

# SPC

[www.spc coils.co.uk](http://www.spc coils.co.uk)



**THERMATILE PLUS**  
HEATING & COOLING

**RADIANT CEILING PANELS**  
INNOVATION WITH STYLE

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## About SPC

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### The Company

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SPC is a specialist manufacturer and supplier of radiant panels, trench heating, fan convectors, coil heat exchangers, and other HVAC equipment to the public and private sector.

SPC leads the way in HVAC technology and in responsiveness to customer needs. We thrive on innovation, new technologies and new challenges. We stand for irresistible quality, exceptional customer care, and whole-life value for money.

For more than 25 years, we've applied our ingenuity to the heating, cooling, and dehumidifying of indoor environments – and to the delivery of HVAC equipment that withstands the grind of daily use. The result is a range of products that are aesthetic, robust, and economical to run.

But new ideas are never developed in isolation. They come from a service culture that takes pride in putting customers first. We listen and, if asked, we advise; we offer free site surveys – and we always return your calls.

Our mission is simple – to become your first-choice HVAC supplier and to be the one company that provides a solution that exactly matches your needs.

#### KEY FACTS ABOUT SPC:

Our mission is to be your first choice for HVAC equipment

Major supplier to local government and commercial sectors

Unrivalled regional sales and technical support team

Free site check / survey

Free coil selection software package

ISO 9001 and Investor in People

Providers of approved CPD seminars



# THERMATILE PLUS Radiant Ceiling Panels

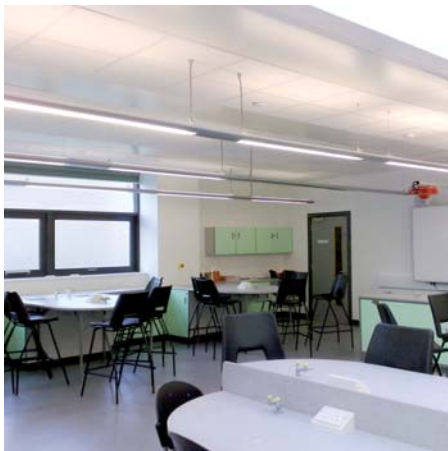
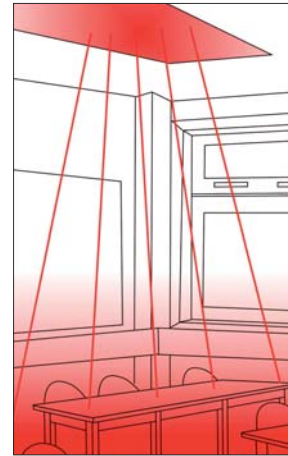
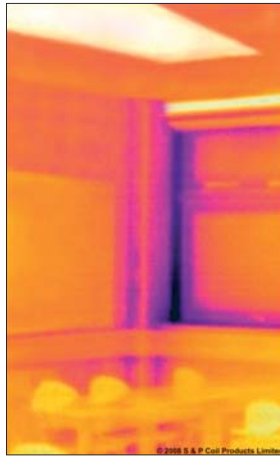
## Introduction

**THERMATILE PLUS Radiant Ceiling Panels are designed to deliver their heat output in the form of radiant heat from the bottom visible surface of the warm panel.**

When you stand in direct sunlight, even on a cold day, you immediately feel warm. This is because the sun emits radiant heat which shines on the surface of your skin and warms it directly. A radiant panel is not as hot as the sun, so the radiant heat is much less intense, but when it 'shines' on the surface of your skin, you feel warmer in the same way.

Because of this radiant heating effect, when using THERMATILE PLUS Radiant Ceiling Panels, comfort temperature is achieved with an air temperature typically 3 degrees lower than conventional heating. This relates, approximately to a 15% reduction in heat loads and therefore energy consumption.

Radiant heat acts in the same way as light, it's just a different wavelength, so the heat is emitted from the panel on the ceiling and 'shines' downward. It has no effect until it shines onto a surface which is then warmed. The surface it normally shines upon first is the floor, so when using radiant panels in the ceiling, it is normally the floor which is heated first. Unlike under floor heating though, it is the top surface of the floor which is heated, against which the air is in contact, so the room is heated rapidly and controllably with low system inertia.



THERMATILE PLUS Radiant Ceiling Panels are designed to easily fit into a standard suspended ceiling grid, they can also be fitted into plasterboard ceilings, angled on a wall or freely suspended from the soffit. Installation and connection has never been simpler with the optional panel joining system.

SPC are able to provide a design service to assist with the design and selection of THERMATILE PLUS Radiant Ceiling Panel Systems.

