HASL

SPECIALIST H & V DISTRIBUTORS

THERMATILE PLUS

HEATING & COOLING

RADIANT CEILING PANELS

INNOVATION WITH STYLE

ActiveBIM

ABOUT SPC

THE COMPANY

S & P Coil Products Limited is a UK based specialist manufacturer and supplier of heating and cooling equipment to the public and private sector in the UK.

We have an extensive range of products to meet the needs of our customers including; **Ultraviolet Object & Air Sterilisation, Radiant Panels, Radiant Conditioning Sails, Radiant Conditioning Beams, Fan Convectors, Trench Heating, Heating/Cooling Coils and Heat Pipes.**

Our task is straightforward; we improve the comfort of indoor environments for those who live and work in them, whilst ensuring that our expert team is on hand to guide you through the process of specifying and acquiring your bespoke solution. The result is a range of products that are economical to run, robust and aesthetic – with all the sales and technical support that you need.

It's a winning combination, and after more than 30 years in business, we've built a worldwide network of satisfied customers.

KEY FACTS ABOUT SPC

- Registered provider of approved RIBA and CIBSE accredited CPD's
- Major supplier to local government and commercial sectors
- Free self-selection software packages
- Regional sales and technical support team
- Free site check / survey
- ISO 9001 and Investors In People

THERMATILE PLUS RADIANT CEILING PANELS

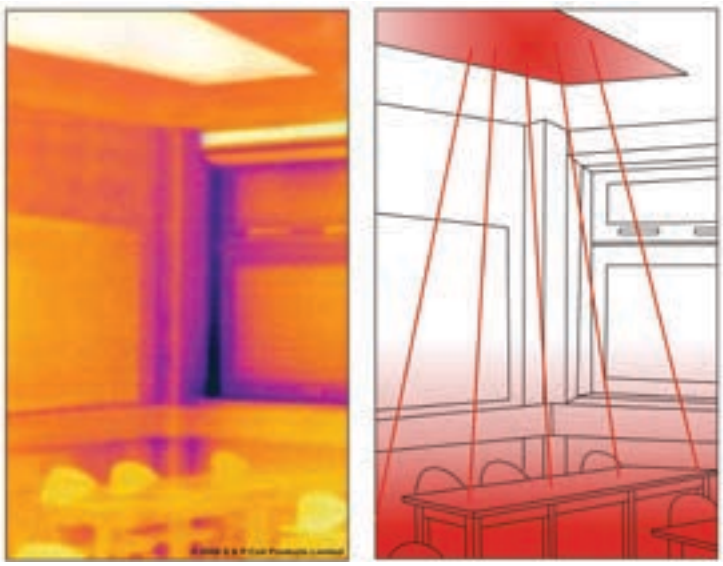
INTRODUCTION

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.

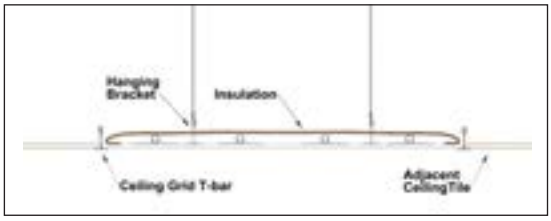
THERMATILE PLUS Radiant Ceiling Panels are part of a range of specialist heating and cooling products which also includes THERMASAIL Radiant Conditioning Sails and THERMABEAM Radiant Conditioning Beams.

THERMATILE PLUS RADIANT CEILING PANELS
TECHNOLOGY

At the heart of SPC's THERMATILE PLUS Radiant Ceiling Panel System is a composite aluminium sheet panel. The panel is structurally rigid with high strength and low weight characteristics. It also has excellent thermal conductivity, which ensures high heat transfer efficiency.

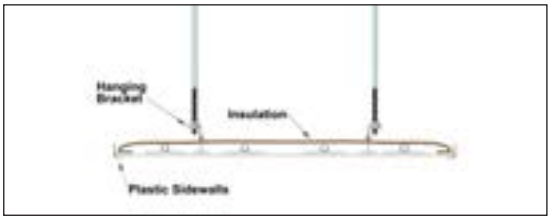
Heat is introduced into the panel via a mechanically folded 12mm copper pipe coil which is fixed into aluminium extrusuions. The extrusions are then riveted to the upper surface of the panel which ensures excellent and reliable heat transfer whilst maintaining a completely smooth lower surface.

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



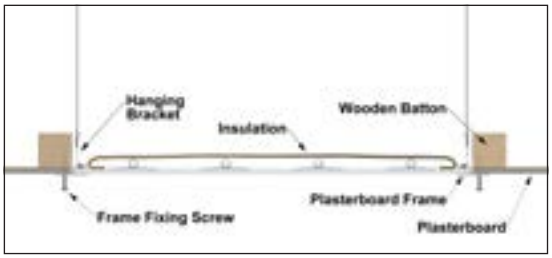
THERMATILE PLUS Panel in Ceiling Grid

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.



