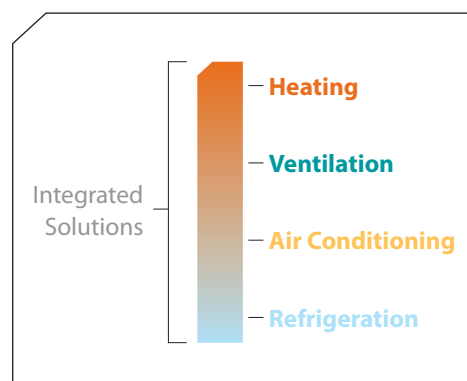




Daikin Altherma Hybrid Heat Pump

Smart heating technology – for the best of both worlds



Forward thinking

Now is the time to rethink the way we heat our homes and hot water. Central heating systems, as we have known them, are changing dramatically and new solutions are needed to meet the Government's renewable energy targets.

When old heating systems need replacing, homeowners are now increasingly demanding more efficient and more environmentally friendly solutions. They expect their new system to reduce energy consumption and be cheaper to run, reducing carbon dioxide (CO₂) emissions and protecting their budget from rising fuel prices.

Daikin is playing its part. Heat pump systems are now available for all homes – even for those homes connected to the mains gas network as well as those using LPG supplies.

The new Daikin Altherma Hybrid Heat Pump combines the benefits of a renewable energy air-water heat pump with the familiarity of a condensing gas combi boiler. This unique system provides the best of both worlds – optimising energy efficiency and delivering completely reliable and controllable heating and hot water for homes.

About Daikin

Daikin has a worldwide reputation for quality and innovative technology, with over 50 years' experience in the design and manufacture of heat pump solutions.

Daikin provides a comprehensive choice of domestic heating and renewable energy products which are ideally suited to the UK housing market.

Daikin is a leading supplier of heating, cooling, ventilation and refrigeration solutions for commercial, residential and industrial applications.

A wholly owned subsidiary of Daikin Europe NV, Daikin UK has an excellent record of concern for environmental issues and applies it to all areas of the business, in many cases pre-empting international and national environmental legislation.



New opportunities in domestic heating

The Daikin Altherma range

The extensive Daikin Altherma range provides solutions for all heating applications: new build, oil boiler replacement, and now also gas boiler replacement.

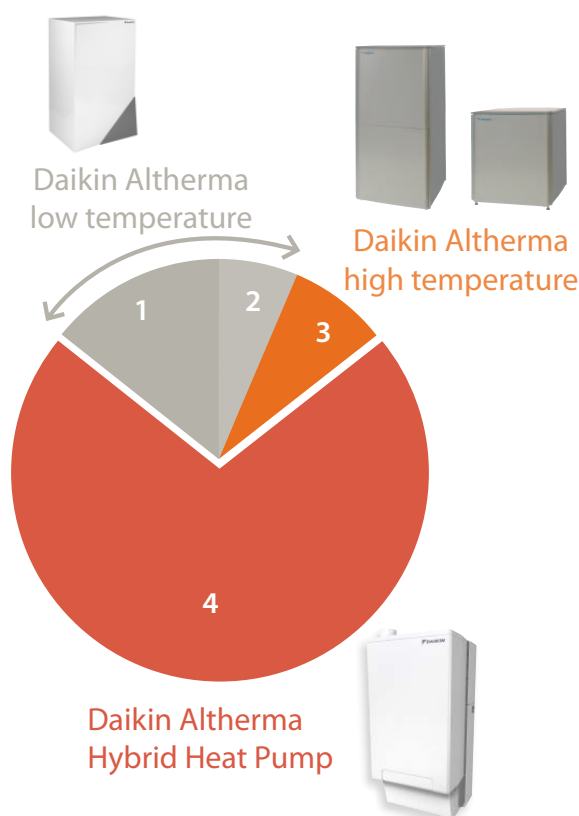
NEW Daikin Altherma Hybrid Heat Pump This unique combination of a high efficiency gas combi boiler and the latest renewable energy air-to-water heat pump is the most efficient system available for gas and LPG boiler replacement.

Daikin Altherma Low Temperature Heat Pump Ideal solution for new build applications and complete renovations, delivering the required heating, cooling and domestic hot water capacities for the home, with the best possible efficiencies.

Daikin Altherma High Temperature Heat Pump Designed to replace an oil boiler. In this case, there is no need to replace the existing radiators, since the heat pump can achieve water temperatures of up to 80°C.

