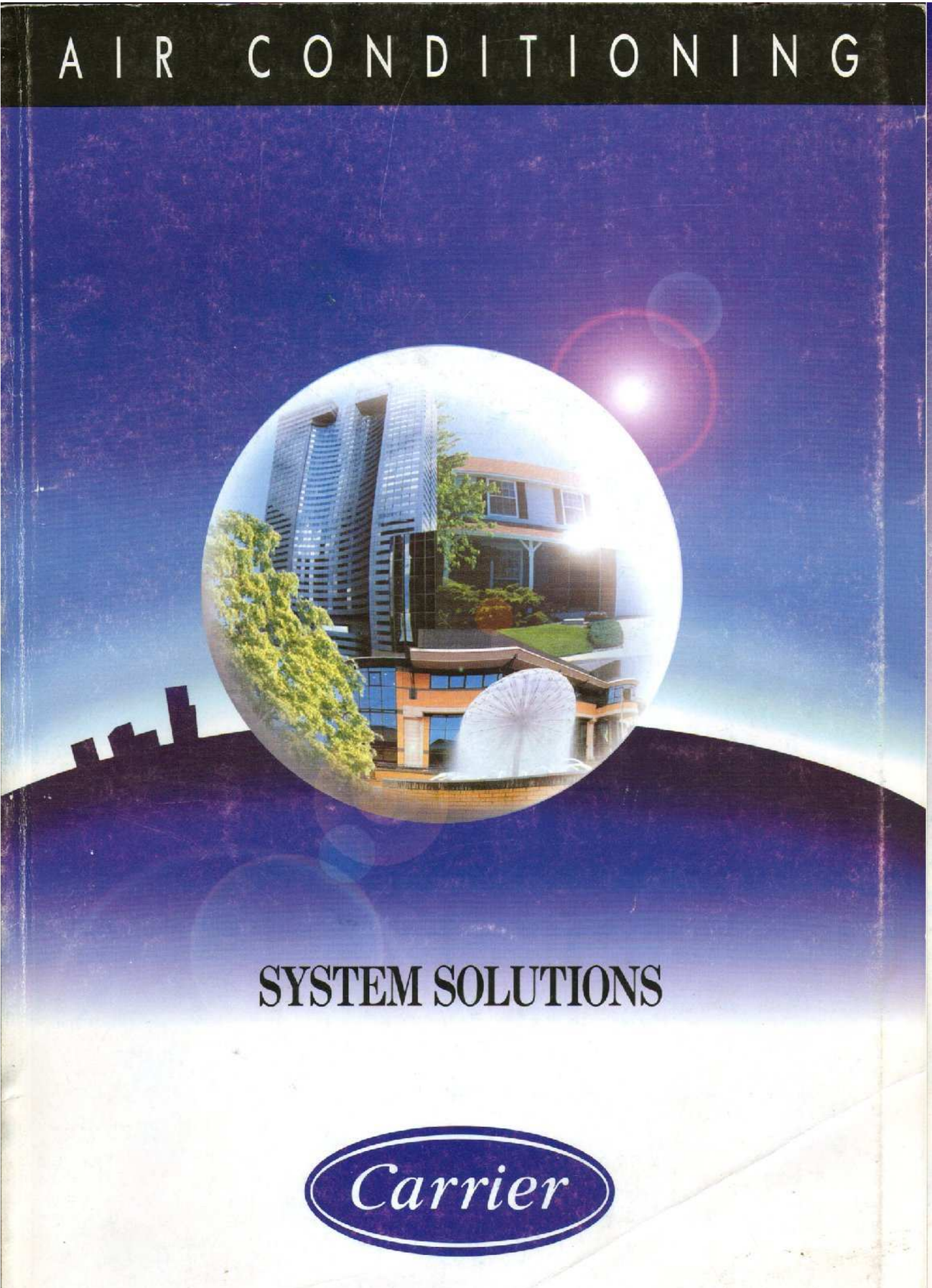
AIR CONDITIONING



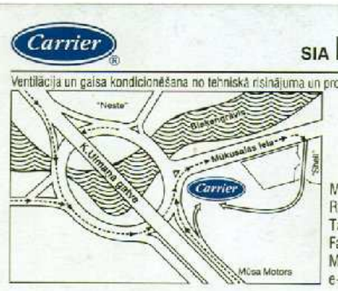
SYSTEM SOLUTIONS

Carrier

Carrier

SIA LAFIVENTS

Ventilācija un gaisa kondicionēšana no tehniskā risinājuma un projekta līdz piegādēm un realizācijai
Licence Nr. 514



Order No. 18128-20 - 03/1999
Supersedes order No. : New

DIXIT I.M. - RCS LYON B 853 009 870

GLOBAL SOLUTIONS FOR COMPLETE PEACE OF MIND

Not content just to supply air conditioning equipment at the leading edge of technology, Carrier also provides a comprehensive range of services, individually tailored to each customer's needs. Post-installation follow-up and commissioning, equipment testing, continuous development, rapid-response maintenance, the portfolio is vast. Solutions that make the everyday world more comfortable.

WIDELY DIFFERING REQUIREMENTS, NEED A ONE-STOP SOLUTION.

The most complex systems demand the simplest solutions. Carrier's unique one-stop capability provides personalised customer care from the initial consultation to final design and maintenance. As a result, you can be sure of being heard and fully understood by technically competent people.

FULL-SCALE SIMULATION.

In keeping with its position as a world leader in air conditioning, Carrier has a unique European test laboratory, approved by the French test authority COFRAC. Occupying over 4000 m², it carries out tests that exactly simulate the actual equipment operating conditions, including how air will flow, diffuse and circulate within each air-conditioned space.

AN AFTER-SALES NETWORK THAT MAKES A WORLD OF DIFFERENCE.

Carrier service has but one aim: to ensure complete peace-of-mind for all its users. Remote supervision and diagnostics mean systems can operate at their optimum capacity, and extremely rapid on-site response is assured. Add to that custom-made contracts, comprehensive service network cover and excellent parts availability, and it is clear that Carrier believes in providing world-class customer services.

FOR EVERY APPLICATION : SOLUTIONS THAT LOOK TO THE FUTURE.

From multi-occupancy premises to industrial sites, from business parks to office blocks, one philosophy: combine quality with a willingness to embrace the latest and highest standards in the industry. At every moment, Carrier is developing and anticipating future trends in air-conditioning that will ensure peace of mind for all its customers.

THE SEARCH FOR PERPETUAL MOTION

TECHNOLOGICAL RESEARCH

As front-runner in the world of air-conditioning, Carrier is at the forefront of innovation, with a strong desire to perpetuate new ideas by sharing the fruits of its many years of research. Office blocks, apartment buildings, hospitals – all sectors can then benefit from the technological progress brought about by Carrier and the UTC group through a transfer of technology from other leading-edge sectors such as avionics.

ACOUSTICS

The level of noise emanating from air-conditioning equipment is now one tenth of what it was a decade ago, thanks to technical advances incorporated or developed by Carrier:

- Tangential fans for low operating noise.
- Flying Bird fans for whisper-quiet comfort and a 30 % improvement in performance.
- Quietec silencers for electronic, real-time correction of equipment noise.

ENVIRONMENT

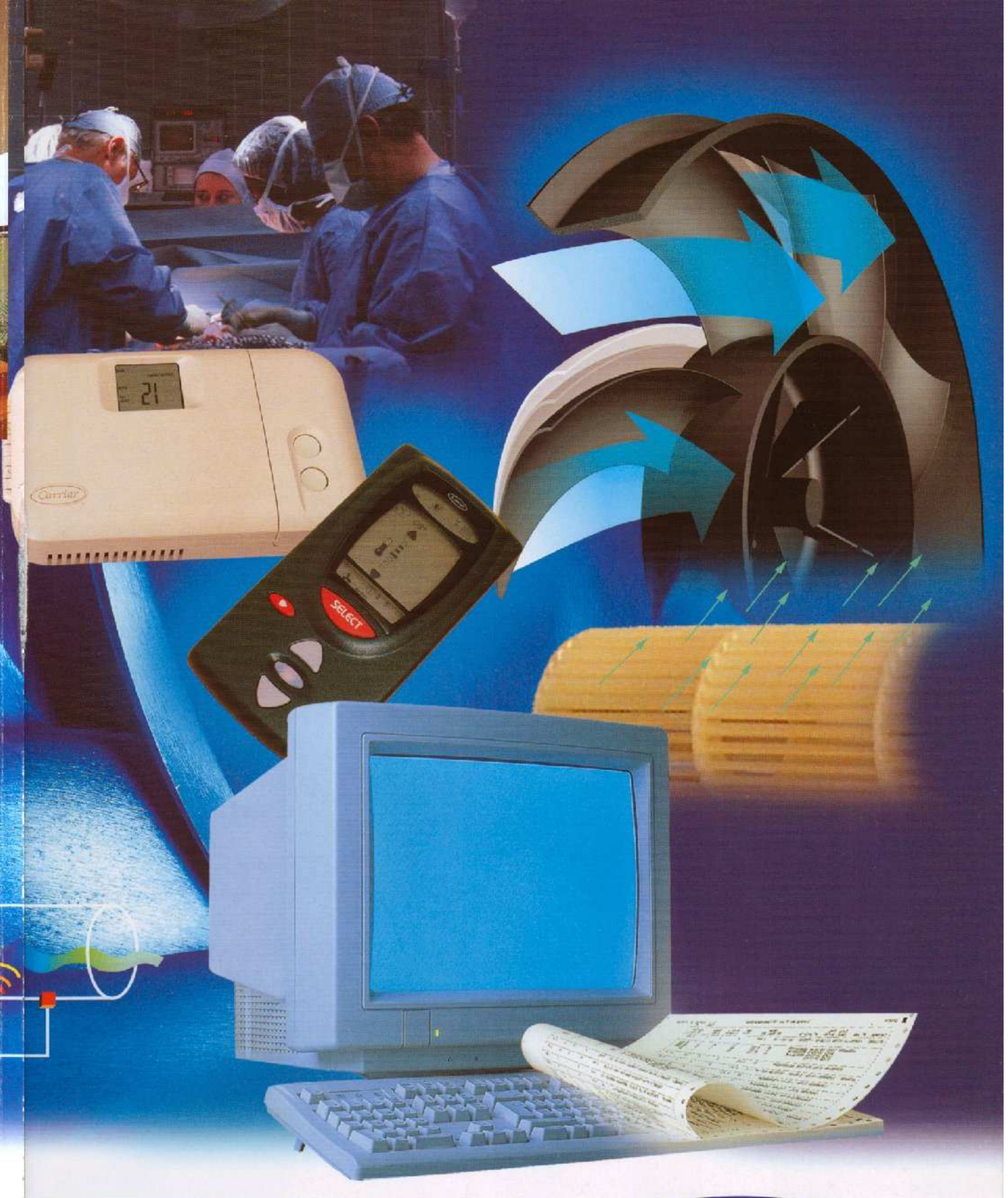
- Environmental management that has been recognised by the award of standard ISO 14001.
- The Global Chiller, AQUASNAP and other machines use fluids, such as HFC 134a and 407C, that have no harmful effects on the ozone layer, without loss of performance.
- Reduced air pollution with high-performance filtration in equipment.

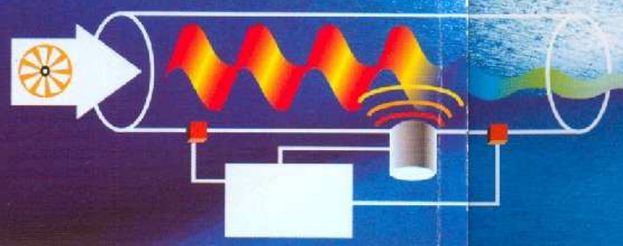
QUALITY

- Research and Development laboratory, the only one of its kind in Europe, accredited by COFRAC.
- Sites certified ISO 9001 from design stage right through to production.
- Actively involved in the development of EUROVENT certification programmes.
- Preventive maintenance contracts backed by remote supervision techniques.

STYLISH DESIGN

- Compact lines and stylish design are a constant feature of the entire Carrier range, releasing more usable space and simplifying installation.

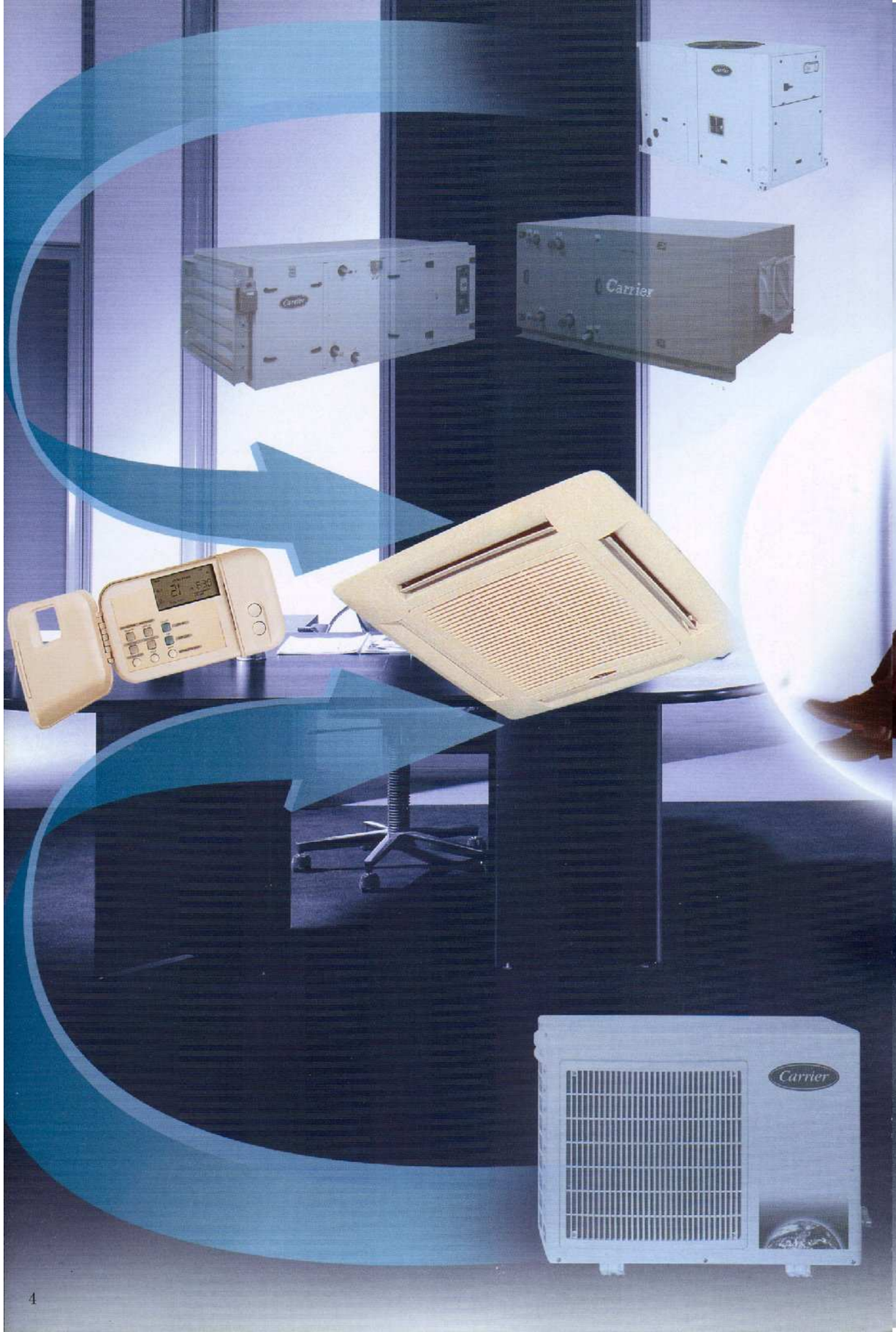




Products & systems shown in this catalogue are designed, manufactured and tested according to Quality Management System ISO 9001.

HFC-134a HFC-407C EUROVENT CERTIFIED PERFORMANCE CE

Carrier



A SYSTEM FOR COMFORT WITH BUILT-IN QUALITY. THE SIGNATURE IS CARRIER.

As an innovator and world leader in air conditioning, Carrier stands out as a pioneering company that has always looked to the future.
The technology of tomorrow is making our systems ever more efficient and even more responsive to the needs of our customers and the environment, whilst contributing ever greater flexibility to the service we can provide.

Today more than ever, the future of air conditioning is turning towards a global vision and total management of every system. From chillers and air handling units to air distribution systems, every item must satisfy the most exacting standards of manufacture.

But it goes beyond quality. Carrier has set itself the task of producing what can truly be described as a system for comfort. Components are tested in relation to one another, then assembled in their optimum configuration. Every piece of Carrier equipment is designed from the outset to give its best performance in harmony with its counterparts.

The aim: to provide the most cohesive and efficient system possible in respect to every user requirement. Just like the component parts of a hi-fi system, which complement one another to create ideal listening satisfaction, air conditioning must be composed in the best possible way. By choosing Carrier, you can be certain of obtaining a system that has been evaluated and designed to amplify the performance of each product, providing you with a standard of comfort which is truly unique.

Carrier

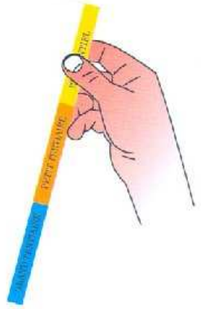
CHOOSING THE RIGHT SYSTEM FOR YOUR NEEDS

This guide has been designed to help you quickly identify the Carrier air conditioning equipment or system that is right for you. Just find the tab that best describes your business sector: residential, small business, large commercial, hospitals, shopping centres. Then choose the type of system you want: centrally controlled (air system), individually controlled by room or zone (hydronic system), or direct expansion (refrigerant-based system).
Finally examine all the characteristics of each system with the help of "Carrier's Quick-Check Overview", giving you an analysis of the main features & benefits of every system.

Carrier

1 FIND YOUR BUSINESS SECTOR

JUST CHOOSE ONE OF THE TABS



2 CHOOSE BETWEEN A CENTRALLY CONTROLLED, INDIVIDUALLY CONTROLLED OR DIRECT-EXPANSION SYSTEM

3 CHOOSE THE SYSTEM THAT'S RIGHT FOR YOU WITH THE HELP OF PRECISE SELECTION FACTORS

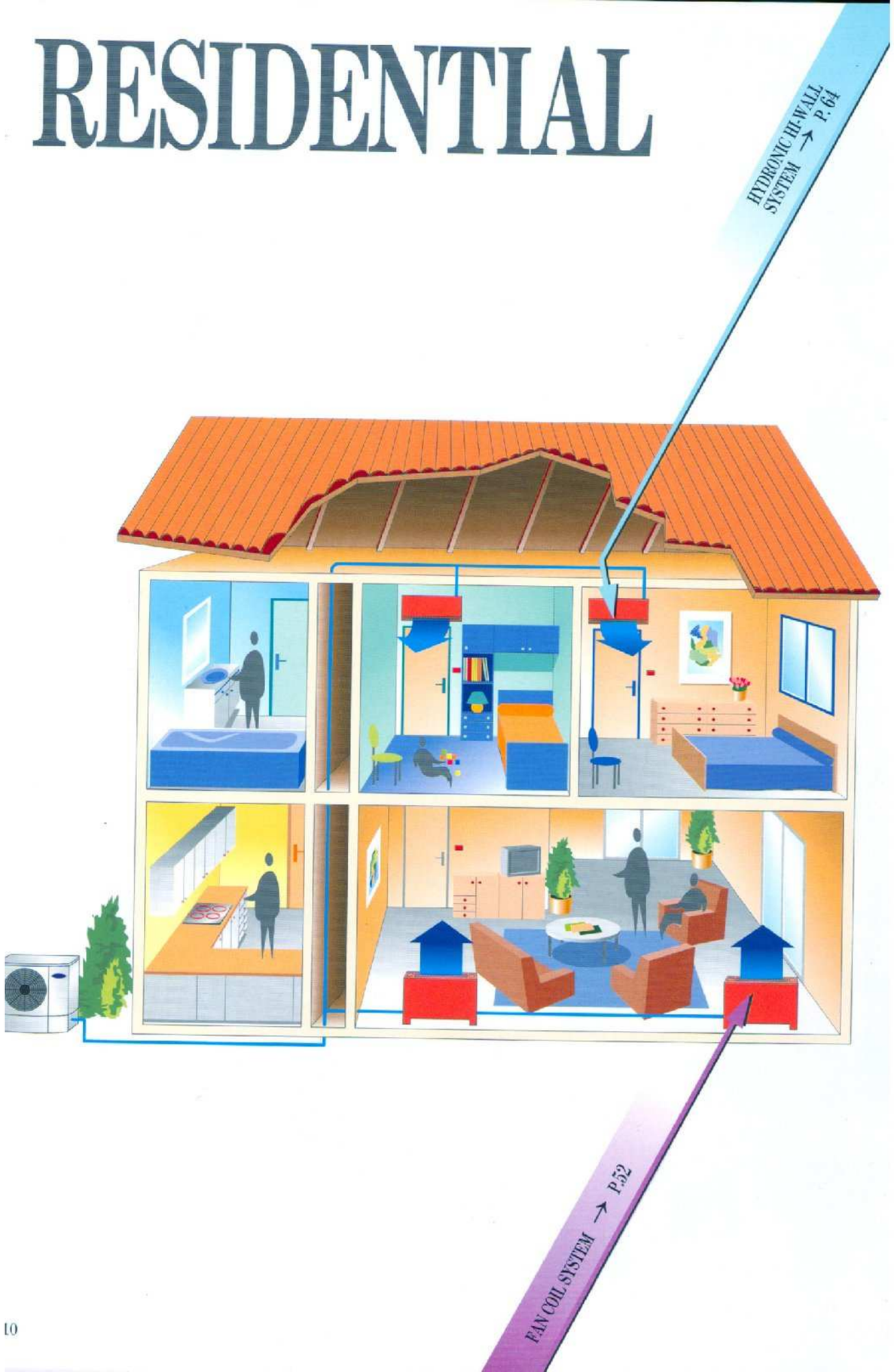
- System descriptions
- Features
- Performance data
- Applications
- Management and maintenance facilities

