Radiant Heating and Cooling Solutions (RHCS) was started to provide a complete package solution for hydronic radiant heating and cooling systems; from the design stage right through to the install, commissioning and hand over. There are a number of companies offering just components, or designs, but very few who were able to offer a full range of solutions and integrate all components into a perfectly designed and balanced system.

One of the main problems faced with designing and installing radiant systems in Australia is that there are currently no regulations or standards in place for hydronic radiant systems. This has led to a number of poorly designed systems and inferior products being installed which simply do not work properly together. In fact, many of the systems being installed in Australia today utilise products and practises that are outdated and would not pass European laws for underfloor heating or underfloor cooling installations. At RHCS we have experienced international employees and we pride ourselves on following the European Standards for our designs, thereby ensuring that the latest technologies and best practises are followed to create the most energy efficient heating and cooling systems.

We are constantly keeping on top of industry trends for designing radiant systems. Our team regularly travels to Europe to review the latest technologies available, as well as having direct contact with both European and local suppliers, thereby ensuring accurate information and competitive pricing is offered.

The staff at RHCS are young, dynamic and enterprising and, above all, motivated. We are a resourceful and well integrated team, with the capability and willingness to find out the right solution in every application.
BENEFITS OF RADIANT SYSTEMS

SUSTAINABILITY

- There is a natural synergy between underfloor heating and renewable energy sources such as Geothermal, Air and Water source Heat Pumps for reduced energy consumption.
- 30 year warranty on underfloor pipe work and ceiling panels.
- Virtually maintenance free.

FLEXIBILITY

- No space within the conditioned space is required for mechanical equipment. This feature is especially valuable in hospital patient rooms, offices, and other applications where space is at a premium.
- Architects gain total design freedom for layout and furnishing of the room as there is no need for wall mounted equipment e.g. radiators, split A/C units etc.
**COMFORT**

- Total human thermal comfort may be better satisfied as both indoor air temperature and also mean radiant temperature can be controlled.
- The distribution of heat and cold emitted by the walls and the ceiling through radiation guarantees a uniform temperature inside the room.
- Draft and noise free environment.
- Dry-bulb air temperature may be lower (in heating) or higher (in cooling), which reduces sensible heating or cooling loads.

**HEALTH & ENVIRONMENT**

- No recirculation of stale contaminated air virtually eliminates the problems associated with sick building syndrome.
- Wet-surface cooling coils are eliminated from the occupied space, reducing the potential for septic contamination.
- Can eliminate the effects of dry eye syndrome and inflamed sinuses associated with convective air heating and cooling systems.
WHAT IS UNDERFLOOR HEATING?

UNDERFLOOR SYSTEMS

In an underfloor heating system, low temperature hot water is circulated through pipes embedded in the floor usually either in a screed, in slab, or beneath a timber floor. A layer of thermal floor insulation is placed beneath the pipework so that the heat is radiated upwards.

The surface area of the emitter (i.e. the floor) is much larger compared to wall radiators, so the mean water temperature necessary to give the required heat output can be reduced. This form of emission gives excellent levels of thermal comfort and is far less obtrusive than wall radiators.

For a quick understanding of how the system is installed you can watch a 3 minute video called ‘laying of the floor system’ at www.rhcs.net.au/downloads
How much does it cost?

Price is always proportional to system complexity, building performance, climate and the contractor. With a simple radiant system design, well insulated building and a skilled contractor, you can obtain an affordable radiant system. People spend thousands of dollars each year on outdoor decks, patio’s and furniture trying to be more comfortable outdoors rather than investing in their own HVAC (Heating, Ventilation and Air Conditioning) systems to be comfortable indoors where they spend 90% of their time... it’s all about ones priorities. We are delighted to provide quotes specific to each project and client’s needs.

What floor finishes are suitable for use with UFH?

Underfloor heating can be used with virtually all floor finishes and surface coverings such as surfaced concrete, stone or quarry tiles, floating suspended floors, carpet underlay, wood and laminate flooring. The system must be designed to ensure that the maximum material and interface temperatures are respected. Contact RHCS for more information.

Can radiant heat crack or damage wood flooring?

The main issue of concern is usually expansion or contraction due to changing moisture levels. The general rules are:

• The initial moisture content of the wood should be less than 8% to avoid warping or shrinkage
• The initial moisture content of the screed should be less than 0.5%
• The surface temperature of the wood should not exceed 27°C
• Softwoods such as pine should be avoided.

