

SPECIAL REPORT

All-in-one, heating and cooling

The Hi Velocity Mini Duct Heating System is claimed to be a great product for a heating engineer to add to their product offering without having to retool, meaning air-conditioning can be offered alongside heating. HPM's Editor, Melody Mitchell, met up with Joe Flanagan, managing director of Cooling & Heating Sales, the UK distributor to find out more and get the full story from him...

Designed in Canada, where it has been manufactured since 1983, the Hi Velocity system is a central air handler, delivering tempered air evenly throughout a space via mini ducts. The system offers the end user heating as well as comfort cooling with the additional facility for air filtration and fresh air. The simplicity of the system means that it can be installed by any heating contractor or plumber without any specialist knowledge or additional equipment.

What is it and how does it work?

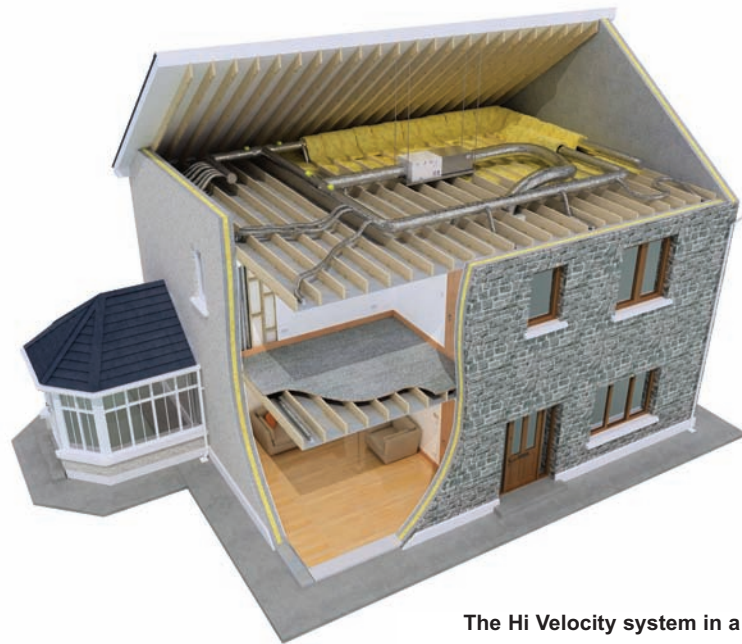
The Hi Velocity system comprises a central Air Handler Unit that is connected to a 'ready to run all in one heat pump chiller' unit which is able to provide both heating and cooling. The chiller unit comes ready charged with refrigerant and can provide water at 4°C for cooling and 55°C for heating. The Air Handling Unit and the chiller are then connected together using standard copper pipe allowing tempered water to flow between the two parts.

From the Air Handler Unit, air is passed into a snap together spiral duct system, usually 200mm or 250mm in diameter, and from there it is delivered to the conditioned spaces via patented flexible sound attenuated mini ducts. These ducts terminate in discreet outlets with 50mm apertures, positioned in ceilings, floors or walls in low traffic areas such as corners, tight in along a wall or horizontally above head height. Air then leaves this outlet at a high speed forming a narrow cone shaped column.

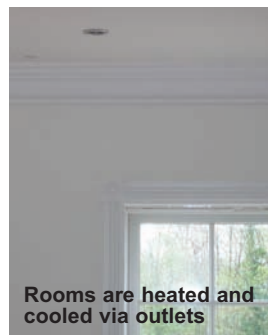
The science behind the system and reason that it is so effective and successful is that it uses the established principal 'that air travelling at speed is at a lower pressure than static air' (Bernuli's Theorem) and in so doing, the air in the rest of the room is drawn slowly towards the moving air from the outlet, where the two mix (The Venturi Effect). However, this air movement towards the outlet is so slow is cannot be detected by human skin, making the system draught free. This constantly slow movement of air ensures

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that the heating or cooling is distributed evenly so that all parts of the room are heated or cooled at the same rate and that there is no more that 1°C variation in temperature at any point in the room. The unique air movement pattern of a mini duct system ensures that the heating or cooling



The Hi Velocity system in a house



effect is felt within a few minutes of start up.

Each Air Handler Unit can have up to eight time/temperature control zones. If less than all zones are calling for heating, the fan motor will slow down accordingly, moving only the air required and saving energy.

Flexibility

The Hi Velocity system is a flexible modular system that can be connected to a variety of alternative heating or cooling sources to suit individual client requirements. In addition to using water based chiller technology, the Air Handler Unit can also be connected to a traditional heat pump condenser or as a heating only system it can be connected to a traditional boiler, as an alternative to under-floor heating or radiators.

There's always a first time

Before using the system for the first time, Cooling and Heating provides training and ongoing field support to cover both the design and installation, ensuring that it is as simple as possible to use. The company's team can help determine what heating or cooling load is required for each area and from that can work out the heat loss or heat load and therefore what units are needed. Units available range between 4 and 30kW of heat and 3.5 to 16kW of cooling, depending on the heat source. The team will also work out the quantity of duct, mini duct and controllers and if needed specify and supply the heat pump.