4 SELECT YOUR CARRIER CONTROL SYSTEM

CENTRALISED

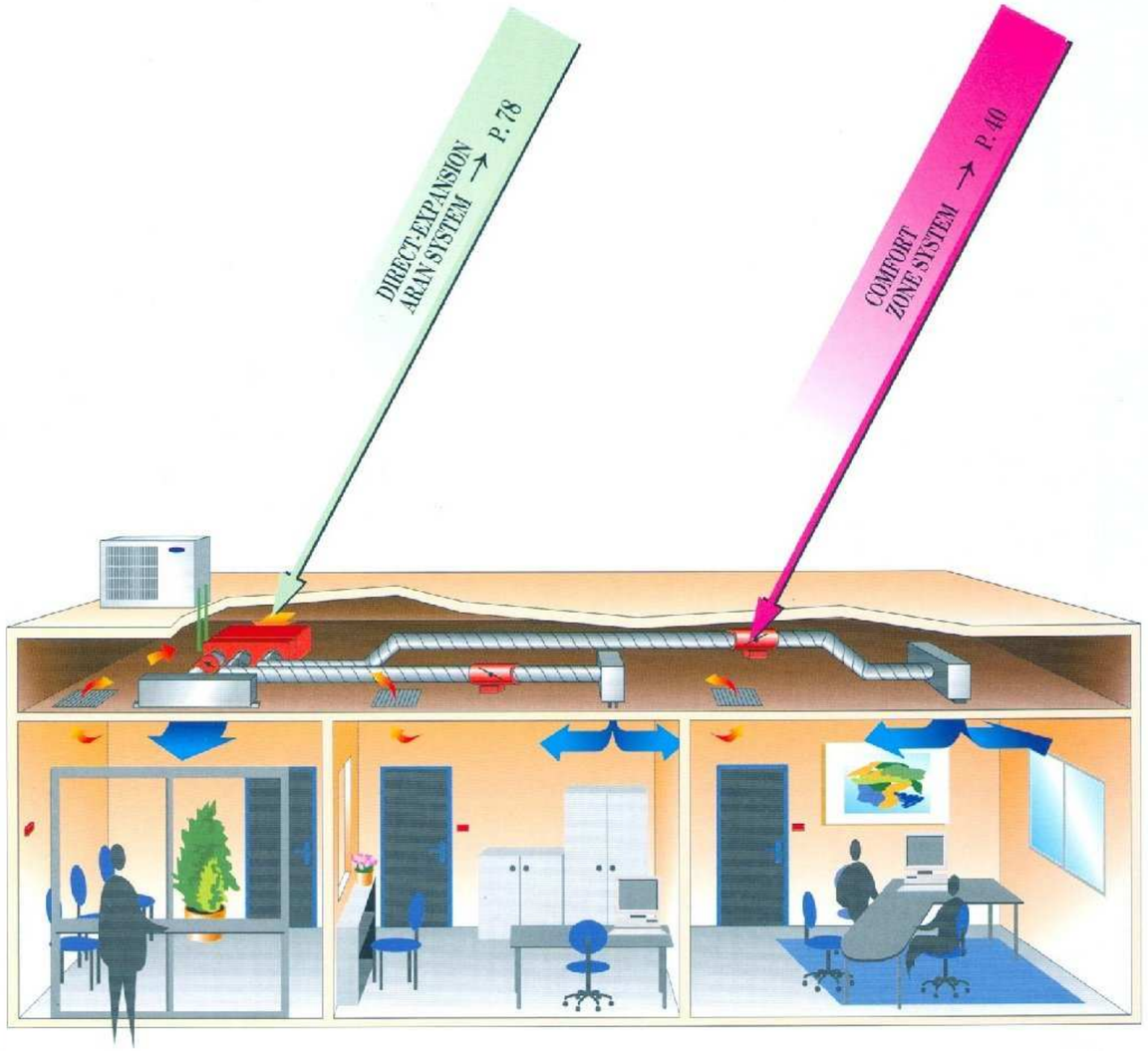
RESIDENTIAL

RESIDENTIAL



RESIDENTIAL

SMALL COMMERCIAL



SMALL COMMERCIAL

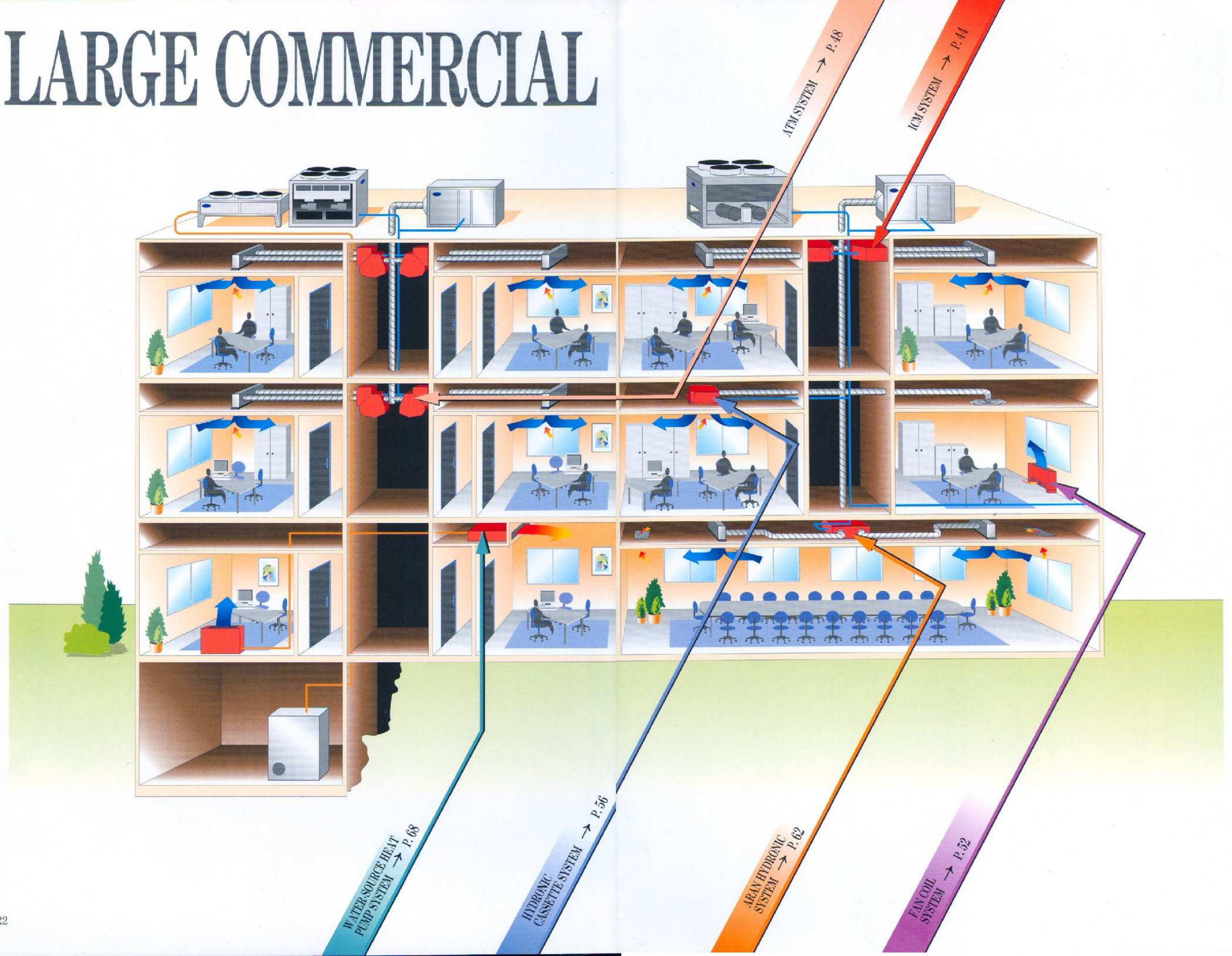
SMALL COMMERCIAL

LARGE COMMERCIAL

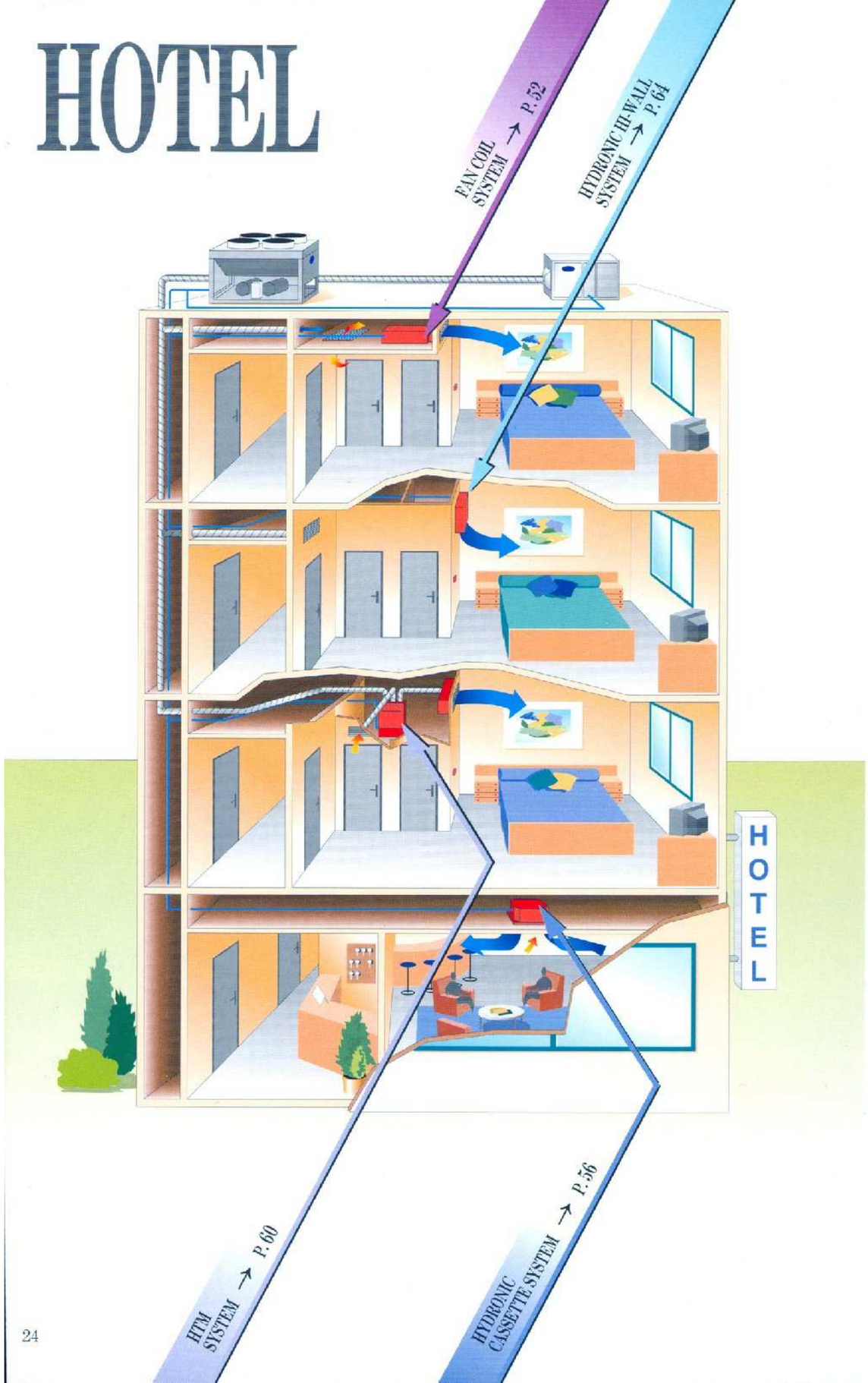
MODULINE SYSTEM → P. 30

MODUBOX SYSTEM → P. 34

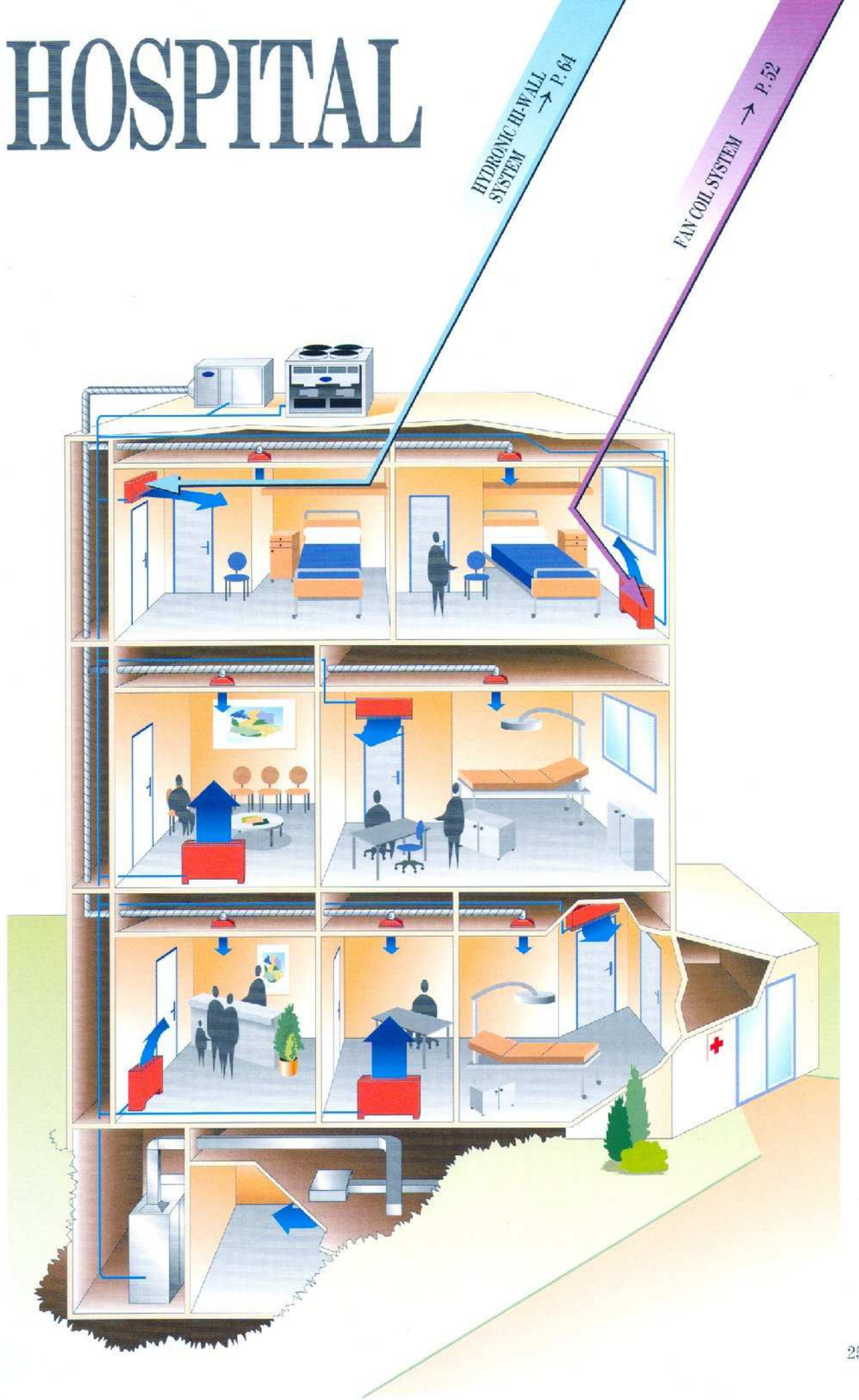
LARGE COMMERCIAL



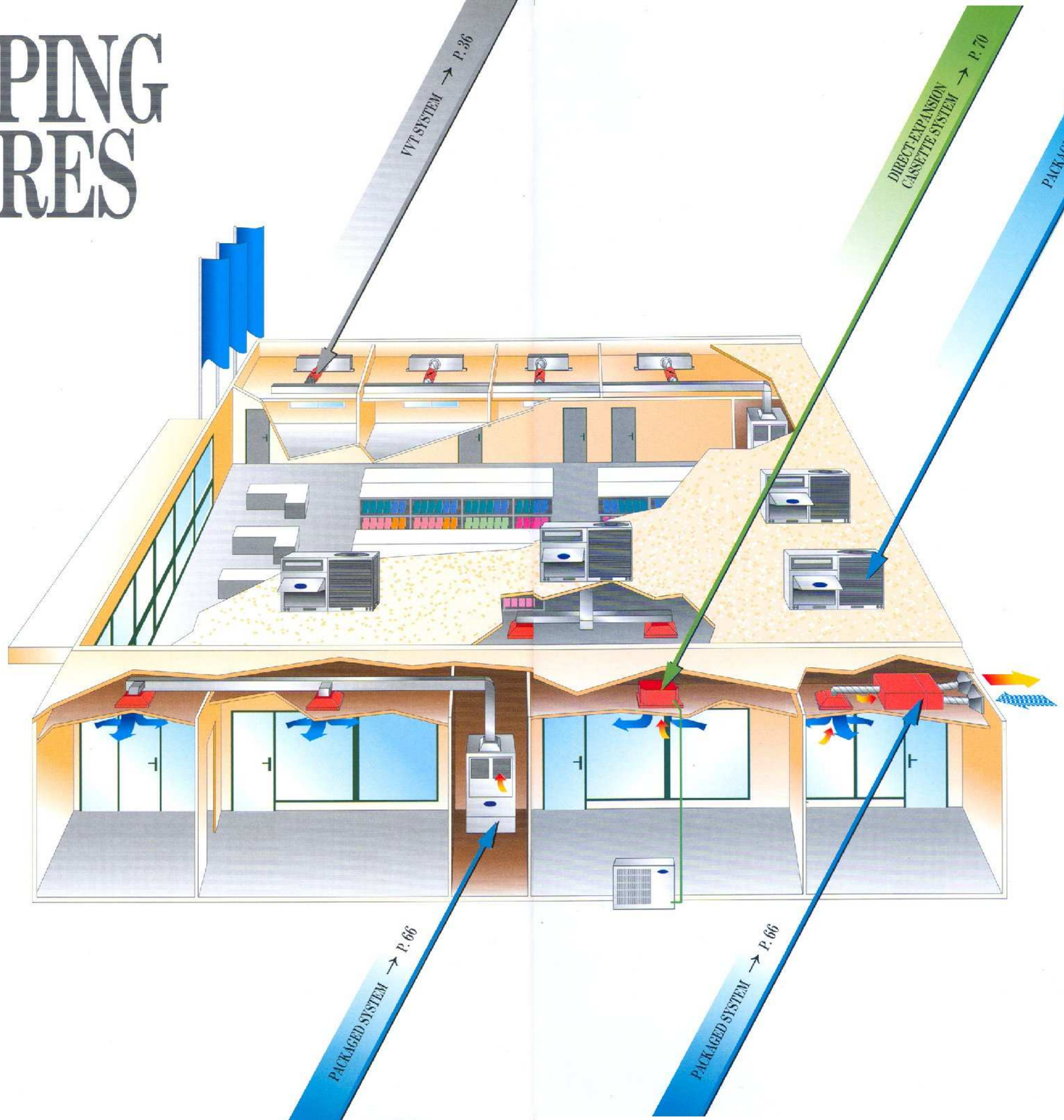
HOTEL



HOSPITAL



SHOPPING CENTRES



OPTIMISED CONTROL FOR FURTHER COST SAVINGS

▼ FACTORS AFFECTING CHOICE ▼ DESCRIPTION

HSM

- Designed to control hydronic systems.
- Buildings smaller than 2000 m² (< 150 kW).
- Centralised management of air conditioning plant.
- Simple to install and configure.
- 128 terminal units distributed among 32 zones.

The HSM system consists of the System Manager and the electronic controllers built into all the air conditioning devices.
It controls the centralised chilled water unit or the heat pump, along with hydronic units such as fan coil systems and cassettes, as well as Hi-Wall and ceiling-mounted units.

The System Manager provides smart system logic. It controls the operation of the centralised unit and up to 128 terminal units distributed among a maximum of 32 zones.
It analyses and decides on the operating mode for the centralised unit (heating/cooling) by reference to the information transmitted from all the controllers built into the terminal units.

MAESTRO SYSTEM

- Designed to control hydronic systems.
- Architecture suitable for buildings larger than 2000 m² (> 150 kW).
- Comfort network can be incorporated into a Building Management System.
- Total control over the occupied space.
- 128 terminal units per Floor Manager.

The MAESTRO system controls the operation of hydronic units such as ATMs, ICMs, fan coil units and cassettes, and may also control lighting and blinds.

Occupants retain control over their own environment with the aid of the remote user interface, which can be used to adjust the set-point and the manual or automatic fan speed, turn lights on and off, adjust the lighting levels, and last but not least raise or lower the window blinds and adjust their inclination.

GROUP CONTROLLER ZONE MANAGER

- Designed to control direct-expansion systems.
- 32 units distributed among eight separate zones.
- Centralised management of Carrier equipment.
- Commercial and residential applications.
- Buildings under 300 m² in size.

The GROUP CONTROLLER is a wall-mounted, hard-wired box which can program up to six different units operating within the same space and to the same parameters (set-point, operating mode and fan speed).
This system, which combines energy savings with comfort and flexibility, is able to control the following parameters:
- 24-hour programming
- Operating mode: cooling, heating, dehumidification, fan only, or automatic mode.
- Selecting fan speed: high, medium, low or automatic.
- Adjusting set-point for optimum comfort.

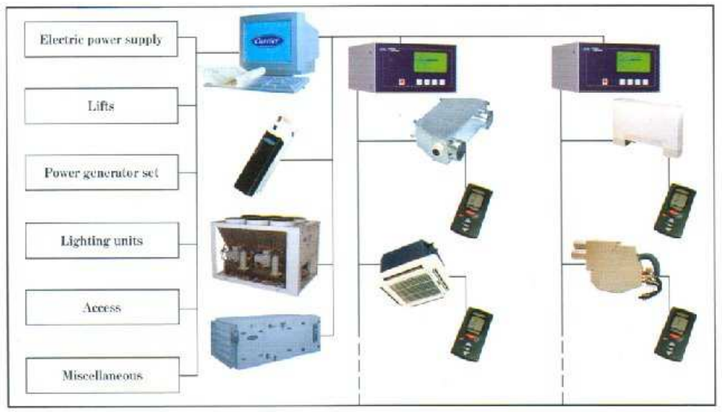
▼ DESCRIPTION ▼ ARCHITECTURE

With the aid of their user interface, occupants can start or stop their own air conditioning, and/or adjust their set-point and fan speed.

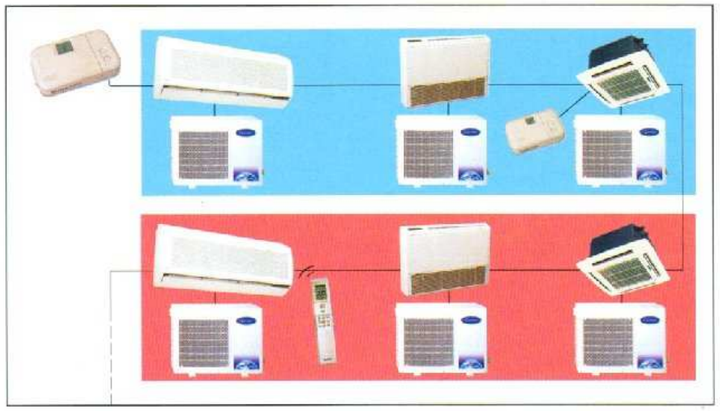
In appropriate cases, an on/off output can issue a centralised command to turn the lighting on or off by reference to the time-clock program tables.