Solutions for all heating applications

- 1 New Build
- 2 Renovation - including change of radiators
- 3 Renovation - oil boiler replacement, keep radiators
- 4 Gas boiler replacement - keep radiators



The NEW Daikin Altherma Hybrid Heat Pump

- ✓ Combines renewable heat pump technology with a high efficiency gas combi boiler
- ✓ Designed for properties currently using gas or LPG
- ✓ Ideal when replacing a gas or LPG boiler
- ✓ Connects to existing radiators (up to 80°C)
- ✓ Most suited to properties with heat loads 12 kW - 20 kW
- ✓ Lower running costs compared with a new condensing boiler



The new hybrid heat pump

The Daikin Altherma Hybrid Heat Pump is unique technology. It combines a high efficiency gas combi boiler with a renewable energy heat pump, all in one efficient, compact heating system that gives the best of both worlds. Its smart hybrid logic automatically selects the most energy-efficient and cost-effective operation based on the user's energy tariff, at any given temperature, to make it the most efficient solution on the market.

RHI-eligible system

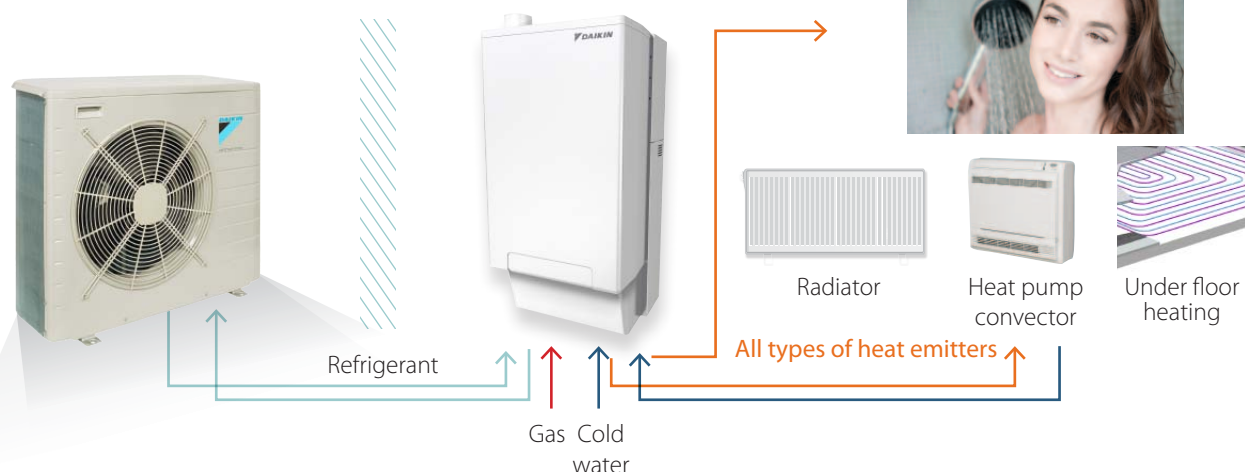
Hybrid systems are eligible for the Renewable Heat Incentive (RHI) due to start in Spring 2014. This Government-funded scheme will pay 7.3p/kWh for each unit of renewable heat generated from an air-water heat pump.

A suitable heat meter and electric meter arrangement will be required for hybrid systems and Daikin can provide further advice.

**Daikin Altherma
Heat Pump outdoor unit
5 kW or 8 kW**

**Gas boiler
DHW 33 kW / CH 27 kW**

**Space heating up to 80°C
Domestic hot water heating**

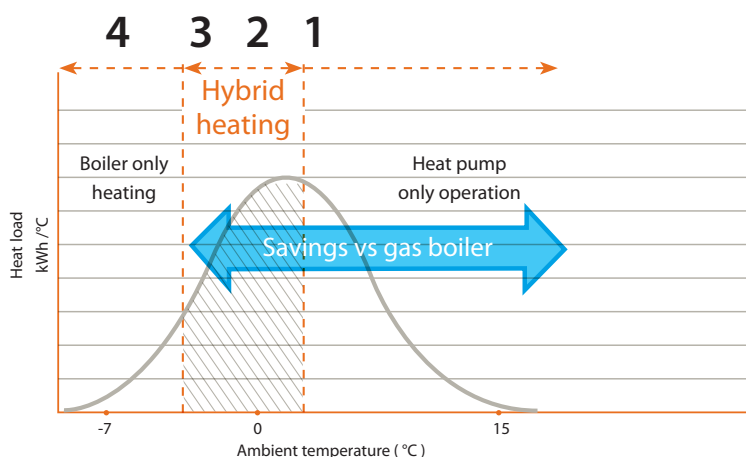


How does it work?

