DAIKIN

altherma

INTELLIGENT HEATING FOR SOCIAL HOUSING

THE ENERGY EFFICIENT HEATING SYSTEM

DAIKIN ALTHERMA

Daikin Altherma is a completely flexible, energy efficient home heating system that extracts the heat from the outside air, raises this heat to a higher temperature and then distributes warmth around the home using underfloor heating, radiators or fan convector heat emmitters. At the heart of this innovative system lies an air source heat pump.

Because of this advanced technology, over two thirds of the heat generated by the Daikin Altherma system is absolutely free of charge! Compared with conventional heating systems, Daikin Altherma heat pump systems reduce both primary energy costs and the unacceptably high environmental carbon emissions impact.

A brand built on quality and innovation

Daikin has more than 50 years experience in the production of heat pumps, manufacturing over a million units a year for both residential and commercial applications. All components used within Daikin Altherma are manufactured at Daikin's state of the art factories in Europe - This includes the all important highly efficient inverter driven compressor unit. In fact, Daikin produces all of its compressors, some 80% of which are for use in heat pump applications.

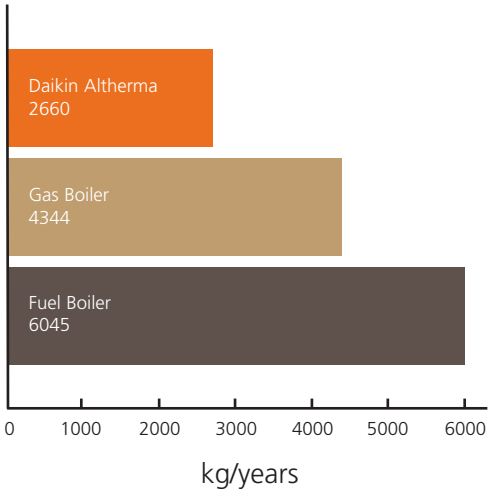
DAIKIN ALTHERMA IS THE COMPLETE HEATING AND HOT WATER SOLUTION FOR THE SOCIAL HOUSING SECTOR

The Future is Low Cost Heating with Low Carbon Emissions

With the drive from initiatives such as 'The Decent Homes Programme' and the targets to reduce the numbers of people in Fuel Poverty, social housing providers are now more than ever under pressure to offer affordable and energy efficient homes for their customers.

Environmental protection from global warming driven by excessive carbon emissions is high on the agenda when it comes to building and refurbishing houses and flats. The Government has put in place several actions to ensure a cohesive strategy from all sectors towards carbon reduction, and has set high targets for carbon reduction as laid out in the Climate change bill 2006. Overall, recently revised target sets the reduction of UK carbon emissions by 80% by 2050 (based on 1990 levels). And the public sector is the forefront to drive and deliver the carbon reduction plan!

Average Annual CO_2 Emissions



Calculations based on data provided by Eurelectric (Union of the electricity industry), 'Eurelec Program - 2001' for EU27.

DID YOU KNOW THAT...

Daikin Altherma can reduce carbon emissions and fuel bills by up to 50% compared to traditional boiler systems.

Ways of reducing carbon emissions?

The use of whole house insulation, double glazed windows and modern energy efficient heating systems are now vitally important in achieving efficient, low carbon emission homes. Ideally, the use of sustainable energy solutions is both desirable and necessary in any new building or major refurbishment of houses or flats.

Daikin Altherma provides a high quality year round complete solution for heating and hot water. Daikin Altherma can reduce carbon emissions by up to 50% when compared to traditional boiler systems. Using the energy taken from the air around us Daikin Altherma is now a recognised renewable solution for home heating and hot water.

Daikin Altherma comes as a complete system, manufactured and supplied by a single provider, Daikin. Daikin Altherma technology offers the most comprehensive and flexible product range that can be adapted to fit the requirements for applications in houses and flats.

COP (Coefficient of Performance)

The COP of the system indicates the amount of usable heat that is produced by a heating boiler system. The higher the COP the more efficient the system.

For Daikin Altherma for every 1kW of electrical power used between 3kW and 5kW of usable energy can be delivered to be used for heating and hot water. The actual amount of usable energy generated by Daikin Altherma will depend on the ambient temperature.

Oil fired boilers have a COP of 0.89 (89% efficient) and modern condenser gas boilers have a COP of 0.93 (93% efficient). Daikin Altherma systems run with a COP of between 3 to 5 and are therefore much more efficient than traditional boilers systems.

In terms of carbon emissions the table below shows the levels of emissions associated with fuel oil, gas and Daikin Altherma. Daikin Altherma is clearly the best system for both efficiency and carbon emissions.

66 TO 80% FREE OF CHARGE

A heat pump boiler works much more efficiently and saves more energy than a traditional heating system based on fossil fuels. With Daikin Altherma, 1kW of electricity consumption generates 3 to 5kW of free heat. That's an investment that pays.

