

S·A·V news

UNDERFLOOR HEATING FEATURE

INSIDE STORY

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SHOULD THE PIPER STILL CALL THE TUNE?

Lars Fabricius, Marketing Director, SAV Valve Systems argues that, as the market heats up, control of underfloor heating is becoming a more significant issue.

When modern warm water underfloor heating first made an appearance in the UK back in the early 80's, pipe was of paramount importance.

Anything that was going to be concealed beneath the floor - or in the case of a concrete structure actually screeded into it - had to be of proven durability and flexibility.

Long and convincing arguments were made for cross-linked polyethylene or PEX and pipes of this type now account for most of the market, as they do elsewhere in Europe - although polybutylene and, more recently, composite pipes with an aluminium layer have their fair share.

Today, as demand for underfloor heating increases day by day, there is no shortage of purpose designed pipe. Now the emphasis is on distribution and control and the modern technology available to the heating engineer to create a safer, more efficient system, which is quicker and easier to install. System design must be approached in a holistic fashion, ensuring successful integration with the building fabric, with other building services and the whole internal environment. The result will be total comfort and total safety!

Naturally enough, the issues divide themselves into mechanical and electrical sub groups.

Mechanical

In the early days, underfloor heating manufacturers saw a future in which only this type of heating would be used - upstairs and down. In reality there continues to be a demand for mixed systems in both commercial and domestic projects. It's a plain fact that the cost of putting in UFH systems for use with suspended floors on upper storeys is prohibitive in most cases.

An oxygen diffusion barrier on the pipe should safeguard the system against corrosion, but control of water temperature also becomes a crucial factor in mixed systems. The point where the two water circuits meet at the manifold becomes a major crossroads for safety and efficiency issues.

Because of this, control of underfloor heating has become much more sophisticated. The old manual mixing valves have been replaced by new valve designs and independent low loss header arrangements, which can give proper control of both radiator and UFH circuits.



Underfloor heating systems must never be allowed to overheat the floor and that means accurate, reliable control of the flow temperature at all times.

SAV's Flow-Watch offers a simple fail/safe solution to the problem that can be supplied as part of the manifold package. A safety relief on the manifold's primary pump protects the mixing valve against sudden injections of high temperature water. Should the mixing valve itself fail, an independent thermostatic control on the flow line will automatically shut down the system.

Safety comes first, but there's also a second stage safeguard. Should the mixing valve itself ever fail, an independent thermostatic control on the flow line will automatically shut down the system the moment an excess temperature is detected.

Each unit is equipped with an adjustable bypass damper located between the supply and return temperature gauges. This ensures accurate control of the supply water temperature. The upper limit can be pre-set by adjustment of the multi-port valve.

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Warmth and safe sheltered homes

An underfloor heating system based on Osma pipework from SAV Valve Systems Ltd will combine comfort with care for residents at two new sheltered housing units in South East London.

Denne Building Services will use the SAV equipment to meet the special needs of frail, elderly occupants of self contained apartments at "Somertrees" at Lewisham and "Marden Court" in Deptford.

The projects are being carried out by the London Borough of Lewisham and Housing 21, with Denne Building Services taking responsibility for both design and installation of services systems including the underfloor heating.

Both projects comprise 40 individual

apartments in three storeys. Most are single occupancy units with open plan living, dining and cooking areas plus bedroom and bathroom. A small number of two bedroom units are included in each project.

Common facilities at both Somertrees and Marden Court will include a day care centre complete with its own kitchen and dining room, assisted bathrooms, a large residents lounge and facilities for hairdressing and chiropody.

Natural choice

Underfloor heating was a natural choice for the project as Keith Nicholls, a senior project engineer at Denne Building Services explains.

"In projects of this kind, safety is an

absolute priority. Underfloor heating obviously meets this requirement because surface temperatures are low and there are no projecting metal components. Temperature control is essential and the SAV system incorporates a Flow - Watch fail/safe feature. *This makes it physically impossible for high temperature water to be diverted into the UFH circuit loops.*

The complete invisibility of the system also helps to overcome one of the major problems with sheltered accommodation - where to put the furniture. Sometimes it's difficult for elderly residents to cram possessions acquired over a lifetime into a small apartment. The absence of radiators means that the SAV system frees up all of the floor and wall space.

From an economic point of view, underfloor heating offers a reduced lifecycle cost because there's virtually no maintenance. Installation cost is also reduced as no boxing is required for unsightly pipework. Running costs should also be lower due to the lower temperature water requirement.