Is underfloor heating more efficient than radiators?

In simple terms underfloor heating is more efficient because:

• it uses lower temperature water (typically 35°C to 50°C rather than 70-82°C) so less energy is needed to heat the water
• it enables condensing boilers to condense more often
• the nature of the heat (radiant) provides a comparable comfort level at a lower air temperature

Can I use a cooling ceiling system also for radiant heating?

Yes, Instead of cool water, you only send warm water through the ceiling panels.

Will a ceiling system cost more than the conventional system?

Radiant ceiling cooling systems will generally cost more than floor heating systems as there is a need for controlling humidity in the space. Cost will vary depending on panel coverage area. Contact RHCS for a quote.
UNDERFLOOR SYSTEM RANGE

“NEW PLUS” PANEL
Thickness of the insulating base: 12.5mm
Standard thickness: 33mm
Thermal resistance: 0.5 (m²K/W)
Pipe sizes: Ø17 mm
Pipe spacing: 83mm multiples

COVER 20/30/40/50/60 PANEL
Thickness of the insulating base: 20/30/40/50/61.5mm
Standard thickness: 48/58/68/78/89.5
Thermal resistance: 0.80/1.10/1.35/1.65/2.00 (m²K/W)
Pipe sizes: Ø17 mm
Pipe spacing: 83mm multiples

DRY-TECH PANEL
Thickness of the insulating base: 10mm
Standard thickness: 25mm
Thermal resistance: 0.6 (m²K/W)
Pipe sizes: Ø14 mm
Pipe spacing: 140-280mm

INDUSTRIAL SHAPED PANEL 20
Thickness of the insulating base: 20mm
Standard thickness: 47mm
Thermal resistance: 0.8 (m²K/W)
Pipe sizes: Ø20 mm
Pipe spacing: 83mm multiples

ZERO AD - LEVEL PANEL
Thickness of the insulating base: 1mm
Standard thickness: 23mm
Thermal resistance: N/A
Pipe sizes: Ø14 mm
Pipe spacing: 40.5 mm or multiples

(Standard thickness reference EN 823:1994, Thermal insulating products for building applications - Determination of thickness)
RADIANT CEILING SYSTEMS

Radiant Ceiling Cooling in parallel with a dehumidifier, is a combination of radiant cooling and convective cooling. Chilled ceilings use chilled or cooled water as the cooling medium, normally between 13°C and 18°C. This cooled water serves the radiant ceiling panels in which the cooling capacity is distributed across the ceiling using serpentine chilled water pipework.

Radiant cooling is an energy efficient alternative to all-air systems. In most cases, the supply air volume of the air handling system is limited in size to satisfy only the ventilation and latent loads, with the radiant ceiling system making up the balance of the heating and cooling loads.

A key benefit of radiant chilled ceilings is that they can be accommodated in a very shallow ceiling voids and are therefore suited to buildings with minimal floor to ceiling heights.
B!KLIMAX CEILING SYSTEM

**PLASTER BOARD**

blklimax by RDZ uses large surfaces (walls and ceiling) to exchange heat by irradiation with people and surroundings. This system enables the human body to balance heat exchange perfectly, thus improving the level of comfort.

Innovative and versatile, blklimax is a radiant heating and cooling system for ceiling installation. It is the ideal solution in rooms where it is important to maintain comfortable conditions all year round. Its very low thermal inertia and high efficiency make blklimax the ideal system for houses, renovated buildings, and commercial applications. blklimax, which perfectly functions in both summer and winter, guarantees the highest performance when it is combined with specific thermoregulation devices and suitable units to control humidity.

Thanks to the uniform distribution of heat and cold, blklimax avoids air currents: the absence of convective movements, deriving from the difference in temperature between heating element and environment, also solves the problem of dust movements and air impurities.

**TILE**

RDZ blklimax Quadrotti system represents the heating and cooling solutions for metal false ceilings with plafonds 600x600 and 1200x600mm. It is particularly suitable for commercial applications thanks to its low thermal inertia, high performance, practical installation, easy hydraulic connections and fine aesthetics.

This solution, which perfectly functions in winter and in summer, guarantees the highest performance when it is combined with specific thermoregulation devices and suitable units to control humidity.