COP (Coefficient of Performance)

Stands for the ratio of the output heat and the energy used by the heat pump compressor. The Daikin Altherma heat pump boiler has a COP of 3 to 5, which means that the pump delivers 3 to 5 times more energy than it uses.

CO_2 EMISSIONS

The carbon footprint of a heating system can be calculated by multiplying the energy input by the Green House Gas Conversion Factor.

RUNNING COST:

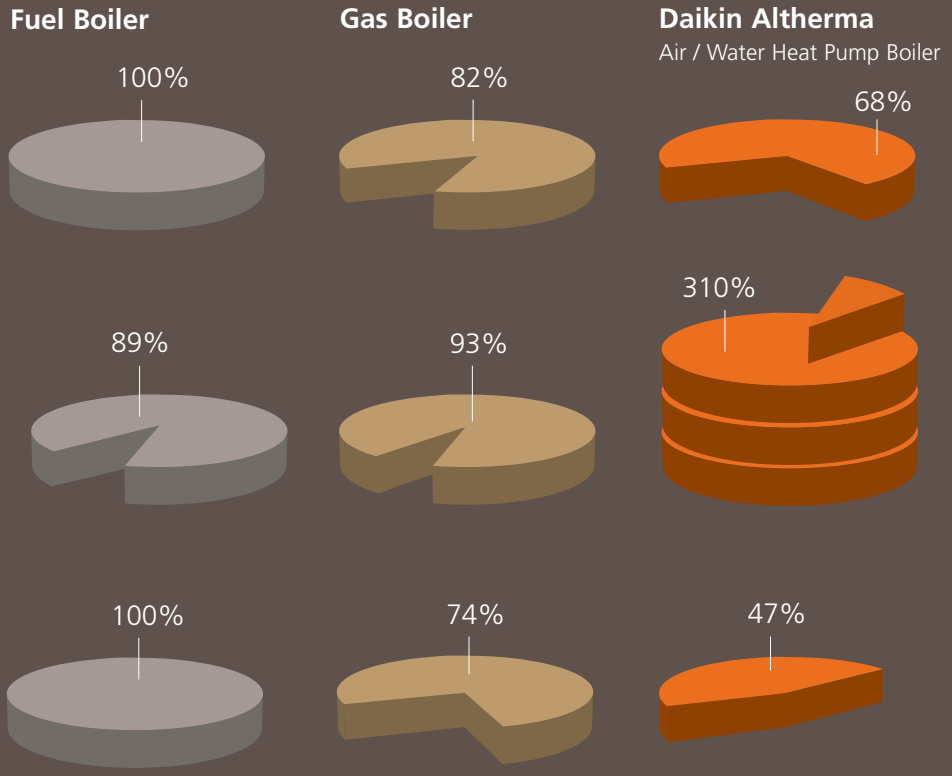
Conditions : Annual heating energy required: 20 000 kWh
Source : Energy prices based on EUROSTAT statistics (first semester 2007).

EFFICIENCY (COP):

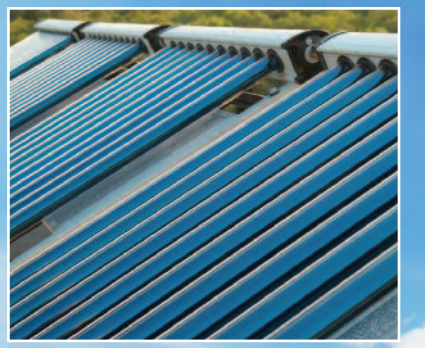
Source : Results depend on individual design of boilers and different climate conditions.
Efficiency of Daikin Altherma measured by an independent accredited laboratory (SP Technical Research Institute of Sweden).

CARBON EMISSIONS (CO_2):

The Green House Gas Conversion Factor is as follows:
Fuel Oil: 0.265
Gas: 0.206
Electricity: 0.430
Source: DEFRA (Department of Environment, Food and Rural Affairs).



'27% of the UK carbon emissions originate from heating and hot water systems in homes'



DID YOU KNOW THAT...

The Daikin Altherma system can be combined with solar panels to produce hot water. Daikin Altherma your total solution, thinks of the future.

TACKLING THE CHALLENGES

Fuel Poverty

Fuel Poverty is defined as "a household which needs to spend more than 10% of the income on fuel to maintain a satisfactory heating regime" (usually 21ºC in the main heating area and 18ºC for other occupied rooms).