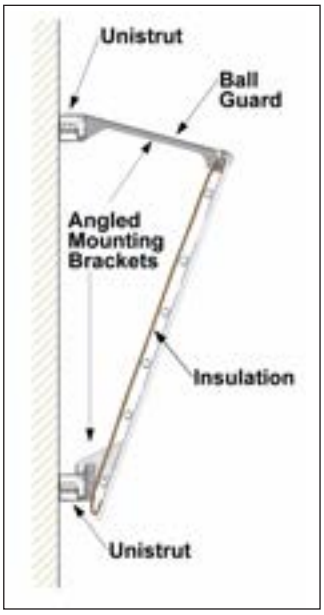
THERMATILE PLUS Panel Freehanging

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 is 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 fixings screws, this system is designed so that no additional access panels are required.



Angled Frame THERMATILE PLUS Panel

THERMATILE PLUS Radiant Panels can also be wall mounted either flat against the wall 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.

THERMATILE PLUS RADIANT CEILING PANELS

FEATURES & BENEFITS

INSTALLED IN A CEILING

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

ONLY 25mm 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

The flat panel itself is structurally rigid, and eliminates the need for structural sidewalls. This not only avoids deflection during warm up, but also ensures a smooth, flat visible surface which is ideal for healthcare applications.

Though panels with warm sidewalls may give a higher total heat output, when installed in a false ceiling the output from the sidewalls will be used to heat the void and services in the void, not the room space.

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 COPPER PIPE COIL

Using 12mm copper pipe coils allows circuit optimisation against a range of water flow rates, maintaining low hydraulic resistance while assuring that flow is turbulent. This ensures that smaller panels achieve the full quoted output. The coils are machine folded from a single copper pipe to ensure reliability. The longer panel runs are sometimes manufactured with headers to reduce flow resistance.

SIMPLE PANEL JOINING AND INSTALLING

The THERMATILE PLUS Radiant Panel system is designed to make installation as simple, quick and safe as possible. If required, panels are joined with a simple joining strip, eliminating the need for cover plates. Each join or connection just needs 2 push fit flexible connectors. The panels are lightweight and easy to lift safely, and are supplied with hanging brackets for either hanging wire or drop rod suspension systems.

Installing radiant panels could not be simpler.

SPORTSLINE PANELS FOR SPORTS HALLS

The THERMATILE SPORTSLINE panel is folded down the centre providing an incline to reduce the chance of balls being "lost" on the top of panels. This avoids the need for additional ball guards, and improves the radiant to convected heat output for sports hall applications.

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.

Proud to be made in Great Britain

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.

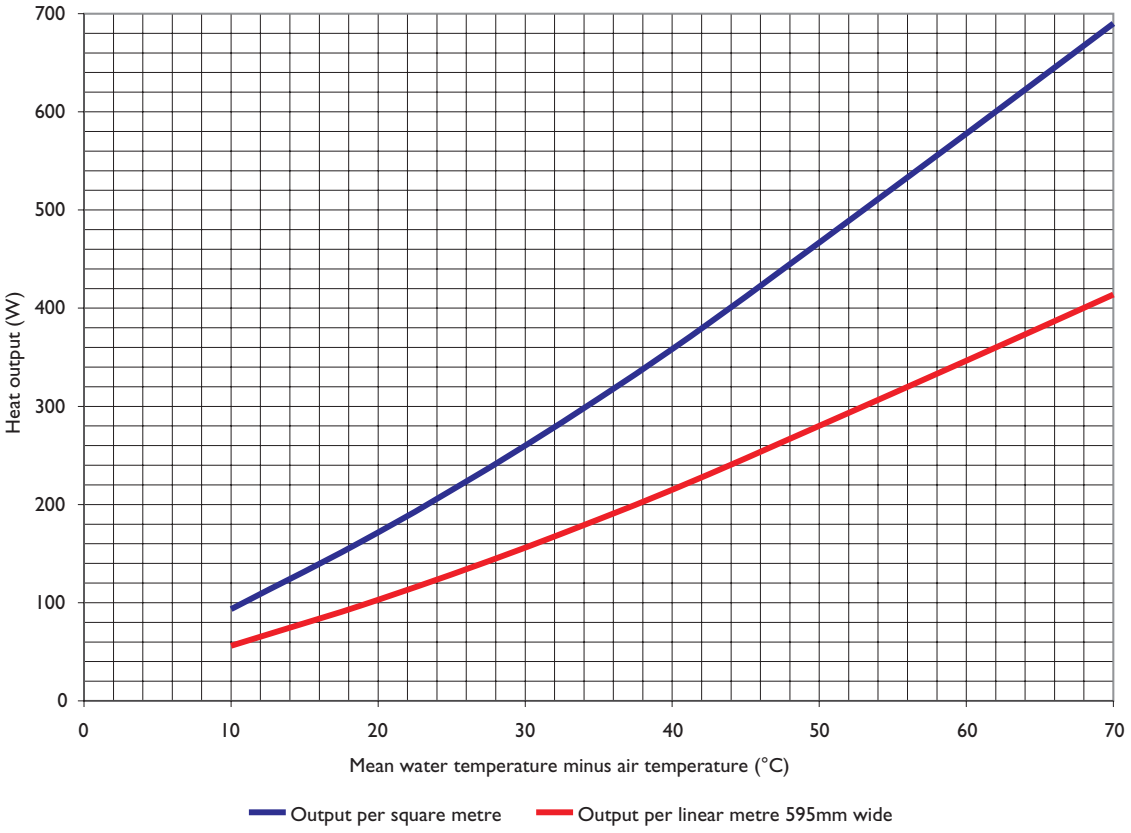
EN14037 is the standard for measuring the output of radiant ceiling panels. It not only states how and where panels can be tested, but also sets standards for panel structure. The European Manufacture of Ceiling Panels (EMCP) Group recommends that customers should only rely on the output of radiant panels accredited 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 EN 14037, 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 and the panel has no sidewalls, 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 BS EN14037 outputs quoted in the following chart.

