



The natural combination



DAIKIN ALTHERMA
HYBRID HEAT PUMP

A new opportunity in residential heating!

There is a growing demand from home owners to replace heating systems, especially replacing of gas boilers, with more efficient, more cost-effective and more environmentally friendly systems that reduce CO₂ emissions, reduce energy consumption and protect their budget.

The answer is the Daikin Altherma hybrid heat pump.



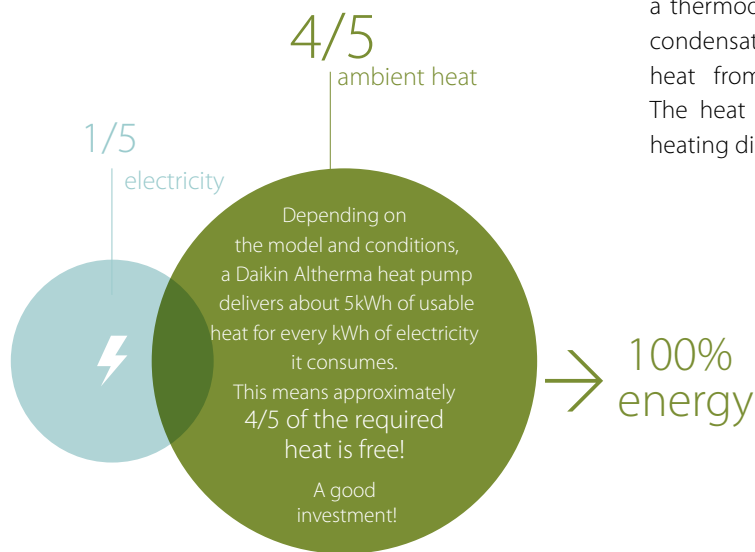
For space heating, the Daikin Altherma hybrid heat pump will **combine air-to-water heat pump technology with gas condensing technology** by searching for the optimum economical condition for its operation, combining parameters of energy costs (electricity, gas), heat pump efficiency and heat load requirements to deliver up to 35% more heating efficiency, plus major cost savings.

For domestic hot water, the Daikin Altherma hybrid heat pump optimises the operation of the most efficient gas condensing boiler.

Your benefits

- ✓ Low running costs for heating and domestic hot water compared to traditional boilers
- ✓ Low investment cost
- ✓ Provides sufficient heat in renovation applications
- ✓ Easy and fast installation

What is an air-to-water heat pump?



The Daikin Altherma air-to-water heat pump uses a sustainable energy source: extracting heat from the outside air. In a closed loop containing a refrigerant, a thermodynamic cycle is created through evaporation, condensation, compression and expansion. This 'pumps' heat from a lower to a higher temperature level. The heat gained is transferred to your home's central heating distribution system via a heat exchanger.

What is condensing boiler technology?

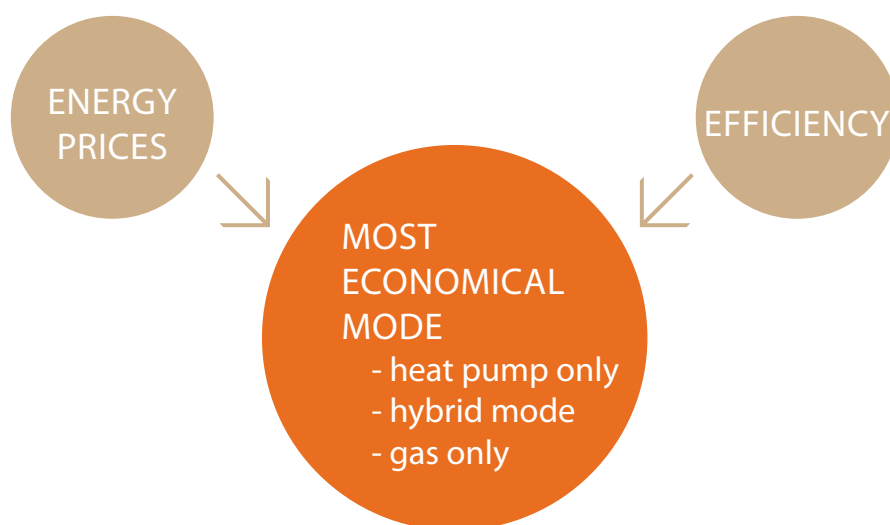
Condensing boiler technology converts the fuel used into usable heat, virtually without loss. This is both good for the environment and your wallet, since lower energy consumption means lower heating costs, less use of energy resources and a reduction in CO₂ emissions. During this process, flue gases are cooled to the extent that the steam they contain is condensed. The energy that is generated is used as heating energy.