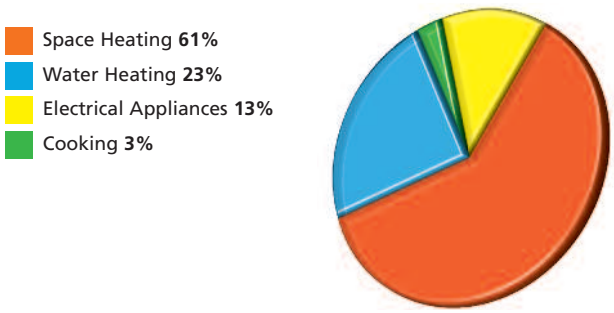
Fuel poverty is thus driven by one or more the following 3 factors:

- Energy efficiency of the dwelling
- Household Income
- Total cost of energy

A series of initiatives and schemes have been put in place to tackle Fuel Poverty, with investment totaling over £20 billion since 2000. Though improvements were made in reducing the number of households on Fuel Poverty up until 2006, with the rise in energy prices the number of vulnerable households has actually increased.

Energy prices are going to remain volatile as the demand for traditional fossil fuel outstrips supply. If Fuel Poverty targets are to be met then the reliance on fossil fuels needs to be reduced by the introduction of renewable energy solutions. Such a solution is Daikin Altherma.

Energy consumption in the typical UK home*



* SOURCE: BRE

Part L1

Part L of the UK Building Regulations was completely revised in 2006 to be in line with the European directives.

Part L1 deals specifically with dwellings and its aim is to promote energy and power conservation. This uses an assessment programme (SAP) to ensure all buildings and major refurbishments use considerably less energy (20% reduction) than houses built in 2002.

The UK Government has set ambitious targets for new housing developments moving towards Zero Carbon housing by 2016. Renewable technology and more specifically heat pumps will play an increasingly significant role in delivering carbon reduction strategies.

2006	20% reduction
2010	25% reduction
2013	40% reduction
2016	Zero Carbon

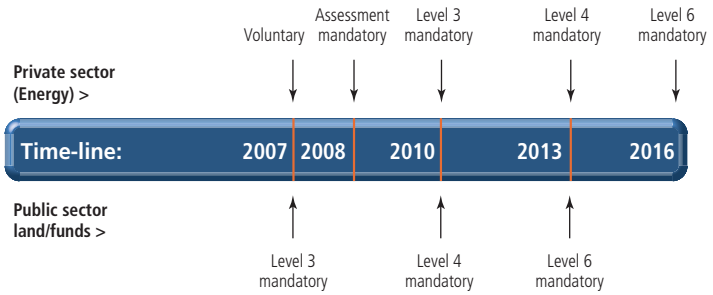
Code for Sustainable Homes

Carbon emission reduction is an essential consideration at the design stage of building new homes or carrying out major refurbishments. Aimed as a national single standard for new housing development, The Code for Sustainable Homes (CFSH) establishes criteria and targets defined in 6 levels of achievement with level 6 showing the highest level of sustainability.

Closely linked the Building Regulations, the CFSH compliance criteria has been set above the standards established by the Building Regulations to provide a more stringent guidance to new residential developments.

As of 2008, Public Sector has to achieve level 3 for all new build residential projects. From 2010 onwards, the criteria will be raised to achieve level 4.

The Code for Sustainable Homes Route Map



Achieving a sustainable rating		
Minimum Standards		
Energy		
Code Level	Standard (% better than Part L 2006)	Points Awarded
1	10	1.2
2	18	3.5
3	25	5.8
4	44	9.4
5	100	16.4
6	Zero carbon home	17.6

Notes

1. Building Regulations: Approved Document L (2006) – 'Conservation of Fuel and Power.'
2. Zero emissions in relation to Building Regulations issues (i.e. zero emissions from heating, hot water, ventilation & lighting).
3. A completely zero carbon home (i.e. zero net emissions of carbon dioxide (CO_2) from all energy use in the home).
4. All points in this table are rounded to one decimal place.

The table above shows the minimum standards, and number of points required in order to achieve each level of the Code.

Planning and Energy policies

In addition to the CO_2 reductions required to meet part L, planning policies are now having a significant impact on the energy strategies for new and existing developments.

Under Planning Policy Statement 22 (PS22 - the Merton ruling) local authorities now have the power to state that a specific percentage of the buildings power come from renewable technologies- typically 10 to 20%. Other strategies such as the London Plan encourage developments to minimise the demand for energy and to supply the remaining requirements "efficiently".

Most local planning requirements mean that the use of sustainable solutions form an important part of the specification for property development and major refurbishments, and the challenge is now how to integrate the concept of on-site renewable energy as a contributor to the overall energy strategy.

The above means that social housing providers and developers now have to look for cost effective renewable solutions in order to gain planning permission.

DID YOU KNOW THAT...

Daikin Altherma offers the most comprehensive and flexible range of air to water heat pump solutions in the UK, suitable for houses, flats and for both new built and refurbishment. With capacities ranging from 6kW to 16kW.

'Daikin Altherma was chosen by Luminus because we evaluated it to be the best system available. The results we have seen from the installations have been impressive in terms of running cost reduction and the cost of installation was actually lower than for a new solid fuel system. As a result of this trial with Daikin Altherma, we have now implemented a plan to install Daikin Altherma in all properties needing heating and hot water system refurbishment where gas is not available.'

