

# case study

## COMPACT SERVICE UNIT

**G**raven Hill, is a vanguard site for self-builders near Bicester. It will allow for up to 1,900 unique homes to be self-built over 10 years. Mariya decided to purchase a plot that allowed her to design a three bedroom detached house over three floors to Passivhaus standards.

Mariya was therefore going to have a very airtight (below  $1\text{m}^3/\text{h}/\text{m}^2$ ) and well insulated house, which would therefore need controlled whole house ventilation and very little heating. As the house is compact at  $114\text{m}^2/1,227\text{sft}$ , whatever appliances she chose for her heating and ventilating solutions, they would have to take up very little space. We completed a room-by-room heat loss calculation and found that the total heat loss for the property was only  $3.27\text{kW}$  which made the PKOM 4 the perfect solution for her house. It is very compact and provides heating, cooling, heat recovery ventilation and domestic hot water in a 212 L cylinder, all energy efficiently and in a foot print of only  $741\text{mm} \times 734\text{mm}$ !

Mariya chose the PKOM 4 because it was "an all-in-one option passing Passivhaus parameters and it minimized the amount of installation labour." Mariya also said she's "...really pleased with it so far; there's plenty of hot water and the cooling aspect works well with the ICF construction... internal temperatures were below  $24^\circ\text{C}$  when outside it was  $38^\circ\text{C}$ !" Heating wise, they have yet to turn on the electric underfloor heating on the ground floor and main bathroom, as their home is warm enough.



total home environment product chosen for Stanisheva house at Graven Hill in Bicester, home of self-build plots in the UK!



PKOM 4 CAD drawings of the ground floor part of the system which provides heating, cooling, heat recovery ventilation and hot water.

see the product in our showrooms or on Stand TV5 at NSBRC Swindon



PKOM 4

### the facts:

**BUILD TYPE:** Passivhaus new-build detached

**NO. OF BEDROOMS:** 3

**REQUIREMENTS:** building eco home to Passivhaus so sustainable ventilation solutions required with minimal heating option

**APPLIANCE:** PKOM 4 compact service unit

**LOCATED:** storage cupboard in hall

**FLOOR AREA:**  $114\text{m}^2 / 1,227\text{sft}$

**VOLUME FOR VENTILATION:**  $138\text{m}^3/\text{hr}$

**WHOLE HOUSE HEAT LOSS:**  $3.27\text{ kW}$

**TERMINALS:** extract x 7, supply x 8

**SUPPLEMENTARY HEATING:** electric underfloor heating on GF & in bathroom.

# We do more with air...

## heat recovery ventilation, heating, cooling & hot water

obviously, the more heat we recover, the less we need to generate...

Nothing can deliver fresh filtered air and remove moisture together with pollutants like a whole house ventilation system.

Typically 80-95% of the heat of the extracted air is recovered, increasing comfort levels and undeniably reducing heating bills.



technical data - appliance in casestudy

DESCRIPTION	PKOM 4
min/max capacity (at 100 Pa):	80/250 m <sup>3</sup> /h (ventilation) 110m <sup>3</sup> /250 m <sup>3</sup> /h (heating)
water capacity:	212 L
power input:	2.8kW
COP:	6.8 heating 4.2 cooling
dimensions (mm) w x d x h:	741 x 734 x 2,012
duct connections:	Ø160 / 200 mm
filters:	F7 supply, G4 extract
weight:	240/452kg (with/without water)

The PKOM 4 offers about 969L of hot water per day allowing ventilation with simultaneous heating in living areas of between 67-208m<sup>2</sup>.

The beauty of the system is that it has two heat pumps, one to provide either heating or cooling and the other to concentrate on domestic hot water - this makes the PKOM 4 one of a kind!

### control

The touch screen display panel allows access to:

- temperature required
- 24/7 programming
- holiday function
- air volumes
- anti-legionella cycles
- solar panel
- supplementary heating
- CO<sub>2</sub> levels
- humidity
- heating and
- cooling.

There is also a handy smartphone app to enable remote operation.

air-source heat pumps | air-to-water heat pumps  
central vacuum systems | heat recovery ventilation  
heat pump ventilation | compact service units | SAP reports  
room-by-room heat loss calculations | MCS certification

total home  
environment