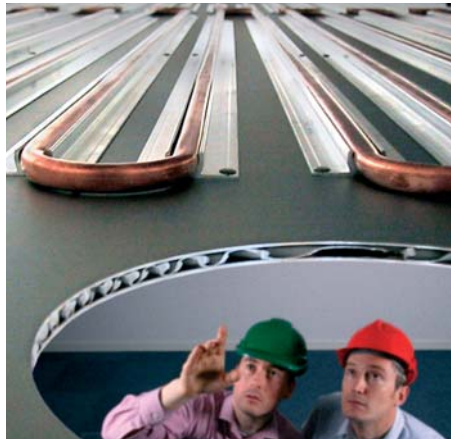
THERMATILE PLUS Radiant Ceiling Panels are part of a range of specialist heating and cooling products which also includes THERMASAIL Radiant Conditioning Sails.



# THERMATILE PLUS Radiant Ceiling Panels

## Technology

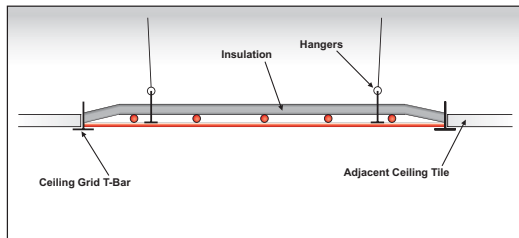
At the heart of SPC's THERMATILE PLUS Radiant Ceiling Panel system is a unique patented, composite aluminium sheet panel. Structurally rigid, the panel is also used in the automotive and marine construction industries because of its high strength and low weight characteristics. It is a building material in its own right.



The excellent thermal conductivity properties of the aluminium panel ensure high efficiency for SPC's radiant heating and cooling panels.

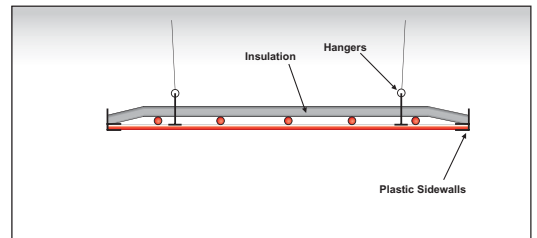
Heat is introduced into the panel via either 12mm or nominal 15mm copper pipes (depending on the system design) which are mechanically fixed into aluminium extrusions. The extrusions are then riveted to the upper surface of the panel, which ensures excellent and reliable heat transfer whilst maintaining a completely smooth visible lower surface.

The completely smooth bottom surface not only makes the panel attractive, but also hygienic, easy to clean and therefore ideal for healthcare applications.



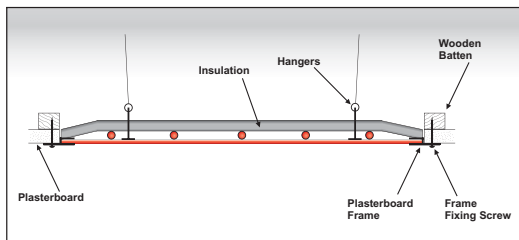
THERMATILE PLUS Panel in Ceiling Grid

THERMATILE PLUS Radiant Ceiling Panels have no fixed sidewalls and a layer of high performance insulation across the whole upper surface right up to the panel edges. This means that the amount of heat that is lost into the void is extremely small, and an extremely high proportion of the heat output quoted is radiated into the room below.



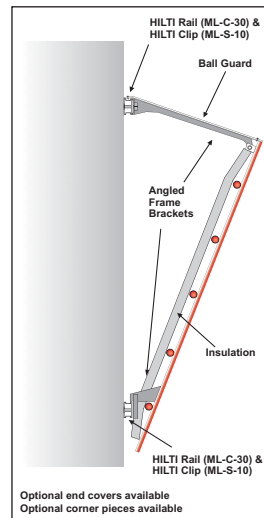
Free Hanging THERMATILE PLUS Panel

When THERMATILE PLUS Radiant Ceiling Panels are hung freely from the soffit, a plastic sidewall trim is attached to the edge of the panels to conceal the insulation. The plastic sidewall is a poor conductor of heat, and ensures that the output is radiated from the bottom surface.



Plasterboard Frame THERMATILE PLUS Panel

Installation of THERMATILE PLUS Radiant Ceiling Panels into a plasterboard ceiling can be achieved by securing the radiant panel via an easy to install frame that is screwed into the ceiling. This option can also be used for anti-ligature using suitable anti-ligature fixing screws.



Angled Frame THERMATILE PLUS Panel

THERMATILE PLUS Radiant Panels can also be wall mounted either flat against the wall (see page 9 for more details) or angled using a specially designed angled mounting bracket. This angled bracket also comes with a ball guard to stop items being lodged between the panel and the wall.