Chan Abraham, Luminus Group Chief Executive.

TECHNICAL EXCELLENCE

Not just another Heat Pump

Daikin Altherma uses advanced technology and is a system developed by Daikin for many years.
Each Daikin Altherma product comes as a complete package of heat pump(s). hydrobox and hot water cylinder including main hydraulics. As well as a fully integrated control system Daikin Altherma has two other exceptional features as standard.

Inverter Compressor Technology at the Heart of Daikin Altherma

This provides real energy savings compared to heat pumps without inverter compressor technology. The compressor is the main component at the heart of all heat pumps. The inverter technology in Daikin Altherma ensures that the compressor is controlled to give optimum performance reducing energy consumption compared to fixed speed heat pump systems.

Weather Compensation

Whatever the temperature outside Daikin Altherma optimises the temperature inside.
Daikin Altherma has weather compensation built into its integrated control system. Weather compensation allows the Daikin Altherma system to minimise energy input to achieve optimum temperature conditions. Compared to most systems Daikin Altherma will be more efficient and cost less to use. Daikin Altherma has weather compensation built in as standard.

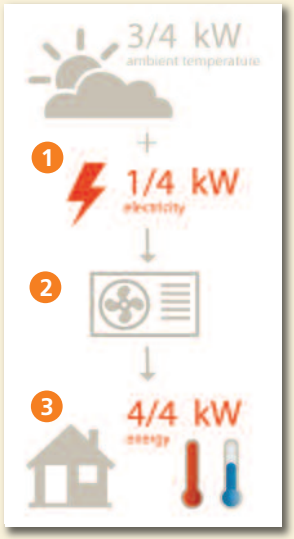
Daikin Altherma is unique, offering the best heat pump technology solution in the market today.

DAIKIN ALTHERMA AT A GLANCE

Heat pumps work on a well established principle, known as, vapour compression or refrigerant cycle. They work in much the same way as the common refrigerator, a technology already embedded in every household, but in reverse.

The heat pump consists of four main components: the compressor, expansion valve, and two heat exchangers, one to absorb heat from the heat source and one to reject the heat.

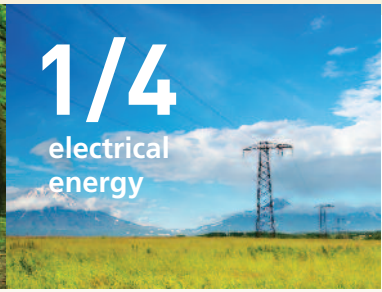
Quite simply, heat pumps are a mover of heat, they absorb heat from one place and move it via a heat transfer medium or refrigerant to be used somewhere else.



Warm in just 1, 2, 3.

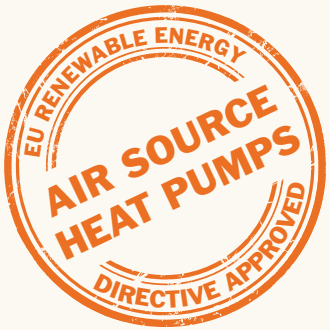
The Daikin Altherma air-to-water heat pump quickly creates an optimal room temperature for you and your family. You enjoy a comfortably warm environment in just 3 steps:

1. The heat pump extracts free low temperature heat from the outside air.
2. The system raises the temperature of the recovered heat.
3. This warmth is then distributed throughout your home via heating emitters.



DAIKIN ALTHERMA HEAT PUMPS: A RECOGNISED RENEWABLE ENERGY SOLUTION

On 17 December 2008, the European Parliament voted the EU Directive on the promotion of the use of energy from renewable sources. For the first time, besides geothermal energy also aerothermal and hydrothermal energy are recognised as renewable energy sources. This Directive must now be transposed by each member state. Daikin Altherma air source heat pumps can now be considered not just a low carbon technology but a true renewable energy solution for heating and hot water for use in houses and flats.



GRANT FUNDING AVAILABLE NOW AND IN THE FUTURE

Microgeneration Certification Scheme (MCS)

Approved product

MCS

The Certification Mark for Onsite Sustainable Energy Technologies

Certificate Number: MCS HP0006

Daikin Altherma is certified under the MCS scheme* and eligible for grants under the Low Carbon Building Programme (LCBP). The MCS is an independently administered scheme (on behalf of DEFRA) and provides consumers the guarantee that certified product and certified installers of those products have conformed to a rigorous set of standards.

Low Carbon Buildings Programme (LCBP)

As a certified MCS product, Daikin Altherma qualifies for grant aid and individual householders can apply for a grant of up to £900, under Phase 1 of the Low Carbon Building Programme.

As of 1 July 2009, Phase 2 of the LCBP will be open to all products and installer companies registered on the Microgeneration Certification Scheme (MCS). A full list of these can be found at www.microgenerationcertification.org.