THERMATILE PLUS ACTIVE LENGTH THERMAL OUTPUT

Tested & Accredited to EN14037 (WSP lab 07.55.SPC.101)



PANEL SIZES, JOINING & SUSPENSION

PANEL SIZES

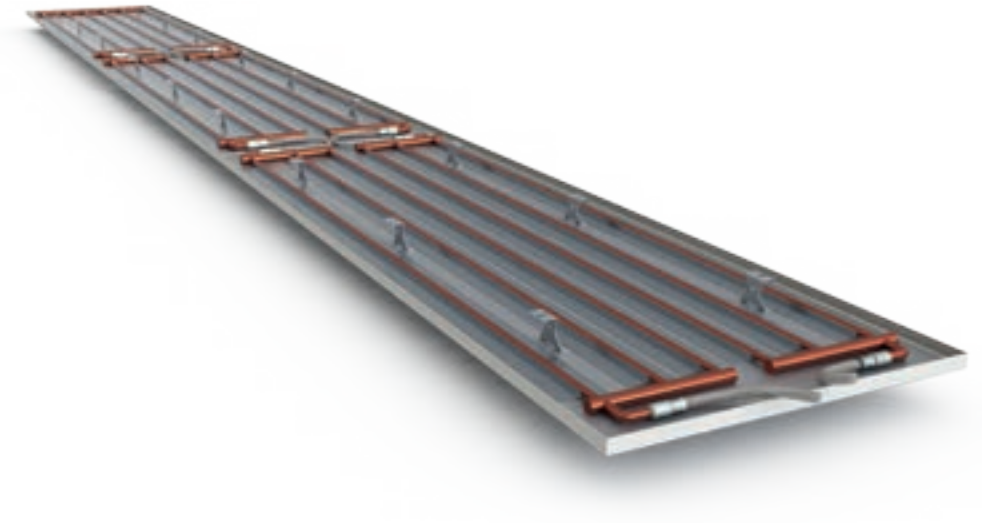
The unique structure of THERMATILE PLUS Radiant Ceiling panels, mean that they can be made to almost any size and shape, maintaining a completely smooth visible surface.

However, standard panel sizes are designed to fit easily into standard ceiling grids, 595mm wide x 590, 1190, 1790, 2390, 2990 and 3590mm long. Longer panels are made up of modules joined end to end, with a simple panel joining strip, (or ceiling grid bar) and just 2 push fit flexible connectors per join.

Hydraulic connections can be simply made using 2 High quality push fit, EPDM lined, stainless steel flexible connections, also supplied by SPC. Only 2 further push fit flexible connectors are required for each join.

Single THERMATILE PLUS panel with same end connections

THERMATILE PLUS Panel up to 7.2m, 2 modules, same end connections.
Only 2 push fit flexible connectors and a simple joining strip
are required for the join.

