More than just an Underfloor Heating System
More than just an Underfloor Heating System

underfloor heating + acoustic flooring + integrated control technology

Performance Technology Integrated Control Strategy (PTICS)
An intelligent system that controls and optimises energy consumption and temperatures across multiple zones and energy sources including underfloor heating, ventilation, heating interface units and fan coil units.

FUSI Underfloor Heating
A complete service from specification through to in-house design and access to BPEC accredited installers and market leading components.
underfloor heating + acoustic flooring + integrated control technology from a single source

More than just an Underfloor Heating System

Smartspan Board
The high thermal conductivity of Smartspan improves heating response times. Capable of spanning between timber bearers, it is an ideal substrate for stone and tile finishes.

CMS Danskin Acoustic Saddle System
The Saddle System can provide floor levelling for uneven sub-floors and Approved Document E performance plus a void for services.
**FUSI Underfloor Heating System Overview**

The FUSI system is a fusion of market leading intelligent climate and energy management control software, underfloor heating and acoustic flooring highly suitable for high rise developments.

- **Primary Features and Benefits**
  - Single software interface can optimise climate and energy costs by controlling both heating and cooling systems across multiple zones
  - Intelligent software learns the hysteresis of each zone, protecting timber flooring from temperature overshoots
  - FUSI’s integrated system gives main contractors a single point of responsibility
  - Using a single trained installer simplifies scheduling of work and reduces on site conflicts
  - Simplified supply chain reduces vehicle movements to site
FUSI System

Underfloor heating + acoustic flooring + integrated control technology from a single source.

Unlike most control software the FUSI PTICS system can optimise the consumption of energy by interfacing with multiple heating and cooling elements such as underfloor heating, fan coil units and ventilation systems. The intelligent software learns the hysteresis of each zone to provide the required climate. It is accepted that timber components should not be exposed to underfloor temperatures exceeding 27°C. Inadvertently permitting this can lead to expensive remedial work for contractors. By learning the hysteresis of each zone, the PTICS software prevents temperature overshoots which might affect sensitive wood floor finishes.

SIG Performance Technology offers a training facility with BPEC certified courses to allow installers to be individually trained to install underfloor heating components within the CMS Danskin Acoustics Saddle System.

The training academy in Crawley offers training and assessment in warm water underfloor heating systems and installation training for the FUSI flooring systems. Trained installers will remove the potential for site conflicts where separate teams of flooring and underfloor heating contractors operate in a shared space.

SIG Performance Technology can provide a full underfloor heating design and supply service using tried and trusted components from brands such as Polypipe. The bespoke system can include the manifold, blending valve and pump, heating pipes, insulation, actuators and sensors as required.

The CMS Danskin Acoustic Saddle System completes the FUSI system and has been demonstrated to comply with the requirements of Part E of the Building Regulations and as an FFT2 acoustic floor for Robust Detail constructions.

SIG Performance Technology and Construction 2025

Construction 2025 is an industry and government strategy to create a smart and sustainable industry that leads the world in low-carbon and green construction exports.

Aims:

- **Lower Costs:** 33% reduction in the initial cost of construction and the whole life cost of built assets.
- **Faster Delivery:** 50% reduction in the overall time, from inception to completion.
- **Lower emissions:** 50% reduction in greenhouse gas emissions.

By simplifying the supply chain, optimising energy consumption and minimising vehicle movements to site, the use of the FUSI system is fully aligned with Construction 2025 objectives.

Furthermore, the FUSI system is not only a ‘green’ technology, but includes sustainable materials in its construction.

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FUSI Underfloor Heating System

Create a warm home without compromising on style.

According to independent analysis (AMA Research), by 2020 the value of the underfloor heating market is forecast to have increased by around 15% compared to the market size in 2015.

The success of this technology is unsurprising. Underfloor heating systems provide a low maintenance and cost effective solution through radiated heat emission, delivering the most natural and comfortable form of heating with even surface temperatures.

In addition, underfloor heating is completely out of sight so there is no compromising on style.

FUSI System

SIG Performance Technology bring together the latest in underfloor heating solutions and integrated control strategies to ensure both exceptional performance and continuous efficiency.

With our in-house design facility and our network of BPEC trained installers, we offer support and technical guidance at every stage of the project, from specification to installation.

Features and Benefits

- Lower operating temperatures, to achieve greater energy efficiency
- Reduced maintenance
- Increased floor space
- Freedom of design
- Increased comfort levels
- PTICS stops floor finishes from overheating

Please note: Packers are available in black only
PT Integrated Control Strategy (PTICS)

Intelligent touch-screen interface for complete climate control.

Simplicity through Control Integration

Operated from a central intuitive touch-screen console or smart device*, Performance Technology Integrated Control Strategy (PTICS) enables end users to easily control the temperature of their living environment. The user can set parameters for different zones, allowing PTICS to regulate the system efficiently.

The system optimises demand and generation of energy, providing ideal comfort at minimal running cost, by interfacing with and controlling multiple energy sources, such as:

- Heat interface units
- Wet and electric underfloor heating
- Ventilation
- Fan coil units

* Additional module software required

Features and Benefits

- Sensors control heating and cooling demand with the benefit of floor temperature protection in up to 32 separate zones
- PTICS learns the thermal inertia of each zone, predicting heating/cooling requirements and optimising energy consumption
- Pre-programmed maintenance regime operates UFH manifold pump and actuators after 72 hours of inactivity, ensuring continual operation of the system
- Individual zone, time and temperature scheduling including hot water, with historical log
- Finely calibrated software enables users to control costs by only producing heat precisely when and where it is needed

An Installer Friendly Solution

The control system operates through a 12volt DC single BUS network for simple installation at minimal cost, making the system cable low-risk and installer friendly. Using its unique software modules PTICS is supplied pre-configured for each project for installation by an electrical contractor.
FUSI Underfloor Heating Components

Incorporating manifold & polybutylene pipework from Polypipe, a leading UK manufacturer.

