinders have a large coil to achieve effective, efficient hot water production with Stiebel Eltron heat pumps. The 400 and 500 litre variants and the SBB WP SOL also have a second coil for use with solar thermal, or which can be joined in series with the first coil for larger heat pumps.

All SBB cylinders have a special enamel coating to resist the buildup of limescale.

An electric boost immersion can be fitted if required.



TECHNICAL DATA	SBB WP		SBB WP SOL	
	300 litre (301)	300 litre (302)	400 litre	500 litre
Model size:	300 litre (301)	300 litre (302)	400 litre	500 litre
Heat exchanger top	3.2m <sup>2</sup>	4.8m <sup>2</sup>	4.0m <sup>2</sup>	5.0m <sup>2</sup>
Heat exchanger bottom	–	–	1.4m <sup>2</sup>	1.4m <sup>2</sup>
Height	1700mm	1700mm	1875mm	1976mm
Width Ø	700mm	700mm	750mm	810mm
Net weight	156kg	184kg	219kg	260kg

**SBB WP** cylinders have a **LARGE COIL** to achieve **EFFECTIVE, EFFICIENT HOT WATER** production with **STIEBEL ELTRON** heat pumps



### NIBE CYLINDERS FOR GROUND OR AIR SOURCE HEAT PUMPS

Nu-Heat supplies a full range of NIBE cylinders designed to work in conjunction with NIBE heat pumps to optimise hot water storage and heat pump efficiency. Units are available with capacities of 300 and 450 litres. Nu-Heat will advise on the most suitable cylinder for your project based on the size of the property, heating load and number of bathrooms.

A solar variant is also available.

**NU-HEAT will ADVISE on the MOST SUITABLE cylinder for your project**



### NIBE VVM300 CYLINDER

An air source heat pump combined with a VVM300 cylinder creates a complete heating and hot water solution.

The VVM300 is a domestic cylinder and electric boiler. Only when the outside temperature drops below a pre-set temperature does the electric heater in the VVM300 activate to supplement the heating or hot water production on the coldest days.

The unit consists of a double-jacketed cylinder, two immersion heaters and intelligent weather-compensation control that makes for easy operation at the same time as enabling the electric boiler to run as efficiently as possible.

The VVM300 is simple to install with all pipe connections easily accessible. Included is a complete set of pressure-relief valves for both the water heater and boiler sections. In addition, it is equipped with climate-controlled mixing valves with outdoor and indoor flow sensors, a shunt valve, circulation pump and expansion vessel. The unit is fully weather-compensated to maximise efficiency and save on annual running costs.

#### TECHNICAL DATA FOR VVM300

	Single Phase VVM300
Height (excl. feet 15-40mm)	1880mm
Required ceiling height	2000mm
Width	600mm
Depth	615mm
Net Weight	160kg
Volume total	280 litres

# SOLAR THERMAL

an **INTEGRATED** solution

## SOLAR THERMAL

During daylight hours the sun's radiation warms the earth – even when the sky is overcast. This energy can be captured and used to heat water. Solar energy is an unlimited resource that produces no harmful emissions and requires no transportation or supply pipelines. Most households can generate a good proportion of their domestic hot water needs using Nu-Heat's modern, maintenance free, well engineered solar energy system. This figure can be as high as 100% in the summer, but falls during the cooler months giving an average annual provision of up to 60%. Every Nu-Heat quote states the estimated annual proportion of hot water the solar collector will supply, based on the individual demand for the household.



*Nu-Heat 'In-roof' solar kit*

## INTEGRATED HEAT PUMP AND SOLAR SYSTEMS

Nu-Heat also offers a flexible renewables package of integrated heat pump and solar collector(s) that will cover the heating and domestic hot water needs of a wide range of properties.



### THE COMPLETE PACKAGE

Nu-Heat supplies a complete package with all of the parts needed to install the system\*. Our range of collectors fully integrates with both our underfloor heating system and heat pumps or can be fitted independently. All components are designed, manufactured and rigorously tested to the highest standard. Units are pre-wired, so connection and operation can be completed in a short time.

\* Excludes copper pipe and electrical wiring.

### COLLECTORS

Our flat plate collectors utilise the latest collector technology including prismatic glass and titanium oxide absorber coating, both of which maximise performance. The metal sheet absorber sits between the glazing and insulation and collects the radiation that passes through the glass. This heat is transferred to the water/glycol mix which flows through the copper pipes in the panel. The fluid is then pumped along circulating pipes before passing through a heat exchanger in the hot water cylinder or thermal store, where the heat is made available.