We were drawn to the SAV underfloor heating control package because it's comprehensive and compact. It's supplied as a pre-assembled package so all we had to do was connect it up and turn it on. As a matter of interest, before we hit on the solution, we did try our hand at assembling manifolds and controls in a mock up form, but the result was enormous and could not be sited in the space available!"

Architects for both projects are Galford Seaden for Housing 21.



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Systems like these can be used to make sure that flow temperatures for both UFH and radiators are properly controlled. They make it easier for the installer to consider the system as an integrated whole and to moved forward from the old style pipe manufacturer's attitude of "responsibility only up to the manifold".

They make for much easier system balancing and commissioning. The large, easily visible temperature gauges give clear indication of the temperature in both the supply and return lines.

They also make a perfect complement to the new types of manifold.

Building up manifolds on site - which some installers still do - may offer an attractive alternative in terms of initial cost, but can also pile up a whole raft of potential problems. The materials used are cheaper, but they're prone to cracking at low

temperatures and, since the valve usually pierces the whole body of the unit, there's a built in flow restriction. Nor can such manifold assemblies be extended should there be a change in requirements over the life of the system. And we all know that changes sometimes occur even during installation!

Modular manifolds can be extended at any time. They're built from long life brass bar and you can find models with connections for all types of pipe, which actually make it possible to use PEX, polybutylene, AluPEX and/or copper on a single manifold. Versatility like this can have major advantages in retrofit applications or mixed systems of any age.

Safety of course, is of paramount importance. Both British Standards and the Underfloor Heating Manufacturers Association caution against permitting the temperature of water entering underfloor heating pipework loops to rise too high.

Where the system is UFH only, this shouldn't be a problem, but in mixed systems where the radiator circuit temperature is far higher, precautions must be taken. Systems like the WITA Shunt Pump/Temperature Control Group incorporate a fail-safe feature in the form of a mechanical bypass damper which makes it physically impossible for high temperature water to be diverted into the UFH circuit loops.

Electrical

The design and theory of underfloor heating is all very well, but in practice, the on site problems are not usually pipes, or water, but electricity! Wiring up the system controls has always been a potential nightmare, with electricians struggling to connect up the right thermostat and the right actuator head and a whole rat's nest of wiring being created at the manifold. All of that has been swept away with the introduction of new wiring control boxes.

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NEW WIRELESS CONTROL



The new wireless Mohlenhoff thermostat enhances SAV's range of electronic 'stats which save energy by minimising under and over-ride of the pre-set temperature.

Intelligent base unit

The Alpha Basis RC Module offers an intelligent base unit for the monitoring and adjustment of room temperature by radio control - acting as an interface between the remote thermostats and the electronically operated actuator heads at the manifold. Once installation has been completed and the system is switched on the Alpha-Basis RC Module performs a 20 second self test. Over the next quarter of an hour all of the heating zones are activated one by one to the test the opening function of the actuator heads. Infra red headphones, alarm systems and other wireless equipment should be switched off during this process.

"Fail Safe" Flow Control

Integrating the heating system into the very fabric of the building offers huge advantages in terms of comfort, efficiency and aesthetics. However, making the best of those benefits requires a little extra care in safeguarding the building and its occupants.

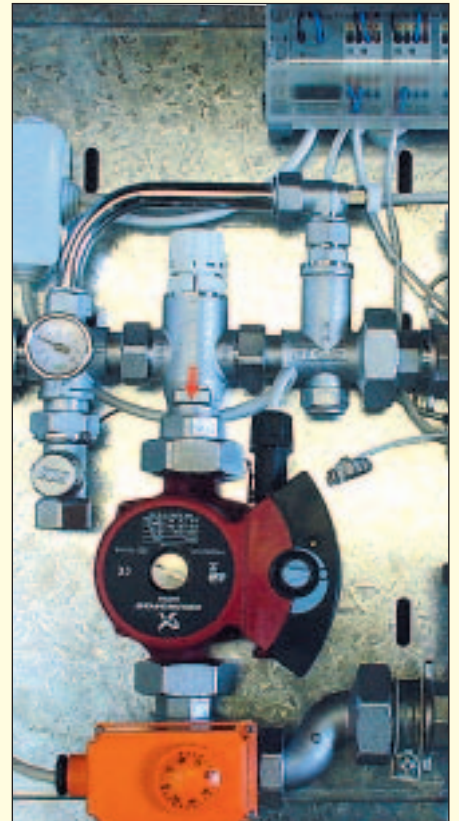
If a radiator gets too hot, just move away. An underfloor heating system doesn't offer that easy option - it covers the entire floor. Although there have been wild stories about the risk to the elderly or the very young in such a situation, it's hard to find any evidence of anyone ever actually being harmed.