The new Daikin Altherma Hybrid Heat Pump incorporates advanced technology that automatically monitors system parameters and temperatures. Designed to maximise system efficiency, it ensures the most cost efficient operation at every outdoor temperature.

The smart hybrid logic controller switches between four unique operating modes depending on the relative **cost** of gas and electricity ("economical" mode – see panel). Alternatively, the user can decide to minimise ecological impact of their heating system by setting the **carbon emission rates** of gas and electricity ("ecological" mode).

The system has built-in weather compensation, which modulates both the heat pump and the condensing boiler. It always operates in the most efficient mode while still providing sufficient heating, generating flow temperatures from 25-80°C. The system is suitable for both new and older properties, and for connection to existing radiators or newly installed underfloor heating.



1. Heat pump only mode
2. First Hybrid mode
[heat pump + gas boiler]
3. Second Hybrid mode
[flow control]
4. Boiler only mode

Economical operating modes

- 1 Heat pump only:** During mild temperatures, heat pump capacity and efficiency is high enough to ensure running cost savings.
- 2 First hybrid mode:** When the outdoor temperature drops and heat pump efficiency falls, the Daikin Altherma Hybrid heat pump continues to operate as it is still cost effective. The boiler provides additional heat as required, operating in series with the heat pump – unlike a conventional bivalent (dual source) system which would switch entirely from heat pump to boiler.
- 3 Second hybrid mode:** When the outdoor temperature drops further and heat pump efficiency reduces, the unique flow control function automatically regulates the variable speed pump and reduces the flow rate through the system. This raises the heat pump efficiency for as long as possible while still ensuring lower running costs and lower carbon emissions than running the boiler alone.
- 4 Boiler only:** When the outdoor temperature is very low and the system temperature requirement is at its highest, the heat pump becomes less economical, and only the boiler operates.

Added benefits for installers, specifiers and householders

✓ **Installer**

- Single heat pump solution for all on-gas and LPG renovation applications
- Easy and fast installation of renewable energy technology
- No need to replace radiators or pipes
- Opportunity to expand your heat pump business

✓ **Specifier**

- Lower running costs for properties using on-gas or LPG
- A renewable energy system for hard-to-heat homes
- Helps to meet local renewable energy targets
- Eligible for Renewable Heating Incentive [RHI] scheme

✓ **Householder**

- Higher running cost savings compared with a conventional new gas condensing boiler
- Uses existing radiators – minimises installation hassle
- Space saving renewable energy heating system – fits in place of your old boiler
- Eligible for Renewable Heating Incentive [RHI] scheme



Installer benefits

1. SINGLE HEAT PUMP SOLUTION FOR ALL ON-GAS AND LPG APPLICATIONS

- Most suited to properties with heat load 12kW – 20kW
- Connect to existing radiators (up to 80°C)
- Also connectable to all other types of heat emitters
- Rapid start-up: the gas boiler can be commissioned without the heat pump outdoor unit to provide heating quickly. Ideal for situations in which the existing boiler has broken down

2. FAST INSTALLATION OF RENEWABLE ENERGY TECHNOLOGY

- Offers fast installation and easy maintenance, with front access to key components
- No need to change existing radiators
- Similar dimensions to an old boiler – minimises disruption and modifications
- All key hydraulic components included – expansion vessel, circulation pump, filter
- Bottom connections – familiar arrangement
- Extensive flue options available (60/100 and 80/125 options)
- Quick commissioning with advanced user interface



3. PEACE OF MIND

- Industry-leading 3-year parts and labour warranty as standard
- Gas condensing boiler with 10-year warranty on the heat exchanger
- MCS accredited – eligible for RHI
- WRAS approved

Become a Daikin Hybrid installer

- ✓ New business opportunities
- ✓ Access to latest sales tools
- ✓ Support from our specialist heating sales team
- ✓ Access to dedicated design software
- ✓ Hybrid marketing materials
- ✓ Installation and product training
- ✓ Dedicated after-sales service support on-site
- ✓ Support from Gas Safe registered Daikin service engineers