Low running costs for heating and domestic hot water compared to traditional boilers

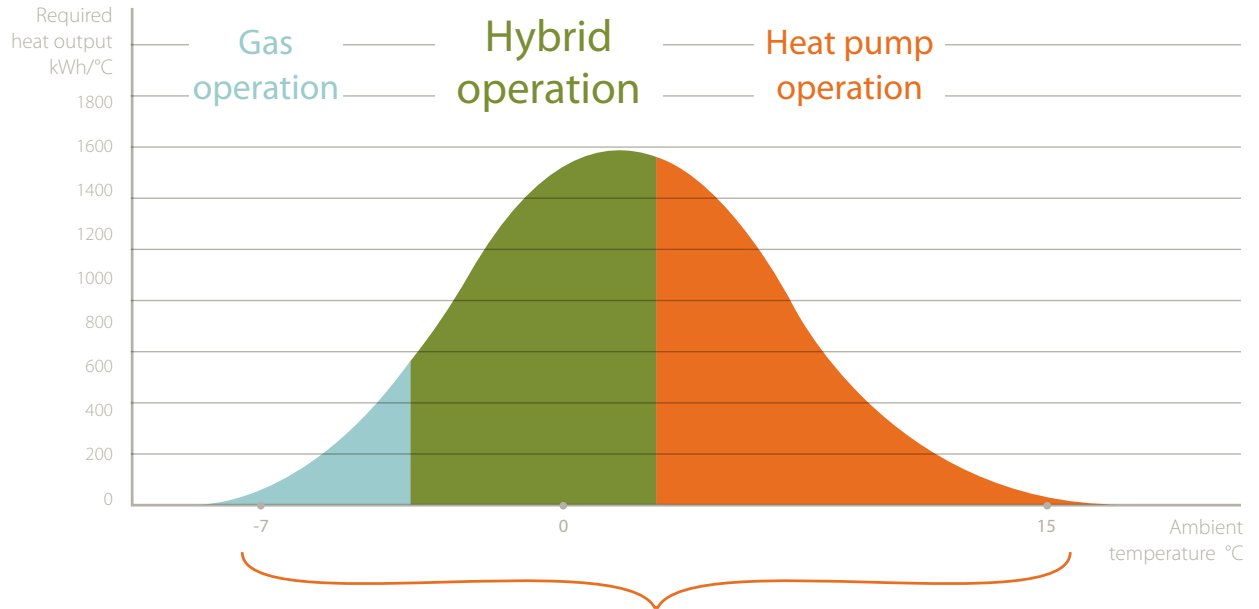
→ A. SPACE HEATING



Depending on the outdoor temperature, energy prices and the internal heat load, the Daikin Altherma hybrid heat pump smartly chooses between the heat pump and/or the gas boiler, possibly in simultaneous operation, always selecting the most economical mode to operate.

Looking at an average European climate, the largest part of the required heat output is covered by the hybrid and heat pump operation, resulting in up to 35% more heating efficiency.

Illustration of an average European climate



+ 35% efficiency (space heating) compared to condensing boiler

- Heat load: 14 kW
- 70% heat pump output
- 30% gas boiler output

Heat load = the capacity of the space heating system required to maintain comfortable indoor temperatures at any time.
 Required heat output = heat load x n° of occurring hours per year

Heat pump operation

The heat pump integrated in the Daikin Altherma hybrid heat pump is the best available technology for optimizing running costs at moderate outdoor temperatures, resulting in a coefficient of performance of 5.04⁽¹⁾!

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

Hybrid operation

If a high heat load is required, or to achieve the highest efficiencies at the current conditions, both the gas boiler and heat pump operate at the same time in the most economical way.

The water flow rate will be automatically regulated, in order to have the possibility of lowering the temperature of the water flowing from the radiators to the heat pump and so maximizing heat pump efficiency.

The exact time the switch-over is made from heat pump operation to hybrid operation depends on the house characteristics, energy prices and the requested indoor temperature setting.