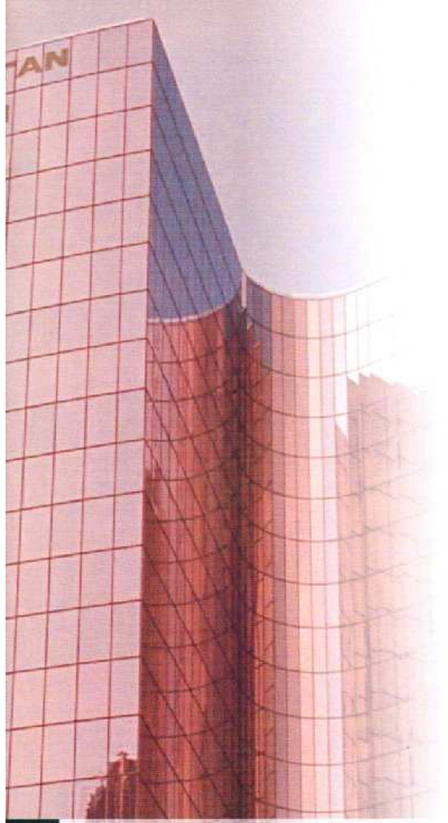
Floor by floor system management of up to 128 terminal units is available from the Floor Manager, or whole building management from the Carrier BMS, either of which allows access to all the parameters of each controlled space. This system management mainly consists of issuing the time-clock schedules, changing the set-point, or load shedding, but also includes reading the status of each unit in order to simplify the maintenance task.

The addition of Carrier programmable logic controllers enables the system to acquire supplementary data such as temperature, air flow or pressure, and to control auxiliary devices such as pumps, fans or motors.



The ZONE MANAGER can control up to 32 different indoor units in eight separate air-conditioned zones. With the aid of the Zone Manager, the operating parameters can be individually adjusted for each zone.
This cost-effective, comfortable and flexible solution provides all the functions of a Group Controller, plus:
- Time scheduling with four program periods per day (for each zone).
- Set-point adjustment between 13° C and 32° C for each zone.
- Separate operating mode and choice of fan speed for each zone.
- Choice of air distribution for each zone.
- Occupied/unoccupied function.
- System diagnostics.
- Night-time set-points with anti-freeze protection and optimised start-up.
- Time display.





FEATURES

COST-EFFECTIVE INSTALLATION

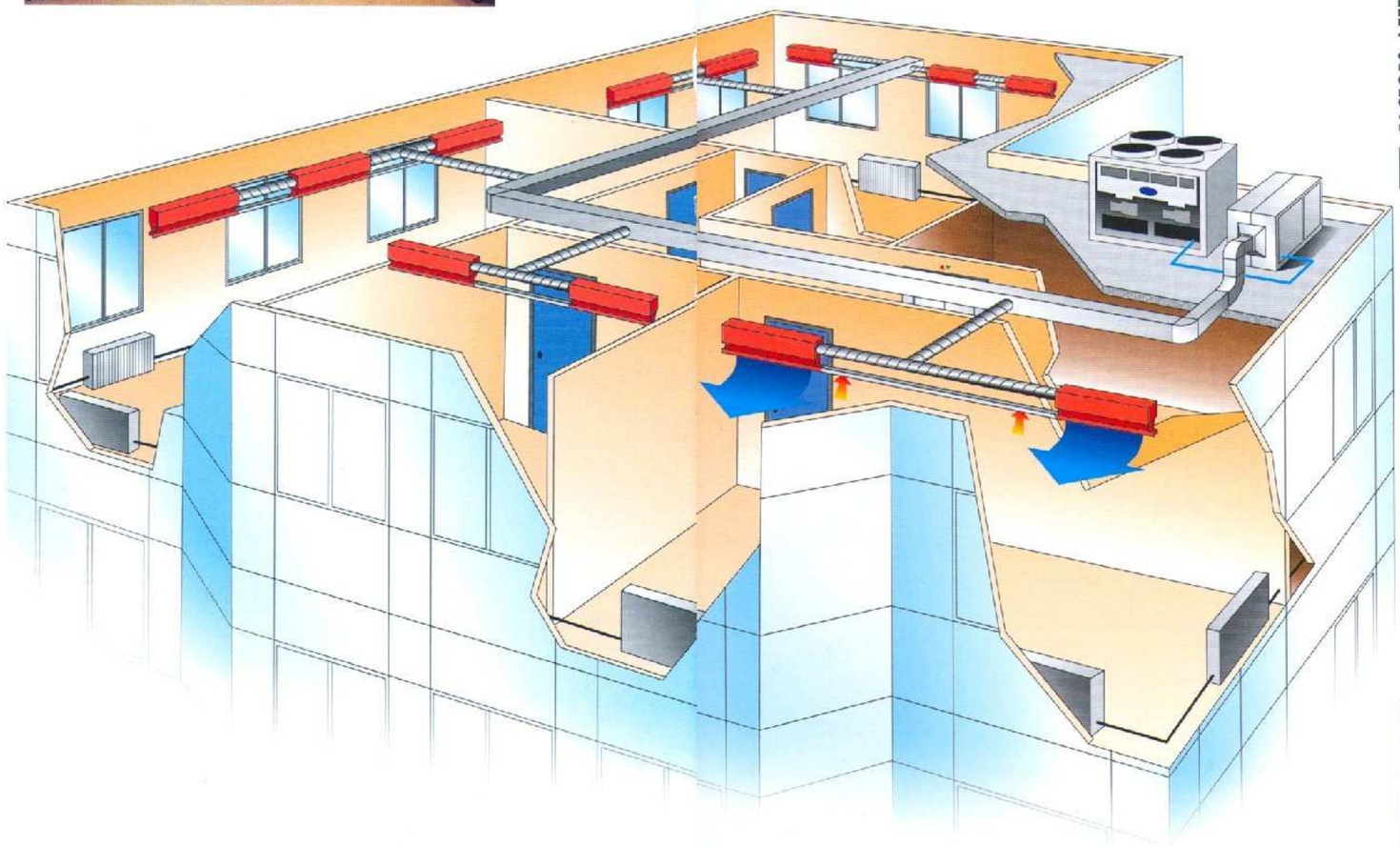
ECONOMY OF OPERATION

EASY REORGANISATION OF OFFICE SPACE

A COMPLETE PRODUCT WHICH COMBINES THE FUNCTIONS OF DISTRIBUTING, CONTROLLING AND DIFFUSING THE AIR

PERFORMANCE DATA

- 5 models.
- Air flows from 20 to 240 l/s.



MODULINE SYSTEM

FACTORS AFFECTING CHOICE

- Variable air volume system.
- False ceiling – minimum recommended void height between 200 and 500 mm.
- Cooling only (with morning warm up) and separate heating system
- Linear/square diffuser.

DESCRIPTION

Each Moduline unit installed in a false ceiling is supplied by a cold air distribution network.
The air is supplied via a variable air volume air handling unit in turn served by a chiller.
The Moduline's built-in high-performance diffuser ensures that the air is distributed evenly and comfortably throughout the occupied space.
A stand-alone controller uses no external energy source, and its simplicity allows the occupied space to be altered without the need for significant modifications to the Moduline units.
The system may require additional in-duct heaters or a separate peripheral heating system according to the application.

The Moduline system forms part of the ducted network and can be installed in stages.

The controller in the unit works on the primary air pressure, which inflates or deflates neoprene bellows, depending on the pressure of primary air in the ducts and the temperature of the conditioned space, to deliver the volume of air needed to maintain the space temperature. An electronic controller is available which may be linked to a BMS via a communication bus.

The diffuser is an integral part of the Moduline system. It is linear in form, easily incorporated into false ceilings featuring visible or hidden T-bars.

- This solution has advantages in the intermediate season when outside air can be used for cooling instead of operating the chillers hence reducing electrical energy costs.
- A very low-maintenance product (occasional system cleaning). Only the air handling unit and the chiller need any kind of regular maintenance.

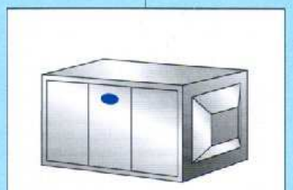
- The Moduline system needs no external energy source.
- It automatically compensates for pressure variations in the ducted network, eliminating the need for compensating dampers.
- The plenum on the unit is fitted with round spigots for easy connection to the ductwork and is pre-insulated reducing on-site work.

- The layout of the occupied space may be changed without having to alter the way the Moduline system is installed and connected.
- When room partitions are moved, the fact that the thermostats are installed in false ceilings makes it a simple matter to move them or add new ones avoiding the constraints of wall-mounted systems.

MODULINE SYSTEM

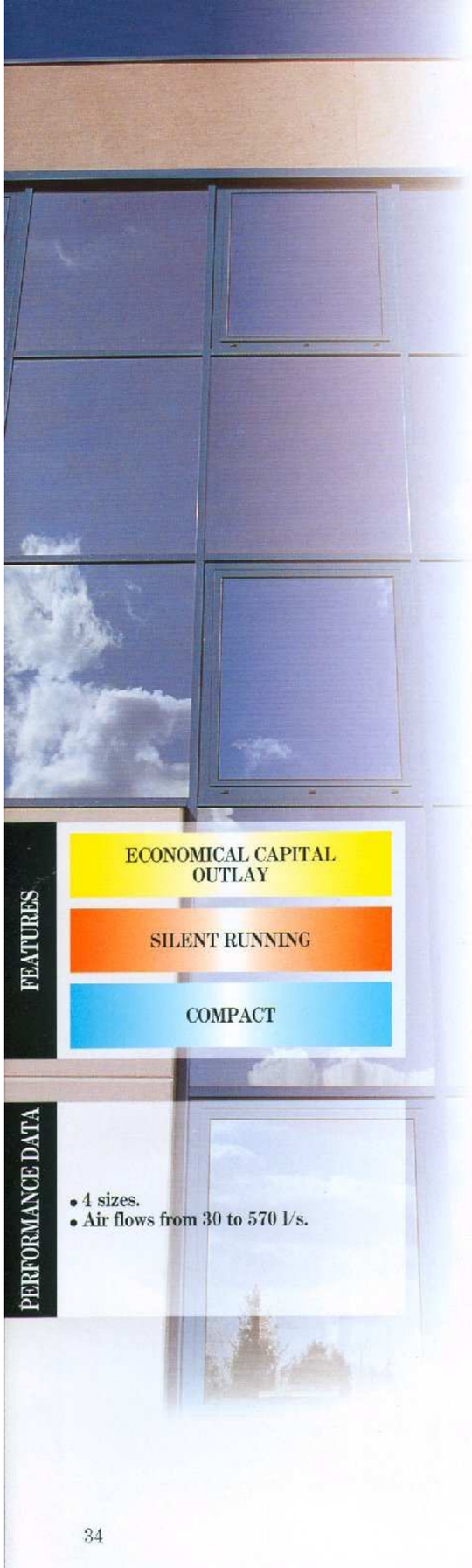
SYSTEM ARCHITECTURE

Liquid chiller



Air handling unit

Moduline



FEATURES

- ECONOMICAL CAPITAL OUTLAY
- SILENT RUNNING
- COMPACT

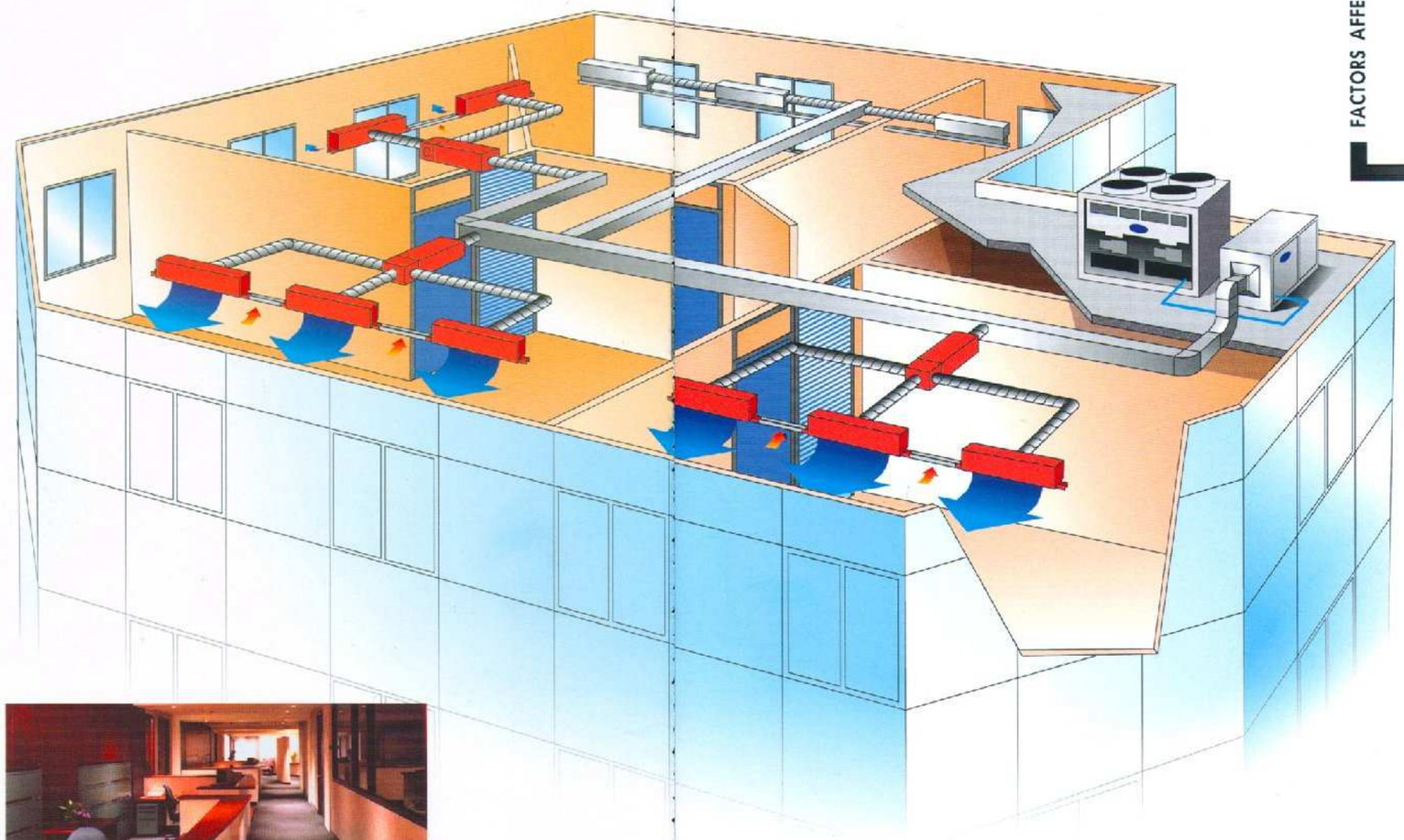
PERFORMANCE DATA

- 4 sizes.
- Air flows from 30 to 570 l/s.

The Modubox system is very compact and simple to install. It fits into a low-profile false ceiling and is the perfect solution for new and refurbished buildings alike.

Each Modubox can handle spaces of up to 80 m² at a low capital outlay.

The plenum has high-performance thermal and sound insulation to ensure low noise. Added to this, the Modubox incorporates an aluminium-profile control damper with a wide cross-section which allows air flow without turbulence, further reducing noise generation.



MODUBOX SYSTEM

FACTORS AFFECTING CHOICE

- Variable air volume system.
- False ceiling: minimum recommended void height between 280 and 330 mm.
- Centrally located cooling and individually controlled heating.
- Ideal for large spaces which cannot be divided.

DESCRIPTION

The variable air volume system provided by Modubox air conditioning units allows a constant temperature to be maintained in the conditioned space.
A variable-volume air handling unit treats the air supplied to the Modubox units and mixes it with outside air.
The discreetly designed, high-induction Moduboot linear diffusers favour rapid mixing of room air and primary air, creating a quiet, comfortable atmosphere.

FEATURES

- PERSONALISED ROOM CONTROL
- ECONOMICAL INSTALLATION AND PERFORMANCE
- DISCREET AND COMFORTABLE SOUND LEVEL
- SIMPLE TO MANAGE

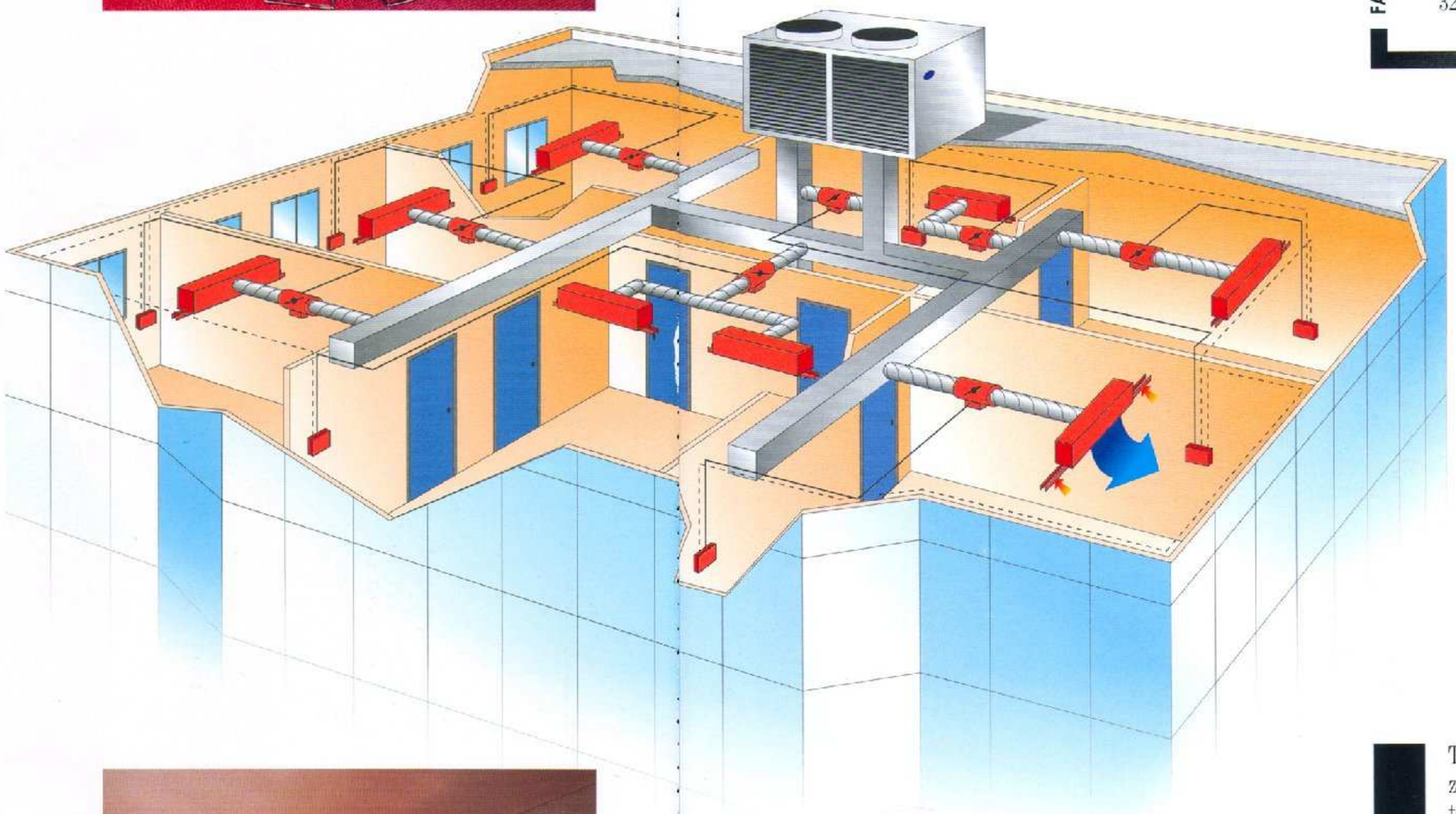
PERFORMANCE DATA

- Ideal for areas in the size range 200 to 1000 m².

V V T SYSTEM

FACTORS AFFECTING CHOICE

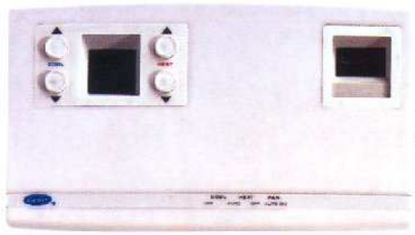
- Air system.
- False ceiling – minimum recommended void height: 400 mm.
- Centralised maintenance and air filtration.
- Heating and cooling from a single unit.
- Individually controlled comfort for up to 32 rooms.



DESCRIPTION

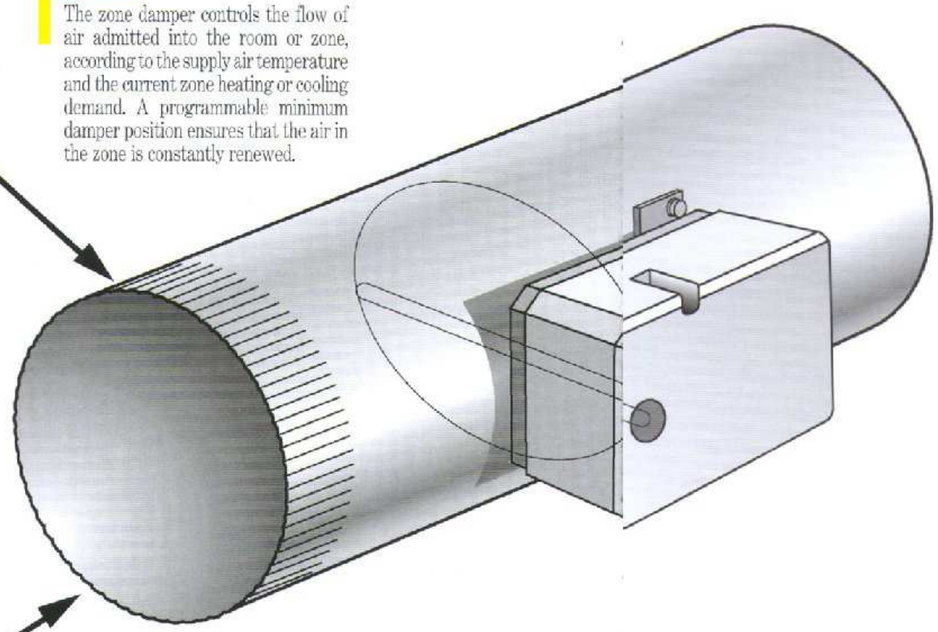
The VVT system consists of individual zone thermostats interconnected to a master thermostat by a communication bus.
The master thermostat analyses and decides on the operating mode for the rooftop unit or indoor packaged unit (heating/cooling/ventilation) by reference to the information transmitted from all the room or zone thermostats.
The combination of a VVT system and a Moduboot linear diffuser ensures excellent distribution of the conditioned air.

Using a Carrier heat pump in conjunction with the constituent parts of the VVT system provides a comprehensive and balanced system for limited capital outlay. It may be possible to reduce the size of the unit because of non-simultaneous cooling loads.
Individual control ensures energy-efficient usage. Similarly, centralised management prevents the simultaneous production of heating and cooling, and enables the use of "free-cooling".
Maintenance is easier since only a single centralised unit needs to be maintained.

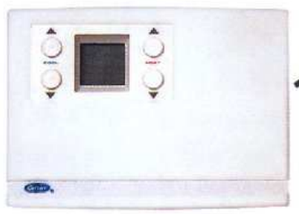


By analysing the data sent from the individual zone thermostats, the master thermostat selects the appropriate operating mode for the centralised unit: heating/cooling/ventilation.

The zone damper controls the flow of air admitted into the room or zone, according to the supply air temperature and the current zone heating or cooling demand. A programmable minimum damper position ensures that the air in the zone is constantly renewed.