### SYSTEM CONTROL

The integrated solar pumping station supplied with every system has simple-to-operate controls. It accurately measures the temperature of the roof panels ensuring that free energy is harvested whenever the hot water cylinder can accept it. Full thermostatic control of all elements of the system is important to prevent heat from the cylinder's store being pumped back through the panels and lost to the atmosphere. It also acts as a safety feature to prevent cylinder overheating.

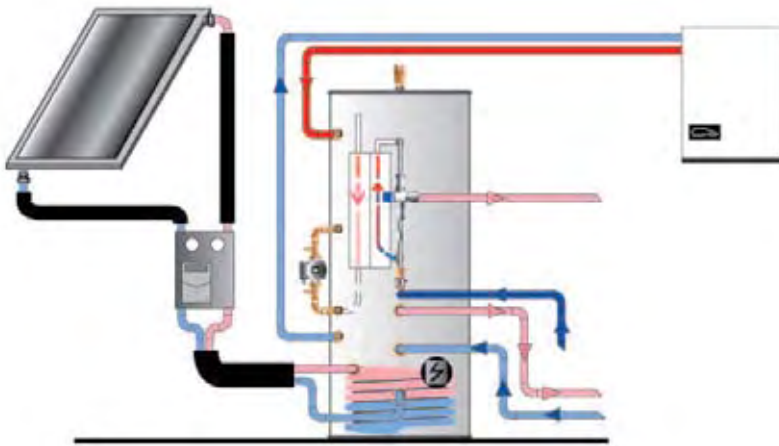


CERTIFICATE NUMBER NIC1097

Our **SOLAR PANELS**  
**FULLY INTEGRATE**  
with both our **UFH** systems & **HEAT PUMPS**  
or can be fitted **INDEPENDENTLY**

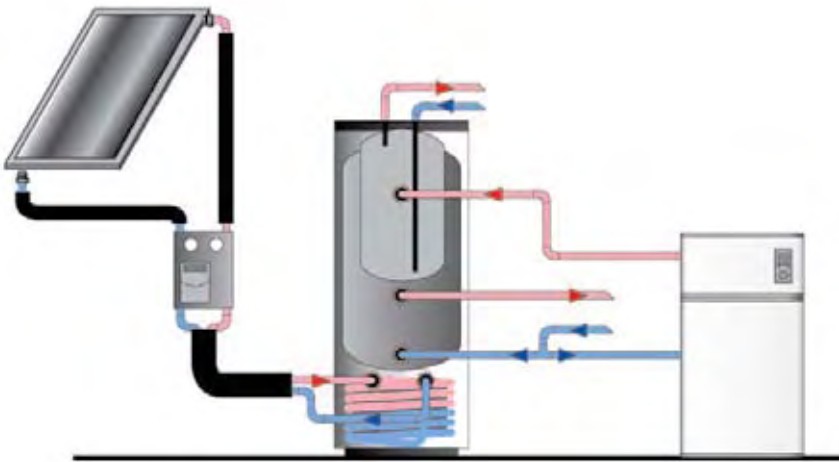
## SYSTEM DESIGN

Up to eight collectors can be fitted from one pump station, so even the largest project can be catered for. Nu-Heat's experienced designers will advise on the correct system configuration to fully achieve optimum efficiency for domestic hot water depending on your requirements. The Nu-Heat design and sizing process uses its own unique calculation package to specify the ideal configuration of cylinder, solar collectors and ancillary components for the project. Our specification process has been developed in conjunction with European solar design software, TSol, as well as the Government's SAP Building Regulations' assessment criteria.



### TYPE SCO1

This system is configured for use with conventional boilers to optimise solar energy harvested for domestic hot water production whilst also contributing to the underfloor heating in spring and autumn, further reducing energy bills.



### TYPE SCO2

This system is configured to optimise solar energy harvested for domestic hot water production whilst also contributing to the space heating in spring and autumn, running in conjunction with a ground source or air source heat pump. It can make a valuable contribution to achieving Level 4 of the *Code for Sustainable Homes*.



