ASHP INSTALLATIONS

CONTENTS

ASHP INSTALLATIONS

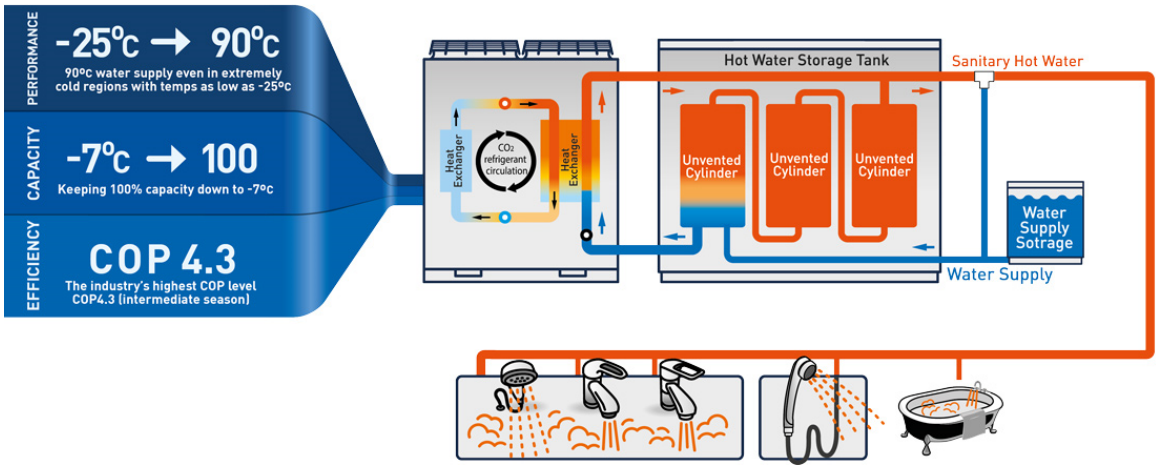
1.0 Introduction

Air source heat pump have been implemented for domestic hot water production at the County Hotel Euston in line with the approved energy strategy.

This is a main stream solution with a proven track record for DHW production for the hotels, , restaurants and public buildings for many decades

It must be remembered that heat pumps utilise grid based electricity, so calculations base the benefits on SAP10 emissions data

In line with approved energy strategy the 4Nos of 2 stage compression air source heat pumps has been installed to service the hot water requirements for the hotel scheme, with overall system efficiency is conservatively expected to meet 430%.



Assuming a seasonal system efficiency of 430% (Coefficient of Performance of 4.3) and that the air source heat pump will replace 100% of the space heating/hot water demand, then the system would reduce the overall CO_2 emissions by approximately 75-85%. The table below demonstrates, on the assumption of a demand of 10000Kwh/year for heating and hot water.

Table 1 – Air Source Heat Pump Performance

Type of Array	Energy Consumption (kWh/yr.)	Emission factor ($kgCO_2/h$)	Total CO_2 emissions (kg/annum)
90% efficient gas boiler	11111	0.210	2333
430% efficient ASHP	2325	0.233	542

A theoretical carbon saving of 77%

ASHP INSTALLATIONS

2.0 Installation Requirements

Since the ASHP is the unit that act as a water heater the cold air is released from the top of the fan when the hot water is produced. If the units are screened from the visual and acoustic reasons the sufficient ventilation via louvres shall be provided to allow operation of the ASHP.

Where there is no other heat source in the area and outside air is introduced the required ventilation is estimated to be in the region of 180m3/min. This is the blow air capacity from each unit and stated in the specification. The blow air capacity depends of the air temperature and is listed below:

Table 2 – Air Source Heat Pump Air Blown Capacity

Outside Air Temperature [C]	The ASHP blow air capacity [m3/min]
Up to 16C	180m3/min
16C-25C	30-180m3/min
Above 25C	Less than 30m3/min

Control installed within ASHP controls the fan motor and as detected outside air temperature adjust the fan blow capacity

The louvres are required to facilitate the dedicated M&E services integrated within the public areas of the hotel.

They have been designed to co-ordinate with the proportions of the original fenestration and coloured to match the window frames. On the Woburn Walk gable, we have co-ordinated the two louvres with architectural visual impact so that they are symmetrical and balanced on that elevation. For the other two louvres, the one above the Woburn Walk door is co-ordinated with the overall door/frame design and the one within the window has been located to the side to minimise visual impact.

Also external louvres shall be provided to ensure that no externally strong winds are blown into ASHP that will cause the operational issue