But if the risk to animate occupants is minimal, the same cannot be said about the inanimate - particularly vulnerable wooden and tiled floors! Exposure to prolonged high temperatures (and "high" means in excess of 25°C) can result in expensive timber shrinking beyond redemption.

So, underfloor heating systems must never, ever be allowed to overheat the floor and that means accurate, reliable control of the flow temperature at all times.

Now, at last, there's a simple fail/safe solution to the problem that can be supplied as part of the manifold package.

The new ZonaFAR Flow-Watch system has been purpose developed for underfloor heating. It incorporates safety relief on the manifold's primary pump to protect the mixing valve against sudden injections of high temperature water.



Safety first, but there's also a second stage safeguard. Should the mixing valve itself ever fail, an independent thermostatic control on the flow line will automatically shut down the system the moment an excess temperature is detected.

An optional version of the ZonaFAR Flow-Watch is available for mixed systems where the presence of high temperature radiator circuits makes comfort with care even more important.

AUTOMATIC COMFORT

All SAV systems now incorporate Mohlenhoff's new, improved Alpha-Actuator 4 actuator heads. These compact, reliable, long-life actuators ensure quality control. Features include A "closed when de-energised" version with first open option to enable a heating test even with no electrical power; low power consumption; over-voltage protection and even an anti-theft device.



Built-in Quality and Safety

Quality components and safety-first design enable us to build up factory-ready Control Centres that set the UFH industry new standards of excellence.

All our ZoneMaster Control Centres feature Alpha-Basis control modules.

Alpha-Basis is designed to ease the control wiring of underfloor heating or any other type of zoned heating system, creating a single connection centre for all control functions. Modular design makes it possible to build up a unit which is matched perfectly to the particular application. In addition to the standard pump control module users may opt extra actuators per zone and/or a digital programmer to vary temperatures between zones.

