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Tel: 01905 752640  
Fax: 01905 456445

### Spare Parts

Tel: 01905 752576  
Fax: 01905 754620

### Technical Helpline (Pre & Post Sales)

Tel: 0844 892 3366  
Fax: 01905 752741

### Renewables Technical Helpline

Email: [renewable.energy@uk.bosch.com](mailto:renewable.energy@uk.bosch.com)  
or telephone 0844 892 4010

### Training

Tel: 01905 752526  
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### Literature

Email: [literature@uk.bosch.com](mailto:literature@uk.bosch.com)  
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### Enquiries

Email: [service.mailbox@uk.bosch.com](mailto:service.mailbox@uk.bosch.com)  
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### Guarantee Registration

To register your Worcester guarantee,  
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telephone 0844 892 2552

Calls to the listed 0844 numbers are charged at up to 3 pence per minute from BT land lines.  
Calls from mobiles and some other networks may vary. Calls to and from Bosch Thermotechnology Ltd  
may be recorded for training and quality assurance purposes.

[www.worcester-bosch.co.uk](http://www.worcester-bosch.co.uk)

# THE INSTALLER'S CHOICE ENERGY PLUS SPECIAL 2011

Product news

Legislation update

Extended guarantee  
promotion



# Green, Greener,



# Greenstar.

By choosing a high efficiency Greenstar condensing boiler for your customers you're helping them to invest in proven Worcester quality and reliability. Today's Greenstar gas-fired range is greener and cleaner than ever, with lower NOx and CO<sub>2</sub> levels. And now, for a limited period, we're backing every Greenstar boiler with an additional **free** 1 year guarantee\*.

To find out more, call 0844 892 3366 or visit our website.

**1 YEAR**  
extra guarantee  
**FREE**  
with every  
Greenstar boiler\*

\*Purchased & installed between  
1st May & 31st August 2011.  
Terms and conditions apply.

**WORCESTER**  
Bosch Group

[www.worcester-bosch.co.uk](http://www.worcester-bosch.co.uk)

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Energy Plus Partners



## Welcome from Steve Lister

Welcome to this Energy Plus Event special edition of Installer's Choice.

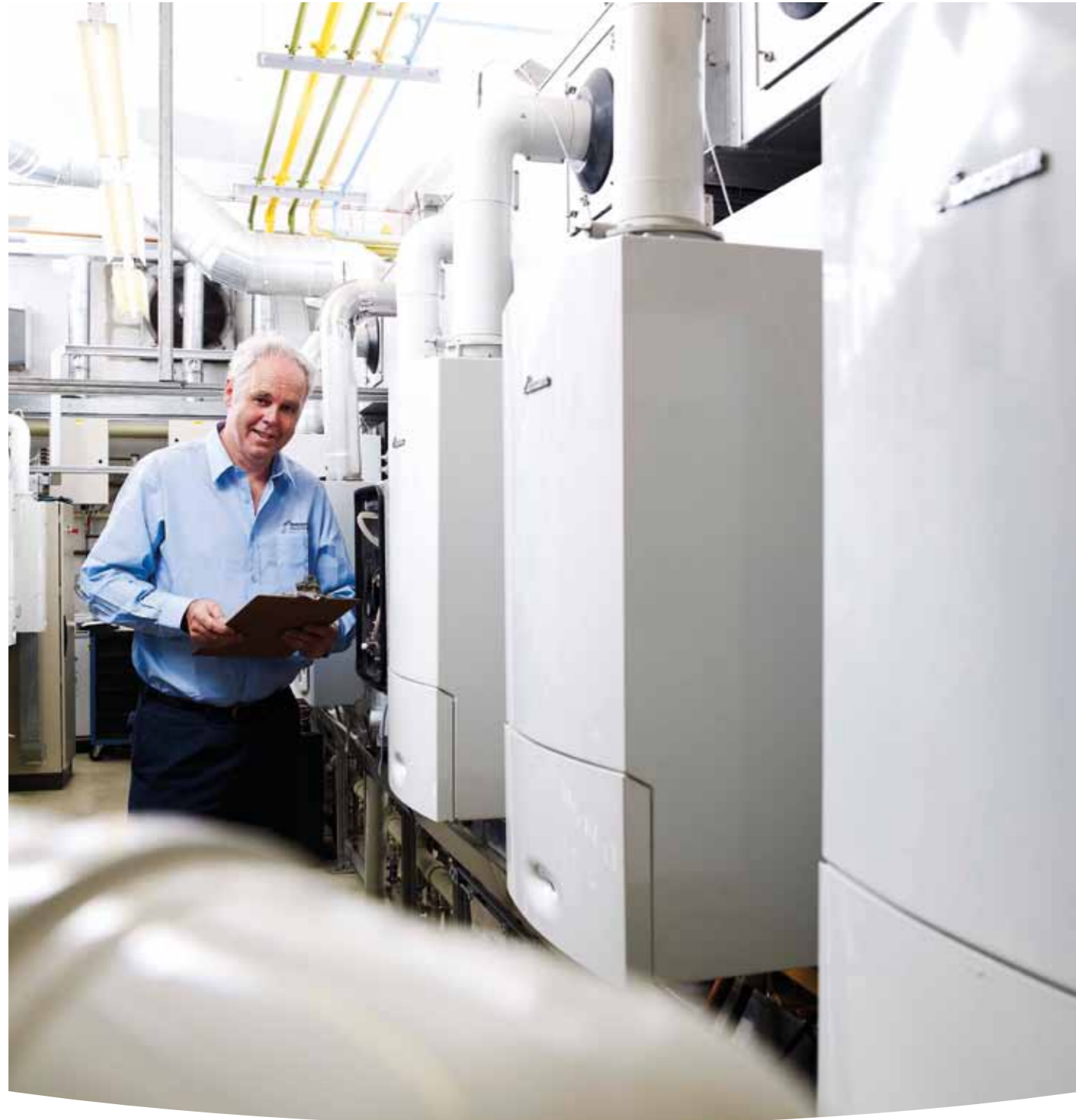
Thanks for your attendance today, we do hope you found it useful. The purpose of these events was to provide you with a unique opportunity to get up-to-date with our latest product news and find out all the latest developments from within the industry.