- The extended programme will continue to provide grant funding to charitable organisations, community groups and the public sector.
- The upper limit for heat technologies will be raised to 300kW.
- Organisations may apply for up to 50% of the cost of installing approved technologies up to a maximum of £200,000 (though maximum grant levels may depend on the nature of the organisation).

With additional funding announced on April 09 Budget, LCBP Phase 2 will receive an additional £35 million which sees the programme extend to April 2011.

Community Sustainable Energy Programme (CSEP)

CSEP is an open grants programme run by BRE as an award partner of the Big Lottery Fund (BIG). Grants are open to not-for-profit community based organisations in England. CSEP will provide £8 million to community-based organisations for the installation of microgeneration technologies and energy efficiency measures including loft and cavity wall insulation. It will also provide £1 million for project development grants.

To be eligible for a grant, the product has to be MCS certified and the installer has to be registered with the Microgeneration Certification scheme. For more information on the grant application process, funding rounds and general terms and conditions, visit www.communitysustainable.org.uk

Other Programmes

Other schemes such as the Carbon Emission Reduction Target (CERT), include grants and offers for households to encourage various energy saving and carbon reduction measures. It is anticipated, under this scheme, that renewable energy solutions such as air source heat pumps will also be considered for grant support.

As the UK strives to hit its ambitious carbon reduction target then it is expected that there will be many more renewable energy solution incentives for house owners, RSL's and property developers.

* MCS certification applies to Daikin Altherma split heat pump range low temperature application (ERHQ006-016). Correct at time of printing.

DID YOU KNOW THAT...

In the UK Daikin Altherma is at the forefront of heat pump technology. Since its launch in 2007, Daikin Altherma has been installed by many social housing providers all around the country.

'Our customers are our most important priority. Their well being is of utmost importance to us at Coastline Housing Ltd. so when we considered how to replace the heating and hot water systems in our off gas properties a key aim was to significantly reduce their ongoing energy bills.'

Derek Chapman, Project Engineer
Coastline Housing Ltd.

DAIKIN ALTHERMA
PRODUCT RANGE

Complete Solution

Daikin Altherma provides a complete whole house solution for heating and hot water, which includes the heat pump, heat exchangers, hydraulic components, hot water cylinder and controls. All systems can be connected to underfloor heating, fan coil units or radiators. Individual room thermostats can be connected to the Daikin Altherma control system for precise comfort all around the home.

With the introduction of Daikin Altherma HT, Daikin Altherma now provides a solution for low temperature and high temperature applications.

Technically Superior

Daikin Altherma has inverter technology for efficient operation and low start current requirements, as well as built in weather compensation control to give a consistent comfortable controlled environment whatever the outside ambient temperature.

Installation and Support

Daikin UK is a nationwide organisation with a large network of Daikin Altherma trained installers throughout the UK. Daikin Altherma installers go through an extensive training programme, including installation and comissioning.

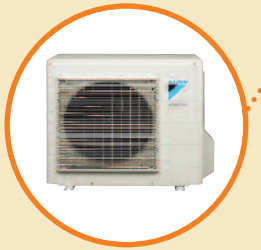
Daikin UK has a technical support team based in Surrey and also Regional centres in Birmingham, Bristol, Manchester and Glasgow, to provide local and fast support.

The Daikin Altherma product range offers the most diverse and complete air source heat pump solutions ideally suited to the profile of the UK housing market.

