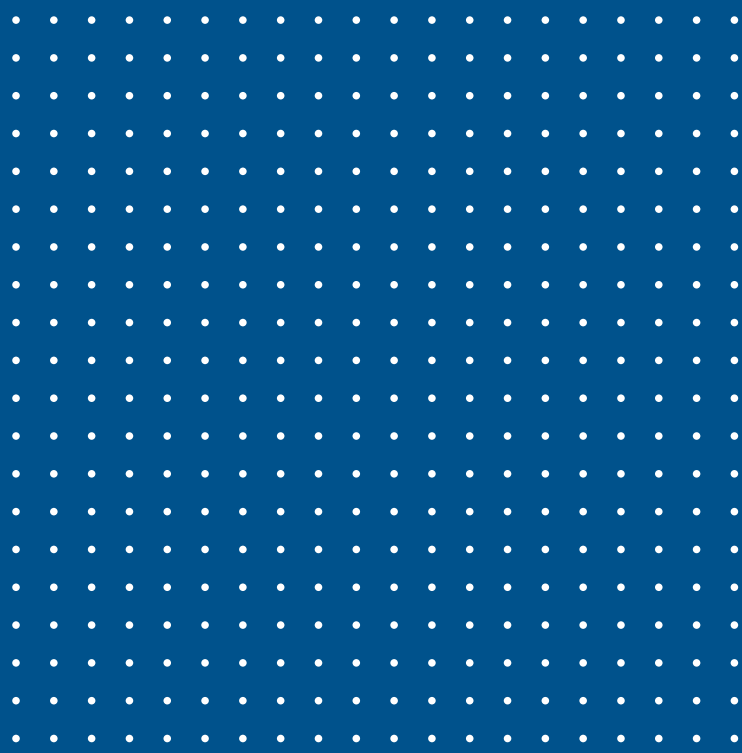


**The ultimate total solution for sustainable heating, ventilation and hot water supply: The Passive House Appliance**



**Climate Systems**

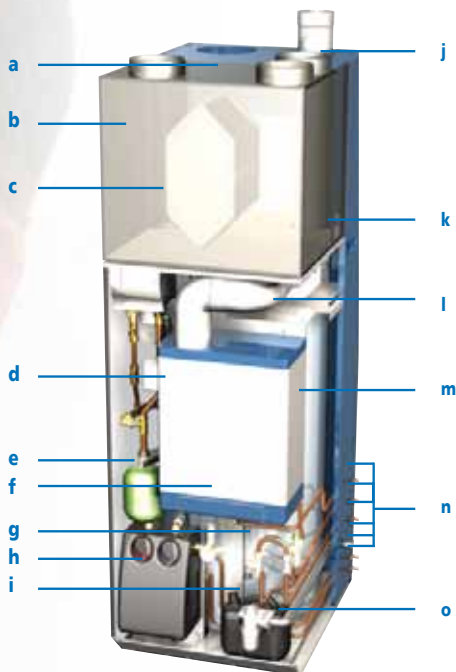
*“Energie saving in new built dwellings and renovation.”*

**For sustainable heating domestic hot water**



*The Passive House Appliance*

*Brink Climate Systems offers an integrated solution for sustainable heating, high-efficiency ventilation with heat recovery, and domestic hot water supply. All this for dwellings that comply with the Passive House standard. Current developments with regard to CO<sub>2</sub> reduction objectives in Europe have considerably raised social awareness with regard to increased energy savings in the built-up environment. With the Passive House Appliance, Brink Climate Systems wants to make a contribution in the Netherlands to the high ambitions recently laid down in various covenants between governments and the building industry aimed at energy saving measures. This solution provides a better balance between comfort and energy savings.*



### ELEMENTS

- 611817/a Ventilation "to dwelling"
- b Renovent HR
- c Heat exchanger
- d Central heating appliance
- e Expansion vessel
- f Control panel central heater
- g Inlet combination
- h Solar pump
- l Air trap
- j Flue gas discharge
- k Electric connections
- l Postheater
- m Water heater
- n Gas supply, domestic hot water connection, condensate discharge, solar connection, extra connection convector(s) or radiator(s)
- o Collector vessel

Exploded view Passive House Appliance

# inable ng, ventilation ot water supply

### FIELD OF APPLICATION

The Passive House Appliance is suitable for newly built dwellings that comply with the Passive House criteria so they are almost energy-neutral, referred to as Passive Houses. In addition, the concept is also suitable for innovative renovation projects. So far passive homes are mainly being built in German-speaking countries, Scandinavia and Belgium. The Passive House Appliance offers an affordable solution for ensuring comfortable living and air quality, certainly at increasing energy costs.