MCS HP0006



Specifier benefits

1. ONE HEAT PUMP SOLUTION FOR ALL GAS AND LPG BOILER REPLACEMENT APPLICATIONS

- Most suited to properties with heat load 12kW – 20kW
- Minimum investment cost and hassle – suitable for use with existing radiators
- Quick commissioning: boiler can be started before final commissioning of the heat pump. Allows fast replacement in event of boiler breakdown
- Flexible for choice of DHW solutions: combi boiler and cylinder option*

2. RENEWABLE ENERGY HEATING FOR ON-GAS PROPERTIES

- Meet renewable energy targets for on-gas properties
- Helps to meet local renewable energy targets
- Lower running costs for householders and tenants

3. EASY TO USE AND OPERATE

- Automatically selects most cost-efficient operation mode to ensure lowest running costs
- Back-lit easy-to-use text display for householder confidence and comfort
- Simple to update energy prices to ensure the system operation is always optimised



Gas boiler system:
DHW 33, CH 27 kW



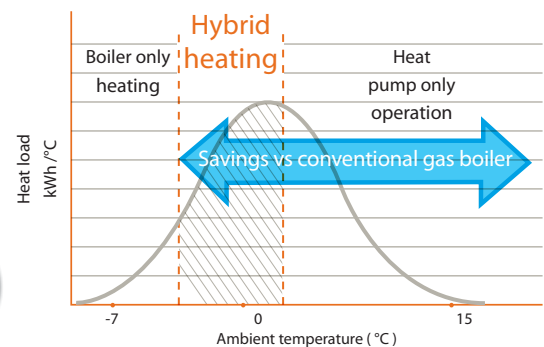
Heat pump system:
5 kW and 8 kW

(*Available Summer 2014)

Householder benefits

1. MORE EFFICIENT THAN CONVENTIONAL NEW GAS CONDENSING BOILER

- ✓ Minimises energy usage
- ✓ Space heating up to 35% more efficient than new gas condensing boiler
- ✓ Efficient domestic hot water heating
- ✓ 3-year parts and labour warranty
- ✓ Minimises impact of future energy price rises



Space heating

- Programmed for most cost-efficient operation at every outdoor temperature
- Daikin hybrid logic to maximise heat pump usage
- Most efficient heat pump system on the market

Domestic hot water heating

- Instantaneous hot water from a gas combi boiler
- High flow rate 13 litres / minute (dT 35 °C)

The Daikin Altherma Hybrid Heat Pump uses a high efficiency combi boiler to provide domestic hot water. The direct flow burner also provides support for space heating when required. By directly heating the cold water, the combi boiler condenses even in hot water mode. This increases efficiency even further compared with traditional gas combi boilers.

2. USE EXISTING RADIATORS AND CYLINDER*

- ✓ No hassle from changing radiators or cylinder
- ✓ Lower investment costs
- ✓ Quicker to install

The system is designed to work with existing system pipework and radiators to reduce disruption during installation.

3. COMPACT AND SPACE SAVING

With dimensions similar to a standard boiler, the indoor hybrid boiler is a single unit designed to fit in place of the old boiler in the available installation space.



(*Available Summer 2014)

Daikin Altherma hybrid technology in practice

Case Study

Property description: 110-year old, solid wall, 140m² mid-terraced home with double-glazed windows and a loft conversion insulated to current Building Regulations. Design heat load: 9kW (at -6°C). Total annual energy demand: approximately 18,500 kWh, with 16,300 kWh for heating.

Project: The existing gas combi boiler was replaced by a Daikin Altherma Hybrid Heat Pump with weather compensation control. Existing high temperature radiators (70°C) were retained.

Analysis and results: 13,060 kWh of space heating was delivered by the heat pump. Even in older properties, the hybrid heat pump can clearly supply most of the energy required for space heating. Measured seasonal efficiency (based on primary energy) was 126% for space heating, and 120% for the combined space heating and hot water demand. This is about 30% higher than a modern gas condensing boiler, based on a seasonal efficiency of 90% for space heating.