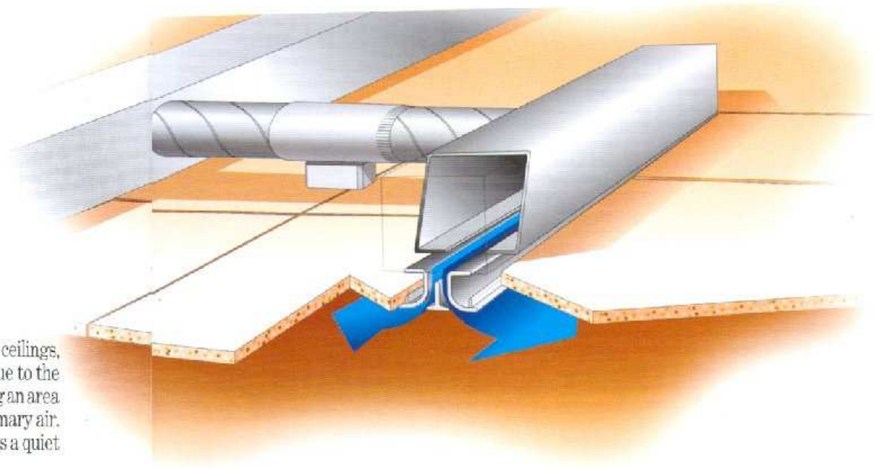


The VVT system contains as many individual thermostats as there are zones (up to 32 rooms), and they are all interconnected to a master thermostat by a communication bus.
Each thermostat controls the positioning of its zone damper, which then allows the necessary volume of air into the room.
Individual programmable thermostats fulfil a number of functions:
- displaying and adjusting the room temperature,
- display of set-point temperatures,
- maintaining a programmable minimum supply air volume,
- controlling system standby outside of the occupied periods.

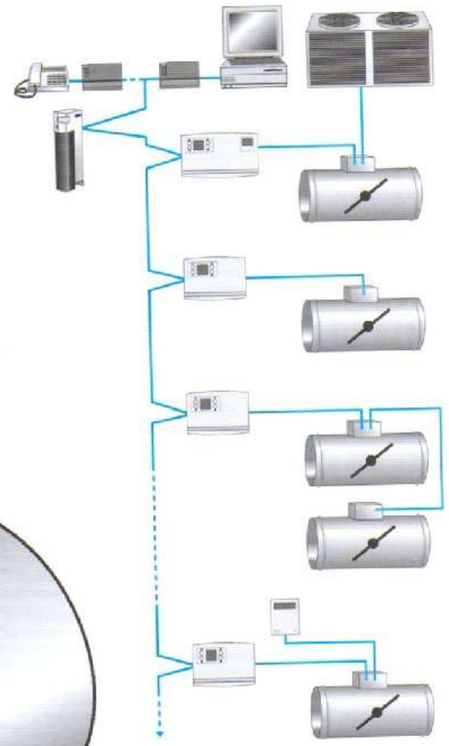


The VVT system can grow with you. If you extend your building, the system can be adapted to provide air conditioning in additional rooms simply by adding thermostats and/or reprogramming existing thermostat settings.

The Moduboot linear air diffuser is ideal for installation in false ceilings, where its discreet design and levels of comfort are unrivalled. Due to the "Coanda" effect, the air flow is directed across the ceiling, creating an area of partial vacuum which favours mixing of the room air with primary air. This high-induction system therefore avoids draughts and creates a quiet atmosphere of comfort in the room.



CONTROLS ARCHITECTURE

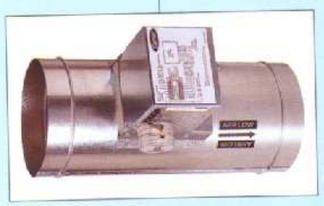


V V T SYSTEM

SYSTEM ARCHITECTURE

Air-cooled packaged unit

Bypass damper



Control damper

Diffuser

COMFORT ZONE SYSTEM

FACTORS AFFECTING CHOICE

- Air system.
- Centralised air filtration and maintenance.
- Heating and cooling.
- False ceiling – recommended void height : 400 mm.
- Individually controlled comfort in up to 8 rooms.

FEATURES

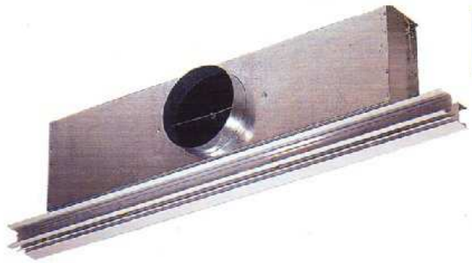
- REDUCED CAPITAL OUTLAY
- OPTIMUM OPERATING COST
- FAST AND EASY INSTALLATION
- INDIVIDUAL ROOM COMFORT CONTROL
- DISCREET AND COMFORTABLE SOUND LEVEL

PERFORMANCE DATA

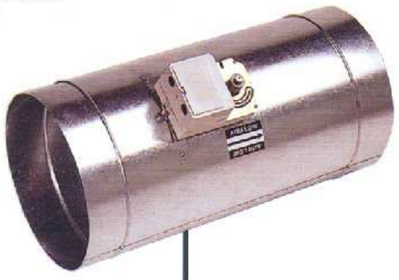
- Up to 500 m^3 per system, for residential and small business premises.

DESCRIPTION

Ideal for the smaller premises, Comfort Zone is a variable volume, variable temperature system capable of covering a maximum of 8 independent zones.
Each zone is individually controllable thanks to its room temperature sensor and electronically controlled air damper.
The demands from each zone are processed by the smart system logic which then switches the centralised unit to heating or cooling mode.
This centralised management offers first-time cost savings since not all system loads peak at the same time and therefore the selection of the main HVAC unit size may be reduced.



The Moduboot ceiling-mounted diffuser with its inherent advantages is a natural extension of the Comfort Zone variable volume system.



Comfort Zone dampers regulate the air flow in each zone.

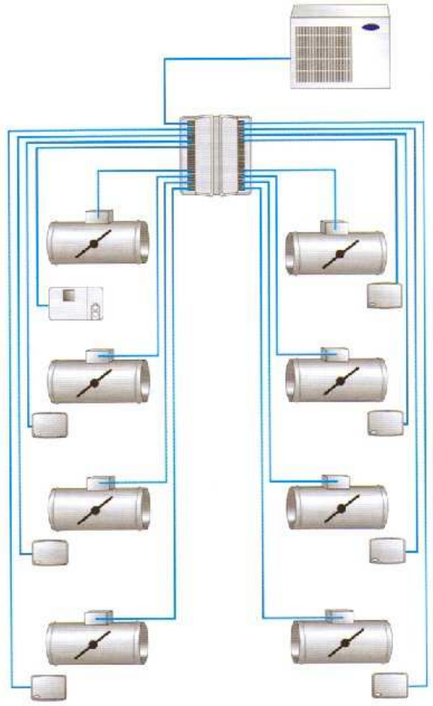
The Comfort Zone equipment control box centralises all electrical connections: master thermostat, room temperature sensors, zone dampers and air conditioning unit in one location.

Comfort Zone room temperature sensors are installed in each zone.

The Comfort Zone User Interface governs the whole system.

The Comfort Zone system can be adapted to all cooling only or heat pump air conditioning units.

CONTROLS ARCHITECTURE



This system offers a very economical capital outlay due to the attractively priced standard components: split system, packaged rooftop system or air conditioning cabinet, etc.

Savings are achieved by the use of staggered day/night and summer/winter set-points which enable the system to follow the user requirements and allow it to be run in fan only mode during the intermediate season. Maintenance is greatly simplified by the centralisation of constituent elements.

Each zone can have its time clock individually programmed per day and for each day in the week.

COMFORT ZONE SYSTEM

SYSTEM ARCHITECTURE

Condensing unit

Aran

Bypass damper

Control damper

Diffuser

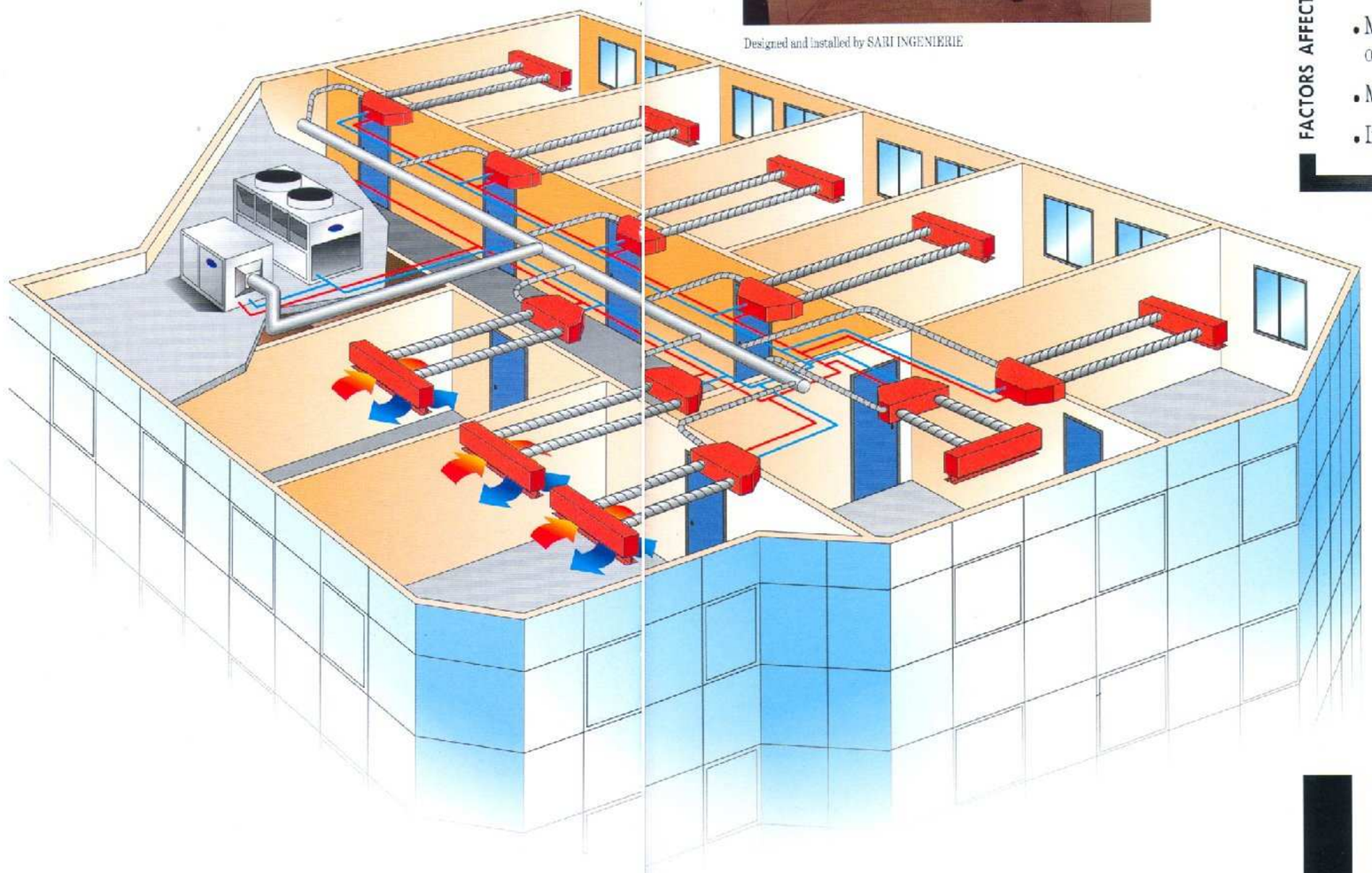
FEATURES

- ENVIRONMENTAL COMFORT CONTROL
- INDOOR AIR QUALITY
- OPTIMUM OPERATING COST
- EASY INSTALLATION AND MAINTENANCE

PERFORMANCE DATA

- 4 sizes.
- Air flow : 94 to 190 l/s.
- Sensible cooling capacity : 1.9 to 3.4 kW.

Designed and installed by SARI INGENIERIE



Designed and installed by SARI INGENIERIE

ICM SYSTEM

FACTORS AFFECTING CHOICE

- Hydronic system.
- Designed to be installed outside the occupied zone.
- May be installed in a false ceiling or false floor.
- Minimum recommended void height : 300 mm.
- Individually controlled heating and cooling.

Designed and installed by SARI INGENIERIE

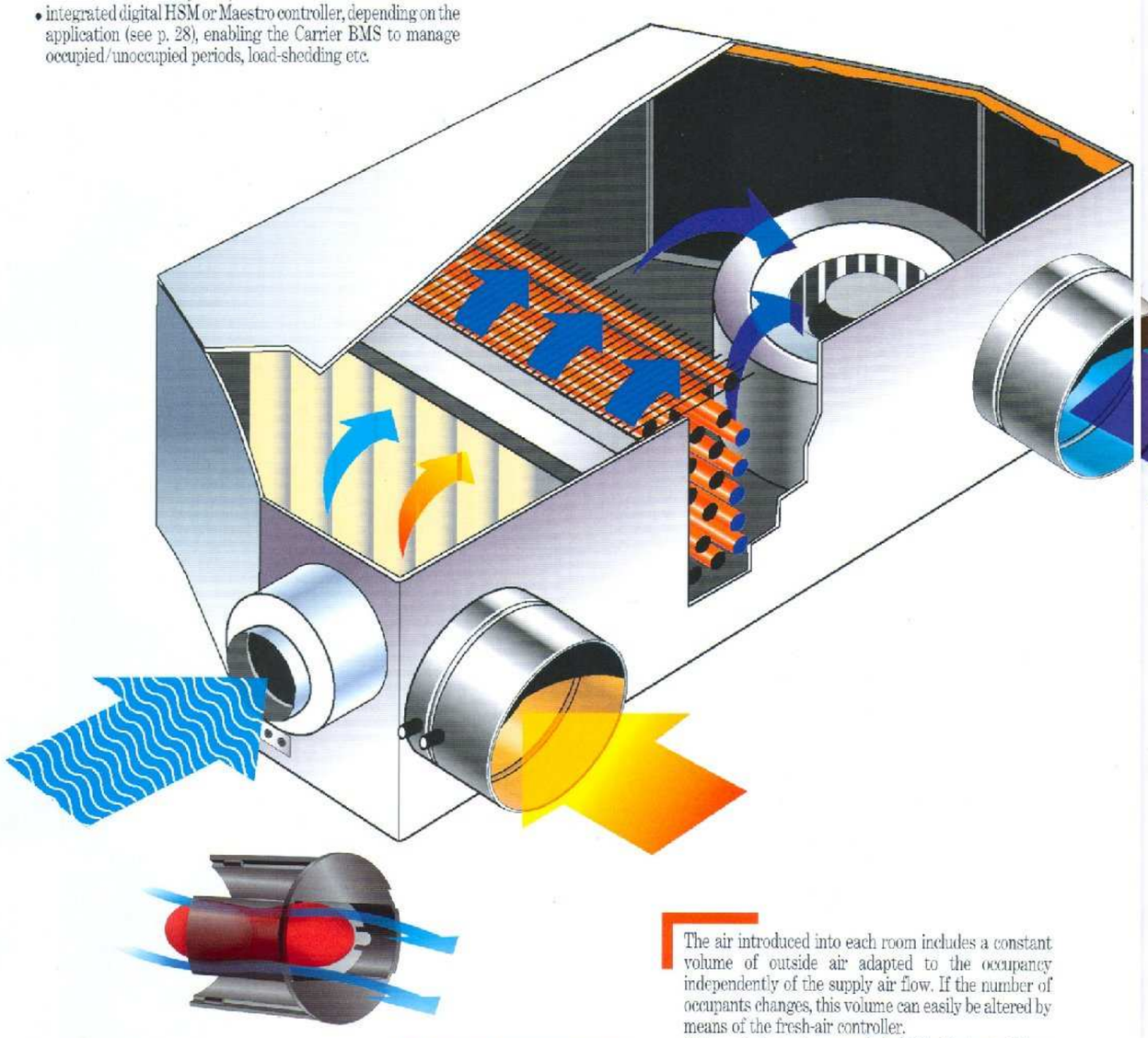
Designed and installed by SARI INGENIERIE

DESCRIPTION

The Individual Comfort Module (ICM) is a ductable two-pipe, two-pipe with electric heater or four-pipe system installed in a false ceiling or false floor void.
Each ICM is supplied with a constant volume of outside air which is filtered, heated, cooled and humidified by an air handling unit.
The system is completed by a supply/return Moduboot linear diffuser allowing fully individualised air-conditioning in each room.
The water supplying the ICM system is heated and cooled by chiller(s) or heat pump(s) plus ancilliary heating equipment.

The ICM builds on cumulative efficiency to achieve the minimum operating cost:

- variable air volume system,
- integrated digital HSM or Maestro controller, depending on the application (see p. 28), enabling the Carrier BMS to manage occupied/unoccupied periods, load-shedding etc.

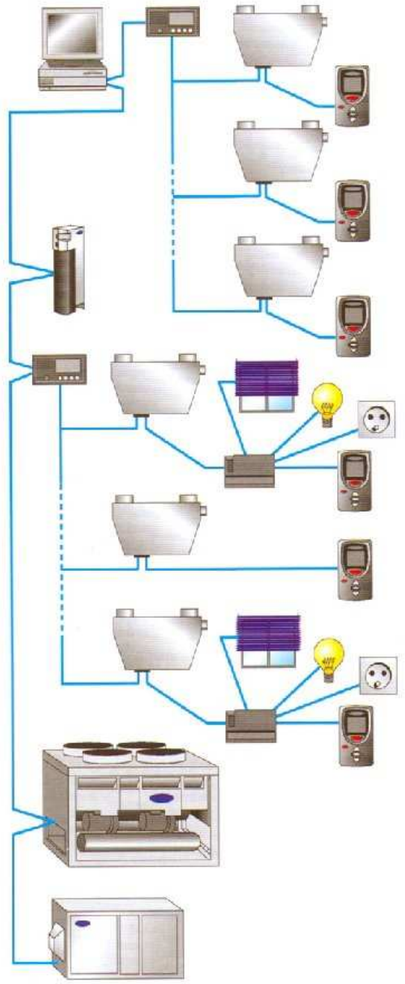


- The ICM system is fitted as standard with a fresh-air controller, valves complete with flexible pipes and a digital controller for simplified on-site installation.
- The shape and specially designed layout of the air inlets and outlets allow the system to be installed in a minimum amount of space and include the possibility of installation in a false floor or false ceiling.
- A user-friendly interface allows occupants to control their own ambient temperature, lighting intensity and blinds.
- Service and maintenance of the ICM system are simplified by locating the equipment centrally in corridors and other common parts of the building.

Installed by SMI. Photo Paul Maurer

The air introduced into each room includes a constant volume of outside air adapted to the occupancy independently of the supply air flow. If the number of occupants changes, this volume can easily be altered by means of the fresh-air controller.
Return air from the room is individually treated by a high-efficiency pleated filter (EU5), protecting occupants from the possible transmission of microbes from one room to another and ensuring that the supply air is kept clean.

CONTROLS ARCHITECTURE

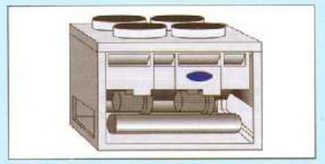


Access to comfort with the minimum number of keys to press.

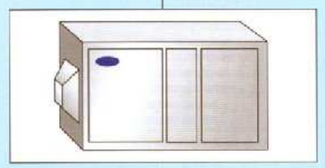
- Set-point.
- Room air purge system.
- Lighting (control of two lighting units).
- Blinds (raise, lower, angle).
- Occupied/unoccupied mode.

ICM SYSTEM

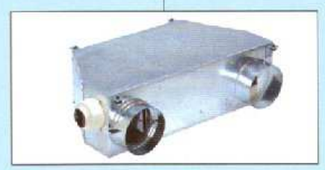
SYSTEM ARCHITECTURE



Liquid chiller



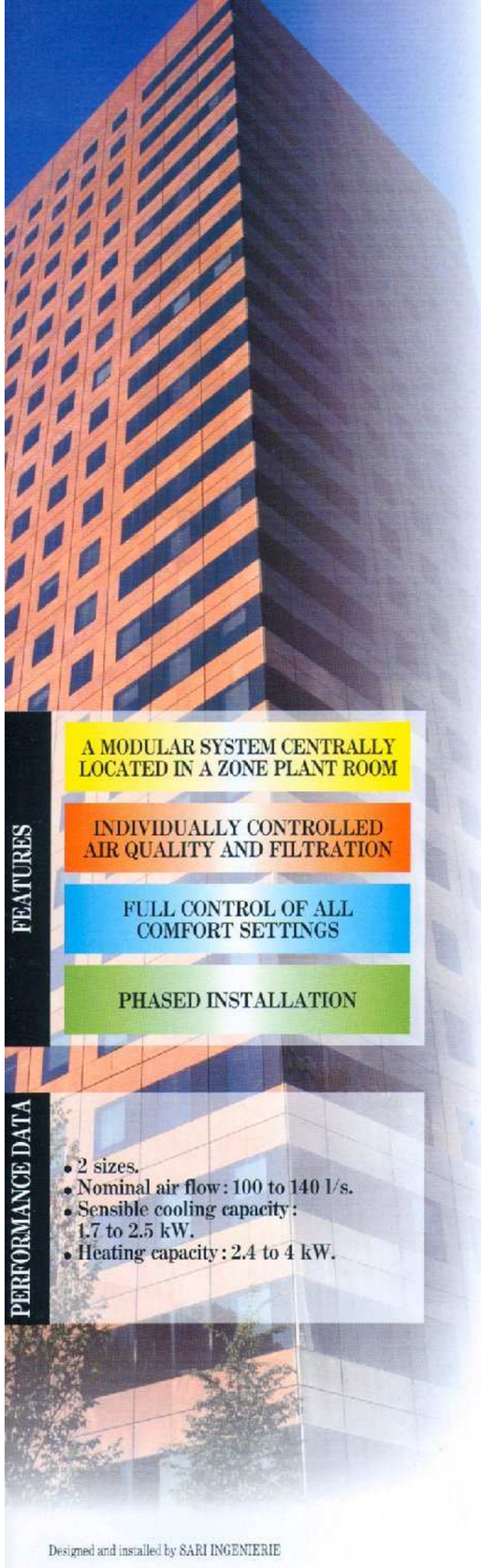
Air handling unit



ICM

Maestro

Diffuser



FEATURES

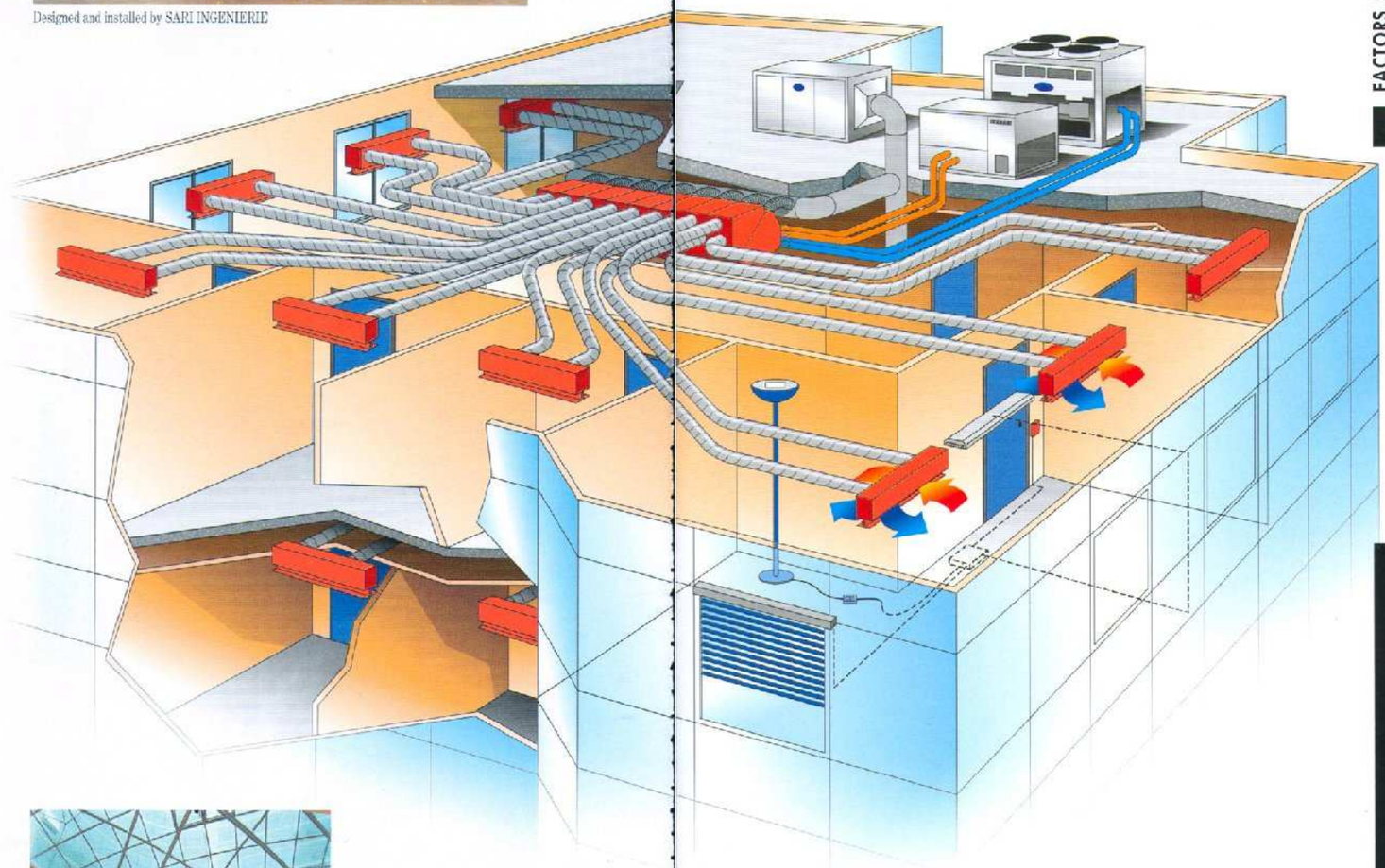
- A MODULAR SYSTEM CENTRALLY LOCATED IN A ZONE PLANT ROOM
- INDIVIDUALLY CONTROLLED AIR QUALITY AND FILTRATION
- FULL CONTROL OF ALL COMFORT SETTINGS
- PHASED INSTALLATION