## NU-HEAT INDIVIDUALLY sizes each SOLAR SYSTEM

*Nu-Heat 'On-roof' solar kit*

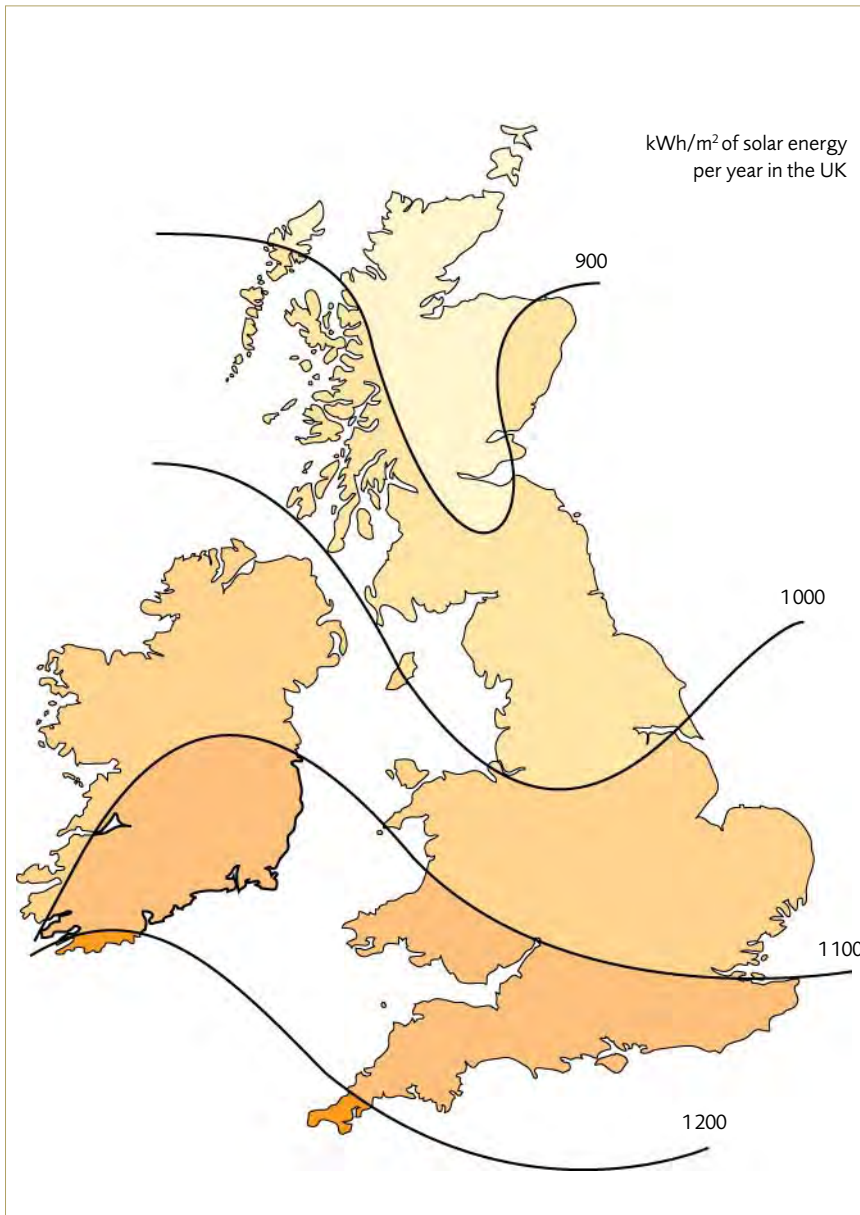
### SOLAR BENEFITS

- Energy-efficient renewable technology – helps to protect the environment
- Produces up to 60% of a household's annual hot water requirements
- Suitable for all homes
- Simple, reliable technology
- Both roof-mounted and integral flat panel models available
- Low-cost investment
- Quick and easy to install
- Suitable for both domestic hot water and underfloor heating
- Supported by Government grants of up to £400 towards the cost of installation

### Technical data

Height/Width/Depth (mm)	1820/1200/109
Overall collector area (m <sup>2</sup> )	2.18
Absorber area (m <sup>2</sup> )	1.96
Weight empty (kg)	35
Solar radiation absorption (%)	95
Efficiency coefficient $a_1$ (W/m <sup>2</sup> K)	3.67
Efficiency coefficient $a_2$ (W/m <sup>2</sup> K)	0.0157
Certification EN12975	DIN, Solar keymark