Interface

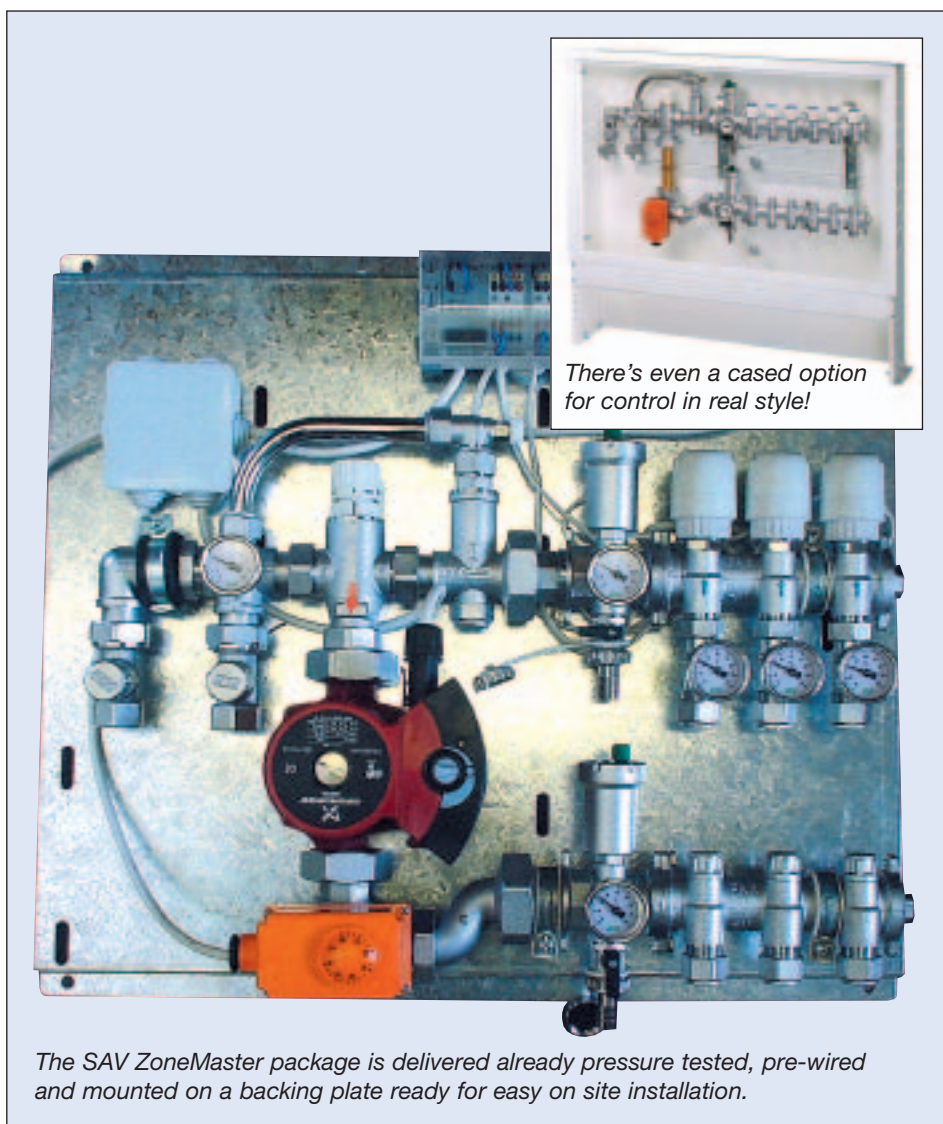
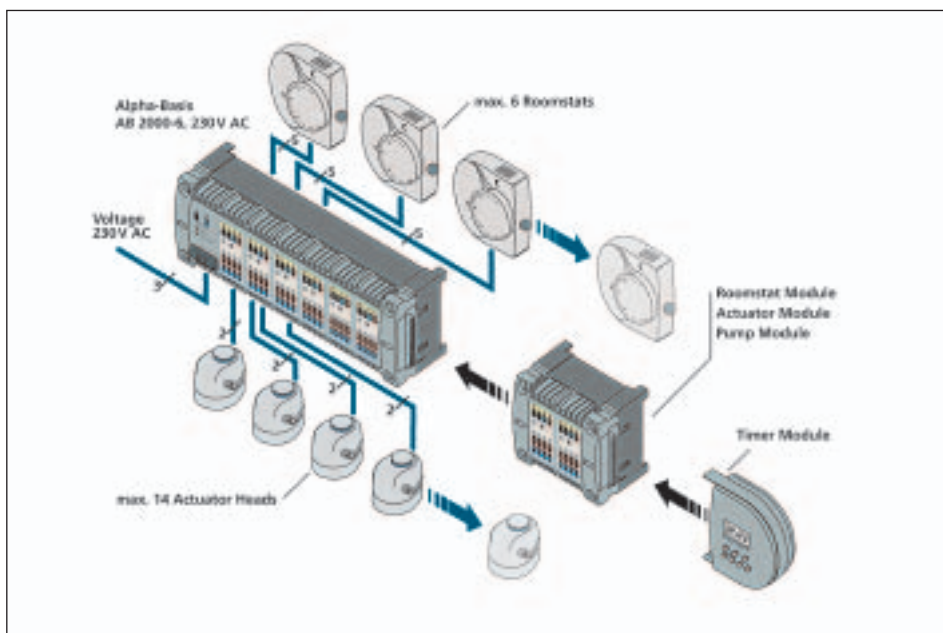
Developed in Germany by thermostatic control specialists Mohlenhoff, Alpha-Basis provides an electronic interface between room thermostats and the actuator heads on the manifold. Each standard unit will accommodate up to six zones each with a maximum of four actuators, so Alpha-Basis is equally suitable for fast, effective temperature control of a domestic sitting room or a large open plan office. Modular construction permits additional capability to be added on two zones at a time.

The modular Alpha-Basis connection board with removable cover should be located as close as possible to the manifold for the zone(s) it is to control. Each module is designed for wiring thermostat connections into the upper section and actuator head connections into the lower, while lights in the centre section indicate the "live" status of each individual component.

Not even a screwdriver is required, quick clamps are used for all wiring connections and every phase of the connection programme can be monitored by the illuminated panel which flashes "error" if a wrong connection is made!

Once wiring has been successfully completed and the control panel indicates that the electronically activated thermostatic actuator heads are operative, the system is on line and the discreet plastic cover can be screwed back into place.

Should access to any component of the control system be required for servicing or troubleshooting, it is simplicity itself to identify any individual room stat wired to the upper section of the panel or actuator head wired to the lower section. Any individual component can thus be isolated without major disruption to the total system.



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