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# THERMATILE PLUS Radiant Ceiling Panels

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## Features & Benefits

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### INSTALLED IN A CEILING

THERMATILE PLUS Radiant Ceiling Panels free up valuable wall and floor area for maximum use of available space.

### ONLY 40MM DEPTH

Can be installed in shallow false ceilings, or where ceiling height is at a premium.

### UTILISES RADIANT HEAT

Comfort temperatures at 3 degrees lower air temperature which equates to approximately 15% energy saving in normal applications.

### RIGID COMPOSITE ALUMINIUM SHEET PANEL

Eliminates panel deflection during warm up, and ensures a smooth and flat visible surface which is attractive and clean, ideal for healthcare applications. Also allows riveting of aluminium extrusions holding the coil to upper surface ensuring permanent and reliable heat transfer.

### PLASTIC SIDEWALLS ON FREE HANGING PANELS

Plastic sidewalls reduce convective output of the panels and conceal the insulation, ensuring that the panels are efficient in terms of the radiant heat to convective heat ratio.

### 12MM & NOMINAL 15MM COPPER PIPE COIL

The 12mm or nominal 15mm coil allows circuit optimisation against a range of water flow rates; maintaining low hydraulic resistance while assuring that flow is turbulent. This also ensures smaller panels achieve the full quoted output.

### SIMPLE PANEL JOINING AND INSTALLING

Panels are joined with a simple plastic joining strip, eliminating the need for cover plates and allowing for expansion movement. Longer panels have either a serpentine coil or a header system on each section with push fit flexible connections on each join. The system is designed as modular and easy to install without specialist tools or equipment. Installing radiant panels has never been simpler.

### PERFORATED ACOUSTIC PANELS

The perforated option provides excellent acoustic attenuation for noisy rooms such as classrooms or where a quiet environment is required such as libraries. Often perforated panels can meet the sound reflection requirements in the building regulations for classrooms without taking any other measures.

### MANUFACTURED IN THE UK

THERMATILE PLUS Radiant Ceiling Panels are made at our dedicated manufacturing facility at Leicester, ensuring an accurate, rapid and flexible response to your project requirements.

### FULL TECHNICAL SUPPORT

SPC's technical sales team are able to assist with all aspects of radiant panel system design.



# THERMATILE PLUS Radiant Ceiling Panels

## Performance

### RADIANT PANEL HEATING PERFORMANCE

Heat output of a THERMATILE PLUS Radiant Ceiling Panels is the sum of the radiated heat output from the panel, and the convected heat output.

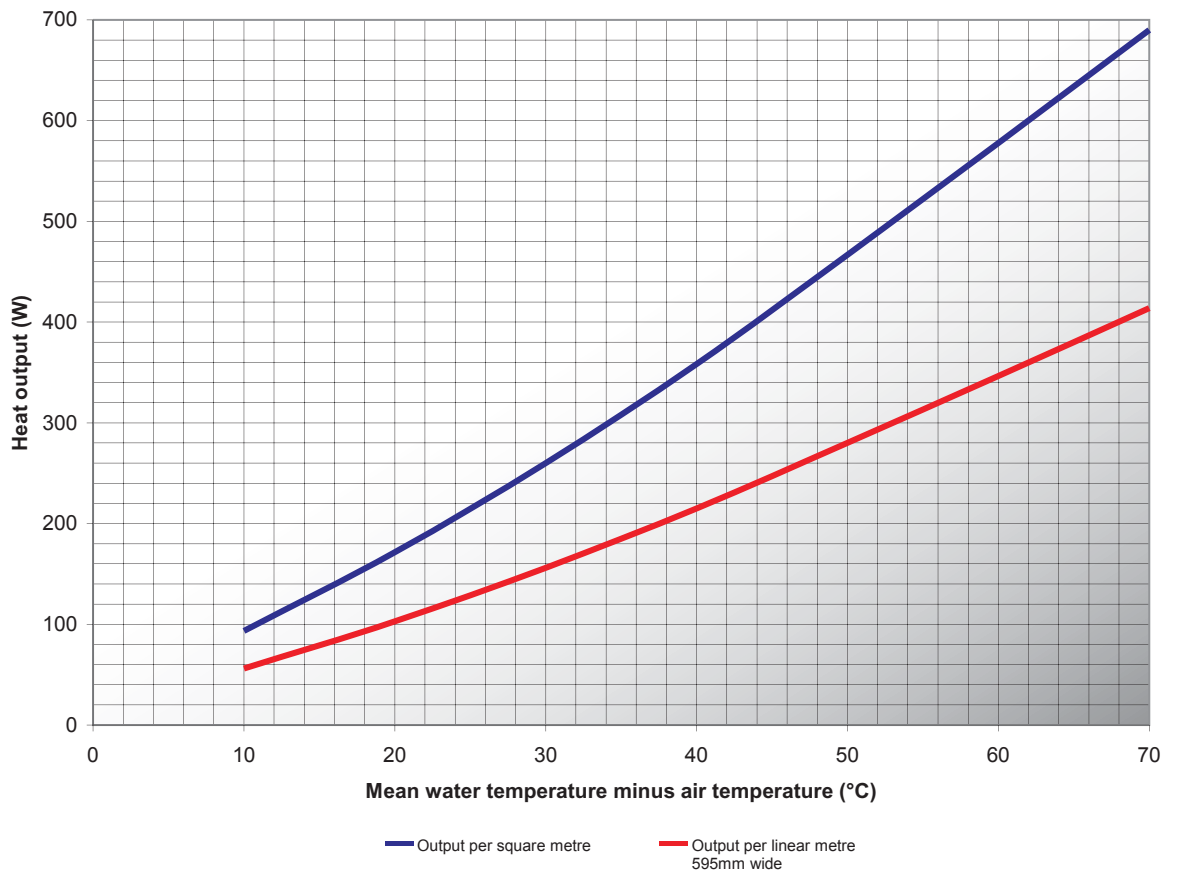
As the radiant heat output is proportional to the surface temperature the majority of variation in heat output between different radiant ceiling panels is the convected output. When a panel is installed in a ceiling grid most of this convected heat output is wasted in heating the void, so it is important that this is kept to a minimum.