Optional Solar Kit

Domestic Hot Water Cyinder

Indoor Hydrobox

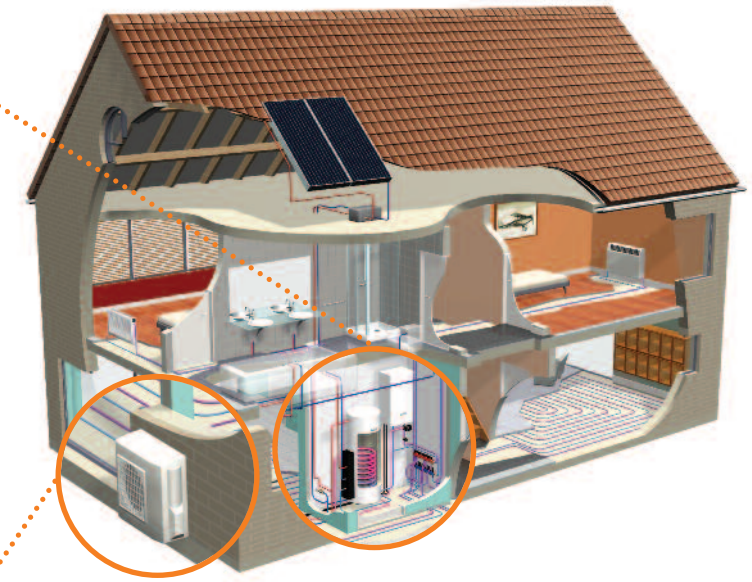


Outdoor Unit

Daikin Altherma Split System

Flexible for New Build and Refurbishment

Low Temperature Application



DAIKIN ALTHERMA SPLIT

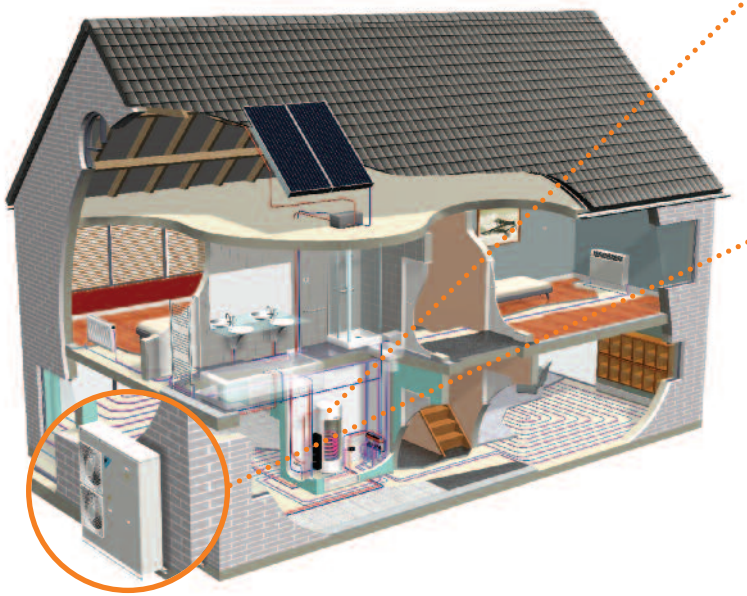
- Provides maximum installation **flexibility**
- Compact outdoor unit and discreet hydrobox (indoor unit)
- Outdoor unit can be located remotely (up to 70m)
- No risk of freezing as all water pipes within the main building
- Solar panel connection option

Heat pump type - Outdoor (compressor) + Indoor (hydraulic parts)
R-410A refrigerant piping - Between outdoor unit and indoor unit
H_2O piping - Between indoor unit and heating emitters
Leaving Water Temperature - Up to 50°C
Capacities from - 5.75kW – 16 kW

Daikin Altherma Monobloc

Single unit containing all components in outdoor unit

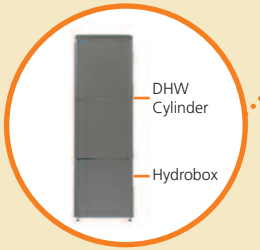
Low Temperature Application



Hot water Cylinder and Optional Solar Kit

Monobloc Outdoor Unit

Outdoor Unit



Indoor Unit

DAIKIN ALTHERMA MONOBLOC

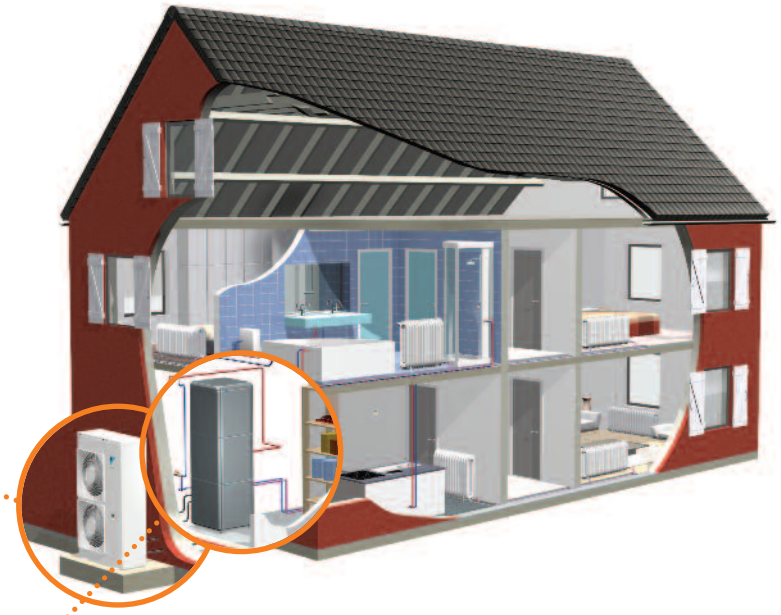
- **Simplified** installation, as all components in the outdoor unit
- Only water connections, no refrigerant handling required
- Contains main hydraulic components
- Anti-freeze function eliminates the need for glycol
- Solar panel connection option

Heat pump type - Outdoor unit only (compressor and hydraulic parts combined)
R-410A refrigerant piping - Not necessary
H_2O piping - Between outdoor unit and heating emitters
Leaving Water Temperature - Up to 50°C
Capacities from - 11kW to 16kW

