calorex

Domestic Heat Pumps

Saving energy comes naturally to us.

Low carbon solutions for heating and hot water

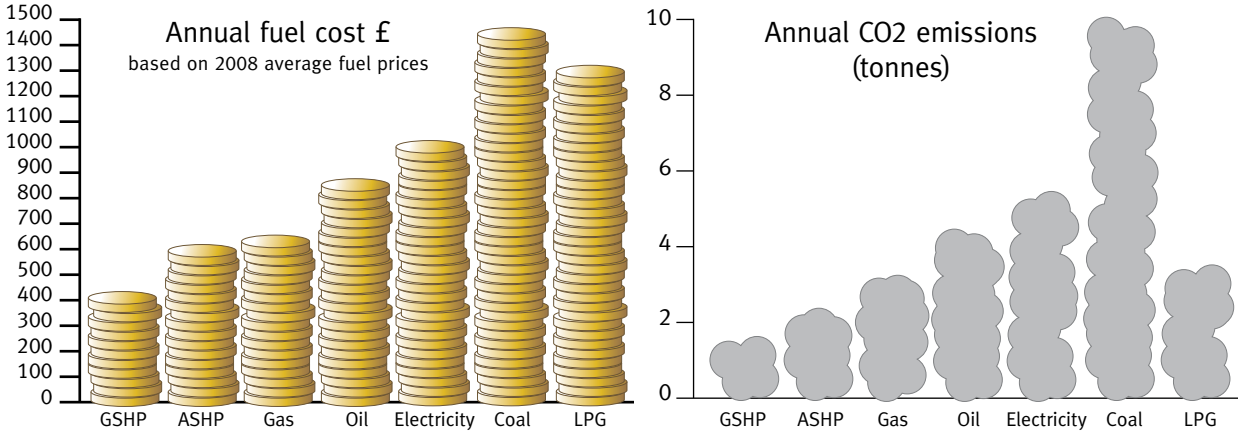
The sustainable heating solution for today and tomorrow

Home heating with lashings of hot water

Whether your concerns are for the environment or your fuel bill, sustainable heating offers benefits for both.

Incredibly, domestic heating accounts for almost 30% of all carbon emissions in the UK. Heat pumps are proven to reduce emissions by an average of 50% compared to fossil fuel boilers or electric heating, making them the most effective way of reducing the impact on both the environment and domestic fuel costs. Fitting a heat pump will help you, the homeowner, significantly reduce your energy bills as it can deliver up to 4kW of useful heat for every 1kW of energy needed to run it. Heat pumps also help to preserve the dwindling supplies of ever more expensive fossil fuels as they make the most of the free energy from the sun.

Heating and hot water supply for a 100m² bungalow



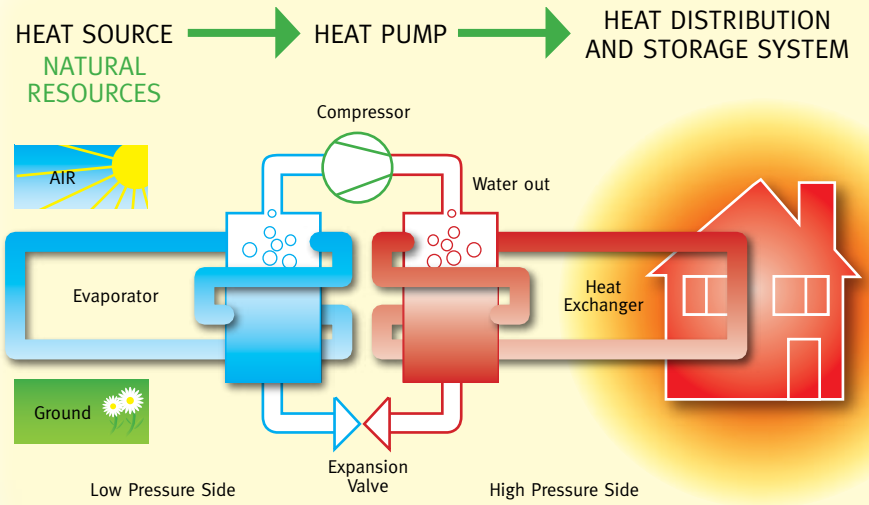
NOTE: GSHP = Ground Source Heat Pump. ASHP = Air Source Heat Pump.