ENI4037 is the new standard for measuring the output of radiant ceiling panels. It not only states how and where panels can be tested, but also sets standards for panel structure. *The European Manufacture of Ceiling Panels (EMCP) Group recommends that customers should only rely on the output of radiant panels tested to this standard.*

However, structures on many panels, such as sidewalls or strengthening bars are warm, and the convected and radiated heat from these structures is included in the total heat output, even when tested to ENI4037, but should be deducted when installed in a ceiling grid. This could be as much as 25% of the output.

The top of the THERMATILE PLUS Radiant Ceiling Panel is covered with insulation, so although the quoted output may be lower than some other panels, the proportion of radiant heat from the visible surface is likely to be higher, and the actual radiant output into the room when installed in a ceiling grid will be as per the ENI4037 outputs quoted in the following chart.

THERMATILE PLUS ACTIVE LENGTH THERMAL OUTPUT  
Tested & Accredited to ENI4037 (WSP Lab 07.55.SPC.101)



S & P Coil Products Limited reserves the right to amend specification without notice, whilst pursuing a policy of continual improvements in performance and design.

# THERMATILE PLUS Radiant Ceiling Panels

## Performance

### ENI4037 TESTING AND ACCREDITATION

As well as testing their THERMATILE PLUS Radiant Ceiling Panels to the standard ENI4037, SPC are now accredited to the standard. The accreditation and testing was performed by WSPLab Stuttgart, Germany. SPC's ENI4037 certificate is available on request from SPC.

Testing of radiant panels by manufacturers has been promoted by the EMCP Group who consist of the major radiant panel manufacturers in the UK and of which SPC are a founder member. The group agreed in 2007 that all companies within the group should test and publish their radiant panel outputs to the ENI4037 standard to help clarify outputs which were causing confusion across the industry.

The ENI4037 test provides an output based on an active length of panel. All panels have inactive sections at each end of every module, which can take the form of end and medial cover plates or loops and headers above the panel. These inactive areas should not be included in the per linear metre output calculation.

The following chart gives accurate outputs of modular THERMATILE PLUS Radiant Ceiling Panels with the inactive area deducted.

### THERMATILE PLUS MODULAR PANEL THERMAL OUTPUTS

Overall Panel Length (mm)	Module 1 Length	Module 2 Length	Panel outputs (W) at Δ T				
			40° C	45° C	50° C	55° C	60° C
595	595		107	122	140	155	174
1195	1195		236	269	308	341	382
1795	1795		365	416	476	527	591
2395	2395		494	563	644	713	800
2995	2995		623	710	812	899	1009
3595	3595		752	857	980	1085	1218
4195	1795	2395	860	980	1120	1240	1392
4795	2395	2395	989	1127	1288	1426	1600
5395	2395	2995	1118	1274	1456	1610	1809
5995	2995	2995	1247	1421	1624	1798	2018