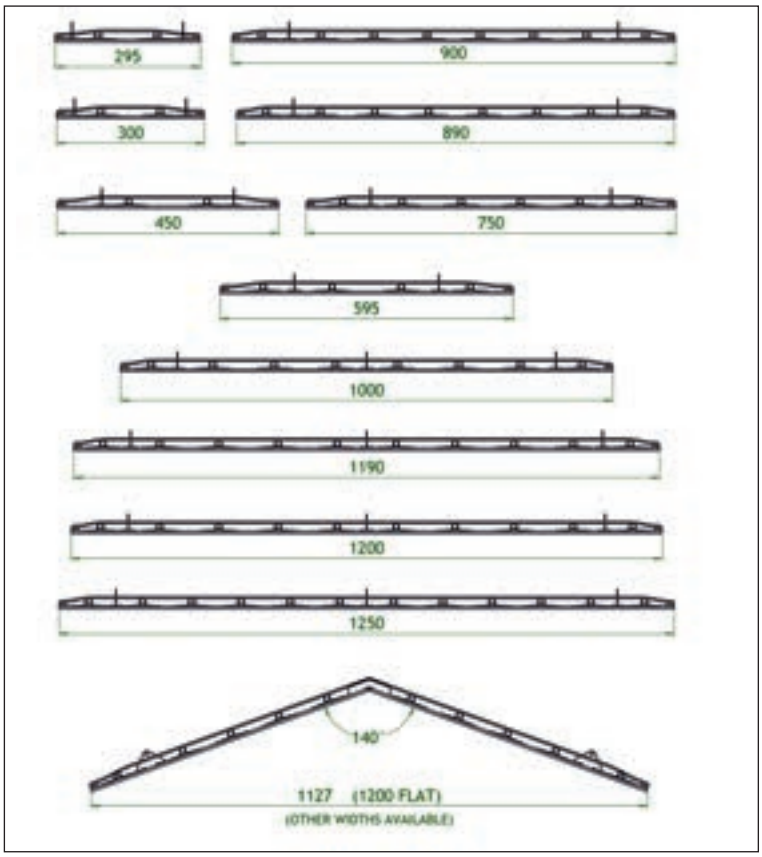


Longer THERMATILE PLUS panels with multiple modules using headers. Still only 2 push fit flexible connections and a simple joining strip are required on each join. (For illustration purposes the panel is shown without insulation affixed, with wire hanging brackets, and edging strips for freehanging panels).

THERMATILE PLUS RADIANT CEILING PANELS

PANEL SIZES, JOINING & SUSPENSION

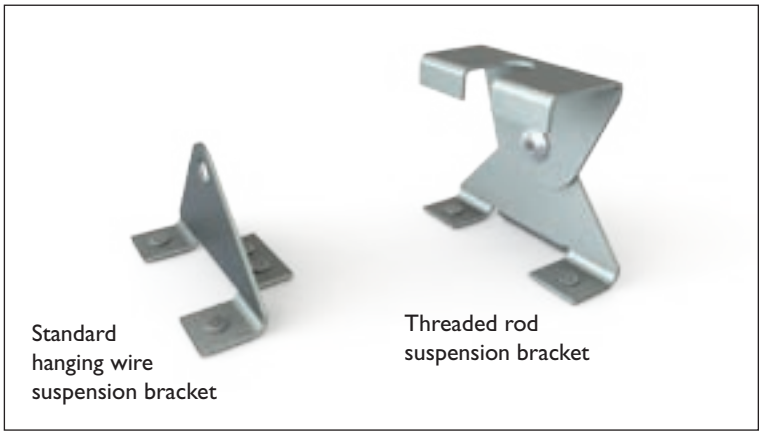
STANDARD PANEL WIDTHS



Bespoke sizes available on request.

SUSPENSION

Thermatile Plus Radiant Panels are supplied with the appropriate number of suspension brackets. These can be either as standard, for wire suspension systems, or threaded for rod suspension systems.



Standard hanging wire suspension bracket

Threaded rod suspension bracket

HYDRAULIC CONNECTIONS

Hydraulic connections can quickly and simply be made using high quality EPDM lined stainless steel push fit flexible connectors supplied by SPC. Other connection systems can also be used.

SPECIAL PANELS - SPORTSLINE PANEL

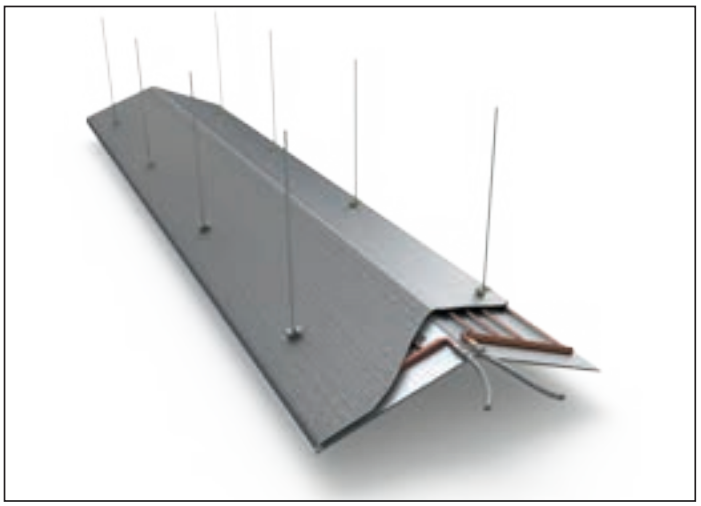
SPORTSLINE PANEL

Radiant Panels are arguably the most efficient way of heating sports halls. The radiant heat from the panels mounted at high level, heat at low level first, and allow the comfort temperature to be rapidly achieved with a lower actual air temperature. This results in three main benefits :-

Firstly, with an air temperature about 3 degrees lower than conventional air heating, there will be a lower heat loss, and a corresponding reduction in heating costs, this can be up to 15% energy saving.