Included in this special edition we provide you with an overview of all the products you have seen to today, including our new Greenskies evacuated tubes and Greenstore twin coil cylinder series. There is an overview

of both the Renewable Heat Incentive and the Feed-in Tariff to update you on the current legislation planned by the Government. Our extended guarantee promotion is still running and offers an additional one year's guarantee on all of our Greenstar gas- and oil-fired boilers. Turn to the back page to find out more.

We hope you enjoy the issue.

**Steve Lister**  
Sales Director



## Greenstar range ‘greener’ than ever before

Reducing the CO<sub>2</sub> emissions of a property has, over the past couple of years, become increasingly important, especially in light of the introduction of the Code for Sustainable Homes. The Code works by allocating a certain amount of points for each environmental innovation and the more points you get the higher level of the Code you can achieve.

Historically, NOx emissions have been split into five categories, however in recent years, Level 5 has been split to introduce a new lower level of 40mg per kW hour which, within the Code, rewards the property or design with two points rather than one.

The latest versions of our Greenstar boilers with low NOx capability now

produce less than 40mg per kW hour of NOx, which means three tradeable credits can be achieved in Category 6, Pollution, to help meet the required level of the Code.

Low NOx options are now available for all of Worcester’s natural gas, low to mid output, combi models. The Greenstar 24i Junior, 28i Junior, 25Si and 30Si

combi are now supplied with a simple to install low NOx code plug, whilst the Greenstar 12Ri and 12i System boilers will perform as low NOx boilers as standard. In all cases NOx emissions are reduced whilst still achieving a SEDBUK A rating.

In addition to helping achieve a further point in the Code, we are also preparing for the introduction of the Energy related Products Directive (ErPD), which has set criteria benchmarks that are more stringent than ever before, with regards to energy efficiency. We are therefore developing products now that will comply with forthcoming regulations.

As standard, we now feature the EMS bus connection to allow for the introduction of weather compensation controls. This communications ability means boilers can now not only receive a signal to indicate whether a boiler needs to turn on or off, to satisfy demand, but also indicate at what flow temperature a boiler should operate.

Intelligent controls are a new generation of heating controls which offer far more than simple on/off control. Two-way communication between the boiler and the room thermostat, or weather compensation controller, means that the controls can help to provide efficient heating even when requirements change.

For example, by connecting a Greenstar i System boiler to a Greenskies solar thermal heating system with a FW100

### Greenstar product specification

Greenstar model	12Ri	12i System	24i Junior	28i Junior	25Si	30Si
System type	Regular	System	Combi	Combi	Combi	Combi
Height (mm)	600	710 (max)	710 (max)	710 (max)	710 (max)	710 (max)
Width (mm)	390	400	400	400	400	400
Depth (mm)	270	330 (max)	330 (max)	330 (max)	330 (max)	330 (max)
DHW flow rate @ 35°C (l/min)			9.8	11.4	10.2	12.3
Output to central heating kW (Btu/h)	4-12 (13,648-40,944)	3-12 (10,236-40,950)	7.2-24 (24,566-82,000)	7.2-24 (24,566-82,000)	7.2-24 (24,566-82,000)	7.2-24 (24,566-82,000)
Max output to central heating with low Now code plug (kW)			13	13	13	13
NOx classification (mg/kWh)	39	39	66	66	66	66
NOx classification with low NOx code plug (mg/kWh)			38	38	38	38
NOx class	5	5	5	5	5	5

*“The latest versions of Worcester’s Greenstar boilers with low NOx capability now produce less than 40mg per kW hour of NOx, which means three tradeable credits, can be achieved in Category 6, Pollution, to help meet the required level of the Code.”*

*Martyn Bridges, director of marketing and technical support*

weather compensation controller, ordinarily the external weather compensator would only have picked up the outside temperature from the north facing wall, where the weather compensator was located.

