specific®

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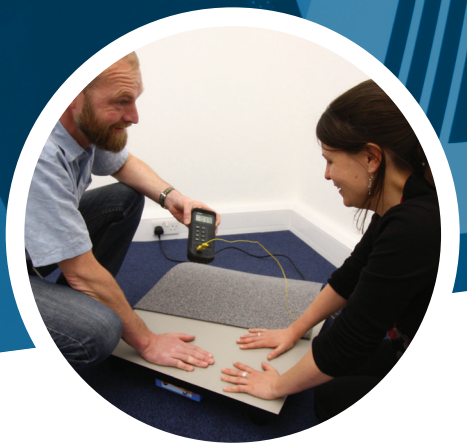
Underfloor Heated-Coating System



SPECIFIC's heated coating functions according to the long-established principle of resistive electrical heating, in which electrical energy is converted into heat energy.

It has a range of potential applications, including the first electrically heated raised access floor system, which has been developed by SPECIFIC and is designed to operate at low voltage to work in combination with locally generated and stored renewable electricity (however could equally well be tailored to operate at higher voltage).

The floor system provides localised heating control, easy installation and simple tile replacement. It uses a conductive ink applied directly beneath the floor surface to deliver heat efficiently into the occupied space. The system has been tested continuously for over 30,000 hours in a purpose built climatically controlled room and demonstrated in commercial office installations of up to 100m².

The low thermal mass of the design addresses the issue of overheating by providing a more dynamic thermal response, compared to screed-based systems. This has been demonstrated in an evolution of the underfloor heating product, which has been operational in the SPECIFIC 'Active Classroom' for over a year.

2013: Initial design concept and upscaling

2014: International patent application filed

2014: Tiles tested in climatically controlled room

2015: 100m² installed at Permaflor Offices

2017: Demonstration at the Active Classroom

Led by:

Swansea University
Prifysgol Abertawe

Funders:

EPSRC
Engineering and Physical Sciences Research Council

We work with Innovate UK

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EUROPEAN UNION

Llywodraeth Cymru
Welsh Government

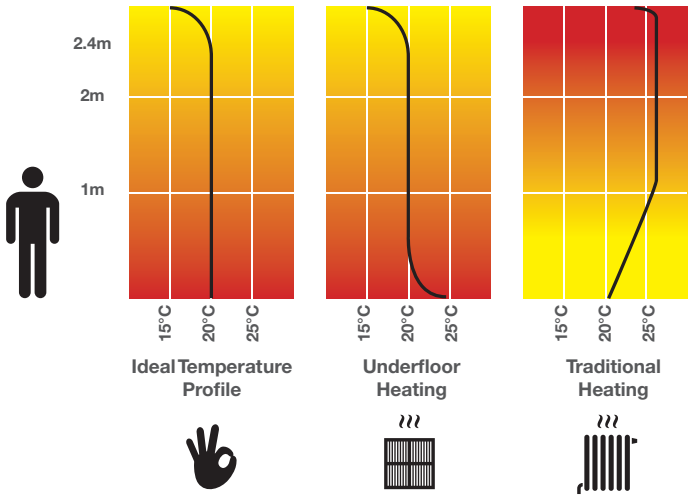
Cronfa Datblygu Rhanbarthol Ewrop
European Regional Development Fund

Mae'r ddogfen hon ar gael yn Gymraeg hefyd

Building Integration / Demonstration

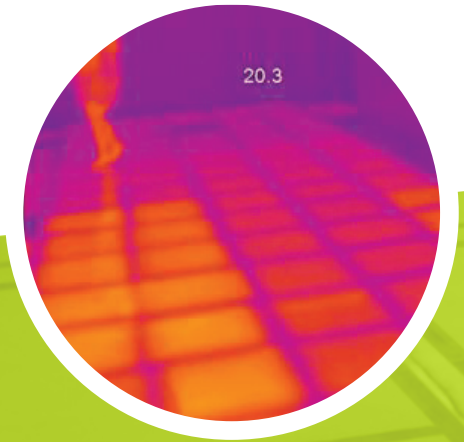
Demonstration at building scale is vital in the evaluation and commercialisation of the floor system. A 100m² raised access floor system was installed in the Permaflor Offices in 2015, where it has been operating successfully since. In 2017 an alternative design of the printed underfloor panels were installed in the Active Classroom; one of the key demonstrator buildings at SPECIFIC, which proves the effectiveness of the system when combined with renewable energy generation and storage.

"This could be the default floor of the future"
Andrew Hubbard, MD Permaflor



Advantages of underfloor heating

- Absence of thermal stratification (reduced heat loss) - ideal temperature profile for comfort
- Lower air temperature to achieve comfort - 2°C reduction in room temperature is equivalent to a 10% energy reduction
- Low surface temperature (typically 29°C) eliminates contact hazards and reduces drafts
- Heaters do not impinge on space - flexibility for fit out and occupancy



Additional benefits of SPECIFIC's Heated Coating:

- **Heated coating can be incorporated into structural building elements**
- **Rapid installation and easy to replace (tile by tile)**
- **Compatible with renewable energy generation and storage**
- **Can be applied as a pattern or to complex geometries.**
- **Zone-able temperature control (to individual tile level, if desired)**
- **Compatible with building management systems**
- **Ideal temperature profile for comfort**
- **Can be retrofitted**