# GENERATE UP TO 60% OF THE DOMESTIC HOT WATER

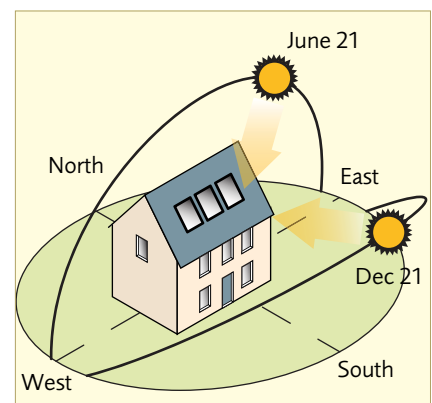


## WHERE SHOULD COLLECTORS BE SITED?

Any roof with a 0° (flat) to 60° slope and facing between southeast and southwest is suitable for solar collectors. The minimum angle for mounting the panels is 22° with the optimum angle between 30° and 45°. Additional collectors can be fitted to compensate if the orientation is less suitable but north-facing roofs should be avoided.

## HOW MANY SOLAR COLLECTORS ARE NEEDED?

Nu-Heat individually sizes each solar system. The result will vary depending on hot water demand, orientation and angle of the panels and the amount of overshadowing present from trees and buildings.



### SOLAR SYSTEM ARCHITECTURE

1. Energy from the sun warms fluid in the solar collector panels.
2. When the fluid reaches a pre-set temperature it is pumped to a coil in the bottom of the solar cylinder.
3. The solar coil heats the cylinder water for domestic and, occasionally, heating use.
4. If the cylinder's temperature sensor detects that the solar panel has not collected enough energy to heat the water to its pre-set temperature, it allows the main heat source to top it up, (i.e boiler).
5. The control panel can be set to optimise efficient use of the solar collectors and ensure hot water is available at the times you need it.

**NU-HEAT** provides a  
**FREE QUOTATION INDIVIDUALLY**  
**DESIGNED** to meet  
your **REQUIREMENTS**





National Training Awards  
Winner of the Year 2009

#### INSTALLATION OPTIONS & SUPPORT

Nu-Heat's ultimate objective is a successful installation and efficient performance. This is why we take such meticulous care in recording project parameters and producing bespoke design drawings with detailed electrical integration.

There are many installation options from self install through to employing the services of a specialist contractor, for which Nu-Heat has a trained nationwide network. Whatever your installation route, Nu-Heat provides a comprehensive installation support service.

For installers wishing to undertake training Nu-Heat also offers a full range of courses at its accredited Training Centre. See [www.nu-heat.co.uk/training](http://www.nu-heat.co.uk/training) for course availability.

#### Underfloor Heating –

2 day – NICEIC accredited

#### Heat Pumps –

3 day – NICEIC accredited

#### Solar Thermal –

3 day – NICEIC accredited

Plus approved pre-requisite courses in Energy efficiency, Unvented Hot Water G3, and Water Regs 1999, as well as a one-day introduction course in Underfloor Heating.

Nu-Heat provides  
**UNRIVALLED**  
customer  
**SUPPORT**





## TECHNICAL SPECIFICATION

All components supplied meet the relevant standards required:

**Optimiser™:** The Optimiser™ design package has been developed by Nu-Heat and is used to calculate the necessary tube and flow rates required for optimum system. Performance is based on BS EN 1264 and BSRIA testing.

**Fastflo® tubing:** Fastflo® cross-linked polyethylene tube (PE-Xc) with oxygen diffusing barrier meets all relevant European standards, manufactured in the EEC to DIN 4726.

**Alupex 18mm pipe:** Alupex™ plastic plumbing tube has an integral aluminium core and conforms to DIN 4726 and all other relevant European standards.

**Pumps:** Pumps are supplied in varying sizes to suit system requirements. All conform to the relevant standards including BS1394 Part 2:1971.

**Thermostats:** All thermostats supplied conform to BS EN 60730-2-9 and, where applicable, EN 300-220-1, E.M.C. 89/336/EEC and 92/31/EEC, I.v.d. 73/23/EEC and 93/68/EEC.

**EnergyMaster2™ cylinder:** WRAS – Certificate No. 0603082

**Cylinder thermostat:** EN 60730-1, EN 60730-2-9.

**Aquastar™ hot water loop pump:** 98/37/EEC (EN 292), 89/336 EEC, (EN 50 081-1, EN 50 082-2), 73/23/EEC (EN 60 335-1, EN 60 335-2-51).