However, now it will also pick up the temperature of the south facing Greenskies solar panels, meaning the

homeowner now has the ability to see and control the required boiler output from both, via a temperature controller in the property’s hallway. Homeowners can now select and receive three different temperatures from three separate areas all over the house; giving a more accurate assessment of the actual temperature and solar gain.

### Intelligent control capability

Intelligent Control Option	Boiler			
	i System	Si Combi	CDi System	CDi Combi
FR10 room thermostat	✓	✓	✓	✓
FR110 room thermostat	✓	✓	✓	✓
FW100 weather compensation controller	✓	✓	✓	✓
ISM1 intelligent solar module	✓		✓	



## Greenskies solar panels

We are proud to offer solar panels for hot water heating which allow the consumer to take advantage of renewable and sustainable energy.

Our Greenskies solar panels harness the power in both direct and diffused sunlight and convert the energy to heat for the production of hot water for the home.

They have been designed to complement existing heating systems which use a store of hot water in a cylinder. The existing cylinder is exchanged for a cylinder with two heat exchanger coils; one from the boiler in the property and a second from the solar panels.

Our Greenskies solar panels are the perfect partner to our range of condensing Greenstar regular and system boilers, with different models available in both gas and oil, which require a separate cylinder for the storage of hot water. When used together, a Greenstar boiler and solar system provide a highly efficient system to give heating and hot water comfort. A typical well sized solar system

should provide around 50-70% of the domestic hot water requirements of a home, representing a very worthwhile

saving on hot water heating costs. The remaining hot water requirement is provided by the boiler.

Features	Benefits
Efficient collector with 95% absorption rate	Increases performance of panel
Robust panel design	Minimises risk of damage and prolongs service life
Environmentally friendly	All materials recyclable, environmentally conscious manufacture
Quick fitting	Labour and money saving
Easy to fit	Reduces complexity of installation
Simple to use controller	Allows quick setting of functions
Selective coating on absorber	Increases collector performance even on cloudy days
Strong solar glass cover	Protects collector from damage

## Greenskies Solar Evacuated Tubes

A new level of energy efficient heating and hot water

The Greenskies solar offering will be extended with the addition of two new high performance evacuated tube collectors to the current flat panel range. Greenskies Solar Evacuated Tubes take advantage of the superior performance of vacuum tube solar collectors to deliver high heat outputs with excellent energy efficiency, even at low light intensities. They are also able to achieve higher temperatures, which means they may make a small contribution to space heating, as well as generation of domestic hot water.

The higher efficiency of the Greenskies Solar Evacuated Tube design is partly the result of the higher insulation properties of evacuated glass tubes, compared to flat plate collectors. This is particularly important to overall performance when there is a high temperature difference between the absorber and outside air.

These are combined with high performance Compound Parabolic Concentrator (CPC) mirror technology to reflect solar energy to the absorber area. The geometry of the ceramic-coated CPC is optimised to ensure that even diffused radiation from a low angle is directed to the absorber, thus maximising efficiency. This enhanced absorption capability enables compact designs with a smaller surface area to be used, so that less roof space is used and the finished installation is less obtrusive.



Features	Benefits
6 and 12 tube variants	Flexible sizing combination opportunities with the ability to combine the 6 and 12 tube options
CPC mirror technology	Optimal capturing of direct/diffuse irradiation. 360° absorption
The absorber is integrated into the evacuated glass tube	Less roof space required per outlet

## Greenstore Twin Coil Cylinder Series

A future-proofed way to store hot water

The Greenstore TC Series is a future-proofed and extended range of our storage cylinders that offers full compliance with both current and future legislation. As such, the Greenstore TC Series cylinders exceed the energy efficiency performance of most other cylinders on the market, addressing the growing demand of homeowners and building operators for reduced energy costs and carbon emissions.

Replacing the Greenskies cylinder range, Greenstore cylinders feature low standing heat losses in line with the anticipated 2013 Building Regulations. They also incorporate a dedicated solar volume, ensuring maximum efficiency

when used with solar heating systems and providing compliance with Building Regulations, SAP and MCS criteria.



### Greenstore product specification

	Capacity	Standing heat loss	Dedicated solar volume	M <sup>2</sup> of solar collector field for MCS compliance	Dia.	Height
Greenstore TC-150	150ltr	1.27kWh/24hrs	65	2	570mm	1382mm
Greenstore TC-180	180ltr	1.31kWh/24hrs	65	2	570mm	1582mm
Greenstore TC-210	210ltr	1.42kWh/24hrs	110	4	570mm	1757mm
Greenstore TC-250	250ltr	1.52kWh/24hrs	115	4	570mm	1957mm
Greenstore TC-300	300ltr	1.93kWh/24hrs	115	4	570mm	2257mm

# Greenfloor Heating

## The perfect addition for a complete energy efficient heating system

Underfloor heating is widely used in northern Europe and in recent years has become more popular in the UK, both for new builds and updating existing properties.