How do heat pumps work?

Up to 400% efficient

A heat pump extracts the heat from solar energy stored in the ground or in the air and concentrates it for use in a domestic heating system. It acts like a fridge in reverse. Conventional refrigeration technology absorbs the heat from the ground or air into a refrigerant, which is then compressed to raise its temperature. A heat exchanger then takes out the heat and uses it in the heating system to provide warmth and hot water. Domestic heat pumps have been used in Europe for many years where they are a tried and tested form of high efficiency low cost heating.

The Heat Pump Cycle



Calorex heat pumps are charged with non-toxic, bio-degradable, CFC-free refrigerant, which has no detrimental impact on the earth's protective ozone layer.

Calorex heat pumps – designed and manufactured in the UK

Calorex has been manufacturing heat pumps in the UK for over 30 years and has unrivalled experience and expertise in heat pump technology. More domestic installations have been supplied by Calorex than by any other manufacturer.

Our range of ground and air source heat pumps has been developed specifically for UK housing, climate conditions and heating system designs. As well as efficiently heating your home, Calorex heat pumps are uniquely designed to supply domestic hot water at 65°C, without the need for electric heating back up. Heating and hot water are managed by a standard central heating programmer with a room thermostat controlling the heat output in exactly the same way as with a conventional boiler.

Legislation and funding support

Most planning application approvals now require houses to be built to code levels 3 or 4 of the new Code for Sustainable Homes. This enforces substantial improvements in energy efficiency over and above Building Regulations Part L. Field trials show that code level 3 can be achieved with a Calorex air source heat pump and level 4 with a Calorex ground source heat pump with no change to the basic structure of the building.

The installation of ground source heat pumps can qualify for funding support of up to 80% under the Carbon Emissions Reduction Target (CERT) and Low Carbon Building Programme (LCBP) schemes. The Calorex sales office can arrange for funding support quotes with E.ON who is a nominated supplier under these schemes. Calorex air source heat pumps now also qualify as a renewable energy source under European legislation. Private householders can apply for grants of £1200 for a ground source heat pump or £900 for an air source heat pump under the LCPB scheme.

Product features

- **Accredited under the Government's Microgeneration Certification Scheme (MCS)**
- **Dual temperature operation for maximum heating efficiency**
- **DHW up to 65°C with no immersion heater or direct electrical resistance heater required**
- **Space heating temperatures variable from 35°C to 55°C for underfloor heating or radiators**
- **Twin compressors in larger models to optimise efficiency**
- **Plumbing and electrical connections only**
- **Only a single phase electricity supply required**
- **No gas supplies, flues or ventilation required**
- **Maintenance free – no expensive annual servicing required**

Ground source or air source?

Both ground source and air source heat pumps offer energy efficiency, reduced carbon emissions and lower running costs. Your choice of system will depend on your budget and on the type of application best suited to your needs and your home.

Benefits of ground source:

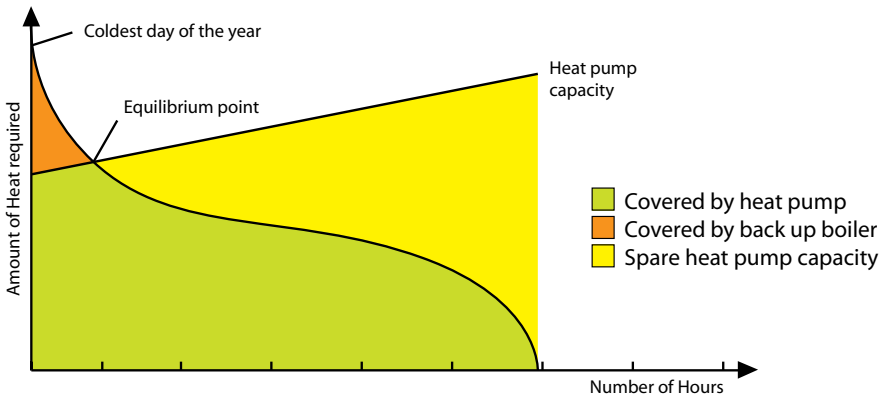
- Higher efficiency because it has a constant temperature energy source – the ground
- Smaller sized units for internal or external installation
- Ideal for multiple installations with vertical boreholes (reduced drilling costs)