Note: Δ T = Mean water temperature – Air temperature



## THERMATILE PLUS Radiant Ceiling Panels

### Panel Sizes, Joining & Suspension

#### PANEL SIZES

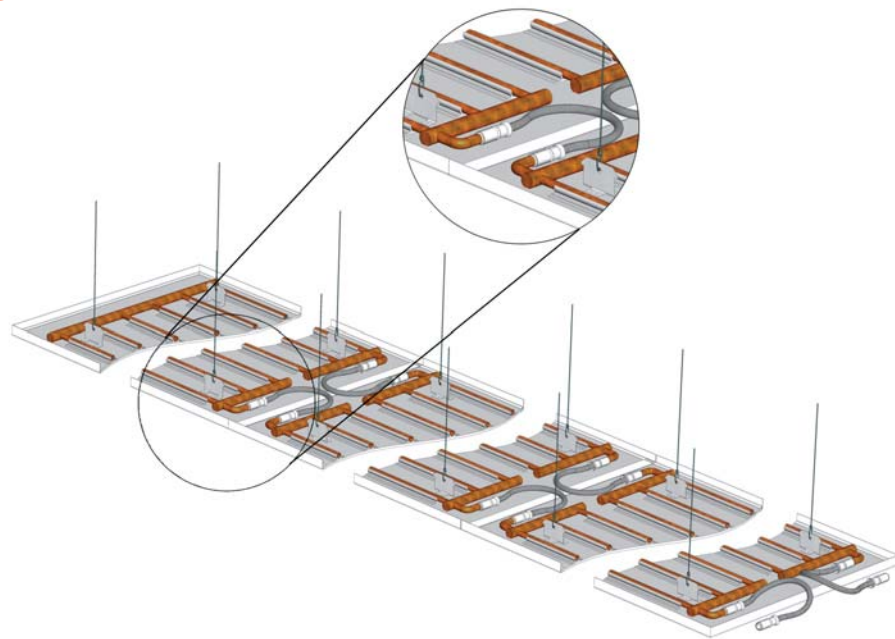
The unique structure of SPC's THERMATILE PLUS Radiant Ceiling Panels means that they can be made to almost any shape or size, maintaining a completely smooth solid visible surface.

However, standard panel sizes are designed to fit easily into suspended ceiling grids 595mm wide x 595, 1195, 1795, 2395, 2995 and 3595mm long. The coil on a standard panel is a single copper pipe serpentine, with same end connections. Alternative coil arrangements such as opposite end connections are also available.

Connecting the panels together can be achieved by using high quality stainless steel braided EPDM push fit flexible hoses, also available from SPC.

THERMATILE PLUS Radiant Ceiling Panels can be joined end to end using a simple plastic joining strip which makes a neat joint and allows for expansion. If opposite end connected panels are being joined, a single push fit flexible connection is required. For medium length same end connected panels, just two push fit flexible connections are required.

#### JOINING



A run of THERMATILE PLUS Radiant Ceiling Panels shown for illustration purposes without any insulation, with edging strips and wire hanging brackets

The THERMATILE PLUS radiant panel strip joining system simplifies the whole process of installing longer runs of THERMATILE PLUS Radiant Ceiling Panels. Each panel module has purpose made header connections at either end, so that only two push fit flexible connections are used on each join. Lengths of up to 30m can be quickly assembled in this way (dependant on system design), without the need for welding or brazing, cover plates, or special tools.

#### SUSPENSION

It is possible to support SPC's THERMATILE PLUS Radiant Ceiling Panels within a ceiling grid system. A 595 x 595 Thermatile weighs 3Kg including water. In most applications the panels are independently suspended from the soffit using hanging brackets which are fixed to the upper surface. Brackets are available for wire and threaded rods.

# THERMATILE PLUS Radiant Ceiling Panels

## Cooling & Wall Mounting

### COOLING

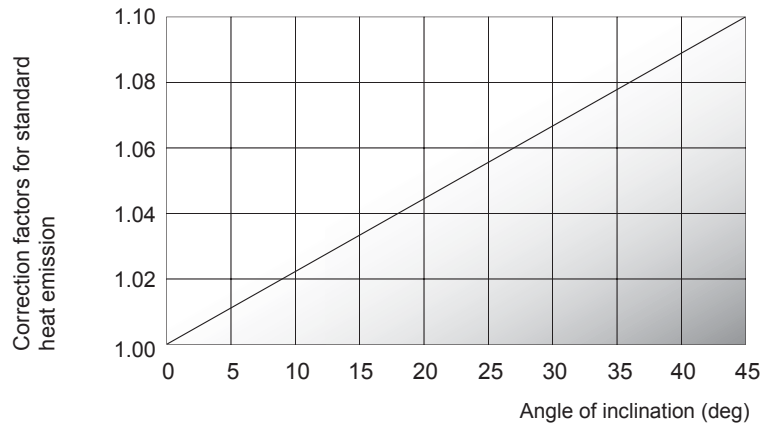
When chilled water is passed through the THERMATILE PLUS panel, the lower surface is cooled, providing efficient conditioning for the room below. Please contact SPC for more details and for performance data.