Our Greenfloor heating system uses a heated water filled pipe system. Heated floors act as efficient large surface area heat emitters, radiating heat energy evenly into the room. This gently warms the living space through a combination of radiant energy and heat conduction. In a modern, well insulated room, where heat loss factors have been taken into consideration, underfloor heating can act as the primary heat source. In the majority of cases eliminating the need for radiators and allowing a free and unrestricted layout within a room.

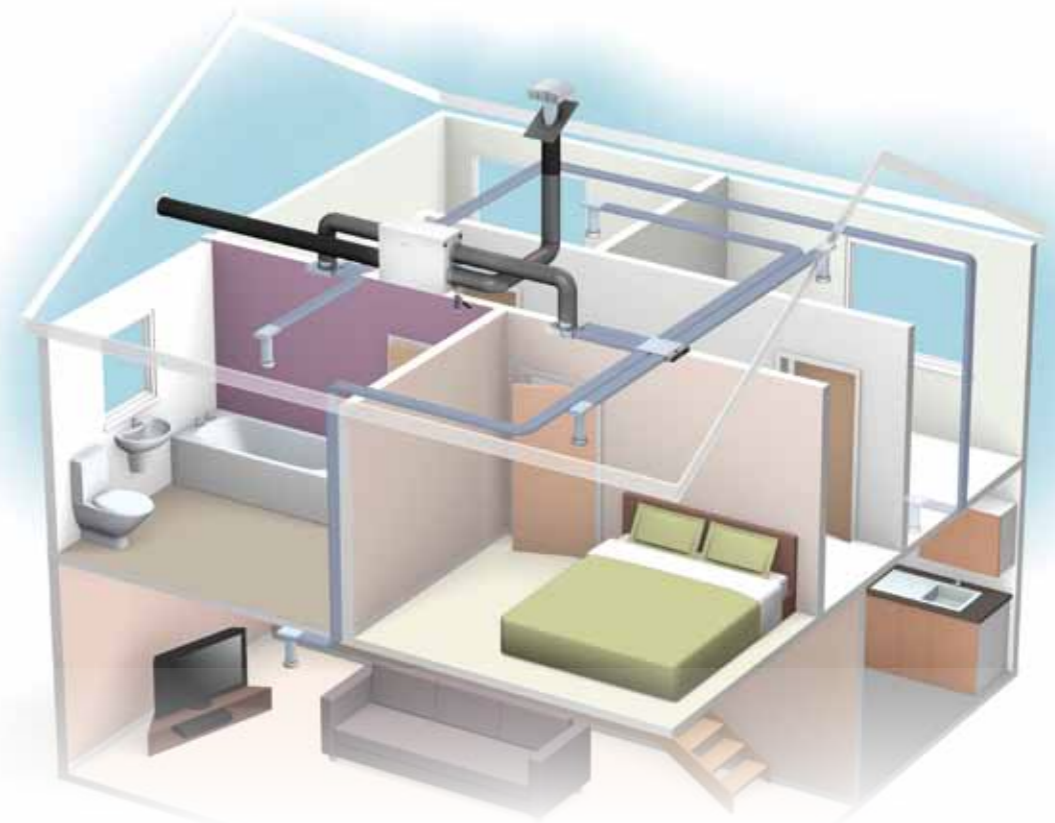
Studies show that an even heat rising from the floor, providing maximum warmth to the feet and cooler but comfortable temperatures at head level, are favourable to the output of a traditional radiator system where the maximum temperature is at ceiling height and floor level is coolest.

Because the entire floor area is providing heat, the actual temperature required to heat the floor area is much lower than in a traditional radiator system, this is of particular benefit to the condensing boiler or heat pump serving the system and will maximise the efficiency of the appliance.

Health benefits can be realised too, as underfloor heating provides radiant

heat and doesn't rely on convection like traditional radiators. Therefore the amount of dust circulated will be considerably less, providing cleaner air for the occupants and reducing the risk of house mites.

Heat from a radiator travels up and around the walls and ceiling of a room first, losing much of its useful heat in the process, while the heat from underfloor heating is evenly distributed from the surface of the floor throughout the whole living space.



## Greenstream Mechanical Ventilation and Heat Recovery

### Designed to meet the need of energy efficient homes

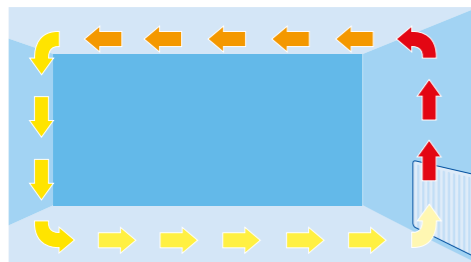
As the Code for Sustainable Homes becomes more focused on the air leakage of properties, it is increasingly important to ventilate homes as efficiently as possible.

In order to maintain energy efficiency it is essential to recover the heat energy from the outgoing air.

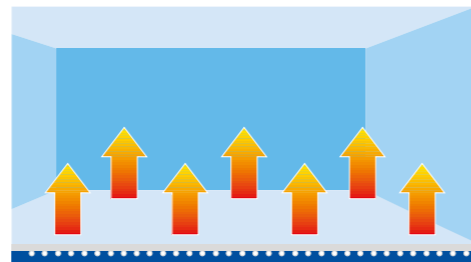
Our range of products has been designed to meet and exceed the demands of a new build home by providing controlled ventilation and then transferring the warmth of the outgoing air to heat the fresh air coming in.