**COPPER SYSTEM**

blklimax+ copper system is a high-performance solution for radiant ceiling installation with metal plafonds 600x600 and 1200x600 (micro-perforated or smooth versions). These plafonds contain a copper pipe, fixed onto the panel through aluminium diffusers, while thermal insulation is optionally made of polyester or rockwool (fire reaction degree A1). The radiant metal plafonds are connected to each other through flexible push-fittings made of stainless steel. Thanks to their modular structure, even invisible if required, fixed to the ceiling through adjustable hangers, these plafonds can be easily removed for inspection and maintenance. This is the ideal solution for commercial applications, such as offices, hospitals, showrooms, etc., and it can be customized by using most kinds of metal plafonds on the market.
bklimax system works in a similar way to underfloor heating. The difference being the cooling/heating pipes are located in the ceiling or walls instead of the floor. The reason why bklimax system can use up to 50% less energy is that it uses large surface areas to transfer energy. This means you do not have to heat or chill the water as much as a traditional air conditioning system to obtain a comfortable room temperature. The less energy required to heat or chill water means the lower your running costs.

bklimax radiant system is an excellent solution for both winter and summer running, which guarantees the highest performance when it is combined with a specific thermoregulation system and with a proper dehumidification system.

bklimax system is completely concealed in ceilings or walls; this makes it possible to use all the available space whilst improving the appearance of the room.
Maxi manifolds

Maxi is the name of the manifolds in B!klimax system, from which main circuits are distributed. Maxi manifolds can be installed both upwards and downwards, and they can be equipped with electrothermal heads for On-Off control on each main circuit. These manifolds are provided with anticondensation shells and accessible filter in order to prevent water impurities from clogging small pipes.

(Distributors not required with B!klimax Copper System)

8-way/4-way open/closed distributors

The distributors are an important part of the system. Maxi manifolds are connected to the distributors by pre-insulated polybutylene pipes Ø 20x2 mm, while the distributors are connected to the panels by pre-insulated polybutylene pipes Ø 6x1 mm.

(Maxifolds not required with B!klimax Copper System)
**CONTROL & SOURCE**

**Wi CONTROLLERS**

In order to guarantee the highest comfort and energy saving it is necessary to use a thermoregulation system. The electronic control ensures the ideal management of all components involved in the systems functioning. These units can manage small or large multi-zone systems, as well as systems with centralised power production and thermoregulation for each user.

RDZ controllers offers the option of monitoring and controlling the home or office from a computer anywhere in the world.

**ENERGY SOURCE OPTIONS**

- Heat Pump
- Gas condensing boiler
- Solar thermal
AIR DEHUMIDIFICATION

DEHUMIDIFIERS/AIR RENEWAL

For the correct functioning of the radiant system in summer cooling it is very important to control humidity. RDZ dehumidifiers control the relative humidity in rooms without affecting the temperature of the air.

Radiant cooling affects room temperature but is not enough to ensure comfort in humid summer conditions. In order to assure comfort you must combine the radiant cooling system with a suitable dehumidification unit. There are different dehumidification versions according to their application and they can be installed on the wall or into false ceilings. The most powerful versions can be ducted.

The dehumidifiers do not run constantly, they only start when the humidity in the room reaches a certain level. They use very little power and are virtually silent.
The RDZ company was established in 1978 as a thermo hydraulic wholesaler. Straight away the founder realized that under floor heating systems would represent the biggest opportunity for growth of RDZ company. The RDZ founder realized that market trends were changing and they wanted to distinguish RDZ quality from other companies. In 1997 after years of quality engineering and workmanship, RDZ became the first company to receive management system quality certification. (today UNI EN ISO 9001:2008). This is thanks to its quality oriented organization, its innovative and advanced solutions and excellent customer service.

In December 2004 there was a corporate change at RDZ. The founder retired from the business and Caleffi entered the partnership. Caleffi is the leading valve manufacturer in Italy and one of the biggest valve manufacturers in the world. In 2009 Mr Marco Caleffi became the sole director. Today RDZ is the leading hydronic heating and cooling company in Italy.

No expense is spared by the RDZ company when it comes to research and development activities. RDZ wants to ensure they remain market leaders, this is why they are constantly coming out with new ideas that save energy and increase comfort. Italians pay one of the highest prices for electricity in Europe, which is what makes them leaders in designing and manufacturing of energy saving products.
ABOUT AHI CARRIER

AHI Carrier formerly known as Air-conditioning & Heating International (AHI) became a Carrier Joint Venture Company on December 18th, 2008. The partnership between Carrier and AHI dates back to December 1997 when the first agreement was signed for distribution of Carrier products in Russia and all of CIS countries (12 countries).