THERMASAIL Radiant Conditioning sails are also an alternative attractive option for cooling applications. The unique yet simple design of the sail allows for much higher cooling outputs than a THERMATILE PLUS panel. Please request a brochure for further details.

### WALL MOUNTING

Generally speaking radiant panels work most efficiently, and provide the best distribution of radiant heat when they are horizontally mounted on, and evenly distributed across the ceiling. So panels should be installed on the ceiling wherever possible.

When THERMATILE PLUS Radiant Panels are mounted on the wall, there are several factors which need to be taken into consideration. Firstly, the radiant heat is not all directed downward, it is directed across the room, which means that the heat distribution is not necessarily so even. Secondly, the greater the angle of the panels from the horizontal position, the greater the convective output. This increase in output is calculable using the generic chart shown on the right.



Increase of heat emission with inclined radiant ceiling panels



Special close fit wall mounting version of the THERMATILE PLUS Radiant Panels at Doncaster Racecourse and Loughborough Police Station's Custodial Suite (output x 1.2)

THERMATILE PLUS Radiant Panels can also be wall mounted using a specially designed angled mounting bracket. This angled bracket also comes with a ball guard to stop items being lodged between the panel and the wall. Optional end and corner pieces are available.

Details of wall mounting panels along with angled panels are available on request from SPC.

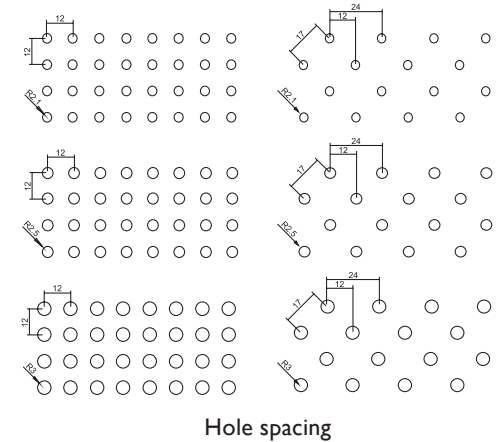
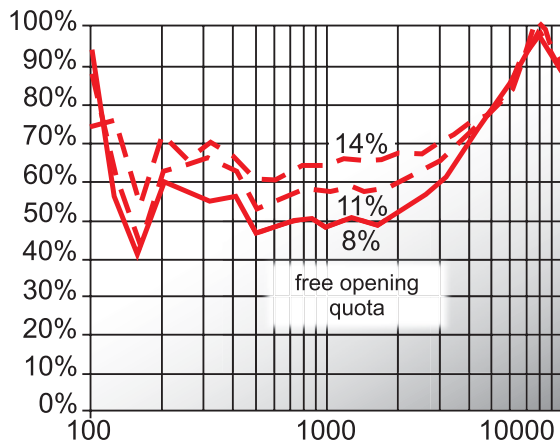
# THERMATILE PLUS Radiant Ceiling Panels

## Options

### PERFORATED ACOUSTIC PANELS

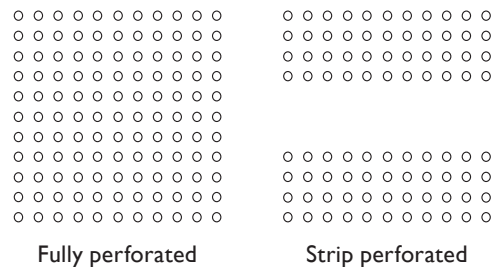
THERMATILE PLUS Radiant Ceiling Panels can be factory perforated. This provides excellent acoustic attenuation without affecting heating performance.

There are a number of perforation size and layout options, which not only give different finished appearances, but also vary the acoustic performance.



### ACOUSTIC PERFORMANCE

Full details of the acoustic performance relative to specific perforation layouts are available on request.



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# THERMATILE PLUS Radiant Ceiling Panels

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## System Design

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The first step when designing a heating system is to determine the room heat load. This is calculated in the normal way. Remember that with radiant panels you can achieve comfort temperature when the air temperature is 2 or 3 degrees lower than with a conventional heating system, reducing the heat load.

Divide the heat load by the output of the THERMATILE PLUS Radiant Ceiling Panels to obtain the total length of panel needed.

The total length of panel needed is then divided by the available ceiling width, or the individual panel or strip lengths desired, to determine the number and lengths of panel required.

Panels should be distributed evenly across the ceiling, in the same way, and for the same reasons that lights are evenly distributed – to achieve uniformity of radiation. As a general rule panels should ideally be parallel with the longest outside wall. The panel nearest to the outside wall should be close to it, to compensate for the heat loss, but at least one tile width away from it, to avoid over warming the outside wall and increasing heat loss.



THERMATILE PLUS Radiant Ceiling Panels at Madani High School, Leicester

Flow rates, pressure drops and pipe work layout depends upon the project and specific application.