Warm, humid, stale air is drawn out of the property and at the same time fresh

air is drawn from outside. The warmth from the humid, stale air is passed to the fresh air which is then fed in to the property. The stale air is then exhausted outside. This allows the air quality in the property to be consistently maintained and most of the heat is recovered.



Heat from a radiator travels up and around the walls and ceiling of a room first, losing much of its useful heat in the process...



...while the heat from underfloor heating is evenly distributed from the surface of the floor throughout the whole living space.

Features	Benefits
PE-Xc Pipe, protected against thermal ageing and stress fracture	Flexible and durable
Pre-insulated pipe positioning panels	Quick and easy installation
Stainless steel manifolds	Robust and durable
Full suite of wireless and wired control systems	Suits any type of installation
Uses radiant heat	Less circulation of dust than with radiators, cleaner air for home
Requires lower working temperatures	Maximises the efficiency of condensing boilers and heat pumps
Eliminates the need for radiators	Creates space on walls and allows unrestricted layout within a room



Features	Benefits
Range of 3 products	Suits most new build houses
Design service available	Ensures most efficient installation Bespoke design to suit each property Simplifies installation
Complete range of accessories	Design can be tailored to suit installation
7 day controller, 4 performance settings	Optimise unit performance to suit homeowners lifestyle
Quiet in operation	Unobtrusive
Summer bypass (optional on HR200)	Keeps indoors cool in the summer
Up to 91% efficient	Economical to run
Includes siphon	Aids installation



## Intelligent controls

Our range of intelligent heating controls enhance the integral efficiency of our Greenstar CDi and Si combi boilers, Greenstar CDi and iSystem boilers and Greenskies solar water heating systems.

Employing the latest digital technology, these intelligent controls deliver a higher level of functionality to maximise energy savings without compromising on comfort.

By using low voltage power the controls also avoid the need for compliance with Part P of the Building Regulations.

There are four models in the intelligent controls range:

- **FR10 Intelligent Room Thermostat**
- **FR110 Programmable Room Thermostat**
- **FW100 Weather Compensation Controller**
- **ISM1 Intelligent Solar Module**

FR10 Intelligent Room Thermostat



Features	Benefits
Compatible with fascia mounted programmers	Programmer and room thermostat separate, familiarity for end user
Large clear display, simple dial adjustment	Easy for installer to explain operation
Hidden intelligence	No additional knowledge required for end user operation
Load compensation	Increased efficiency of condensing boiler

FW100 Weather Compensation Controller



Features	Benefits
Wall or fascia mounted	Installation flexibility
Factory set parameters	Quick to install and commission
Economy temperature	House never goes cold
Integrated solar control using ISM1	Removes need for separate Worcester TDS10 controller
Solar optimisation	Maximum benefit and efficiency from solar installation
Weather compensation	Increased efficiency of condensing boiler

FR110 Programmable Room Thermostat



Features	Benefits
Wall mounted, with clear back-lit display	Ease of use for end user
Programmable room thermostat	Varied temperatures throughout the day
Economy temperature	House never goes cold
Integrated solar control using ISM1	Removes need for separate Worcester TDS10 controller
Solar optimisation	Maximum benefit and efficiency from solar installation
Load compensation	Increased efficiency of condensing boiler

ISM1 Intelligent Solar Module



Features	Benefits
All solar control via FR110 or FW100 controller	Only one control to explain to end user
Displays solar performance on FR110 or FW100	End user can check solar input
Clear colour coded plug-in connections	Installation ease
Solar optimisation	Maximum benefit and efficiency from solar installation

## Greenstar Oilfit Plume Management Kit for Greenstar oil-fired boilers

A plume management kit for Greenstar oil-fired boilers is now available to divert troublesome exhaust plumes. The kit can be used on both internal and external models in conjunction with 80/125mm horizontal telescopic flues. The kits can also be used with the old style non-telescopic flues using an adaptor.

Danesmoor Wall Mounted 18/25 boilers. Plume management lengths of up to 5m can be achieved using additional 1m extensions and 90° and 45° bends which are available as accessories.

The kit consists of a 90° bend, a 500mm extension, a terminal bend, a clamp and a flue damper which is required for Camray 18/25, Camray 25/32 and

### Accessory Part Numbers

Product	Part number
Plume Management Kit (Includes 90° bend, 500mm extension, terminal bend, clamp and flue damper)	7 716 190 092
1m extension	7 716 190 093
2 x 45° elbows	7 716 190 094
90° bend	7 716 190 095
Conversion kit for old non-telescopic flues	7 716 190 100



## Other accessories available include:

### Below Boiler Pipe Cover

Suitable for use with all Greenstar wall-hung appliances, this is a neat and simple solution for hiding the pipes on installations where they run below the boiler. The cover is curved to match the profile of the boiler fascia and is manufactured from white satin finished plastic. It is 600mm high, 400mm wide and 65mm deep and can be cut to the required height.