Manifold
Irrespective of floor type, manifolds are used on all wet underfloor heating systems and supplied complete with wall mounting brackets.

15mm push fit connections are included in the FUSI system with each manifold including a meter on the flow ports to provide a visual indicator of the flow through the circuits.

Manifolds include standard and pump blending arrangements enabling reduced water temperature flow when used in conjunction with other heating systems.

Pre-assembled for ease of installation, the simple push fit technology makes the only joint that occurs at the manifold safe and secure.

Polybutylene Pipework
At the heart of FUSI underfloor heating system is polybutylene pipework.

The natural flexibility of polybutylene pipework allows the pipe to bend into the tightest of spaces aiding installation.

Extremely durable and offering long term performance the pipework is also extremely lightweight compared to copper piping systems making it the material of choice for the discerning underfloor heating installer.

Standards/Approvals:
• Manufactured in accordance with BS EN ISO 9001-2000
• Polypipe ultra-flexible pipe manufactured to BS EN ISO 15876-2:2003 and covered by BBA certificate No. 00/3699

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1" Outlets

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It is very common for cast in situ concrete floors and pre-cast concrete planks to be uneven. Both have cambers and deflection characteristics which necessitate the packing of timber floating floors to achieve a level floor finish.

Our patented range of Saddle Flooring Systems solve this problem by providing an easy and accurate method of levelling a floating floor over an uneven sub-floor without the need for levelling screeds.

Compliance with the Building Regulations

The sound insulation of party floors is a necessary requirement of the Building Regulations. Methods of satisfying the Regulations are set out in Approved Document E in England and Wales and Section 5 in Scotland.

Performance

Test evidence* showing compliance with Section 5, Approved Document E and Robust Details is available for the Saddle System in conjunction with different structural floor and ceiling combinations.

* Please ask for details.

Please note: Packers are available in black only

FUSI Acoustic Flooring Systems

CMS Danskin Acoustic Saddle System

A lightweight floor solution which provides acoustic insulation, levelling and a void for underfloor heating and other services

Features and Benefits

- Effective reduction of impact and airborne sound
- Weight saving compared to screeds can reduce foundation costs
-Eliminates wet trades
- FFT2 compliant for many Robust Detail floors
- Quick and easy levelling of uneven floors
- Provides void for services, insulation or underfloor heating
- PEFC™ or FSC® chain of custody
- GWP of resilient layer is 0

Please note: Packers are available in black only
Smartspan is a calcium sulphate board which can span between the timber support bearers of the Saddle System with minimal deflection, making it an ideal substrate for stone and tile.

With a thermal conductivity of 0.44W/mK the Smartspan flooring panel is much more responsive to changes in underfloor heating settings than a standard chipboard flooring panel. The high density board enhances the acoustic performance of the Saddle System.

Physical Characteristics

- Panel size: 1200mm x 600mm
- Thickness: 18mm, 25mm, 28mm & 32mm
- Density: $\geq 1500\text{kg per m}^3$
- Edge detail: T&G - 4 sides
- Fire rating: Class A1 non combustible to EN13501-1

Acoustic Performance

In an independent test conducted by the Building Research Establishment (BRE) 25mm Smartspan laid on the Saddle System on top of an ISO 140-8 standard concrete floor achieved an impact sound improvement of $\Delta Lw = 24\text{dB}$.

Features and Benefits

- High density assists with reduction of sound transmission
- High thermal conductivity maximises energy efficiency
- Make room temperature control more responsive
- Ideal substrate for large format and stone tiles
- Dry solution enhances on site efficiency
FUSI Acoustic Flooring Systems

FUSI Solid Floor System
Incorporating Regupol® resilient layer

The FUSI solid floor system is compatible with a variety of floor finishes including tile, carpet and timber. The system can be acoustically treated by the introduction of a Regupol® resilient layer.

1. Final floor finish
2. Underlay
3. Screed system (min coverage 30mm over pipes)*
4. FUSI 15mm diameter polybutylene pipe
5. Insulation board (min 25mm)
6. Regupol® resilient layer
7. Concrete sub floor
8. Perimeter edge insulation

* Screed manufacturers recommendations on screed depth within an underfloor heating application must be sought as recommendations will vary.

FUSI Recessed Board System
A floating floor system utilising a pre-grooved insulation panel laid on a Regupol® resilient Layer

Within the FUSI recessed board system, heat emission plates are introduced to increase the radiated surface area. The system can be acoustically treated by the introduction of Regupol® resilient layer. The recessed board system is reliant on a completely flat and level floor surface prior to application. This may require a levelling screed.

1. Final floor finish
2. Underlay
3. Separating layer (chipboard or Versapanel®)
4. FUSI 15mm diameter polybutylene pipe
5. Heat emission plates
6. Pre-grooved insulation board
7. Regupol® resilient layer
8. Concrete sub floor
9. Perimeter edge insulation