SPC's technical sales team are available to assist with system design which includes a full technical breakdown of information such as flow rates and pressure drops. This information is provided with each quotation by SPC's new radiant panel selection programme. A general arrangement of each panel, pipe work and run configuration is also provided by the system and is supplied with your quotation.

### CONTROL

THERMATILE PLUS Radiant Ceiling Panels systems are very similar to radiator systems and are therefore connected, zoned and controlled in the same way. Ideally, black bulb sensors should be used to monitor room temperature, because they take into account radiant heat. If ordinary air temperature sensors are used, they should be set at two or three degrees lower than the required comfort temperature to compensate for the radiant heating effect.



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## THERMATILE PLUS Radiant Ceiling Panels

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### Installation

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THERMATILE PLUS Radiant Ceiling Panels are designed to make installation of the system easier than ever before.

It is possible to fit THERMATILE PLUS Radiant Ceiling Panels directly into a ceiling grid, and they can be supported by the grid providing that the supports are sufficient. Usually, however, the panels are independently suspended from the soffit.

The first step is to fix appropriate anchors into the soffit in position above the panels hanging brackets.

The THERMATILE PLUS Radiant Ceiling Panels should then be lifted into position and suspended from the anchors using adjustable hanging systems. Systems such as suspension wires are recommended because they allow for expansion movement, especially on longer panels. It is also possible to use threaded rod suspension systems.

The panels should then be levelled, and matched to the height of the ceiling grid as appropriate.

Where panels are joined together to form strips in a ceiling grid, the standard ceiling grid T-bar should be used to conceal the join. Where the panels are free hanging, or if T-bars are not used the THERMATILE PLUS Radiant Ceiling Panels joining strip is simply fitted in between the panels to cover the joint and take up any expansion movement.

The connections should then be made using flexible connectors, and the connections pressure tested. The installation is now complete.

The protective plastic film should be removed from the radiant panels prior to use.

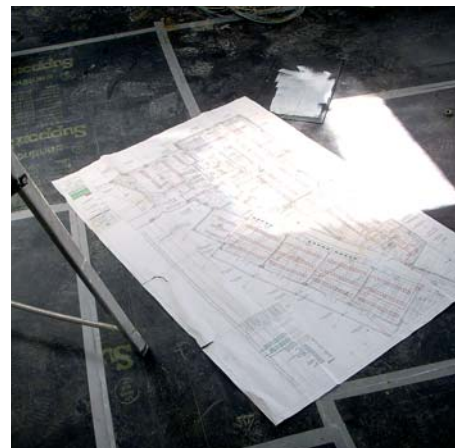
Where panels are installed below a ventilated loft space it is recommended that normal loft insulation be fitted over the panels in addition to the fitted insulation.

Installations into plasterboard ceilings are supplied with a fitting frame. Please contact SPC for further information regarding ThermaTile Plus Radiant Panels for plasterboard ceilings.

Full installation and maintenance details are provided on request.

Additional information and advice can be obtained by contacting SPC's technical sales department.

SPC have a CPD Seminar on the understanding and design of Radiant Ceiling Panel Systems which is available on request.



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# THERMATILE PLUS Radiant Ceiling Panels

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## Standard Engineering Specification

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THERMATILE PLUS Radiant Ceiling Panels shall be supplied by S & P Coil Products Limited, SPC House, Evington Valley Road, Leicester. THERMATILE PLUS Radiant Ceiling Panels are suitable for all applications as described in the literature. The quantities and model references shall be as indicated in the schedule, with the constructional features complying to the under mentioned specification.

### PANEL

THERMATILE PLUS Radiant Ceiling Panels shall be constructed from a 5.5mm thick composite aluminium sheet which shall be structurally rigid and have a high thermal conductivity performance. The coil shall be made from either 12mm or nominal 15mm copper pipe, which is mechanically fixed into aluminium extrusions, which are in turn riveted to the upper surface of the panel. This ensures excellent heat transfer and long term reliability. Where specified, plastic sidewalls are fixed to the sides of the panel to retain and conceal insulation.

### TEST PRESSURE

Each THERMATILE PLUS Radiant Ceiling Panel is to be factory tested with pressurised air under water up to 10 bar. The units are to be suitable for a working pressure of 7 bar.

### SURFACE FINISH

The lower visible surface shall be completely flat and smooth with a painted 20% gloss RAL 9010 finish. (Other RAL colours available by special order). The finish is to be protected by a removable plastic film. The upper surface of the panel is to be primed, apart from the copper coil and the aluminium retaining extrusions.

### CONNECTORS

There shall be two 12mm or 15mm copper tubes (depending on system design) protruding from one end of the upper surface of the panel (opposite end connections and headered fast fit connections are available as required). These can be connected to the LPHW system with non-toxic, EPDM lined, stainless steel over braided push fit flexible hoses, also supplied by SPC. Valved and other conversion hoses are also available to order.