### Earth Bonding Strip

Available as part of the kits and also separately, this not only looks neater, but saves up to 20 minutes on installation compared with fitting separate earth bonding tags to each pipe. It can be used with all Greenstar wall mounted gas-fired boilers.

### Vertical Pre-piping Assembly Kits

We are already the only manufacturer whose designs enable pipework to be run behind the boiler as standard and we're taking this feature a step further with our Pre-piping Assembly Kits. The pre-bent pipes have swaged-ends for easy soldering and will save you approximately 30 minutes on installation time.

### The kits contain:

- 22mm CH flow pipe
- 22mm CH return pipe
- 15mm Mains water inlet pipe\*
- 15mm DHW outlet pipe\*
- 22mm Gas inlet pipe
- Earth bonding strip

Pre-piping Assembly Kits are designed for Greenstar i Junior, Si, CDi, i System and CDi System boilers.

### Additional Part Numbers

Greenstar Accessories	Part numbers
Greenstar i Junior/Si Pre-piping kit	7-716-192-570
Greenstar CDi Combi Pre-piping kit	7-716-192-607
Greenstar i System Pre-piping kit	7-716-192-650
Greenstar CDi System Pre-piping kit	7-716-192-651
Earth Bonding Strip	7-716-192-686
Below Boiler Pipe Cover	7-716-192-608



## Doing our bit

Whilst we remain committed to manufacturing some of the UK's leading domestic heating products, our Corporate Social Responsibility strategy is of equal importance. Here, we look at some of the work we're doing to support local and national enterprises.

Here at Worcester, we're dedicated to going green and doing our bit for the environment. Our renewable product range help save consumers money, are easy to install, and help save the planet a bit at a time.

But it's not just about providing solar panels and heat pumps, we need to ensure that we educate our next generation of the importance of looking after the planet.

### Worcester salute Cub Scouts with latest ECO badge

The Worcester sponsored 'Global Challenge' badge means Cub Scouts across the UK are learning about the impact of energy efficiency and protecting the world we live in. Young people around the country are being put to the test on

how they can do their bit and make their own home environmentally friendly. By backing the 'Global Challenge' badge we can help to show children and parents that by taking small steps they can make a big impact on improving energy efficiency and protecting the world we live in. An information pack to accompany the badge features experiments, word searches, internet tasks and plenty more to put Cub Scouts through their paces and teach them everything they need to know about being environmentally friendly.

After launching at the Scouts Big Reunion event, keen youngsters can now put their skills to the test with the Worcester 'Global Challenge' badge, learning all about how to be more energy efficient in their own home.



The Global Challenge Award activity pack



The Global Challenge badge

## In the name of charity

Our chosen charity for 2011 is Children in Need and Bosch UK has pledged to raise £125,000, with £60,000 coming direct from Worcester. Nicola Fisher, our trade brand manager said: "We're always keen to ensure that

we're giving as much as possible back to the community. Children in Need is a fantastic cause and by pledging this level of support, we're hoping that we can make a real difference to the lives of disadvantaged children in the UK."



**BOSCH**  
Invented for life



## Celebrating a Bosch Birthday



Dedicated to energy-efficient and sustainable heating solutions, Worcester is a name that stands for quality, reliability and efficiency and this was further strengthened when Worcester became part of the Bosch Group – one of the world's leading names in high-end technology in 1992.

2011 marks a truly significant milestone in Bosch history as it celebrates 125 years since Robert Bosch opened his first workshop in 1886 in Stuttgart, with just one associate and one apprentice.

Initially the workshop focused on all types of electrical equipment but one product in particular quickly became the backbone of the company - the magneto ignition device, an early ignition electrical source, which he adapted to fit the engine of a vehicle. In creating this reliable ignition system, he was responsible for solving one of greatest technical problems faced by the automotive industry.

By 1913, the company was selling its products on every continent and after

WW1 Robert developed and launched a whole range of innovations for automotive technologies including the electric horn in 1921, the windscreen wiper in 1926 and the diesel injection and pneumatic power brake system in 1927.

Robert Bosch died on 12th March 1942, yet his legacy still lives on. With a global presence and over 275,000 employees, of which approximately 1,800 are employed by Worcester, the foundations that Robert built 125 years ago are still as strong as ever.



## Overview of the RHI and FiT

It is a common fact that around half of the UK's carbon emissions come from the energy used to produce heat, a figure that is significantly greater than that which is used to produce electricity. But did you know, over 95% of this heat is produced by burning fossil fuel? With North Sea gas supplies currently in decline and the UK needing to reduce carbon emissions by 80% by 2050, looking for low carbon alternatives that allow the UK to be self-reliant when it comes to energy is essential. Here, Neil Schofield, head of Government and external affairs, looks at two Government incentives which intend to put in place foundations for future energy in the UK as well as drive the uptake of renewable technologies in the UK.

### The top four things you need to know about the renewable heat incentive

1. The Government's Renewable Heat Incentive (the RHI) will provide long-term financial support to renewable heat installations to encourage the uptake of renewable heat technology. A groundbreaking notion, it is the first financial support scheme for renewable heat of its kind in the world.