Benefits of air source:

- Lower capital cost
- Operational to -15°C
- Reverse cycle defrost only 4 minutes per hour
- Ideal for multi-storey apartment buildings
- For stand-alone use (monovalent) or integration with existing heating systems (bivalent)

Bivalent installation - Air source heat pump with existing boiler

Whilst Calorex heat pumps can be sized to provide your total heating and hot water requirement, it is often better with existing properties to link a heat pump into the system whilst retaining the back-up of the existing boiler. The heat pump is sized to provide a variable proportion of the annual heating requirement (say 85%) with the existing boiler integrated to deliver the balance on the coldest days.



Technical Specification

Air Source Heat Pumps

MODEL	Units	AW 4502	AW 9002	AW 12002
Air On 0°C 90%RH *				
Output To Water (@35°C) #	kW	3.39	6.56	9.50
Electrical Input	kW	1.11	2.17	3.14
Output To Water (@55°C) #	kW	2.97	5.63	8.20
Electrical Input	kW	1.54	2.93	4.26
Air On 7°C 87%RH *				
Output To Water (@35°C) #	kW	4.40	8.40	12.20
Electrical Input	kW	1.18	2.27	3.29
Air On 20°C 60%RH *				
Output To Water (@35°C) #	kW	6.30	11.81	17.20
Electrical Input	kW	1.37	2.58	3.75
Output To Water (@55°C) #	kW	6.10	11.44	16.60
Electrical Input	kW	1.78	3.35	4.85
ELECTRICAL DATA				
Electrical Supply 1 Phase	V/ph/Hz	230/240V~1N/50Hz		
Minimum Supply Capacity	amps	13	25	32
Maximum Supply Fuse 1 ph N/ Type C MCB	amps	15.0	32.0	40.0
Soft Start Amps 1 ph N	amps	19	35	31
AIR DATA				
Air Flow (Anem' @ air on grille. Wet evap')	m^3/hr	2700	3000	4400
Fan External Resistance STD	mm Wg	0	0	0
Fan External Resistance "F"	mm Wg	6	6	6
WATER DATA				
Water Flow ±20%	litres/min	7.5	15	20
Pressure Drop (Water)	metres hd	1.1	0.7	0.2
Condenser Volume	litres	2.0	3.5	6.5
Water Connections	inches	¾" BSPM	¾" BSPM	1" BSPM
Condensate Water Connections	inches	¾" Domestic Waste		
Typical Buffer Tank Sizes	litres	50	100	150
SOUND DATA				
Sound Pressure @ 1 metre	dB(A)	56	58	58
Sound Pressure @ 10 metres	dB(A)	37	39	39
PHYSICAL DIMENSIONS				
Width (unpacked)	mm	1107	1140	1582
Depth (unpacked)	mm	505	557	607
Height (unpacked)	mm	955	961	955
Weight (unpacked)	kg	150	164	264

NOTES:
1) Weight and dimensions nett.
2) Allow 500mm clearance to service panels.
3) Minimum air temperature -15°C
4) Calorex reserve the right to change or modify models without prior notice.
5) *= Outdoor heat exchanger inlet temperature
6) # = Indoor heat exchanger inlet temperature