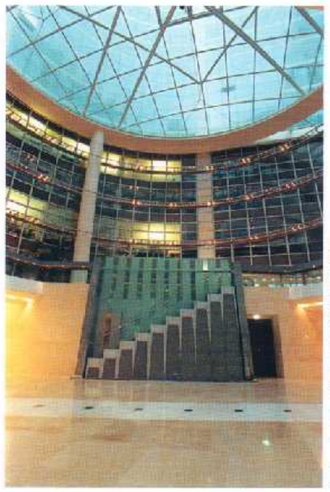
PERFORMANCE DATA

- 2 sizes.
- Nominal air flow: 100 to 140 l/s.
- Sensible cooling capacity: 1.7 to 2.5 kW.
- Heating capacity: 2.4 to 4 kW.

Designed and installed by SARI INGENIERIE

Designed and installed by SARI INGENIERIE





Designed and installed by SARI INGENIERIE

ATM SYSTEM

FACTORS AFFECTING CHOICE

- Hydronic system.
- Unit centrally located in a plant room.
- False ceiling – minimum recommended void height: 250 mm.
- Individually controlled heating and cooling.
- Air quality.
- Multi-function user interface.

DESCRIPTION

The Air Treatment Module (ATM) is a compact, variable-volume system which provides highly flexible and cost-effective installation solutions for the building owner and end user alike.

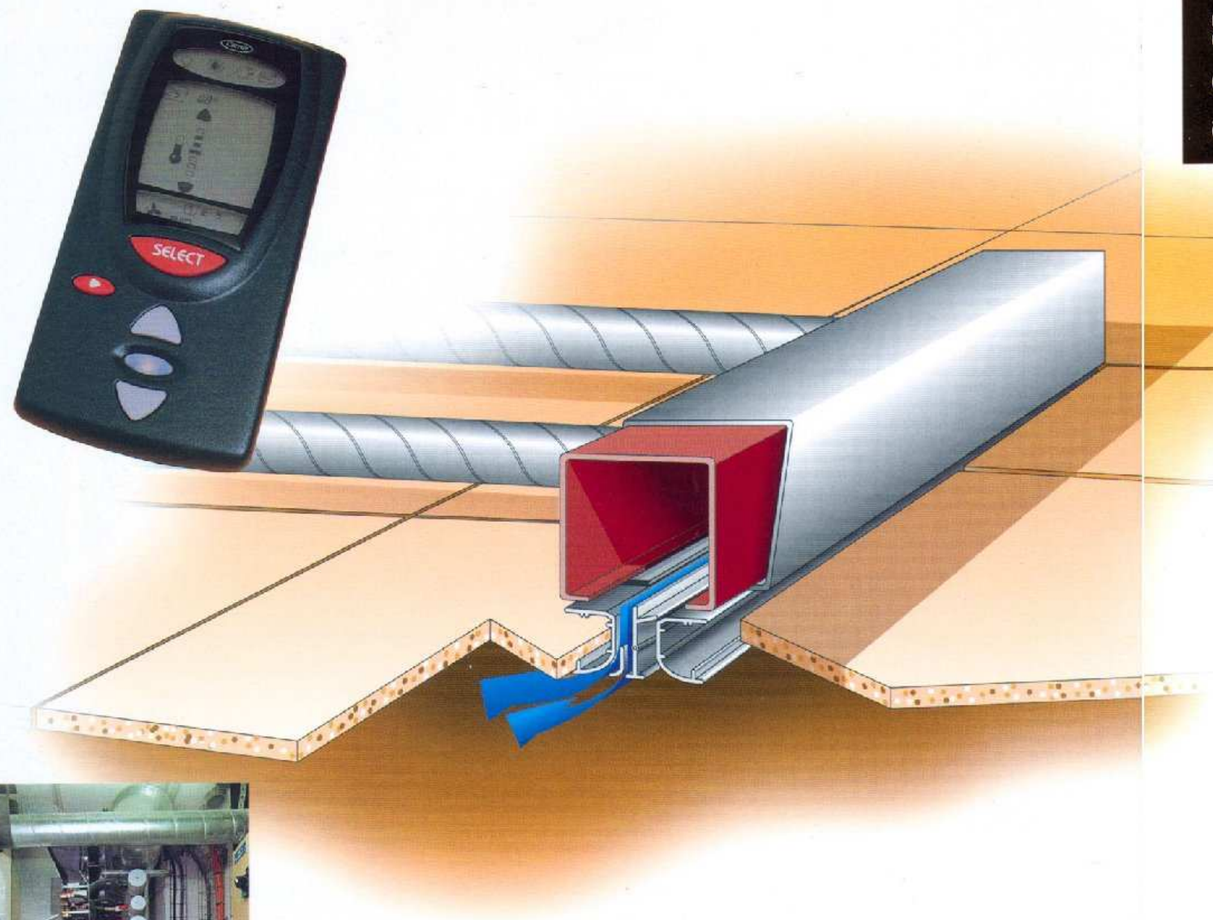
An ATM includes the following main components:

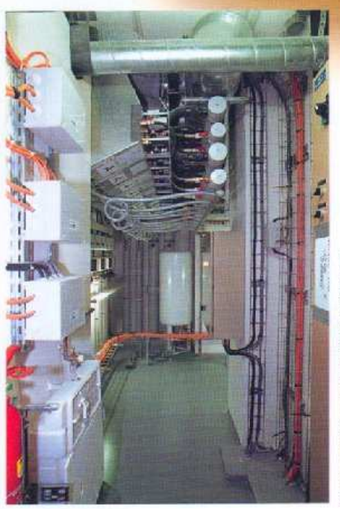
- chilled water coil for cooling, and electric resistance heater or hot water coil for heating, complete with their respective control valves and flexible pipes with quick-connect couplers for easy fitting and maintenance,
- a fresh-air controller, complete with factory-fitted flexible duct, can introduce fresh air at a rate of 7 to 44 l/s,
- a high-pressure supply fan enables ducting up to 50 m in length to be used,
- each system has its own Moduboot linear diffuser for supply and return air, eliminating cross-contamination between offices.

The total building system will also include one or more chillers and a fresh air handling unit(s).

Immediate access to comfort with the minimum number of keys to press:
- occupied/unoccupied mode,
- set-points,
- air purge,
- lighting (control of two lighting units),
- blinds (raise, lower, angle).

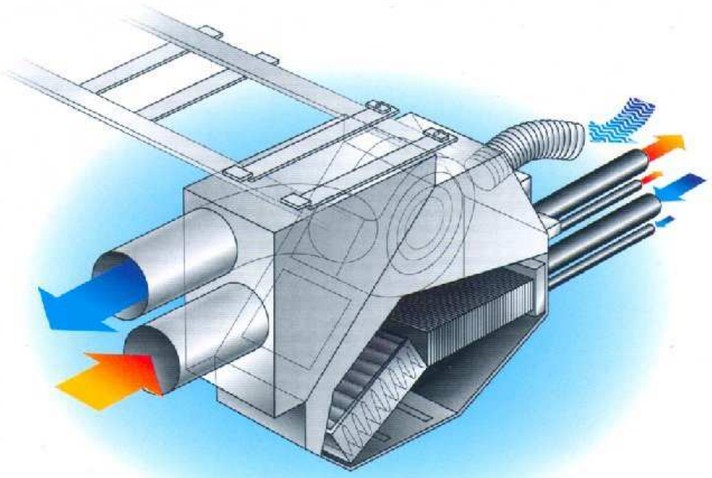
This variable volume system automatically adapts to the requirements of each zone with the aid of a dedicated controller (see p. 28). This makes it possible to take advantage of the lowest possible operating costs, thanks to:
- individual management of blinds and lighting units.
- a supervision system which allows all the functions of each ATM to be placed on standby during individual or collective occupied/unoccupied periods.



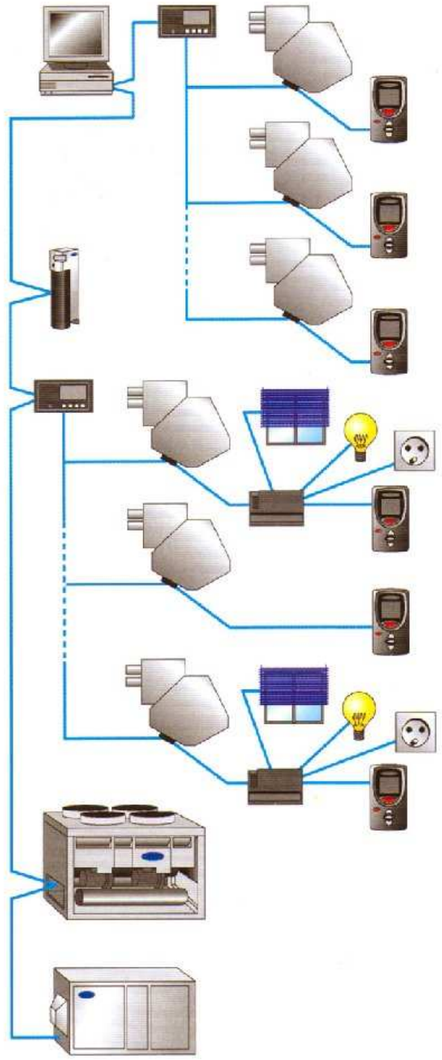


Designed and installed by SARI INGENIERIE

Locating equipment centrally in a zone plant room keeps maintenance work away from the occupied area so that it can be dealt with more quickly without disturbing occupants.



CONTROLS ARCHITECTURE

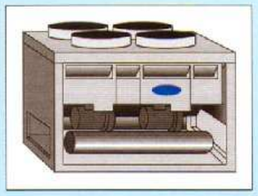


Installation takes place in two phases. In the first phase the suspension rail and suspension casings are fitted, whilst the second phase consists of fitting the ATM itself. This method of installation means that the full capital investment on air conditioning equipment can be phased-in on the project. Installation time is shortened as the ATM system includes as standard a fresh-air controller, valves, a Maestro controller, etc. In addition, each ATM is provided with quick-connect couplers for the water and fresh air connections as well as for the low-voltage electrical system.

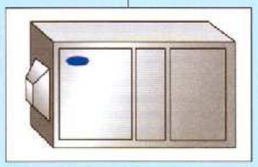
- Return air quality is ensured by a high-efficiency pleated filter (EU5).
- A constant volume controller ensures fresh air is supplied to each individual zone.

ATM SYSTEM

SYSTEM ARCHITECTURE



Liquid chiller

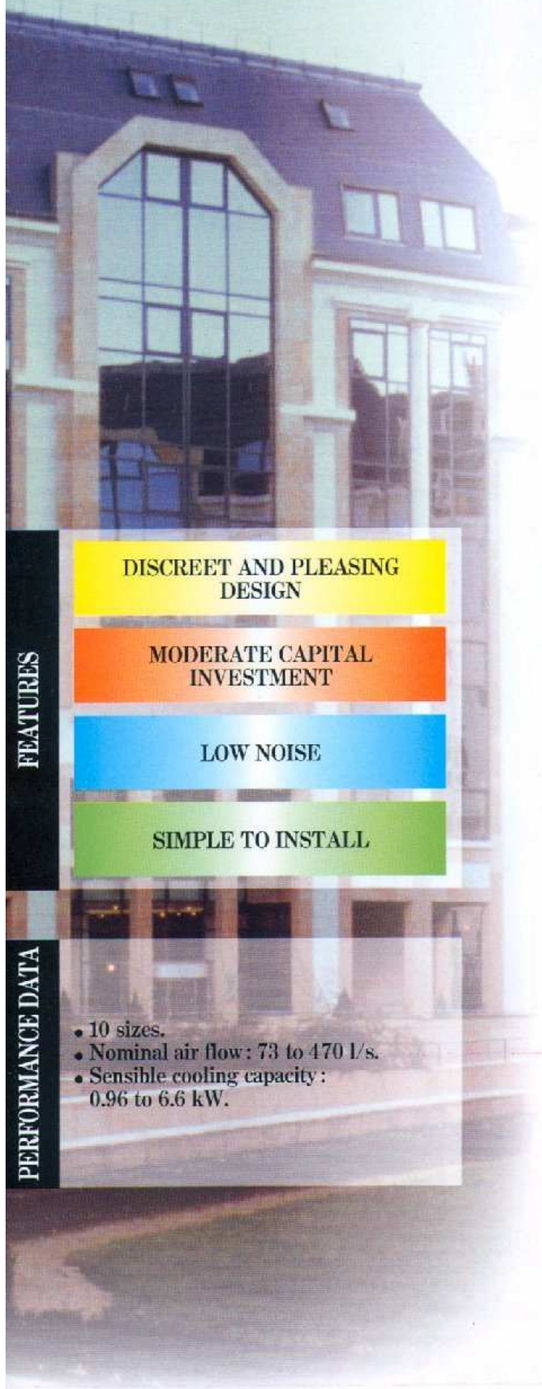


Air handling unit

ATM

Maestro

Diffuser



FEATURES

DISCREET AND PLEASING DESIGN

MODERATE CAPITAL INVESTMENT

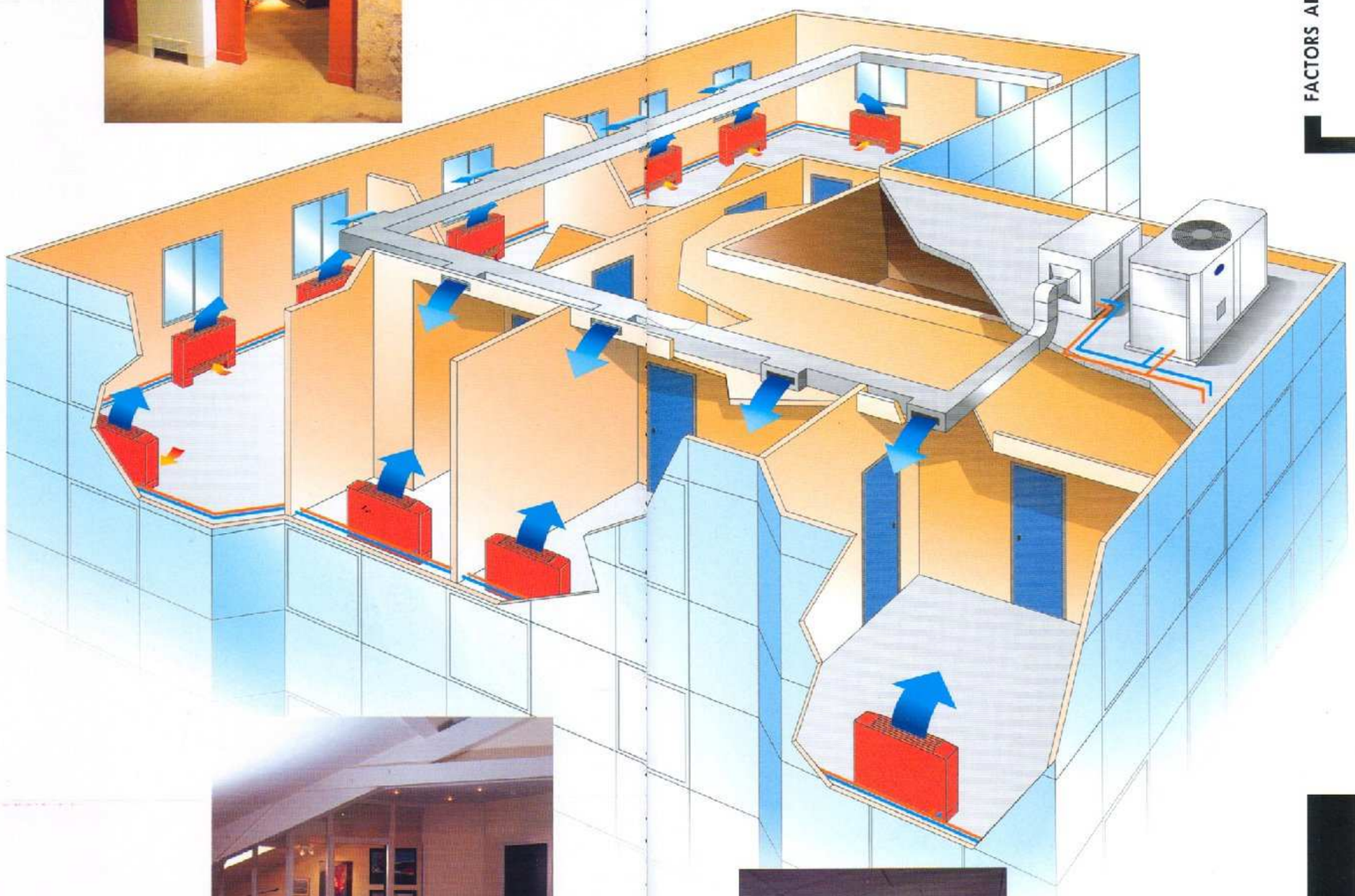
LOW NOISE

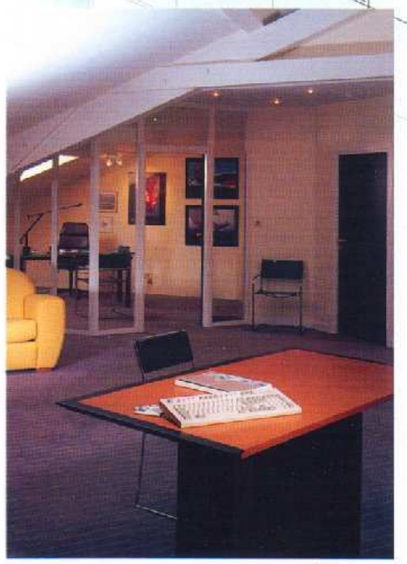
SIMPLE TO INSTALL

PERFORMANCE DATA

- 10 sizes.
- Nominal air flow: 73 to 470 l/s.
- Sensible cooling capacity: 0.96 to 6.6 kW.

Designed and installed by SARI INGENIERIE





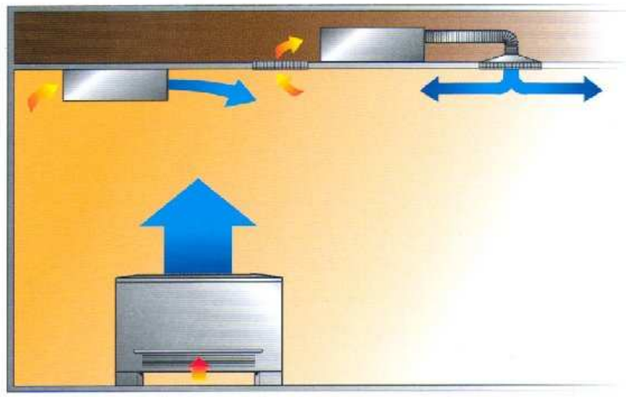
FAN COIL SYSTEM

FACTORS AFFECTING CHOICE

- Hydronic system.
- Installation flexibility: false-ceiling, under-ceiling mount or below window sill.
- Individually controlled heating and cooling.
- Suitable for refurbishment projects.