**Heat pumps:** The heat pumps supplied by Nu-Heat all conform to relevant standards including ISO 9001:2000 accreditation and ISO 9001 certification. Also, where applicable: EN 55 014-1:2000, A1:2001, A2:2002; EN 55 014-2:1997, A1:2001; EN 61000-3-2:2000; EN 61 000-3-3:1995, A1:2001; EN 61 000-3-11:2000; EN 61 000-6-1:2001; EN 61 000-6-3:2001; EN 60335-1: 2002, A11:2004; EN 60335-2-21:2003; EN 60335-2-40:2003, A11:2004, A12:2005; EN ISO 3834-2: (2005); EN ISO 15614-1: (2004); EN 287-1: (2004); EN 10 204: (2005); (EMC): 89/336/EEC; (LVD): 73/23/EEC, 93/68/EEC.

**Solar thermal collectors:** DIN EN 12975-1: 2006-06; DIN EN 12975-2: 2006-06.

In line with the company policy of product development, Nu-Heat reserves the right to supply different components of a similar high quality, to those illustrated in this brochure.

## WARRANTIES

Optiflo™ manifold – 2 years

Fastflo® floor heating tube – 25 years

Stiebel Eltron heat pumps (all) – 2 years  
+ 5 year optional extension

Hitachi heat pumps (all) – 5 years

NIBE heat pumps (all) – 2 years

Solar thermal collectors – 10 years;

EnergyMaster2™ & EnergyMaster2 Solar™ – 25 years;

Flexible stainless steel pipes & VPAS cylinder – 2 years;

All electrical parts – 2 years.

## INSURANCES

Professional indemnity – to £5 million

Products liability – to £5 million

Public liability – to £5 million



## WHY NU-HEAT?

Nu-Heat is proud to be the leading domestic warm water underfloor heating provider in the UK. From a standing start in 1992, we have achieved this position by an ever-increasing number of customers entrusting the design and supply of their underfloor heating systems to Nu-Heat.

Underfloor heating design is a serious business as many factors need to be considered – from the floor construction and floor covering through to the heat source, number of air changes and thermal heat loss of the building. Once installed, the underfloor heating system is embedded in the floor, therefore it is vital that the system is designed accurately. With this in mind, Nu-Heat has invested heavily in developing calculation software that incorporates all design criteria and allows us to offer customers our insurance-backed *Nu-Heat Design Guarantee*.



With the addition of heat pumps and solar thermal – the perfect partners for underfloor heating – Nu-Heat can supply a complete package with every component sourced, manufactured and tested to ensure compatibility, backed up with award-winning manuals, and bespoke design layouts and electrical diagrams detailing the whole system.

Training forms the backbone of the business; all Nu-Heat employees have a detailed understanding of our products allowing them to give informed advice to customers. Our new Training Centre, – the first in the country to offer NICEIC Accredited Training on Underfloor Heating, Heat Pump and Solar Thermal Installation – ensures that our quality systems are underpinned by the highest installation standards in the industry.

When viewed against the level of support, from pre-sale consultation, detailed and specific product literature, individual design and electrical drawings, through to technical support and ongoing customer care, Nu-Heat provides the most comprehensive and competitive system in the industry.



Whether you want an integrated system or separate underfloor heating, heat pump or solar quotations, to take advantage of our expertise, please forward a set of floor plans and we will prepare a comprehensive, no-obligation quotation. If more convenient, these can be emailed.

**Email:** [quote@nu-heat.co.uk](mailto:quote@nu-heat.co.uk)

**Post:** Nu-Heat UK Ltd., FREEPOST (EX49), Honiton, Devon, EX14 1BF.

**Fax:** 01404 549771

NU-HEAT DELIVERS

a system that works –  
HEATING & HOT WATER  
when and where they're needed



## CUSTOMER CARE is at the HEART OF OUR BUSINESS

### MORE INFORMATION

Nu-Heat has a comprehensive website with product downloads, floor construction details and videos.  
Visit [www.nu-heat.co.uk](http://www.nu-heat.co.uk) or **FREEPHONE 0800 731 1976** for further information.



**The Nu-Heat ONEZONE™ brochure –**  
for conservatories and single room extensions.

Freephone: 0800 731 1976

Website: [www.nu-heat.co.uk](http://www.nu-heat.co.uk)

Email: [info@nu-heat.co.uk](mailto:info@nu-heat.co.uk)

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Email: [info@nu-heat.co.uk](mailto:info@nu-heat.co.uk)



INVESTOR IN PEOPLE

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