Technical Specification

Ground Source Heat Pumps

MODEL	Units	WW 3500	WW 5000	WW 6500	WW 8000	WW 12000
Source Water/Brine on 0°C*						
Output to water (@35°C)#	kW	3.40	4.80	6.53	8.30	12.50
Electrical Input	kW	0.75	1.06	1.59	2.01	2.90
Output to water (@55°C)#	kW	2.80	3.60	6.48	8.10	12.00
Electrical Input	kW	0.76	1.10	2.08	2.58	3.90
Source Water/Brine on 15°C*						
Output to Water (@35°C)#	kW	5.90	8.20	9.71	12.31	18.90
Electrical Input	kW	0.97	1.38	1.67	2.10	3.08
Output to water (@55°C)#	kW	5.00	6.50	9.55	11.93	18.20
Electrical Input	kW	1.05	1.52	2.41	3.03	5.50
ELECTRICAL DATA						
Electrical Supply Spec' 1 Phase	V/ph/Hz	230V/~1N/50Hz				
Minimum Supply Capacity 1 Phase	amps	11	15	20	25	32
Maximum Supply Fuse 1 Phase	amps	15	20	32	32	40
Max Starting Current/Start (LRA)	amps	19	22	33	19	21
WATER DATA						
Source(Ground) Water(Brine) Flow ±10%	l/min	12	17	25	25	35
Pressure Drop (Water/Brine)	m hd	0.45	1.2	2.8	2.8	1.4
Water Connections	inches	¾" BSPM				1" BSPM
Process (Heated) Water Flow ±10%	l/min	7.5	10	15	15	20
Pressure Drop (Water)	m hd	0.79	3.5	0.7	0.7	0.4
Water Connections	inches	¾" BSPM				1" BSPM
GENERAL DATA						
Gas Charge (R134a)	kg	1.8	2.2	2.3	3.2	5.3
Sound Pressure Level @1m	dB (A)	44	45	46	48	52
DIMENSION DATA						
Width (unpacked)	mm	500	500	715	715	915
Depth (unpacked)	mm	444	444	465	465	465
Height (unpacked)	mm	850	850	945	945	945
Weight (unpacked)	kg	94	107	130	158	196
GROUND COLLECTOR EXAMPLES						
240v single phase for 1800 hours						
Heat Pump	kW	3.5	5.0	6.5	8.0	12.0
Borehole depth	m	60-80	70-90	80-100	140-170	160-190
Flat ground hose length	m	150-200	200-300	300-400	2 x 200 or 2 x 300	2 x 250 or 2 x 350
Slinky collectors	m	2 x 30	2 x 40	2 x 50	3 x 45	4 x 50

The above information is offered only as guidance and Calorex recommend that professional technical advice is sought prior to design and selection of system components.

NOTES:
1) Weight and Dimensions Nett.
2) Allow 500mm clearance to service panels.
3) Calorex reserve the right to change or modify models without prior notice.
4) *= Outdoor heat exchanger inlet temperature
5) # = Indoor heat exchanger inlet temperature

Technical Specification

Cylinders

CYLINDER CAPACITY	Type	Dimensions mm	Insulation	Order Code
HOT WATER CYLINDERS	all fitted with 3kW - 1 phase immersion heater			
140 Litres	vented	1050x550	50mm foam only	584058
150 Litres	unvented	1125 x 550	50mm foamed and cased	584067
150 Litres	unvented slimline	1700 x 450	50mm foamed and cased	584071
180 Litres	unvented	1325 x 550	50mm foamed and cased	584068
180 Litres	unvented slimline	1600 x 450	25mm foamed and cased	584072
210 Litres	unvented	1525 x 550	50mm foamed and cased	584069
210 Litres	unvented slimline	1850 x 450	25mm foamed and cased	584073
210 Litres	vented	1200 x 600	50mm foam only	584060
210 Litres	unvented twin coil	1525 x 550	50mm foamed and cased	584050
250 Litres	unvented	1780 x 550	50mm foamed and cased	584070
250 Litres	unvented twin coil	1780 x 550	50mm foamed and cased	584051
BUFFER TANKS	all fitted with 3kW - 1 phase immersion heater unvented tanks do not include expansion kits			
50 Litres	vented	450 x 450	foam only	584055
95 Litres	vented	750 x 450	foam only	584056
150 Litres	vented	1100 x 450	foam only	584057
50 Litres	unvented	450 x 450	foamed and cased	584064
95 Litres	unvented	750 x 450	foamed and cased	584065
150 Litres	unvented	900 x 500	foamed and cased	584066
COMBINED BUFFER TANKS AND CYLINDERS Buffer Tank / Cylinder	unvented tanks include 1 DHW expansion kit			
50 L / 150 L	vented	1500 x 550	foam only	584061
95 L / 180 L	vented	2100 x 550	foam only	584062
150 L / 210 L	vented	2250 x 600	foam only	584063
50 L / 150 L	unvented	1500 x 550	foamed and cased	584052
95 L / 180 L	unvented	2100 x 550	foamed and cased	584053
150 L / 210 L	unvented	2250 x 600	foamed and cased	584054

calorex®

World Leaders in Heat Pump Technology

Calorex Heat Pumps Ltd, The Causeway,
Maldon, Essex, CM9 4XD

01621 856611 or visit
www.calorex.com