Secondly, sports halls tend to be used intermittently, so having a low inertia heating system saves on energy used during long heat up times, and enables rapid and controllable temperature control.

Thirdly, when exercising, it is known to be physiologically better to have a lower actual air temperature, as it improves the body's ability to maintain temperature balance. This means that using radiant panels in sports halls feels more comfortable than conventional systems.



The SPC THERMATILE SPORTSLINE panel is specifically designed to provide all the above benefits, but add further advantages for the Sports hall environment :-

In a sports hall, balls of various types are often used, and can easily become lodged on conventional flat panels. The SPC THERMATILE SPORTSLINE panel is structurally folded along the centre line, so that the top of the panel is angled downwards, and balls are able to roll off. This not only eliminates the need for special top mounted ball guards, but it also slightly reduces the convective output of the panel, as the layer of warmer air is trapped in the bottom of the panel, making it more efficient for high level installations. The SPC THERMATILE SPORTSLINE has the same lightweight, and ease of installation benefits as the rest of the Thermatile range, making high level installation as simple and safe as possible.

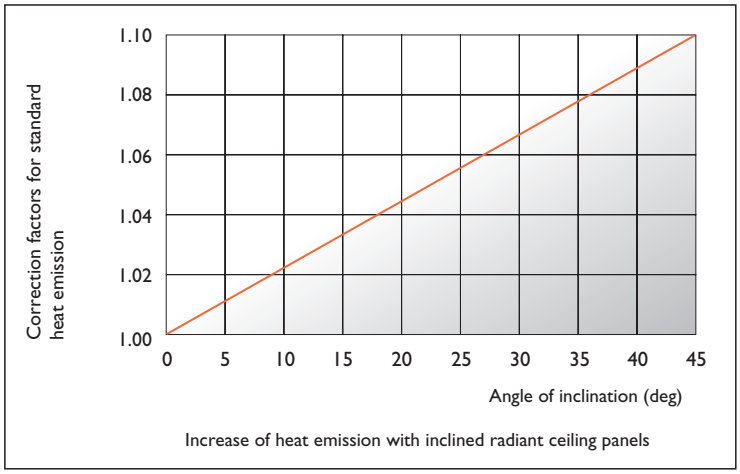
THERMATILE PLUS RADIANT CEILING PANELS

SPECIAL PANELS - WALL MOUNTING

WALL MOUNTING

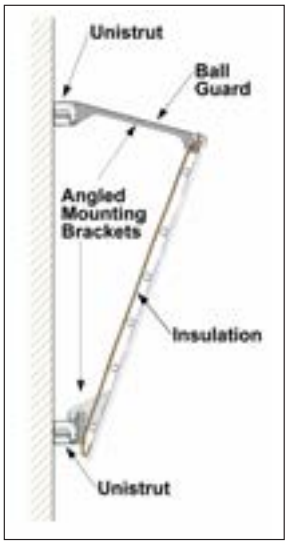
Generally speaking radiant panels work most efficiently, and provide the best distribution of radiant heat when they are horizontally mounted on, and evenly distributed across the ceiling. So panels should be installed on the ceiling wherever possible.

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

Typical factory installation, End Caps optional.



THERMATILE PLUS Radiant Panels are 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 mounted angled panels are available on request from SPC.

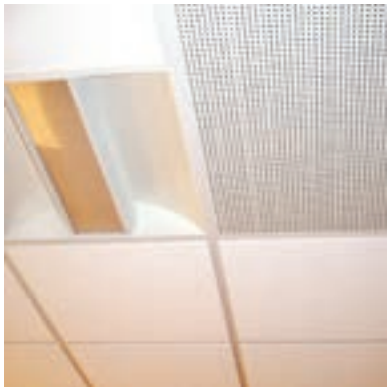
THERMATILE PLUS RADIANT CEILING PANELS

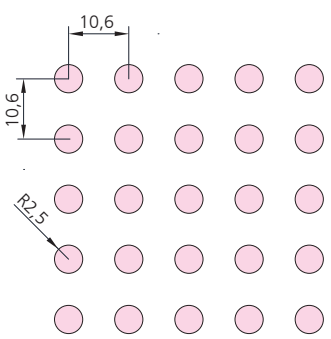
SPECIAL PANELS - PERFORATED ACOUSTIC PANELS

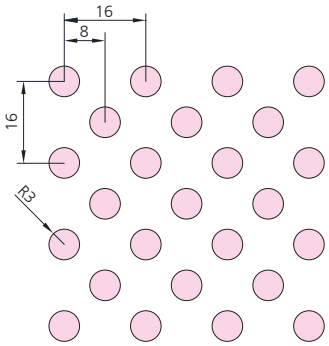
PERFORATED ACOUSTIC PANELS

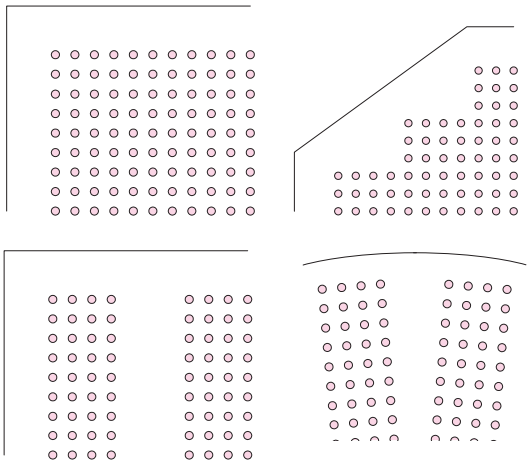
THERMATILE PLUS Radiant Ceiling Panels can be factory perforated. This provides excellent acoustic attenuation without affecting heating performance.