The proposals announced in March are not expected to be approved by Parliament until summer 2011, therefore its official introduction won't be until later this year. The scheme will be introduced in two phases.

2. The RHI will be funded from general Government spending, not through the previously proposed RHI levy
3. Support for domestic properties will be seen through the Renewable Heat Premium Payment in the first year of the scheme, which is expected to see up to 25,000 installations completed. Those taking up the Premium will then be eligible for a RHI tariff from October 2012 when the Green Deal is introduced in October 2012.
4. The scheme is expected to include a range of technologies and fuel uses including solid and gaseous biomass, solar thermal, ground and water source heat-pumps, and deep geothermal.

### The top four things you need to know about the feed-in tariff

1. The Feed-in Tariff aims to literally turn the electricity market on its head by making electricity suppliers pay consumers. For years, the relationship has been one-way; we, the consumers, use energy and then we get a bill. Now however, consumers can get paid for any electricity they generate by selling it back to the National Grid.

2. The Feed-in Tariff (FiT) was introduced in April 2010. Before consumers can generate a regular income stream from a FiT, they have to install a generating system, including solar photovoltaic, wind turbine, hydroelectricity or using a micro combined heat and power (micro CHP) systems.

3. The FiT is designed to ensure that the average monthly income from an installation will be significantly greater than any monthly loan repayment, on the basis of a 25 year loan.

4. Consumers can expect three types of tariff. Firstly, a generation tariff, which is a set rate paid by the energy supplier for each unit (or kWh) of electricity generated. This rate is changeable each year for new entrants but, once in, you can expect to continue on the same tariff for 20 years, or 25 years in the case of solar photovoltaic. Secondly, consumers can benefit from an export tariff which offers a further 3p/kWh from your energy supplier for each unit exported back to the electricity grid. This rate is the same for all technologies. Finally, consumers will benefit from energy bill savings due to the fact that a much smaller amount of energy is being purchased. The amount saved will obviously vary depending how much of the electricity is used on site.



## Total Quality Improvement

We have learnt that a number of you regularly encounter four typical installation oversights when replacing a property's existing boiler. These errors aren't product related but perpetually crop up so here, Martyn Bridges, highlights the common problems and explains how they can be avoided.

### Insufficient gas supply pipe sizing

Following a boiler replacement, the installer may get a call-back from the homeowner who is disappointed with the temperature from their hot water tap. This may occur because the existing gas supply pipe for the property is sufficiently sized for this new high output boiler.

We commonly find that the previous gas supply pipe to the original boiler has a 15mm diameter, but the new boiler needs a pipe with a diameter of 22mm, possibly even 28mm. The issue with not checking the gas supply pipe is that a smaller diameter pipe could mean that rather than actually operating at 30kW for example, the boiler is most likely working at about 15kW and therefore not generating enough heat to heat the water that's flowing through it all the time.

### External water connections and pipes

Occasionally when a combi boiler is fitted a certain amount of expansion will take place. Meaning, as the hot tap is switched off, an element of residual heat is left in the boiler which will make the cold water main and the hot water within it expand. It is quite acceptable as part of the water regulations for this expansion to travel

back down the water mains, but if there is a non-return valve fitted, or perhaps a water meter, then the expanding water cannot travel back down the mains so the pressure will build up and in the worst cases it can make the shower valve fail or washing machine hoses to leak.

Another query into our technical helpline is a homeowner complaining about the thumping noise coming from their radiators. This often occurs when a thermostatic radiator valve has been fitted to the wrong pipe, so that the flow of water will be trying to leave the radiator valve downwards on what would ordinarily be the entrance point, which can cause the radiator valve to make a rattling noise.

### External electrical connections

The majority of wiring oversights are with Regular boilers or System boilers. In both of these cases the majority of the components are wired externally to the boiler, so there are more opportunities for things to go wrong.

With external wiring we also quite commonly find that there is no visible bonding on the boiler, so it's important all the pipework is connected together,

essentially so there is an equal electrical potential over each pipe.

### Flue installations

When it comes to problems with flues, it is often to do with termination. Installers now not only need to consider where the flue is going to be installed, but they also have to be wary of where the condensate discharge pipe is going to go, meaning it is often difficult to find the perfect flue termination point. In our installation instructions we quite clearly indicate the minimum dimensions required for the termination of the flue, but what installers need to be wary of is whether this position is likely to cause a nuisance to the homeowner or neighbour. We will never be able to do without the flue pipe but there are now remedies available for this, including flue redirection kits.

For more information on any of the above, please visit:

[www.worcester-bosch.co.uk](http://www.worcester-bosch.co.uk) and refer to the technical bulletins within the literature pages.



# Frozen condensate

Last winter the UK experienced prolonged spells of extremely cold weather. This resulted in a significant increase in the number of calls to boiler manufacturers and heating installers from householders with condensing boilers where the condensate drainage pipe had frozen, causing temporary boiler shut down. In the vast majority of cases, this occurred where part of the condensate drainage pipe was located externally.