### PASSIVE HOUSE CRITERIA

The Passive House Appliance is designed for dwellings that comply with strict preconditions with regard to energy

consumption:

- 15 kWh/m<sup>2</sup> for space heating.
- 120 kWh/m<sup>2</sup> primary total, including domestic use (48 kWh/m<sup>2</sup> downstream of the power plant.
- Extra air tightness  $q_{v10} \leq 0,15$ .
- Dwellings must comply with the Passive House project package calculation 'PassiefHuis ProjecteringsPakket calculation' (PHPP calculation).
- Very highly insulated envelope with high comfort level throughout.
- Designed to ensure that the dwelling can be heated with a minimum of installation engineering systems and that active cooling is not necessary.
- Availability of gas, water and electric power.

### OPERATION PASSIVE HOUSE APPLIANCE

- Brink HR Central heating appliance postheats the top 80 litres if insufficient solar energy is available.
- Renovent HR recovers heat from ventilation air.
- Postheater heats fresh outdoor air.
- Heating through ventilation air and/or convectors/radiators.

### LOW ENERGY CONSUMPTION

Application of balanced ventilation with heat recovery (Renovent HR) ensures that almost all heat is recovered. Renovent HR delivers considerable energy savings up to no less than 95% compared to a traditional ventilation system. So the appliance not only ensures an optimum indoor environment, but the global environment also benefits.

Use of solar collectors may result in energy savings of up to 55% for domestic hot water. In addition, considerable savings on space heating can be realised. The annual energy demand of a Passive House does not exceed 15 kWh per m<sup>2</sup>. This roughly matches 1.5 m<sup>3</sup> of gas per m<sup>2</sup> of useable area. In other words, about two 100 Watt light bulbs could heat a room of 20 m<sup>2</sup> and a hairdryer would suffice to heat a Passive House of 100 m<sup>2</sup>.

*“A pleasant indoor climate  
at the lowest possible  
energy consumption.”*

**Compact  
comfort a**



**Application**

The Passive House concept is suitable for newly built houses as well as for innovative renovation projects.

*A Passive House stands out in that it combines a pleasant indoor climate with a very low energy consumption. The Passive House principle is based on the starting point that dwellings must be insulated effectively enough to make a central heating installation and active cooling superfluous. Because of its clever design, heat can hardly escape from the Passive House in winter. The design features excellent envelope insulation, without thermal bridges and with adequately sealed joints and cracks, combined with carefully thought out sun orientation and sun screening. As a result, it hardly takes any energy to keep the home nice and warm in winter and pleasantly cool in summer.*

# Passive House appliance versus and energy savings



## **Solar collector**

A solar collector is used to generate heat which is stored in a solar water heater.

## **INTEGRATED APPLIANCE**

The Brink Climate Systems Passive House Appliance is the first to combine various functions into one compact, integrated appliance. The unique control system and the combination of all components in one appliance reduces the risk of installation errors and guarantees an optimum result. The Passive House Appliance is a giant leap forwards towards energy-neutral dwellings.

## **OPERATION PASSIVE HOUSE APPLIANCE**

A solar collector with an area of well over 4 m<sup>2</sup> generates heat and stores it in a solar water heater. That is the heart of the system. This solar water heater supplies domestic hot water. It also feeds the postheater.

If the solar heat does not suffice, the vessel is kept at the right temperature by a Brink HR central heating boiler with HR 107 efficiency. If required, the system can be supplemented with comfort heating in the living room, for instance with a convector. The Renovent HR heat recovery unit acts as the lungs of the system. The Renovent HR supplies clean and fresh postheated air to the dwelling.