Daikin Altherma HT

Ideal as direct replacement for existing boiler

High Temperature Application



DAIKIN ALTHERMA HT

- Superior cascade heat pump technology
- Perfect for combination with existing high temperature radiatiors
- Temperature of 80°C can be reached without additional electric heating
- No loss of capacity in UK climate (down to -10°C)
- Fast Domestic hot water recovery time - as gas boiler

Heat pump type - Outdoor (compressor 1) + indoor (compressor 2 and hydraulic parts)
R-410A refrigerant piping - Between outdoor unit and indoor unit
H_2O piping - Between indoor and heating emitters
Leaving Water Temperature - Up to 80°C
Capacities from - 11kW to 16kW

ADVANTAGES
TO SOCIAL HOUSING

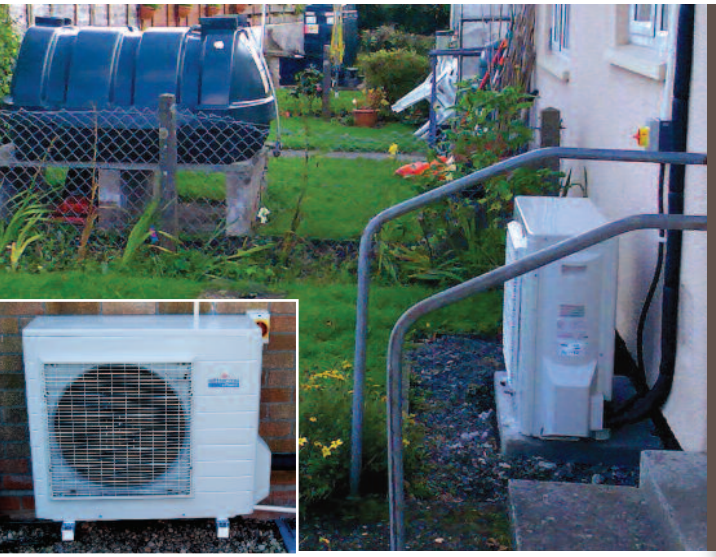
Daikin Altherma is the best sustainable energy solution for domestic heating and hot water available in the marketplace. Daikin Altherma is a well proven and tested product, able to meet the needs of modern building requirements and legislation in terms of carbon emissions and improved energy efficiency.

The message is clear

Daikin Altherma satisfies the heating and hot water needs in houses and apartments for everyone, from the housebuilder and developer, to the home owner.

ADVANTAGES TO SOCIAL HOUSING PROVIDERS

- 30 – 50% reduction in CO_2 emissions
- Manufactured and provided as a complete package from Daikin
- Helps achieve 3 star rating and higher in the Code for Sustainable Homes
- Easy to install, no groundwork i.e. trenches or boreholes
- No gas supply required. Ideal for properties not on the gas grid
- No flues or ventilation required
- No fuel storage tanks required
- Robust and reliable
- Comparable installation costs to gas fired boilers
- Single phase power supply with low starting current
- Flexible, can be connected to underfloor heating, radiators or fan coils
- Comprehensive product range ideally suited to the UK housing market
- Like for like installation compared to traditional boilers, easily adapted for refurbishment of older properties



DID YOU KNOW THAT...

