

But what about the water side? Most of these systems will be used to power under-floor heating, the main reason being that the systems will struggle to produce water hot enough to heat radiators. All heat pumps – no matter what the marketing departments claim – become less efficient as the difference between the outdoor coil temperature and the indoor coil temperature increases. So if you want really hot water you can have it, but you have to pay.

The big question is: do we get involved with the under floor part of the installation? Most of us have no experience here, so training will be required unless we sub the work out. Maybe we will all become plumbers, after all.

John Lightfoot, domestic chair, Heat Pump Association

"If it's too good to be true, it probably is. I am sure like me, at some stage you have had some wise sage somewhere above you in a organisation quote this when you have come up with what you think is a great and easy way for your company to make or save some money.

Unfortunately, this is also the sentiment that has, until very recently, proved to be a major stumbling block to rolling out heat pumps into markets which traditionally have not involved air conditioning, refrigeration or building services Engineers as part of their procurement process.

Even the Government and many of its civil servants could not believe by using one 1kW of electricity, a heating optimised heat pump could provide 3kW of heat even at freezing temperatures. The fact that other European countries with much colder winters than ours were using heat pumps in their tens of thousands was not enough to convince them.

The tide is turning however, as the numbers of heat pumps installed into the domestic heating market begins to move from the hundreds to the thousands per annum. The more units installed, the more good news stories appear and the more comfortable the doubters are to accept heat pumps do have something very sig-



Lightfoot: 'The more units installed, the more more comfortable the doubters are to accept heat pumps do have something very significant to offer'

nificant to offer in the fight to reduce carbon emissions and fight fuel poverty by reducing heating bills.

The commercial sector is well served with engineers who can quickly grasp whether a heat pump makes sense for any given application, be it air to air, air to water or a ground source heat pump (or any other variable).

However, the pursuit of energy efficiency is now allowing them to engineer in more effective solutions such as using ground source heat pumps to provide year-round heating and cooling, but also using free cooling when available in the summer, from either the earth or water source being used. Effectively they are

SANYO CARBON DIOXIDE HEAT PUMP DELIVERS EXCEPTIONAL EFFICIENCY IN UK CONDITIONS

Richard Tyson, managing director of Oceanair Distribution, reports on the potential from Sanyo's carbon-dioxide-based heat pump.

The initial data from the first installation in the UK has shown high efficiencies in British climatic conditions. The air-to-water heat pump will deliver low-cost hot water for use in heating and domestic supplies in residential and small commercial premises.

As reported in last month's RAC, unlike other heat pump-based heating systems operating on HFCs, using CO₂ as refrigerant enables the Sanyo system to deliver water

up to 65 deg C, hot enough to be used directly in showers and baths without the need for an electric booster heater and can also be used with traditional radiators.

To date, the only field performance data available has been based on conditions particular to installations in Japan and Scandinavia, meaning very low winter temperatures, down to -26 deg C, which is not reflective of the milder winters experienced in the UK.

The first UK test site was a solid stone-walled, 200-year-old three-bedroom cottage on Exmoor. The outdoor unit was installed in a temperature-controlled workshop, allowing the temperature of the "outside"

air to be controlled between +20 deg C and -2 deg C.

The existing oil-fired boiler was replaced with a 9kW Sanyo unit, and the system commissioned. The heat pump took over providing for all heating and domestic hot water needs in time for the cold weather in November.

The system was monitored using a ClimaCheck performance analyser, confirming expectations for performance and efficiency. A COP of 3.7 was recorded with water at 35 deg C and an outside temp of 15 deg C; in addition, a COP of 2.71 was recorded with a flow temperature of 65 deg C, and an outside temp of 7 deg C.