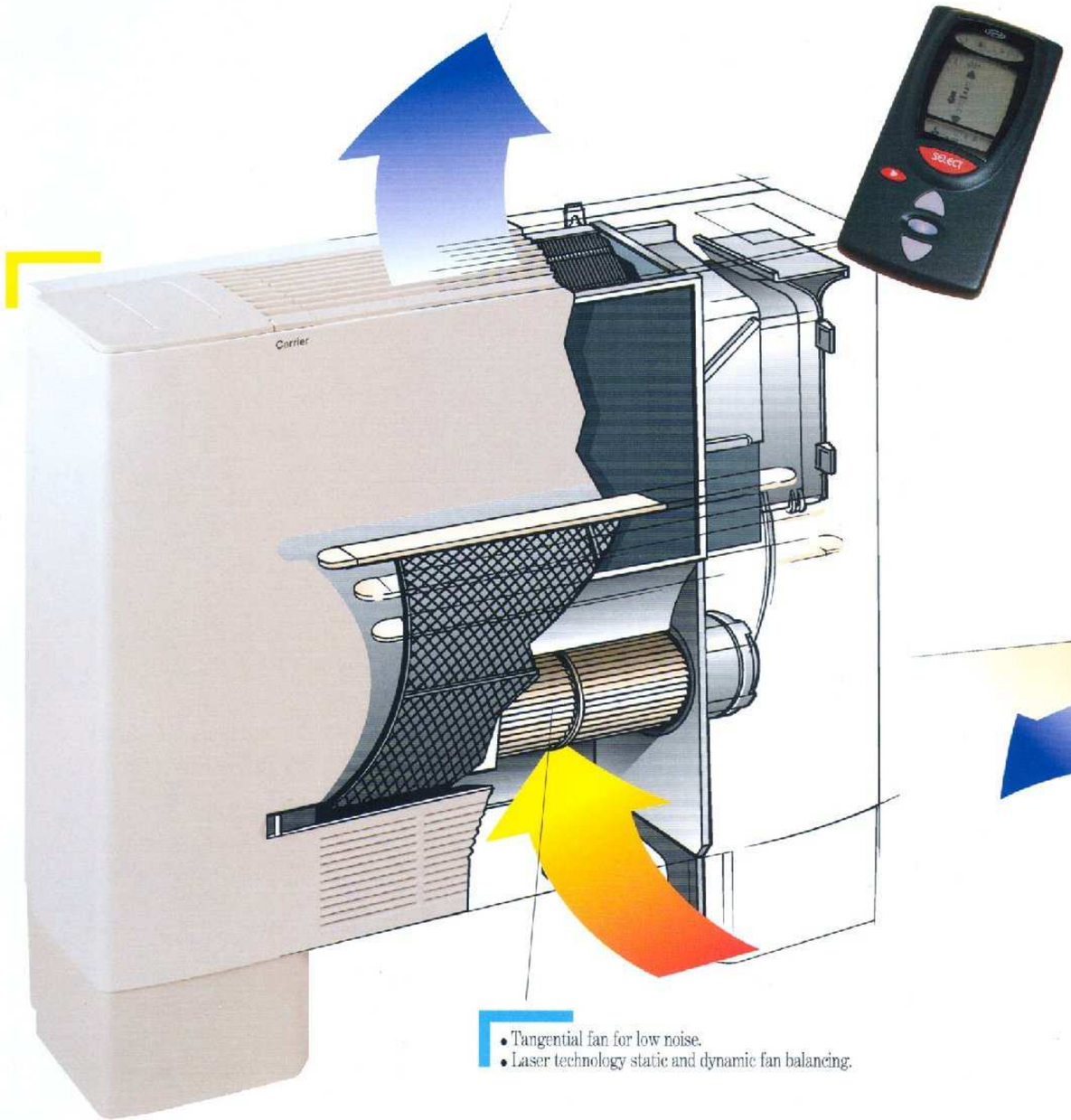
DESCRIPTION

Because it is so compact, the fan coil system can be installed in any of three different ways: below a window sill, mounted directly under the ceiling, or in a false ceiling void.
It is supplied with chilled/hot water (or can have an electric heater).
Heating and cooling can be provided by a chiller or heat pump.
Additionally, fresh air supplied by an air handling unit can be fed in through a separate duct system.
Each fan coil system has its own controller to maintain the desired conditions in the air conditioned space.



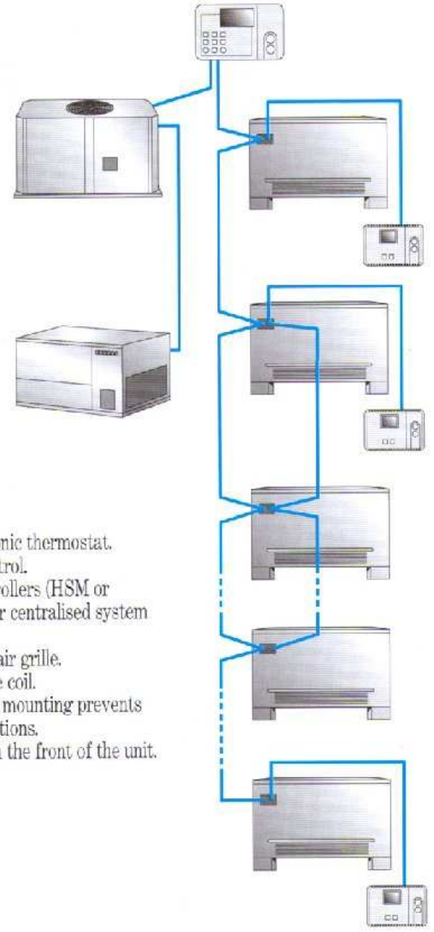
May be installed with a choice of three possible configurations.

Moderate capital investment thanks to modular design and simplified installation.



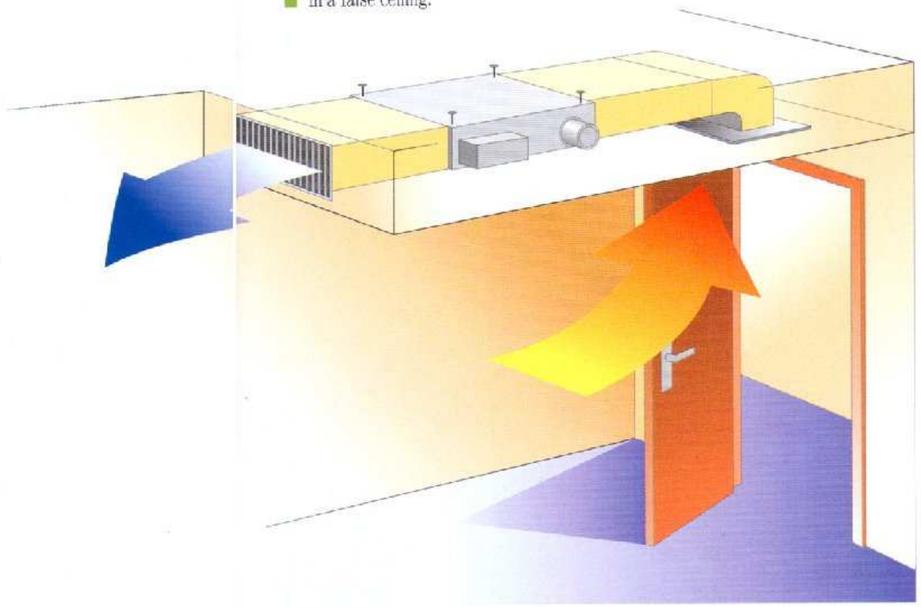
- Tangential fan for low noise.
- Laser technology static and dynamic fan balancing.

CONTROLS ARCHITECTURE



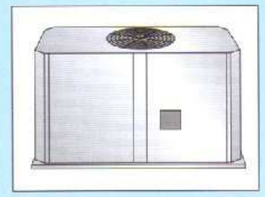
- Multi-function electronic thermostat.
- Air or water side control.
- Communicating controllers (HSM or Maestro, see p. 28) for centralised system management.
- Two-position supply air grille.
- Two-pipe or four-pipe coil.
- Elastomer fan-motor mounting prevents transmission of vibrations.
- Filter accessible from the front of the unit.

Centrifugal fan for installation in a false ceiling.

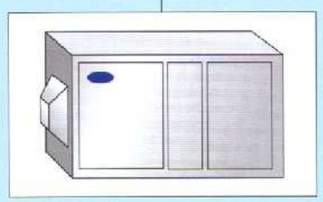


FAN COIL SYSTEM

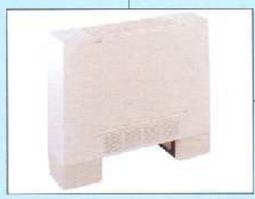
SYSTEM ARCHITECTURE



Liquid chiller



Air handling unit



Fan-coil unit

CRC

FEATURES

MAY BE INSTALLED IN FALSE CEILINGS OF ALL TYPES

HIGH QUALITY AIR DISTRIBUTION

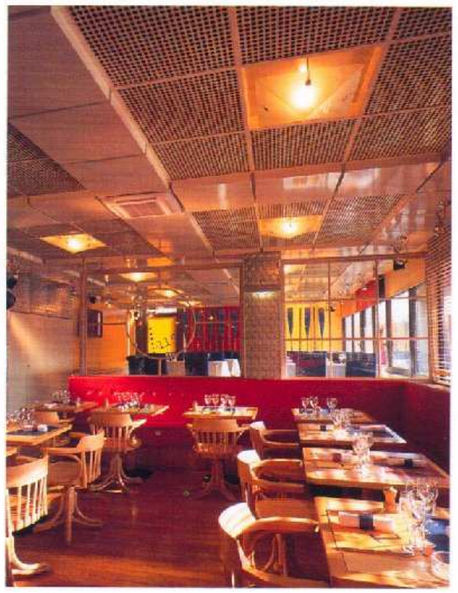
EASY TO INSTALL AND MAINTAIN

LOW NOISE

PERFORMANCE DATA

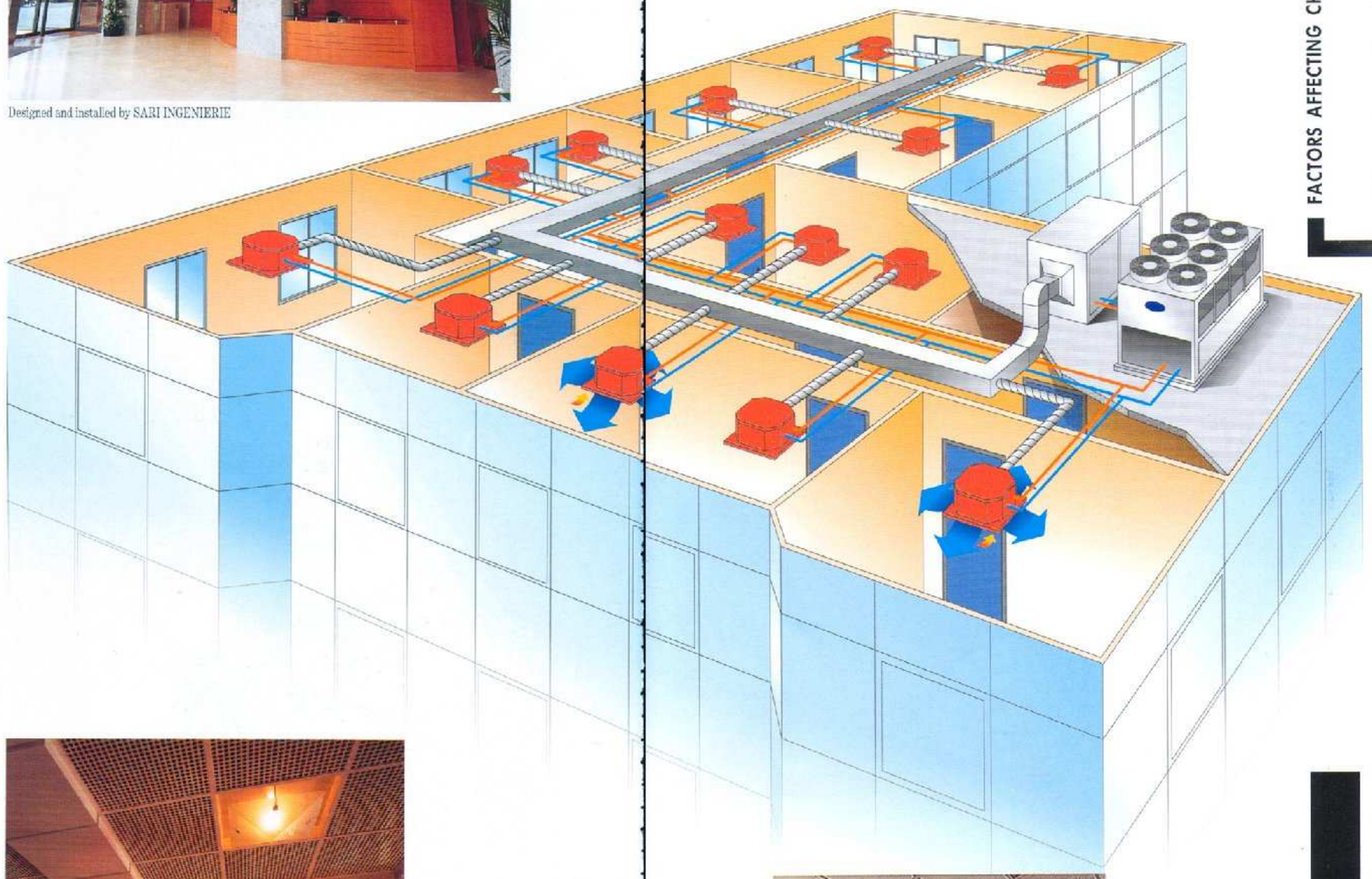
- 5 sizes.
- Nominal air flow: 150 to 470 l/s.
- Sensible cooling capacity: 2.1 to 9 kW.

Designed and installed by SARI INGENIERIE



Designed and installed by SARI INGENIERIE

HYDRONIC CASSETTE SYSTEM



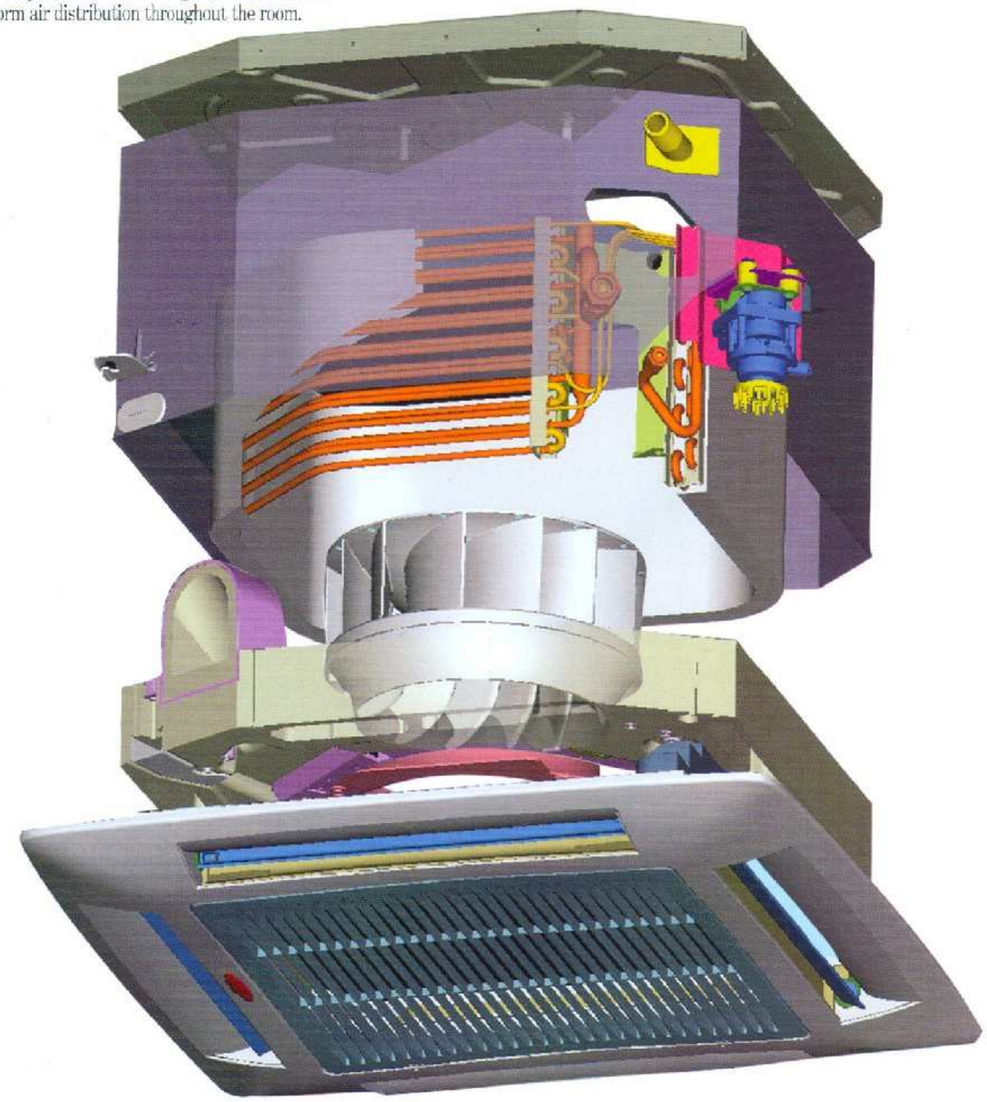
FACTORS AFFECTING CHOICE

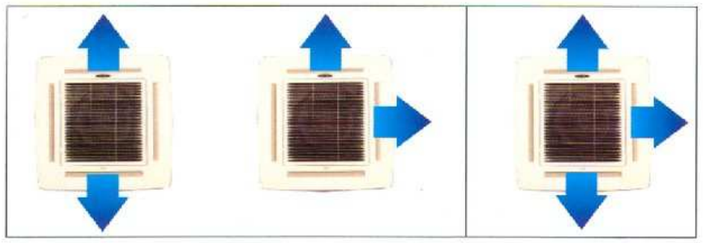
- Hydronic system.
- False ceiling – minimum recommended void height: 330 mm.
- Individually controlled heating and cooling.
- Integrated air diffuser.

DESCRIPTION

Hydronic cassette systems are installed in false ceilings.
They use chilled water for cooling, and hot water or an electric heater for heating. A fresh air handling unit introduces air directly into each cassette after filtration, heating and/or dehumidification.
To simplify on-site installation all peripheral components are fitted in the factory, including the condensate drain pump, control valves and electronic controller.
Modular incorporation of cassettes into rooms both simplifies and keeps to a minimum the amount of work needed if the office layout is ever changed.

- Return air is filtered in the central part of the cassette.
- High quality of air distribution on all four sides for year-round ideal comfort.
- The aerodynamic shape of the movable guide vanes on the diffuser gives uniform air distribution throughout the room.



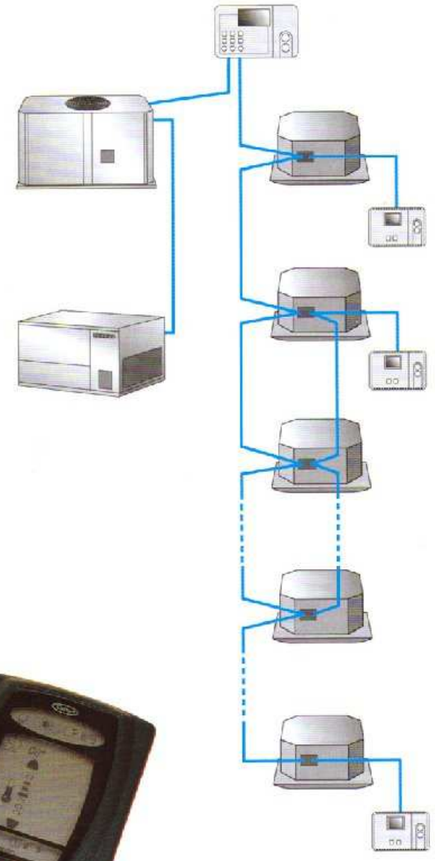


Time saving at installation due to pre-assembly of all components into the product at the factory.

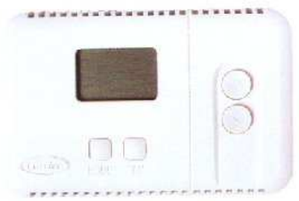
- Low profile: 298 mm.
- May be installed in a 600 x 600 mm modular ceiling (up to 6 kW).

- Air distribution on 2, 3 or 4 sides.
- Integrated condensate drain pump.
- Easy access via the grille to all components including filter, controller, condensate drain pump, etc.

CONTROLS ARCHITECTURE



The hydronic cassette system can be fitted with a digital Maestro or HSM controller, depending on the application, in order to provide optimised energy management (see p. 28).

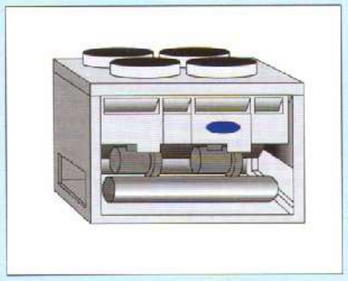


The following versions are available:
- Two-pipe system for cooling only or summer/winter changeover.
- Two-pipe system + electric resistance heater.
- Four-pipe system (cooling/heating).

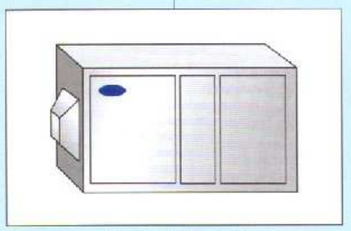
The condensate pump is located in a separate insulated compartment. Due to this and the aerodynamic shape of the fan wheel, the unit is virtually silent in operation.

HYDRONIC CASSETTE SYSTEM

SYSTEM ARCHITECTURE



Liquid chiller



Air handling unit

Cassette

CRC

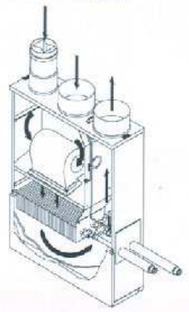
FEATURES

- LOW NOISE
- FAST INSTALLATION
- EASY AND ECONOMICAL MAINTENANCE
- CENTRALISED MANAGEMENT
- AIR QUALITY

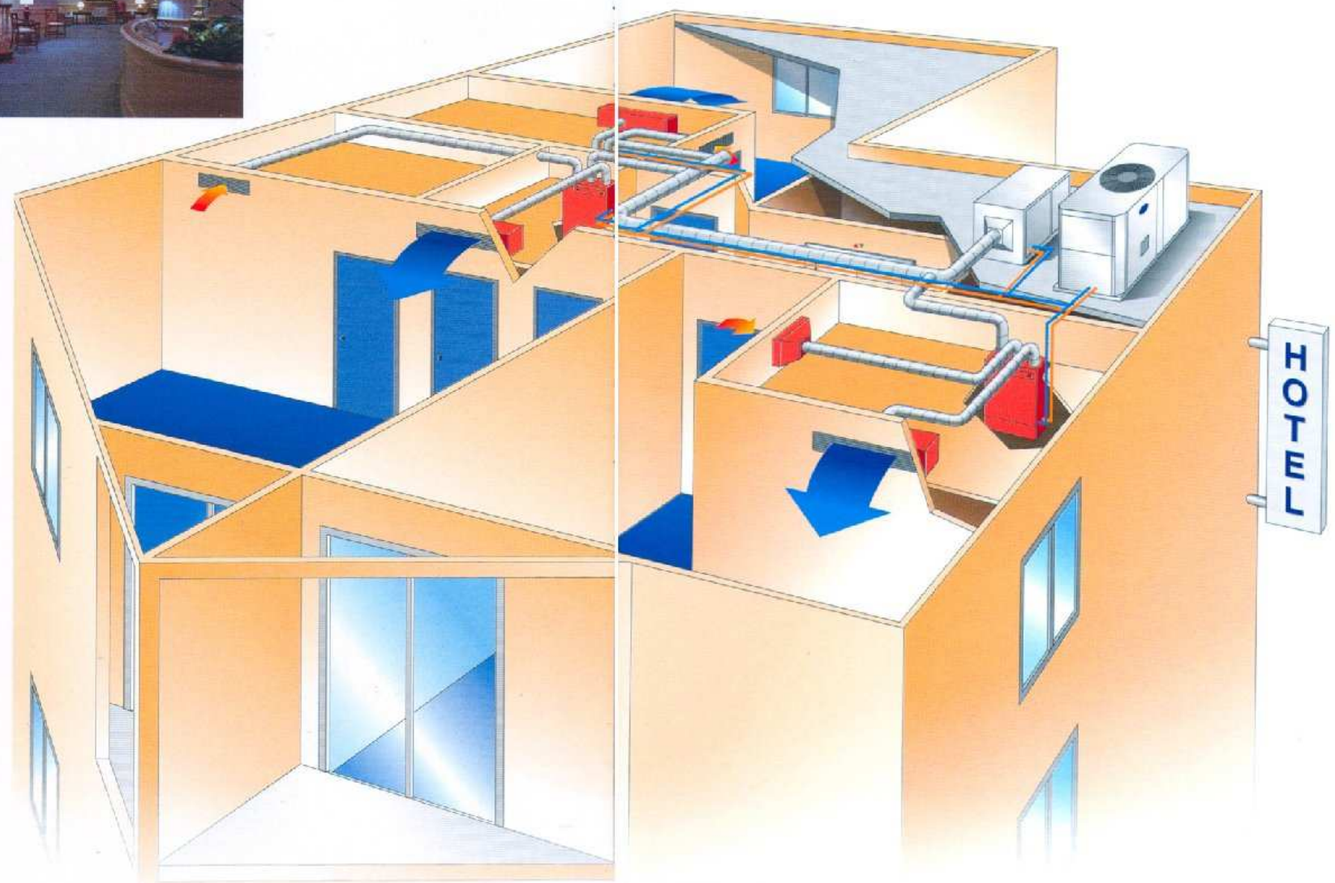
PERFORMANCE DATA

- For areas in the size range 10 to 25 m².
- Sensible cooling capacity: 1.5 kW.