In order to minimise the risk of freezing during cold spells, the following methods of installing condensate drainage pipe should be used, in order of priority:

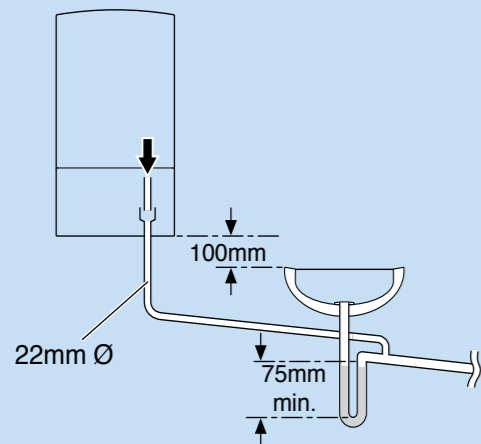


Credit: Jimmy Joe <http://www.flickr.com/photos/joe67/318951722/>

**1.** Wherever possible, the condensate drainage pipe should be routed and terminated so that the condensate drains away from the boiler under gravity to a suitable internal foul water discharge point such as an internal soil and vent stack, internal kitchen, bathroom or washing machine waste pipe or similar. A suitable permanent connection to the foul waste pipe should be used and all other relevant guidance in British Standards and/or the boiler manufacturer's instructions should be followed.

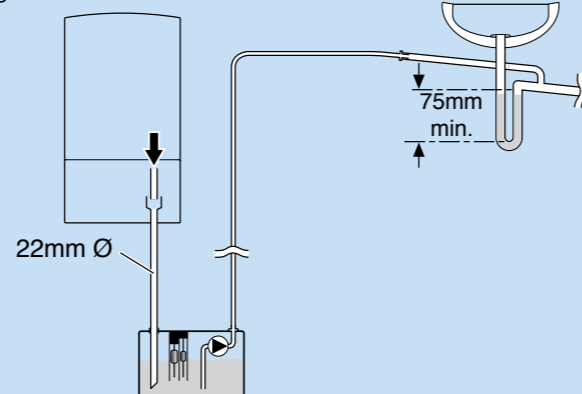
**Note:** where a new or replacement boiler is being installed, access to an internal "gravity discharge" point should be one of the factors considered in determining boiler location, alongside flue position, convenience of supply and system pipe runs etc.

Fig.1



**2.** Where "gravity discharge" to an internal termination is not physically possible, or where very long internal runs of drainage pipe would be required to reach a suitable discharge point, condensate should be removed using a proprietary condensate pump, of a specification recommended by the boiler or condensate pump manufacturer. The pump outlet pipe should discharge to a suitable internal foul water discharge point such as an internal soil and vent stack, internal kitchen, bathroom or washing machine waste pipe. A suitable permanent connection to the foul waste pipe should be used and all other relevant guidance in British Standards and/or the boiler and condensate pump manufacturers' instructions should be followed.

Fig.2

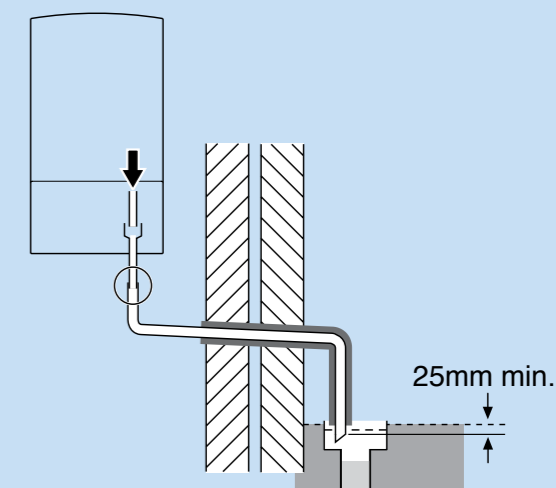


**3.** If no other discharge method is possible then the use of an externally run condensate drainage pipe terminating at a suitable foul water discharge point, or purpose designed soakaway, may be considered. If this method is chosen then the following measures should be taken:

- The pipe should be run internally as far as possible before going externally and the pipe diameter should be increased to 32mm before it passes through the wall to the exterior. The pipe should be insulated using suitable waterproof and weather resistant insulation
- The external pipe should take the shortest and least exposed route to the discharge point, and should "fall" as steeply as possible away from the boiler, with no horizontal runs in which condensate might stand.
- The use of fittings, elbows etc. should be kept to a minimum and any internal "burrs" on cut pipework should be removed so that the internal pipe section is as smooth as possible.
- Where the pipe terminates over an open drain or gully, the pipe should terminate below the grating level, but above water level, in order to minimise "wind chill" at the open end. The use of an additional drain cover may offer further protection.

- In situations where there are likely to be extremes of temperature or exposure, the use of a proprietary traceheating system for external pipework, incorporating an external frost thermostat, should be considered. If such a system is used, the requirement to use 32mm pipe does not apply.
- Internal pipe runs in unheated areas such as lofts, basements and garages should be treated as external runs.

Fig.3



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