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

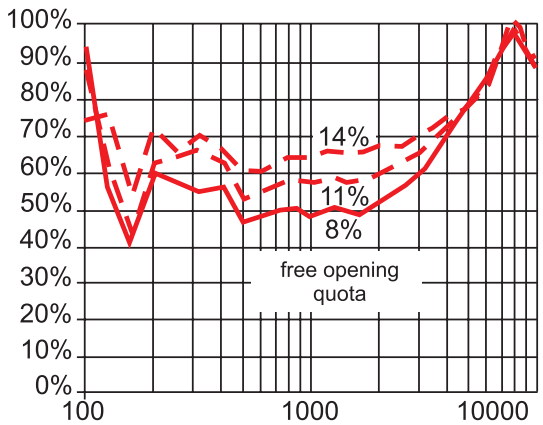








ACOUSTIC DATA CHART



The above chart shows the accoustic performance of Perforated THERMATILE PLUS Panels at various sound frequencies and with different perforation proportions.

ACOUSTIC PERFORMANCE

Full details of the acoustic performance are available on request.

THERMATILE PLUS RADIANT CEILING PANELS

SYSTEM DESIGN

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 Crown Hills 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 radiant panel selection programme together with BIM models. A general arrangement of each panel, pipe work and run configuration is also provided by the system is be 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.

THERMATILE PLUS RADIANT CEILING PANELS

INSTALLATION

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

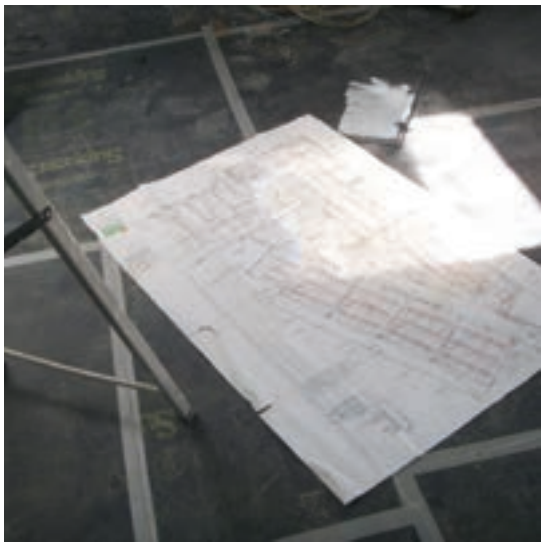
Where panels are installed below a ventilated loft space it is recommended that normal loft insulation be fitted over the panels in addition to the fitted insulation.

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.



THERMATILE PLUS RADIANT CEILING PANELS

STANDARD ENGINEERING SPECIFICATION

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 12mm 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 copper tubes (depending on system design) protruding from opposite ends of the upper surface of the panel (same end connections and headered fast fit connections are available on special request). 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 590, 1190, 1790, 2390, 2990, 3590mm. 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 Thermatile shall comply with all 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

BUILDING INFORMATION MODELLING (BIM)

SPC has achieved full Building Information Modelling (BIM) compliance with SPC's ActiveBIM objects now available to load into your Revit model using a supplied type catalogue holding all the project specific information configured by SPC's selection program at the design and quotation stage.

SPC offers Active BIM objects for Radiant Panels, Radiant Conditioning Beams, Radiant Conditioning Sails, MINIB Trench Heaters, Belgravia Fan Convectors, Coil Heat Exchangers, Ultraviolet Air and Object Sterilisers and Heat Pipes, with various configurations and specifications included in the modelling.