Gas operation

When outdoor temperatures are dropping drastically, it is no longer efficient to operate in hybrid mode. At that point, the unit will switch automatically to gas operation only.

→ B. DOMESTIC HOT WATER

The domestic hot water is heated using gas condensing technology: cold tap water flows directly into a special dual heat exchanger that allows optimal and continuous condensing of the flue gases during domestic hot water preparation, **resulting in an efficiency increase of 10-15% compared to traditional gas condensing boilers.**

Additionally, thanks to the hybrid principle, when space heating is provided by the heat pump, domestic hot water can simultaneously be provided by the condensing technology, resulting in optimal comfort.

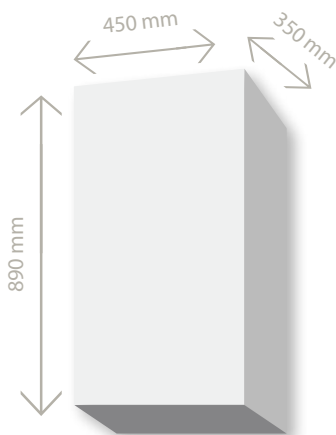


Low investment benefits

There is no need to replace the existing radiators (up to 80°C) and pipe work as our Daikin Altherma hybrid heat pump connects directly to the existing heating system, thus reducing the cost and disruption of installation. Thanks to the compact dimensions, the space needed for the new system is very similar to that of an existing system, so there is no loss of space and no need for structural modifications.



Daikin Altherma
hybrid heat pump



Existing gas boiler



Providing sufficient heat in renovation applications

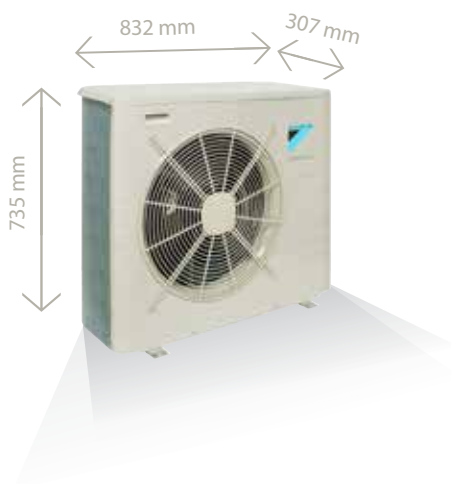
Several applications are possible using the Daikin Altherma hybrid heat pump as all heat loads are covered up to 27 kW. The gas boiler can be installed without the heat pump in the early stages, in order to quickly restart heating in the case of a breakdown of the existing gas boiler.

Easy and fast installation

The Daikin Altherma hybrid heat pump is delivered as three large components:

- heat pump outdoor unit
- heat pump indoor unit
- gas condensing boiler

Heat pump outdoor unit



Gas condensing boiler



Heat pump indoor unit

As the heat pump indoor unit and gas condensing boiler are delivered as separate units, they are easier to handle and manipulate, and easier to install.

The heat pump indoor unit is easily mounted on the wall with a standard back plate. With the quick interconnections, the gas condensing boiler is easily attached to the heat pump indoor unit, resulting in a very compact unit.

Similar to all wall mounted gas boilers, all the connections are at the bottom and all the components can be accessed from the front, which makes the unit easy to service and maintain.