In 1999, Carrier & Toshiba Air-conditioning entered into a Joint Venture and as a consequence the Toshiba range of air-conditioning products were added for distribution in our territories. Success came early and in 2000 Carrier rewarded us by expanding our distribution rights to East and Central Africa (15 countries).

Since the creation of “AHI Carrier” Joint Venture more countries have been added to include Middle East, Central Europe, Australia & New Zealand (18 countries).

The most critical factor contributing AHI’s successful track record of profitable growth has been its commitment to service – and this commitment will become increasingly important in the future.

AHI Carrier runs TOTALINE stores in Australia, New Zealand & Middle East where more such stores are being added. TOTALINE stocks and sells a full range of HVACR parts, consumables & tools for residential and commercial applications.

AHI Carrier now distributes Carrier & Toshiba HVAC products in 44 countries across 3 continents.

OUR VALUES

Customer Care
Providing optimal service to our customers is a top priority. In every vertical market we serve and we aim to achieve 100% satisfaction, building a strong, loyal and ever-expanding customer base.

Performance
Our performance is a vital reflection of who we are and a testament to our ability to deliver on promises to our customers. We are committed to achieving world-class performance and strive for continuous growth and improvement to reinforce Carrier’s leadership position.

Employee Development
Our employees are our most valuable asset. We believe in building a culture of inspiration and mutual respect – where personal and professional development is encouraged, and diversity is celebrated.

Business Practices
Our business is driven by a fundamental sense of global citizenship and responsibility. We maintain the highest ethical and environmental standards, and actively support the communities in which we do business.

ABOUT CARRIER

Carrier Corp. is the world’s leader in high technology heating, air-conditioning and refrigeration solutions. Carrier experts provide sustainable solutions, integrating energy efficient products, building controls, and energy services for residential, commercial, retail, transport and foodservice customers. Founded by the inventor of modern air conditioning, Carrier improves the world around us through engineered innovation and environmental stewardship. Carrier is part of United Technologies Corp., a leading provider to the aerospace and building systems industries worldwide. www.carrier.com
The Bosch Group is a leading global supplier of technology and services, active in the fields of automotive technology, energy and building technology, industrial technology, and consumer goods. According to preliminary figures, more than 306,000 associates generated sales of 52.3 billion euros in 2012. The Bosch Group comprises Robert Bosch GmbH and its more than 350 subsidiaries and regional companies in some 60 countries. If its sales and service partners are included, then Bosch is represented in roughly 150 countries. This worldwide development, manufacturing, and sales network is the foundation for further growth.

Bosch spent some 4.5 billion euros for research and development in 2012, and applied for over 4,700 patents worldwide. The Bosch Group’s products and services are designed to fascinate, and to improve the quality of life by providing solutions which are both innovative and beneficial. In this way, the company offers technology worldwide that is “Invented for life.”

Robert Bosch (Australia) Pty. Ltd is a regional subsidiary and part of the global Bosch Group. Bosch has had a presence in Australia since 1907, and generates annual revenues of more than 650 million Australian dollars per annum in Oceania, and employ over 1,100 people working primarily in our Melbourne and Sydney locations.
Apricus Australia began as a small operation at a household in Sydney NSW in 2005. The company grew rapidly and has been recognised numerous times for its growth and innovation: Apricus was a finalist for numerous Telstra Business awards, named in Smart company’s Smart 50, BRW’s Fast 100 and 50 Most Innovative Companies, as well as most recently winning The Australian Business Awards for Service Excellence in 2013.

Today, Apricus Australia is firmly established in the solar industry with a solid distribution, sales and service network, represented both nationally and locally. Apricus Solar distribution network consists of 1500+ Suppliers, and over 150 Warranty/Service agents, as well as growing into a global company with offices in the USA and France, supplying to more than 30 countries.

Apricus Australia has a strong emphasis on the following core values:

- Building strong relationships with customers.
- Providing the highest quality product.
- Providing the best possible support; going above and beyond for our customers.

Apricus Australia has experienced exponential growth since its inception in 2005, but the core values and the ‘Apricus Way’ continues to—and always will—remain the same.

**WINNER OF THE AUSTRALIAN BUSINESS AWARDS FOR SERVICE EXCELLENCE IN 2013**