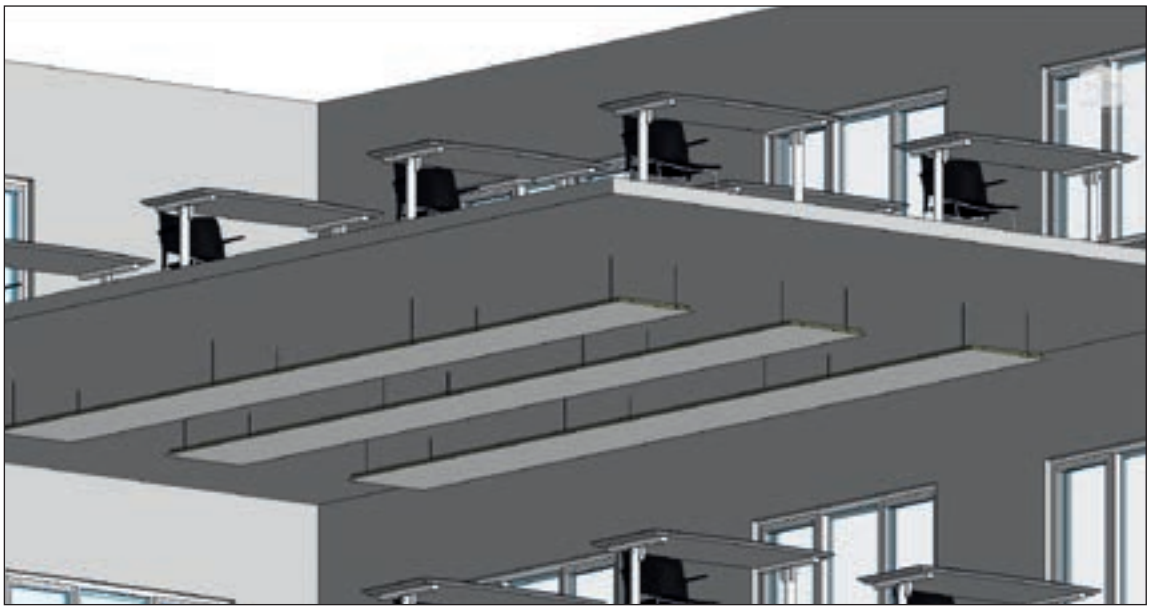
BIM is a rich 3D experience that enables specifiers and contractors to plan and design buildings using digital simulations, rehearsing all the stages of the design and build process before construction starts.

The modelling can be shared between the various parties involved in the build which streamlines the process, increasing efficiency, saving money and reducing risks. For example, an engineer is able to use information sourced from the architect to prepare energy calculations.

BIM objects can be used at the modelling stage to determine the right specifications of components, the sizes required and, when it comes to such things as heating outputs best suited to the project. This information is then stored in the model and passed onto the facilities management team to help maintain the building during its lifecycle.

SPC's Active BIM objects are detailed enough for architects, designers and contractors to experiment with various sizes and types of components to make sure they are exactly right before ordering. The data provided with the Active BIM objects also reduces the time spent inserting project specific data into the Revit model saving both time and money.

More detailed information and specifications can be found on the SPC website www.spcoils.co.uk/BIM



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THERMATILE PLUS RADIANT CEILING PANELS

EXAMPLES

GOFFS SCHOOL, CHESHUNT

A & B JUDO CLUB

EASTFIELD COMMUNITY NURSERY

ELD LANE BAPTIST CHURCH, COLCHESTER

BIRCH HILL HOSPITAL

CROWN HILLS SCHOOL, LEICESTER

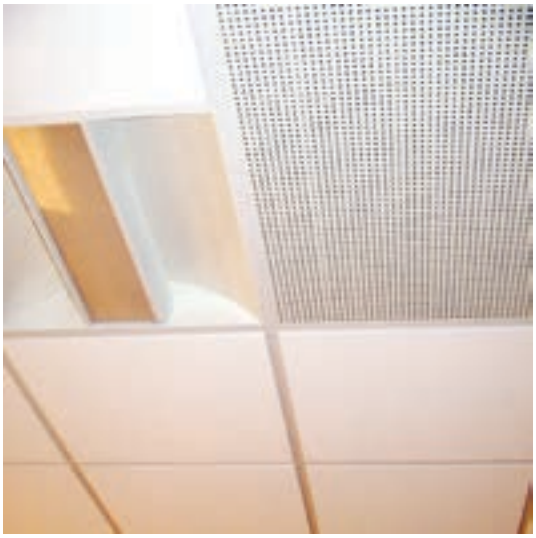
THERMATILE PLUS RADIANT CEILING PANELS

EXAMPLES

SALISBURY HOSPITAL

MADANI HIGH SCHOOL, LEICESTER

MACMILLAN ACADEMY



KING JOHN SCHOOL

TYPICAL FACTORY INSTALLATION

WYTHENSHAWE HOSPITAL

Proud to be made in Great Britain

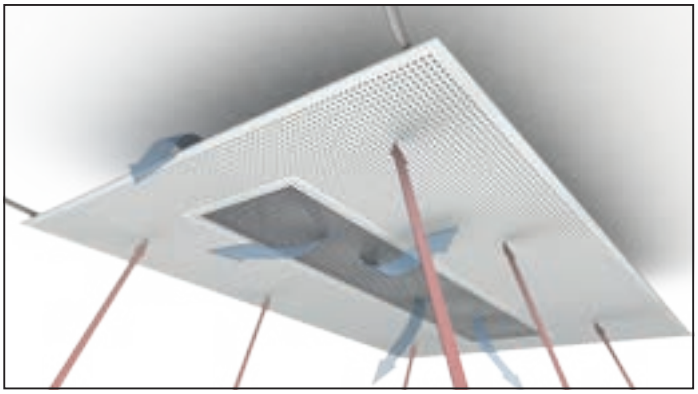
THERMABEAM RADIANT CONDITIONING BEAMS

THERMABEAM RADIANT CONDITIONING BEAMS

THERMABEAM Radiant Conditioning Beams utilise the same radiant cooling and heating concept as the THERMASAIL, but have enhanced cooling capacity provided by a shallow central coil, making it suitable for higher cooling capacity applications.