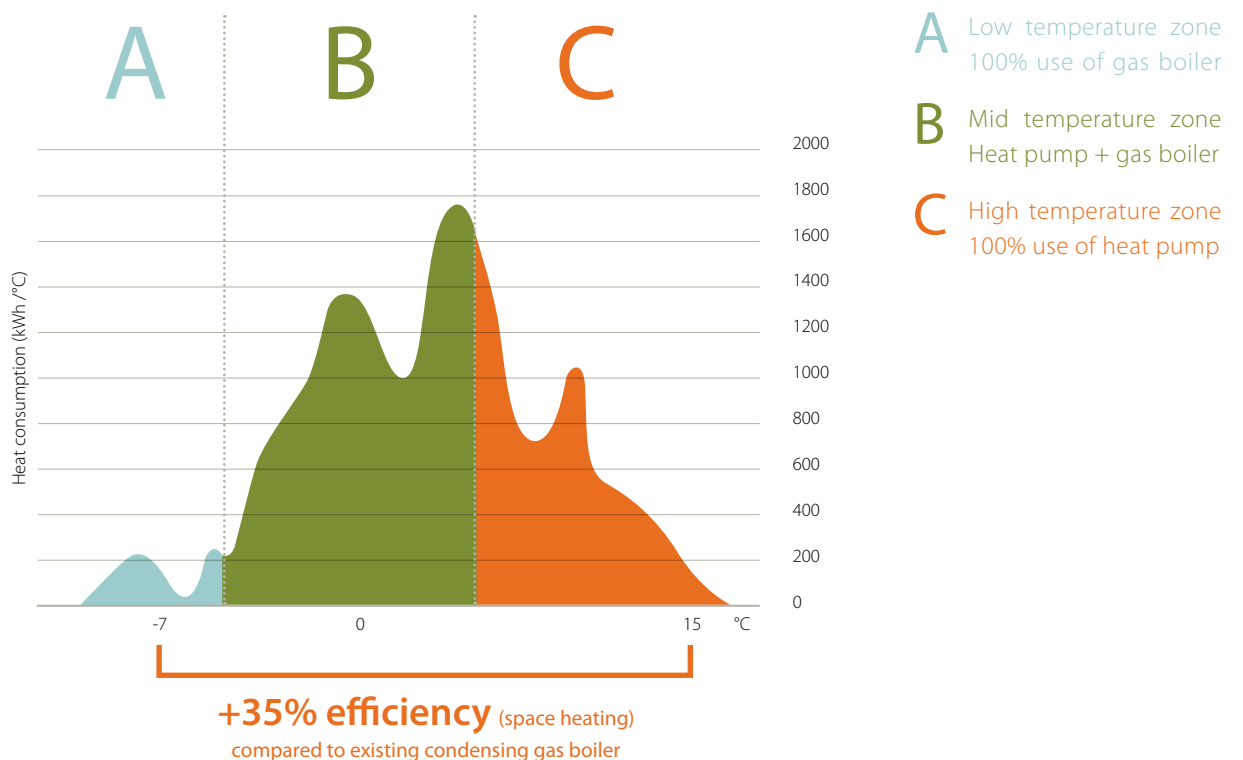
Replacing a gas boiler with a Daikin Altherma hybrid heat pump means **saving on running costs for both space heating and the domestic hot water supply**

Case study

Running costs comparison versus new gas condensing boiler -
Typical Belgian example

With our Daikin Altherma hybrid heat pump, the most cost-efficient combined operation will be used no matter what the ambient outdoor temperature is.

Heat consumption during a typical Belgian winter





	DAIKIN ALTHERMA HYBRID HEAT PUMP	NEW GAS CONDENSING BOILER	EXISTING GAS CONDENSING BOILER
		SPACE HEATING	
Energy supplied by HP	12,800 kWh		
HP efficiency	3,64 SCOP		
Energy supplied by gas boiler	6,700 kWh	19,500 kWh	19,500 kWh
Space heating efficiency	90%	90%	75%
Running costs	1,220 €	1,520 €	1,820 €
		DHW HEATING	
Energy supplied by gas boiler*	3,000 kWh	3,000 kWh	3,000 kWh
DHW heating efficiency*	90%	80%	65%
Running costs*	230 €	260 €	320 €
		TOTAL	
Running costs	1,450 €	1,780 €	2,140 €

* for combi-boiler, no separate domestic hot water tank

→ **Yearly savings:**
for space heating and domestic hot water

versus new gas condensing boiler

330 €/year

-19%

versus existing gas condensing boiler

690 €/year

-32%

Heat load	16 kW
Design temperature	-8°C
Space heating off temperature	16°C
Maximum water temperature	60°C
Minimum water temperature	38°C
Gas price	0.070 €/kWh
Electricity price (day)	0.237 €/kWh
Electricity price (night)	0.152 €/kWh
Total space heating requirement	19,500 kWh
Total DHW heating requirement (4 persons)	3,000 kWh

Specifications



Indoor unit



Outdoor unit

Heating & Cooling

Indoor unit				EHYHBX08AV3		EHYKOMB33AA	
Casing	Colour			White		White - RAL9010	
	Material			Precoated sheet metal			
Dimensions	Unit	HeightxWidthxDepth	mm	902x450x164		710x450x240	
Weight	Unit			31.2		36	
Operation range	Heating	Ambient	Min.-Max.	°C		-25~25	
		Water side	Min.-Max.	°C		25~55	
	Cooling	Ambient	Min.-Max.	°C		10~43	
		Water side	Min.-Max.	°C		5~22	
	Domestic hot water	Water side	Min.-Max.	°C		---	
Power supply	Name			V3		-	
	Phase					1~	
	Frequency					50	
	Voltage					230	