### INSULATION

The panel shall be supplied with fitted insulation covering the entire coil and upper surface. The minimum thermal conductivity of the insulation shall be 0.037 W/m/°C.

### SIZE

The standard sizes of individual panels shall be 595mm wide by 595, 1195, 1795, 2395, 2995, 3595mm. Other sizes are available by special order.

### PACKAGING

Panels shall be supplied in suitable purpose made cartons, clearly marked with the Order Number/Room/Run/Panel reference to help document your radiant panel order. Each unit shall have the visible surface protected by a removable plastic film.

### CE MARKING

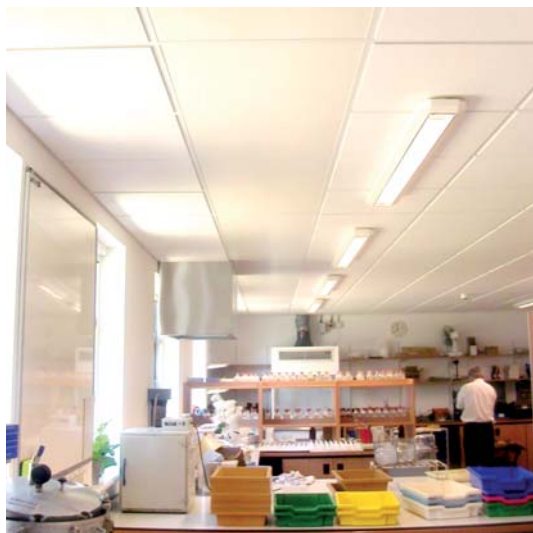
The tile complies with all relevant EU directives currently in force.

S & P Coil Products Limited reserve the right to amend specification whilst pursuing a policy of continual improvements in performance and design.

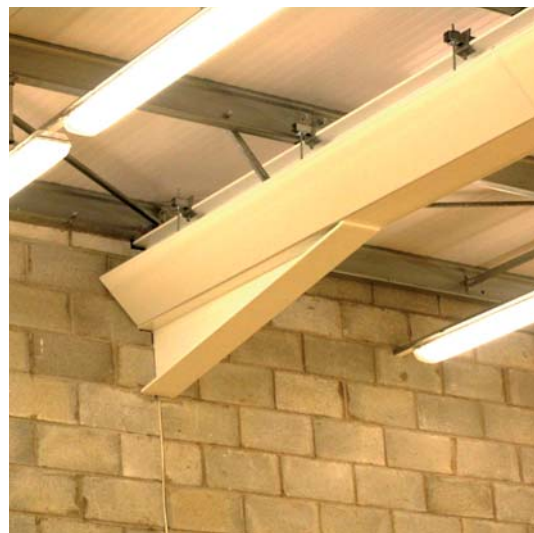


# THERMATILE PLUS Radiant Ceiling Panels

## Examples



GOFFS SCHOOL, CHESHUNT



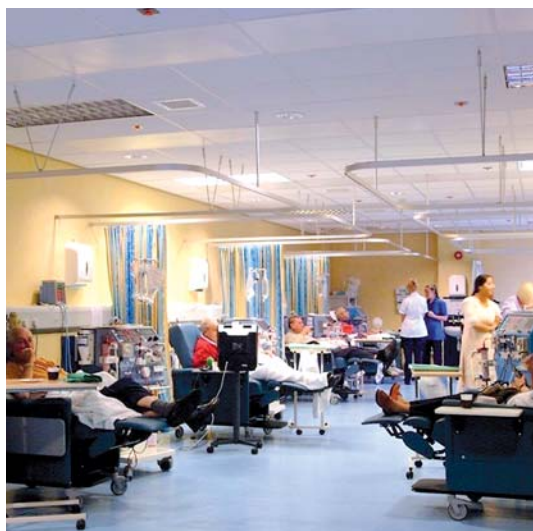
A & B JUDO CLUB



EASTFIELD COMMUNITY NURSERY



ELD LANE BAPTIST CHURCH, COLCHESTER



BIRCH HILL HOSPITAL



HARWICH SCHOOL

S & P Coil Products Limited reserves the right to amend specification without notice, whilst pursuing a policy of continual improvements in performance and design.

# THERMATILE PLUS Radiant Ceiling Panels

## Examples

EXAMPLES



SALISBURY HOSPITAL



MADANI HIGH SCHOOL, LEICESTER



MACMILLAN ACADEMY



KING JOHN SCHOOL



LOUGHBOROUGH POLICE STATION



WYTHENSHAW HOSPITAL





**SPC**

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Ref: TTI Issue 5