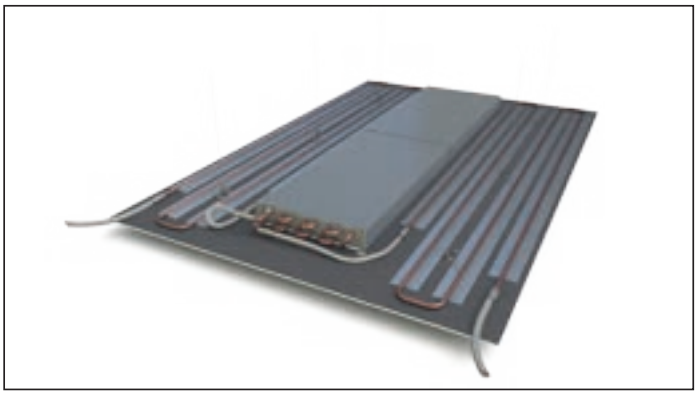
COOLING

When chilled water is passed through the coils, the large chilled lower surface cools the air against it. It also absorbs radiant gains from the room, lowering the resultant temperature. The air above the panel is also cooled, and either convects downward around the panel edges, or is drawn through the central cooling coil, where it's density ensures that it descends into the room.



HEATING

In heating mode the central coil is normally switched off so the unit works in the same way as a radiant panel, but with a higher convective output due to the uninsulated top surface. As theThermabeam is normally sized for cooling low water temperatures will normally be required to satisfy heat loads.



With high water temperatures for cooling and low water temperatures for heating, allowing for the highest efficiencies on reversible heat pumps, or boilers and chillers, added to the radiant loss in cooling and radiant gains in heating, Thermabeam is one of the most efficient cooling and heating emitters available.

For full technical details of THERMASAIL Radiant Conditioning Sails and THERMABEAM Radiant Conditioning Beams, please contact SPC.

Thermabeam Radiant Conditioning Beams, a typical installation

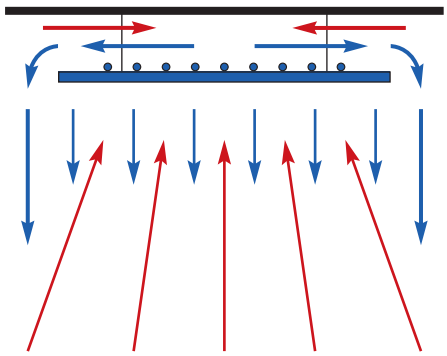
THERMASAIL RADIANT CONDITIONING SAILS

When chilled water is passed through a THERMATILE PLUS Radiant Panel, very efficient radiant cooling is provided for the room below. Please contact SPC for detailed cooling performance data.

However SPC have developed two separate Radiant conditioning systems with highly efficient radiant cooling and heating in mind.

THERMASAIL RADIANT CONDITIONING SAILS

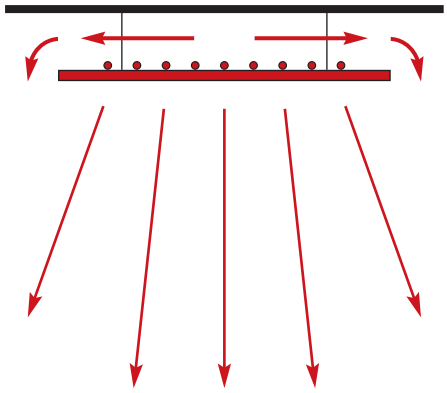
THERMASAIL Radiant Conditioning Sails fill the gap between chilled beams and chilled ceilings, opening up an entirely new range of architectural and design possibilities whilst combining the highest available efficiencies in radiant cooling and heating with ease of installation.



Radiant Heat from room

Cooling

When chilled water is passed through the coil, the large chilled lower surface cools the air against it. It also absorbs radiant gains from the room. The air above the panel is also cooled, and this cooled air convects around the edges of the sail. The unique strength of the panel eliminates the need for any structural sidewall allowing unrestricted cooled air movement and high cooling performance.



Heating

When warm water is passed through the coil, the lower surface of the sail operates as an efficient radiant heater.

The air above the panel is also warmed, and convects into the room space. With a large heated area, low water temperatures can be used which maximises boiler efficiency. The system has a low inertia, reacting very rapidly to heating and cooling demands, ensuring minimum energy consumption.

THERMASAIL Radiant Conditioning Sail installations

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