(1) DB/WB 7°C/6°C - LWC 35°C (DT=5°C), boiler bypassed

Outdoor unit				EVLQ08CV3					
Heating capacity	Min.			kW		1.80 (1) / 1.80 (2)			
	Nom.			kW		7.40 (1) / 6.89 (2)			
	Max.			kW		10.02 (1) / 9.53 (2)			
Cooling capacity	Min.			kW		2.50 (3) / 2.50 (4)			
	Nom.			kW		6.86 (3) / 5.36 (4)			
Power input	Heating	Nom.			kW		1.66 (1) / 2.01 (2)		
	Cooling	Nom.			kW		2.01 (3) / 2.34 (4)		
COP							4.45 (1) / 3.42 (2)		
EER							3.41 (3) / 2.29 (4)		
Dimensions	Unit	HeightxWidthxDepth			mm		735x832x307		
Weight	Unit					kg		56	
Operation range	Heating	Min.-Max.		°CWB		-25~25			
Refrigerant	Type							R-410A	
	Charge							kg	
Sound power level	Heating	Nom.		dBA		62			
Sound pressure level	Heating	Nom.		dBA		49 (3)			
Power supply	Name/Phase/Frequency/Voltage			Hz/V		V3/1~/50/230			
Current	Recommended fuses			A		20			

(1) Condition: Ta DB/WB 7°C/6°C - LWC 35°C (DT = 5°C) (2) Condition: Ta DB/WB 7°C/6°C - LWC 45°C (Dt=5°C) (3) Cooling: Ta 35°C - LWE 18°C (DT=5°C) (4) Cooling: Ta 35°C - LWE 7°C (DT=5°C)

Heating only

Indoor unit				EHYHBH05AV3		EHYHBH08AV3		EHYKOMB33AA			
Casing	Colour			White		White		White - RAL9010			
	Material					Precoated sheet metal					
Dimensions	Unit	HeightxWidthxDepth			mm		902x450x164		710x450x240		
Weight	Unit					kg		30		31.2	
Operation range	Heating	Ambient	Min.-Max.	°C		-25~25		---		---	
		Water side	Min.-Max.	°C		25~55		15 (1)~80 (1)		15 (1)~80 (1)	
	Domestic hot water	Water side	Min.-Max.	°C		---		40~65		40~65	
Power supply	Name					V3		-		-	
	Phase							1~			
	Frequency							50			
	Voltage							230			

(1) DB/WB 7°C/6°C - LWC 35°C (DT=5°C), boiler bypassed

Outdoor unit				EVLQ05CV3		EVLQ08CV3			
Heating capacity	Min.			kW		1.80 (1) / 1.80 (2)			
	Nom.			kW		4.40 (1) / 4.03 (2)			
	Max.			kW		5.12 (1) / 4.90 (2)			
Power input	Heating	Nom.		kW		0.87 (1) / 1.13 (2)			
COP							5.04 (1) / 3.58 (2)		
Dimensions	Unit	HeightxWidthxDepth			mm		735x832x307		
Weight	Unit					kg		54	
Operation range	Heating	Min.-Max.		°CWB		-25~25			
Refrigerant	Type							R-410A	
	Charge							kg	
Sound power level	Heating	Nom.		dBA		61		62	
Sound pressure level	Heating	Nom.		dBA		48		49	
Power supply	Name/Phase/Frequency/Voltage			Hz/V		V3/1~/50/230			
Current	Recommended fuses			A		20			

(1) Condition: Ta DB/WB 7°C/6°C - LWC 35°C (DT = 5°C) (2) Condition: Ta DB/WB 7°C/6°C - LWC 45°C (Dt=5°C)





Today, Daikin leads the way towards more efficient, cost-effective and environmentally friendly comfort solutions, introducing products optimised for all seasons. In fact, Daikin products reduce energy and costs in a smart way. They are designed to perform under all conditions and reflect the actual performance you can expect over an entire heating and cooling season. So, with Daikin you make the right choice for your wallet... and the environment.

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