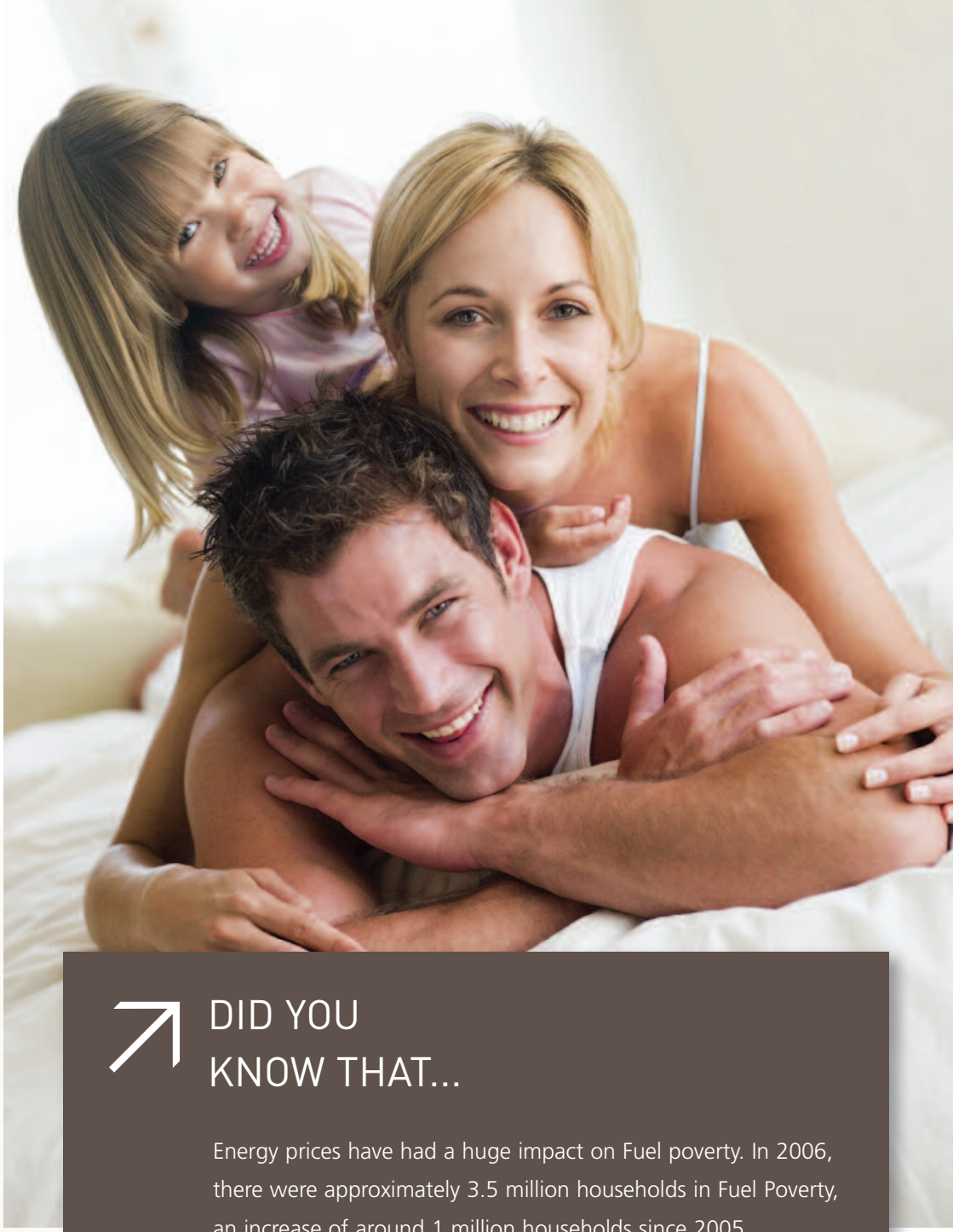
With Daikin Altherma you need no flues or fuel lines, no storage tanks or groundworks. The Daikin Altherma system is unobtrusive, and provides a space saving solution with installation flexibility.

ADVANTAGES TO SOCIAL HOUSING TENANTS

- Energy efficient, saving up to 50% of fuel bill compared to traditional boiler systems
- Space saving, as no fuel storage tanks are required
- Comfortable environment with consistent room temperatures all year round
- Supreme performance even in extreme conditions (-20°C)
- Satisfies all heating and hot water requirements
- Completely safe to use with no inflammable fuels or dangerous flue gases
- Low maintenance costs compared to fossil fuel systems
- Low noise – unobtrusive and quiet
- Large life time energy cost savings for the tenant
- Can be connected to room thermostat to regulate ideal temperature easily and conveniently

'Oil, solid fuel and electric storage heating are the most costly forms of heating and many tenants using these systems are under considerable financial constraints because of the high cost. By installing Daikin Altherma we have effectively reduced their heating costs by at least 50%, as well as improving the overall quality of operation and heating in each property.'

Derek Chapman, Project Engineer Coastline Housing Ltd.



DID YOU KNOW THAT...

Energy prices have had a huge impact on Fuel poverty. In 2006, there were approximately 3.5 million households in Fuel Poverty, an increase of around 1 million households since 2005.

DAIKIN

altherma

Head office

Daikin Airconditioning UK Limited
The Heights, Brooklands, Weybridge, Surrey KT13 0NY
Tel 0845 6419000 Fax 0845 6419009

www.altherma.co.uk

DAIKIN UK
RECYCLING
END OF LIFE
AIR CON
UNITS

FSC LOGO HERE
PRINTERS WILL
PUT ON

Approved product

MCS

The Certification Mark for Onsite Sustainable Energy Technologies

Certificate Number: MCS HP0006

Daikin UK is approved by LRQA for its Quality Management System in accordance with the ISO9001 standard. ISO9001 pertains to quality assurance regarding design, development, manufacturing as well as to services related to product.

ISO14001 assures an effective environmental management system in order to help protect human health and the environment from the potential impact of our activities, products and services and to assist in maintaining and improving the quality of the environment.

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

Daikin Europe N.V. participates in the Eurovent Certification Programme for Air Conditioners (AC), Liquid Chilling Packages (LCP) and Fan Coil Units (FC): the certified data of certified models are listed in the Eurovent Directory. Multi units are Eurovent certified for combinations up 2 indoors units.

Daikin products are distributed by:

UKEPCEN09-720C • 06/09
Printed in the U.K. on paper that is 50% recycled and 50% from sustainable sources