## **SOLAR WATER HEATER, HEART OF THE SYSTEM**

The solar water heater supplies domestic hot water and feeds the postheater downstream of the Renovent HR. The solar water heater has a capacity of 200 litres of sanitary water for maximum utilisation of solar energy to guarantee perfect hot water

comfort. The room thermostat controls the hot water supply. Primary heating of the solar water heater is arranged by a solar collector and, if necessary, it is postheated by a modulating Brink HR high-efficiency central heating appliance.

## **RENOVENT HR, LUNGS OF THE SYSTEM**

The Renovent HR ensures healthy and comfortable ventilation with heat recovery. That also ensures the required ventilation. Dependent on heat demand, exhaust comfort and free cooling demand, Renovent HR moves the required quantity of air in a comfortable manner. The occupant can control the exhaust rate and fresh air supply with a simple multiple switch.

The appliance is equipped with a preheater. That makes it possible to suck in the required quantity of outside air also at temperatures below 0°C and to transfer to it the heat from the exhaust air. Preheating is arranged through an electric heater or soil pipe.

## **SUMMER VENTILATION**

For carrying off excess heat during the summer period, Passive Houses have opening windows and/or shutters and a skylight in the central staircase. The occupant can open these during the evening and night to let cool air flush through the dwelling. That keeps a Passive House comfortable during the summer in a natural manner without using additional energy.

*“Always made-to-measure support for your project.”*

**Experience  
and  
are at y**



**Project applications**

*In the Roosendaal quarter “De Kroeven”, Brink Climate Systems installed a Passive House Appliance in three dwellings. Another 133 are under construction.*

*The Passive House Appliance complies with the Climate OK requirements. Climate OK means a healthy, low energy and comfortable indoor climate. That can only be realised with with products for heating, ventilation, cooling and hot water that meet the highest quality requirements In addition, Brink Climate Systems acts as a knowledge provider and intermediary towards all players in the building and construction chain, in a joint effort to ensure a Climate OK indoor climate.*



# ed consultants d designers your service

## **PASSIVE HOUSE APPLIANCE, A SENSIBLE CHOICE**

At Brink Climate Systems, corporate social responsibility is the driving force behind all innovation. The environment is very important in this connection. The Brink Climate Systems Passive House concept complies with the strictest environment regulations. Brink Climate Systems succeeds in combining this established fact with attractive personal advantage for you: costs savings.

## **IN-HOUSE CONSULTANCY DEPARTMENT**

Brink Climate Systems' in-house consul-

tancy department has ample experience in designing systems for heating, cooling, ventilation and hot water provision in dwellings and small nonresidential buildings. Our people are fully familiar with the ins and outs of installation possibilities and building regulations.

We can compile a dwelling-specific recommendation for you. Quality is the starting point here. We can also arrange the design and the specifications for you.

## **STUDY PASSIVE HOUSES "DE KROEVEN" IN ROSENDAAL**

An independent study into the performance of a number of Passive Houses equip-

ped with a Brink Passive House Appliance showed that the occupants are highly satisfied. In addition, the report indicates that the studied Passive Houses performed excellently in various respects. That applies particularly to the indoor air quality and the silent ventilation system. Therefore, Brink Climate Systems once more demonstrates that low-energy living and comfortable, healthy installations go together perfectly.

## **CORPORATE INFORMATION**

Brink Climate Systems, member of Centrotec Group, develops and produces high-quality climate control systems (certified under ISO 9001 and ISO 14001). The systems can be found all over the world in dwellings, office buildings, health centres, sports centres, schools, workshops, showrooms and production halls.

Member of



Member of



Distributed by:



**ubbink**

Ubbink (UK) Ltd, 81 Cherry Orchard Industrial Estate, Ballyfermot, Dublin 10.

Tel: 01 – 626 2600

Email: [info@brinkclimatesystems.ie](mailto:info@brinkclimatesystems.ie) [www.brinkclimatesystems.ie](http://www.brinkclimatesystems.ie)