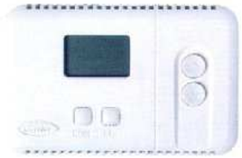
Installing the system in a cabinet away from the occupied zone lowers the in-space noise level. The U shape design of the polystyrene pan allows air to circulate with minimum resistance in a minimum amount of space which contributes to the compact unit design.
The correct choice of diffuser, such as the Moduboot diffuser, and acoustically treated ductwork with a high-performance sound insulating material, enhance the acoustical characteristics of the HTM system.



The HTM system can be installed in a minimum amount of space thanks to its low profile. Additionally, the installation template and quick connectors for water and electricity allow quick and easy fitting of the unit.



Each room is fitted with a thermostat giving access to the full range of comfort settings. A communication bus linking each individual thermostat to a "master" allows centralised management based on the occupancy of the premises.



Easy access to internal components is achieved through a removable panel: water valves, fan, coils, etc.
To make maintenance even easier, the filter is fitted inside a front-mounted sliding drawer, and the complete unit can be removed without having to disconnect the ductwork connections.

The air introduced into each room includes a constant volume of fresh air which is adapted to the occupancy independently of the supply air flow. If the number of occupants changes, this volume can easily be altered by means of the fresh-air controller.

Return air from the room is individually treated by a high-efficiency pleated filter (EU5), protecting occupants from the possible transmission of microbes from one room to another and ensuring that the supply air is kept clean.

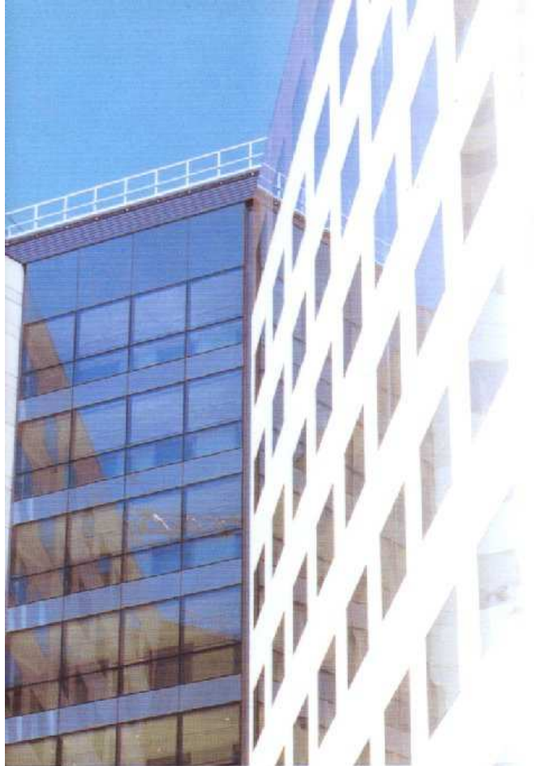
HTM SYSTEM

FACTORS AFFECTING CHOICE

- Hydronic system.
- Individually controlled heating and cooling.
- May be wall-mounted behind an inspection panel.
- Ideal for hotel bedrooms.

DESCRIPTION

An HTM, originally developed for hotel applications, is a two-pipe or two-pipe with electric heater or a four-pipe ductable air treatment system.
This system provides individually controlled air conditioning by means of a supply/return diffuser located in the air conditioned space.
In addition, the outside air treated in the air handling unit is regulated at each HTM by a constant volume controller.
The HTM system may also be installed with or without a communicating controller.
The system is completed with chiller(s) or heat pump(s) and a boiler system which provides heating and cooling.



FEATURES

COMPACTNESS

AIR QUALITY

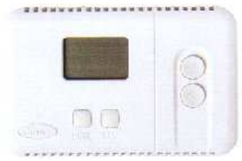
LOW NOISE

EASY INSTALLATION AND MAINTENANCE

PERFORMANCE DATA

- 3 sizes.
- Sensible cooling capacity from 1.9 to 12 kW.

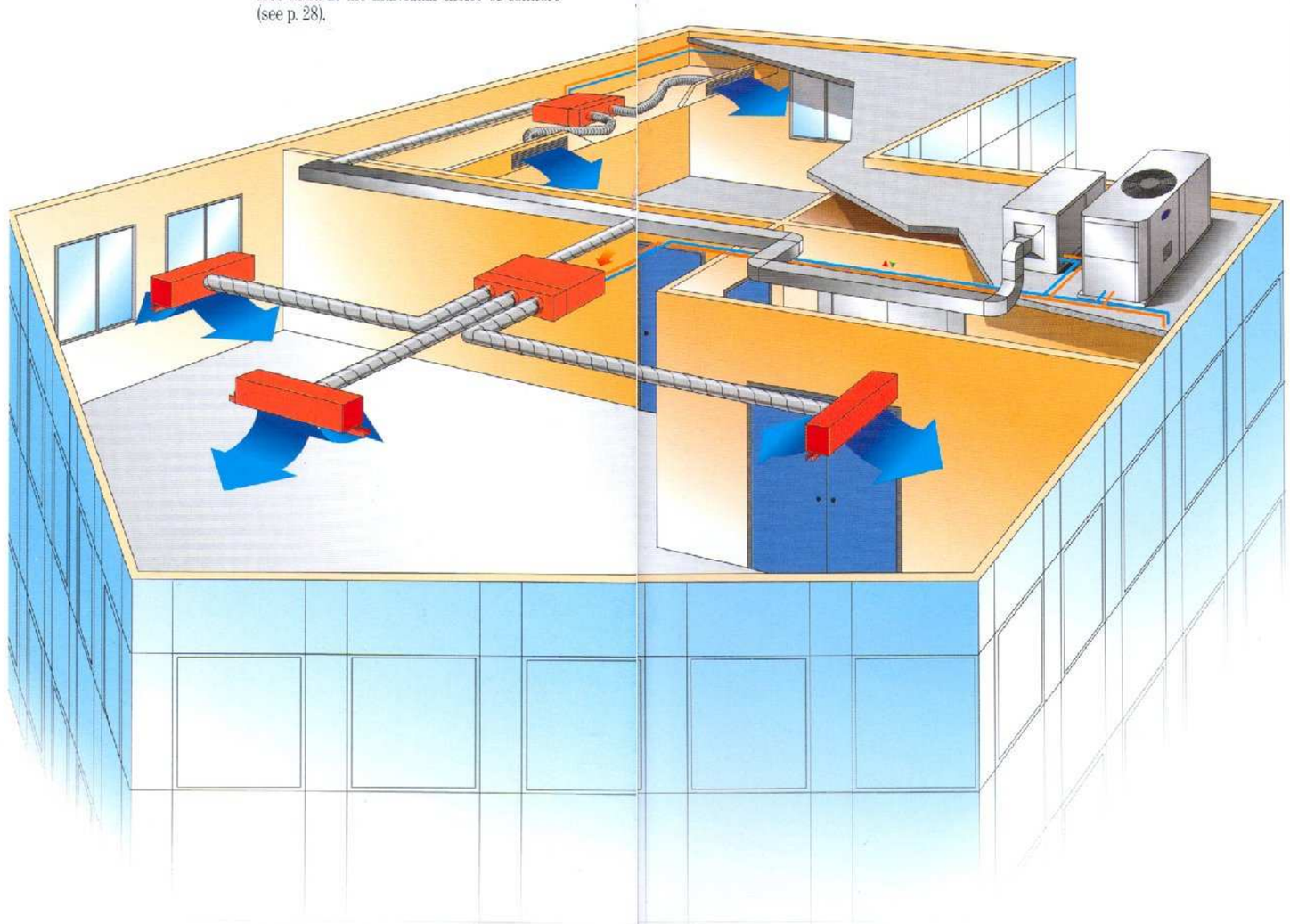
Designed and installed by SARI INGENIERIE



Each Aran system is fitted with an electronic controller to maintain the desired conditions in each zone, and the user is able to:

- choose the operating status: occupied/unoccupied mode,
- adjust the room set-point,
- select the fan speed.

In addition, the HSM control is available making it possible to optimise management of all the terminal units and the centralised unit, whilst leaving each occupant a completely free hand in the individual choice of comfort (see p. 28).



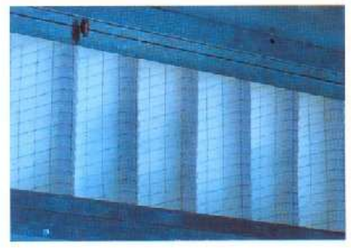
High-performance sound insulation combined with a multi-speed fan provides excellent acoustic characteristics.

ARAN HYDRONIC SYSTEM

FACTORS AFFECTING CHOICE

- Hydronic system.
- Heating and cooling.
- Installation in a false ceiling: minimum recommended void height 250 to 350 mm.
- Large spaces of up to 120 m².

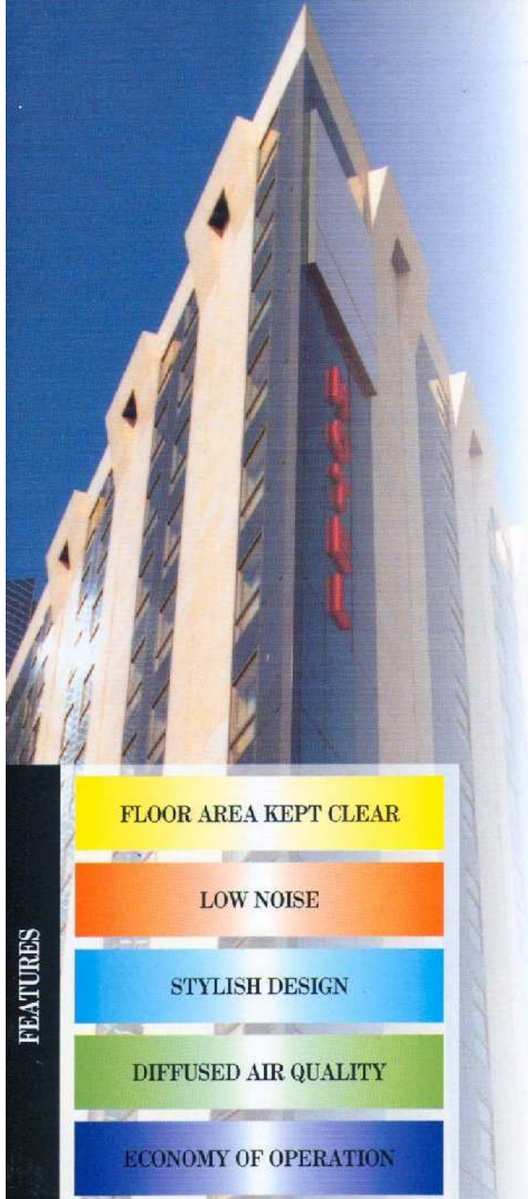
The Aran system offers excellent air quality. An additional auxiliary filter is available to satisfy higher levels of filtration (EU4).



DESCRIPTION

Aran chilled water hydronic systems are installed in false ceilings.
They have a heat exchanger supplied with chilled water, hot water and/or an electric heater. A fresh air handling unit introduces air directly into each Aran unit after filtration, heating or dehumidification.
The Aran system is fitted with easily accessible filters and a range of accessories designed to simplify installation.
Two versions are available:

- Two-pipe cooling only system with summer/winter changeover (when used with a heat pump); two-pipe/two-pipe with electric heater system (with electric resistance heater).
- Four-pipe system (cooling and heating).



FEATURES

FLOOR AREA KEPT CLEAR

LOW NOISE

STYLISH DESIGN

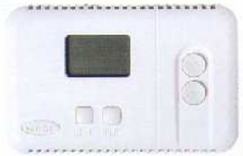
DIFFUSED AIR QUALITY

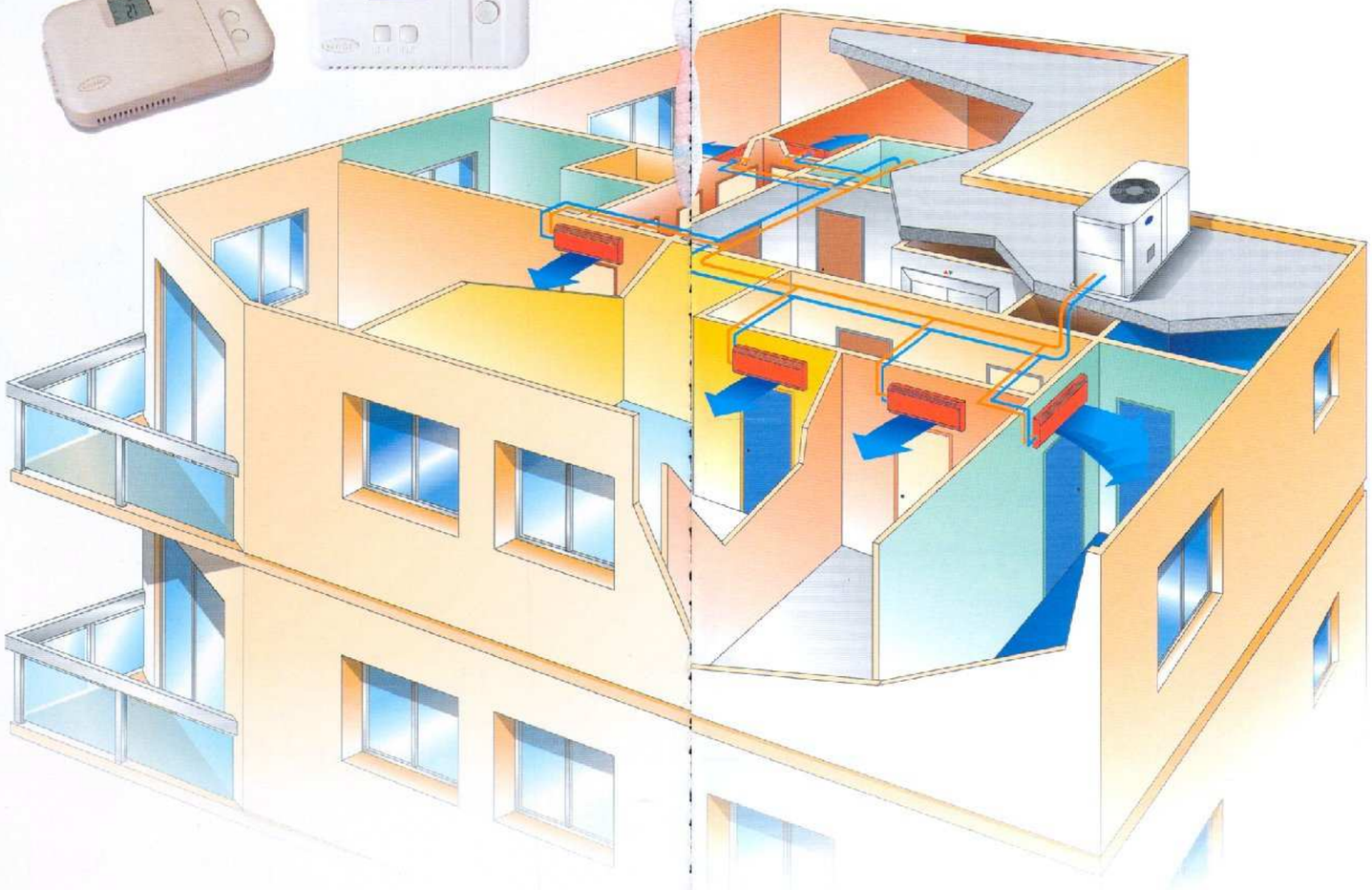
ECONOMY OF OPERATION

PERFORMANCE DATA

- 3 sizes.
- Cooling capacity: 1.5 - 2 - 2.5 kW.

Each hydronic Hi-Wall unit is fitted with its own controller so that the user can personalise the settings. A centralised management module linked to all the units allows the operator to optimise the system functions (see p. 28).





Quick and easy installation, since the unit is delivered with all peripheral components factory-fitted and tested, including control valves, isolation valves, flexible water pipes, etc.

Air flow direction is easily controlled with the aid of the motorised guide vanes, giving a choice of six positions with continuous sweep and automatic mode.

HYDRONIC HI-WALL SYSTEM

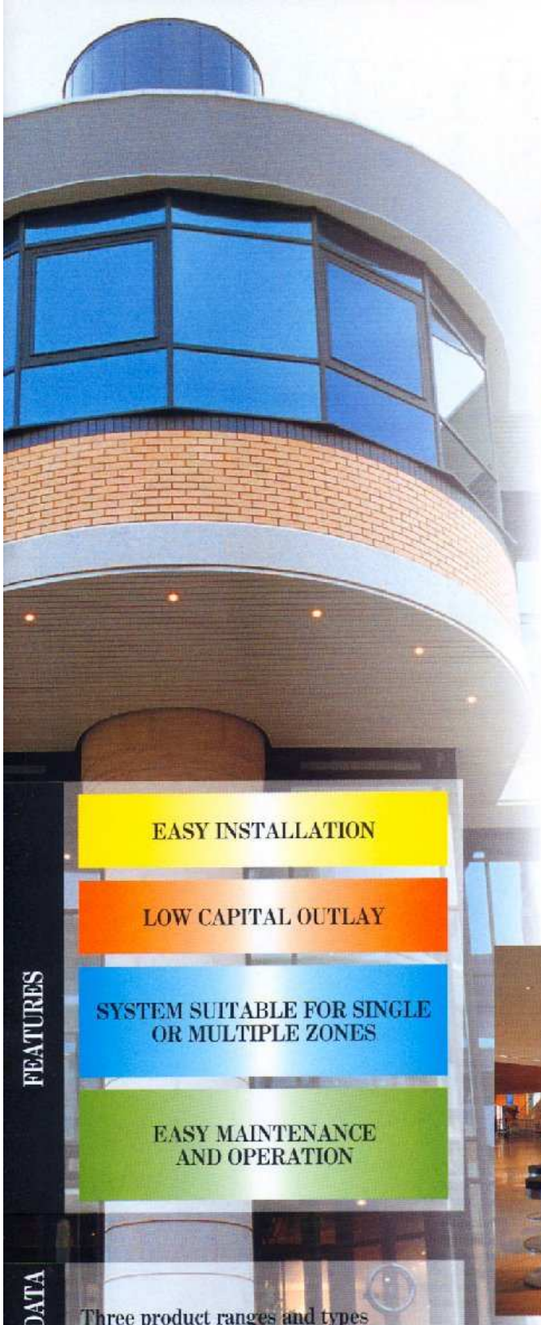
FACTORS AFFECTING CHOICE

- Hydronic system.
- Heating and cooling.
- Applications: hotels, hospitals, apartments.
- Comfort controlled by individual room with possibility of centralised management.

Optimised system design, coupled with the use of a tangential fan, ensures low operating noise.

DESCRIPTION

Discreetly and stylishly designed, the hydronic Hi-Wall system is supplied with chilled or hot water by either a heat pump, or a chilled water unit supplemented by a boiler.
Each Hi-Wall unit is fitted with its own controller in order to maintain the desired conditions in its particular space and allowing:
- choice of operating status: occupied/unoccupied mode,
- set-point adjustment,
- fan speed selection.



FEATURES

EASY INSTALLATION

LOW CAPITAL OUTLAY

SYSTEM SUITABLE FOR SINGLE OR MULTIPLE ZONES

EASY MAINTENANCE AND OPERATION

PERFORMANCE DATA

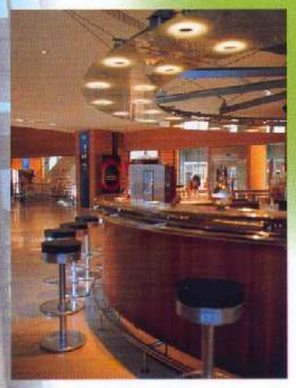
Three product ranges and types from 6 to 120 kW:

- Ceiling mounted air conditioning units from 6 to 22 kW.
- Rooftop air conditioning units from 7 to 120 kW.
- Vertical cabinets from 15 to 70 kW.

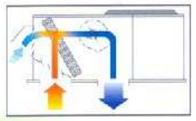
Packaged units may provide all heating and cooling functions in a stand-alone product for a lower capital investment.

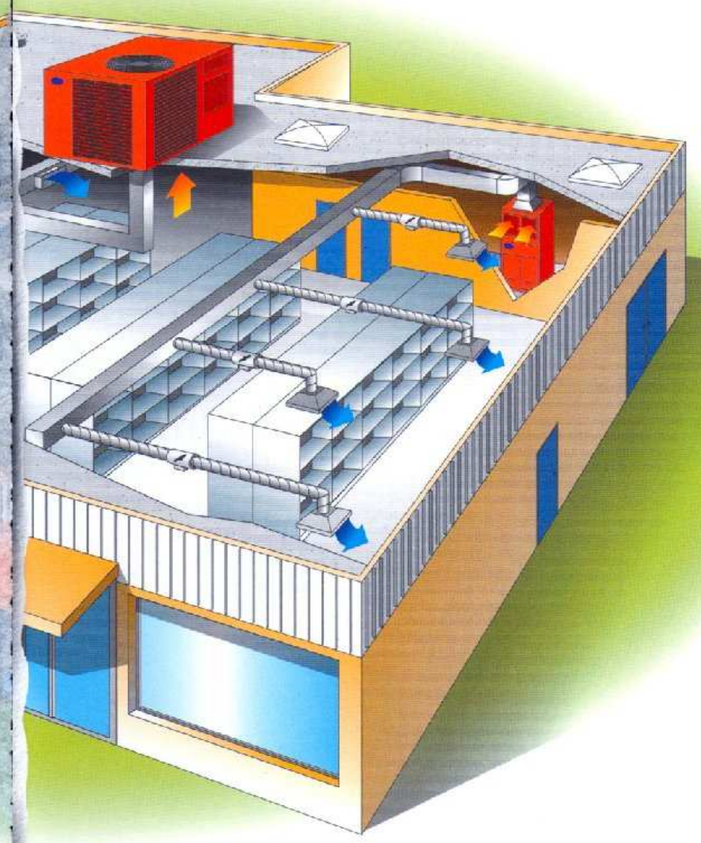
The unit may be controlled by a variable volume, variable temperature VVT or Comfort Zone system which enables energy savings to be optimised and personalises the level of comfort by dividing the air conditioned space into independent zones.