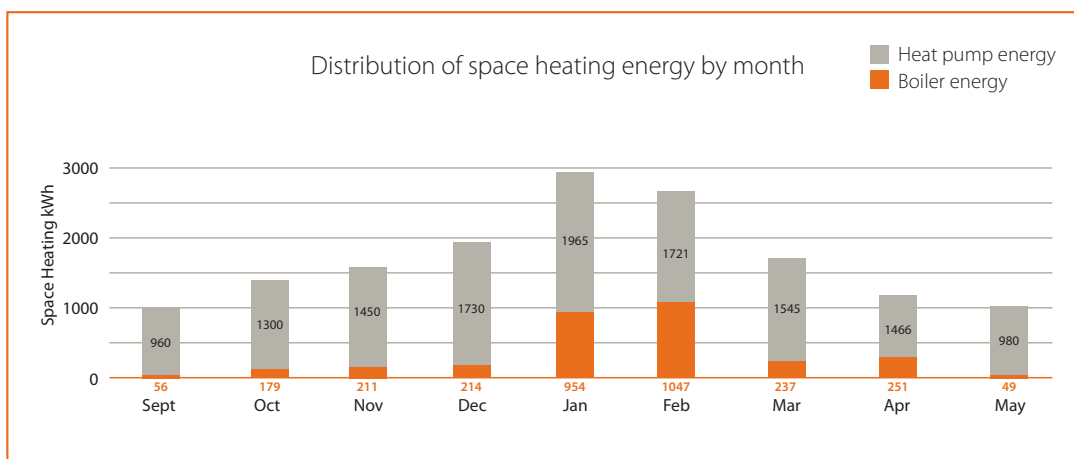
Summary of results

- ✓ Heating demand: 16,300 kWh
- ✓ Delivered by heat pump: 13,060 kWh
- ✓ sCOP (heat pump - heating) 340%
- ✓ sCOP (hybrid - heating and DHW): 177%
- ✓ Primary Energy sCOP (hybrid): 120%

What is Primary Energy sCOP?

Natural gas is a primary energy source with coefficient of 1. Electricity is a secondary energy source often produced by burning fossil fuels and has a coefficient of 2.5 (ErP Ecodesign LOT 1).

Primary Energy sCOP quantifies system efficiency by considering the different operating modes of the hybrid system.



Technical specifications

INDOOR UNIT				BOILER MODULE EHYKOMB33AA	HEAT PUMP MODULE EHYHBH05A	HEAT PUMP MODULE EHYHBH08A
Heating input (Hi)				Heating & DHW	Heating only	Heating only
Min - Max	G20 (20 mbar)		kW	7.6 - 27.0	-	-
Heat output CH	Min - Max	80/60	kW	8.2 - 26.6	-	-
SEDBUK 2009 rating			%	89.1	-	-
DHW output	Min - Max		kW	7.6 - 32.7	-	-
Flow rate	Max	dT 35K	l/min	13.1	-	-
Dimensions (casing)	H x W x D		mm	710 x 450 x 240	902 x 450 x 164	902 x 450 x 164
Weight			kg	36	33	31.2
Flue length, 60/100	Max		m	10	-	-
Flue length, 80/125	Max		m	29	-	-
Plume kit for 60/100			dBA	yes	-	-
Adjustable to LPG			dBA	yes	-	-

OUTDOOR UNIT			EVLQ05CV3	EVLQ08CV3
Heating capacity	Minimum, heat pump operation only	kW	1.8	1.8
Heating capacity	Nominal, heat pump operation only	kW	4.40 ¹ 4.03 ²	7.4 ¹ 6.89 ²
COP	Nominal, heat pump operation only		5.04 ¹ 3.58 ²	4.45 ¹ 3.42 ²
Dimensions	H x W x D	mm	735 x 832 x 307	735 x 832 x 307
Weight		kg	54	56
Sound power level			61	62
Sound pressure level			48	49

(1) heating Ta DB/WB 7°C/6°C - LWC 35°C (DT = 5°C)

(2) heating Ta DB/WB 7°C/6°C - LWC 45°C (DT = 5°C)

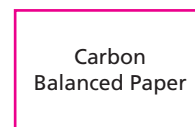




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Daikin units comply with the European regulations that guarantee the safety of the product.



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Daikin Airconditioning UK Limited The Heights Brooklands Weybridge Surrey KT13 0NY Tel 0845 6419000 Fax 0845 6419009 www.daikin.co.uk

Dedicated Heating Line: 0845 641 9070

Scotland Region 0845 641 9330	Northern Region 0845 641 9340	Midlands Region 0845 641 9370	Western Region 0845 641 9320	North London 0845 641 9360	South London 0845 641 9355
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