Packaged units for use within a single zone in warehouses, shops or large halls are driven by an electronic room controller.



Significant energy savings may be achieved through an economiser by using cool outdoor air, which limits the need to use the compressor during intermediate seasons and morning periods.
Easy access to the filter, the electrical cabinet and the various components is obtained via the hinged doors on rooftop units.
The use of a built-in electronic controller simplifies and optimises operation of the machine, whilst saving energy by controlling all the operating parameters: duration, management of temperatures, set-points, alarms, etc.
The unit may be linked to the Carrier network by a communication bus or to other systems via communication interfaces, thus providing local or remote supervision.



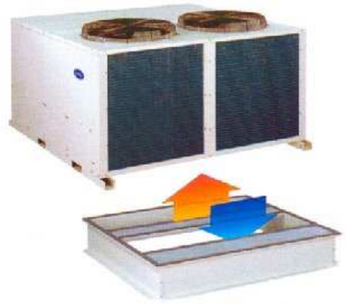


PACKAGED SYSTEM

FACTORS AFFECTING CHOICE

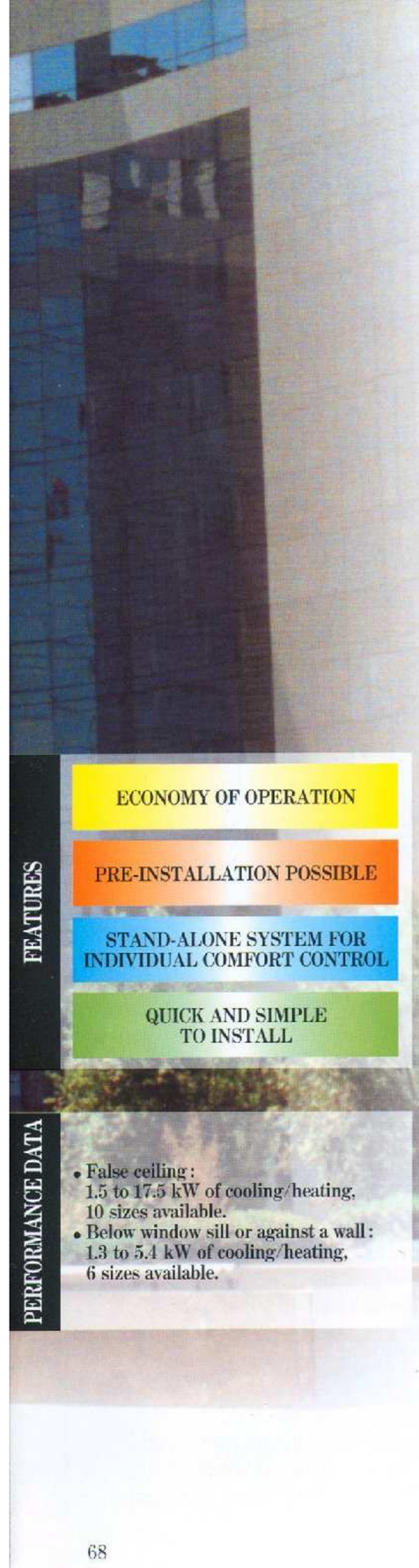
- Air system.
- Heating and cooling (water/electricity/gas).
- Suitable for most commercial applications.

Rooftop units offer many advantages: a perfect seal between the air conditioning unit and the roof, prefabrication of ducts before the rooftop air conditioning unit is placed in position, fast delivery and positioning of all machines. Several versions are available for a perfect match with the installation requirements.



DESCRIPTION

Ductable, packaged air conditioning system for filtering, cooling, dehumidifying or heating air.
System heating may be provided by electricity, hot water, gas or a heat pump. The systems are fitted with electronic controllers which also manage the alarms.
If the system is used to air condition offices, shops or any area in which zoning and individual temperature control are required, using it in conjunction with a VVT or Comfort Zone system provides the ideal economic solution in terms of capital outlay and operation.



FEATURES

ECONOMY OF OPERATION

PRE-INSTALLATION POSSIBLE

STAND-ALONE SYSTEM FOR INDIVIDUAL COMFORT CONTROL

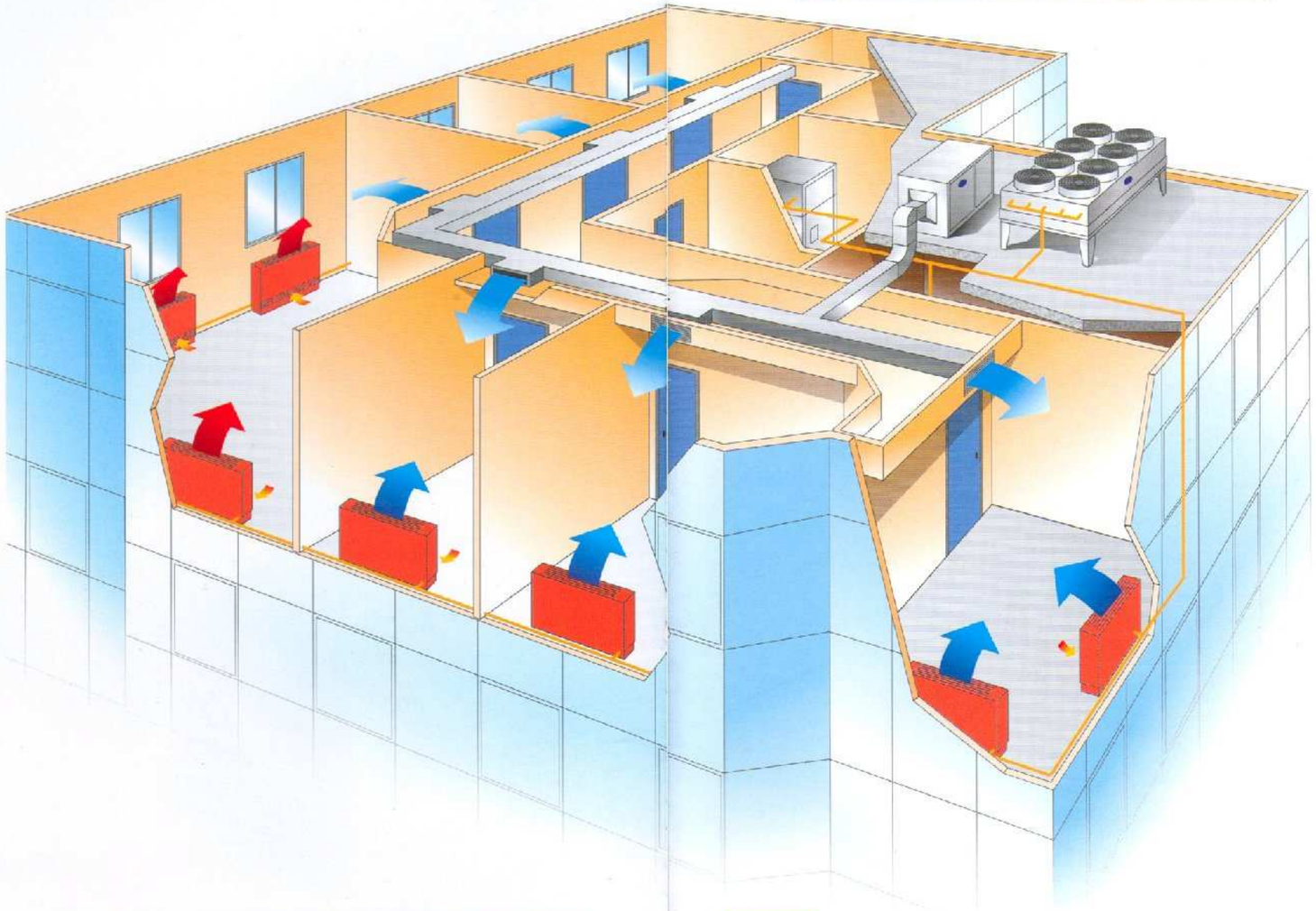
QUICK AND SIMPLE TO INSTALL

PERFORMANCE DATA

- False ceiling:
  1.5 to 17.5 kW of cooling/heating,
  10 sizes available.
- Below window sill or against a wall:
  1.3 to 5.4 kW of cooling/heating,
  6 sizes available.

The water circuit may be installed whilst the building is under construction. The console units can then be installed once the premises are occupied.

Easy connection to the water circuit by means of a set of flexible pipes supplied as standard.



Heat is transferred by reversible air conditioning units sharing a common water loop, resulting in considerable savings in operating costs.

Each reversible air conditioning unit is fitted with its own electromechanical or electronic controller.
Scheduling, selecting heating/cooling mode, selecting the fan speed, changing set-points and so on – with the infra-red remote control the user can instantly choose the most comfortable environment.

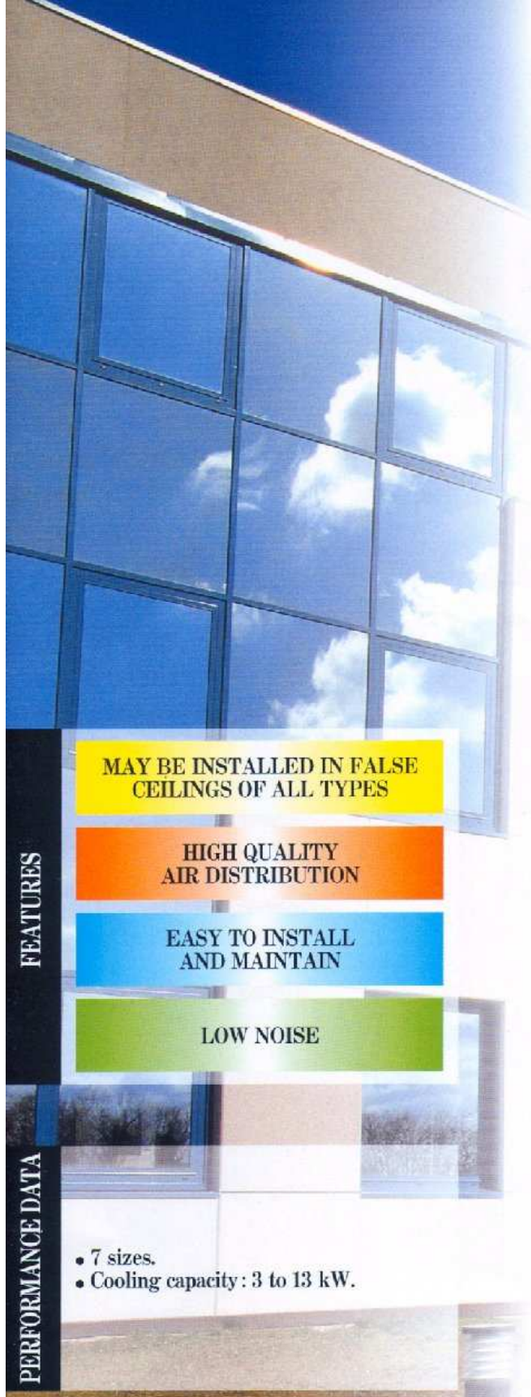
WATER-SOURCE HEAT PUMP SYSTEM

FACTORS AFFECTING CHOICE

- Configuration for buildings with high solar gain.
- Stand-alone heating and cooling.
- Fitting below a window sill, against a wall or in a false ceiling.
- Minimum recommended void height: 310 to 600 mm.

DESCRIPTION

The water-source heat pump system can be used in the intermediate season to establish good thermal balance in a building by transferring heat from the hot spaces to the cold spaces.
In extreme temperature conditions, heat is added to the water loop by a boiler in the winter and removed from it by a dry cooler or cooling tower in the summer.
In the case of heat pumps located below window sills or against a wall, fresh air is provided to each office from an air handling unit via separate air ducts.



FEATURES

MAY BE INSTALLED IN FALSE CEILINGS OF ALL TYPES

HIGH QUALITY AIR DISTRIBUTION

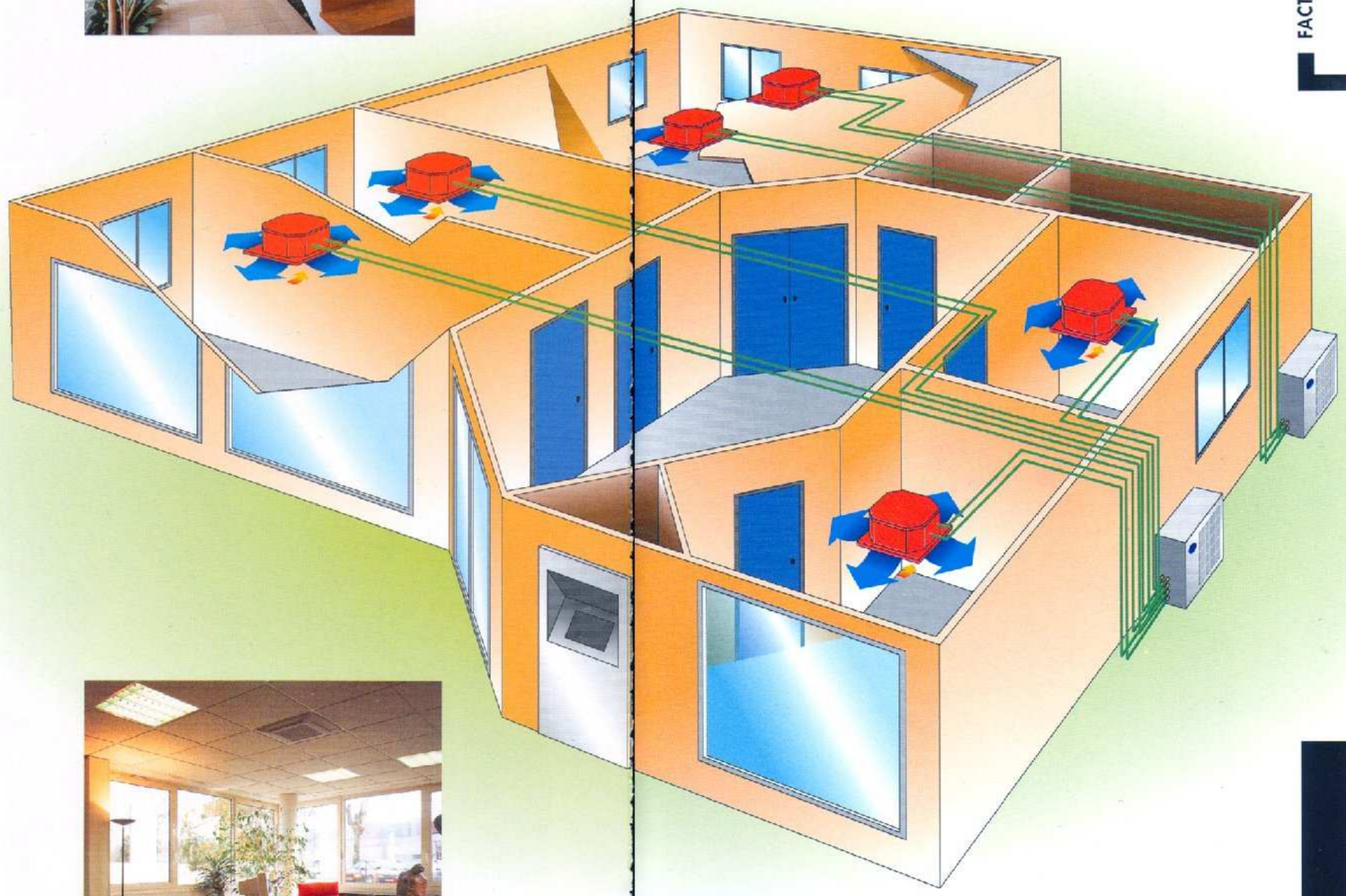
EASY TO INSTALL AND MAINTAIN

LOW NOISE

PERFORMANCE DATA

- 7 sizes.
- Cooling capacity : 3 to 13 kW.

Designed and installed by SARI INGENIERIE



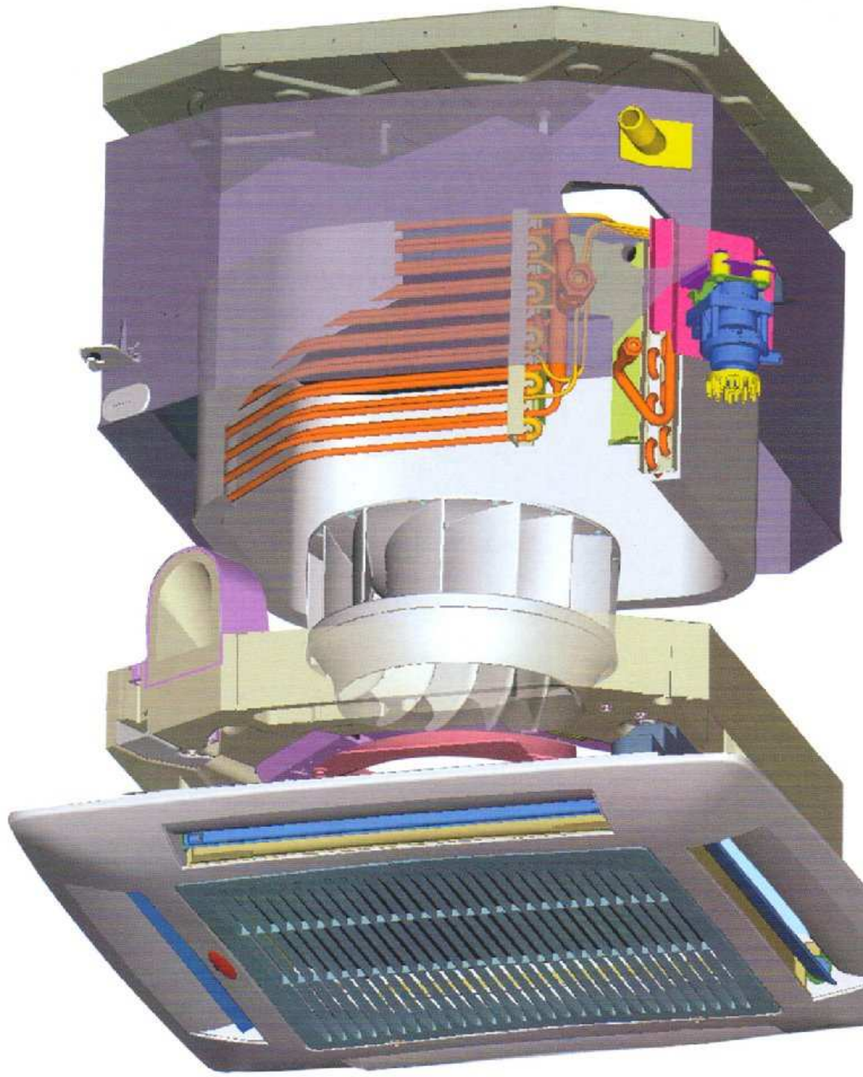
DIRECT-EXPANSION CASSETTE SYSTEM

FACTORS AFFECTING CHOICE

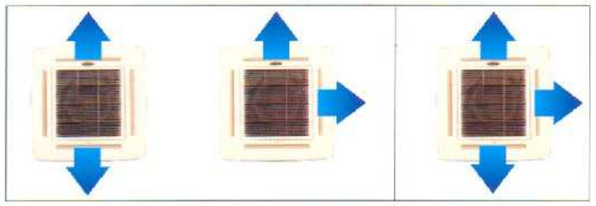
- Refrigerant-based system.
- False ceiling – minimum recommended void height : 330 mm.
- Heating/cooling/dehumidification.
- Integrated air diffuser.

DESCRIPTION

Compact and easy to connect, this cassette system fits easily into a false ceiling.
Available in a wide range of versions for many different applications, it can even be used in open plan locations.
The system is compatible with all air or water-cooled units, in single or multiple split configurations.
By incorporating an electronic controller, the system can be used on an individual basis or as part of a network.



CONTROLS ARCHITECTURE



- Low profile : 298 mm.
- May be installed in a 600 x 600 mm modular ceiling (up to 6 kW).

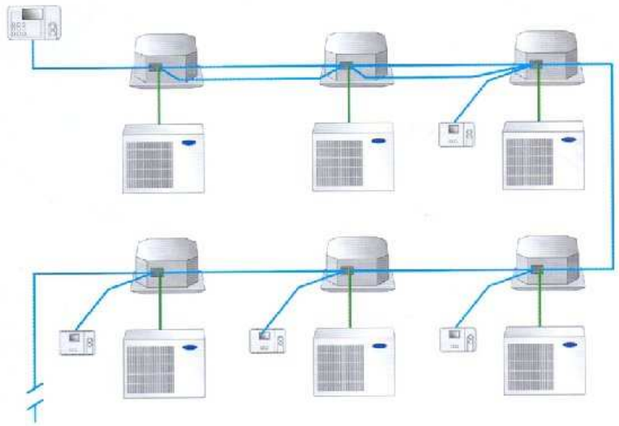
- Easy access via the grille to all components including filter, controller, condensate drain pump, etc.
- An adjacent room can be air conditioned via an additional air distribution grille.

Each system is fitted with an electronic controller (see p. 28) which means that an infra-red remote control can be used to maintain the desired conditions in each zone and the user can:

- choose the operating status: occupied/ unoccupied mode,
- adjust set-points,
- select the fan speed.

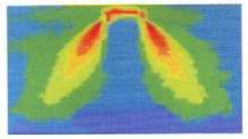
A Group Controller can be used instead of an infra-red control and performs the same basic functions. Additionally it is able to control from 1 to 6 different indoor units all operating to the same parameters within a large space.

In addition, a Zone Manager makes it possible to optimise management of the whole system.

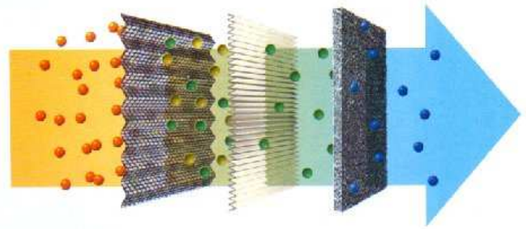


The condensate pump is located in a separate insulated compartment. Due to this and the aerodynamic shape of the fan wheel, the unit is virtually silent in operation.

The cassette technology incorporates motorised air diffusers which supply air in a choice of six directions, with continuous sweep and automatic positioning. There is a fresh air inlet on each cassette for renewal of the room air.



An electrostatic filter and an active carbon filter may be added to the standard filter in order to remove odours and dust particles.



DIRECT-EXPANSION CASSETTE SYSTEM

SYSTEM ARCHITECTURE

Condensing unit

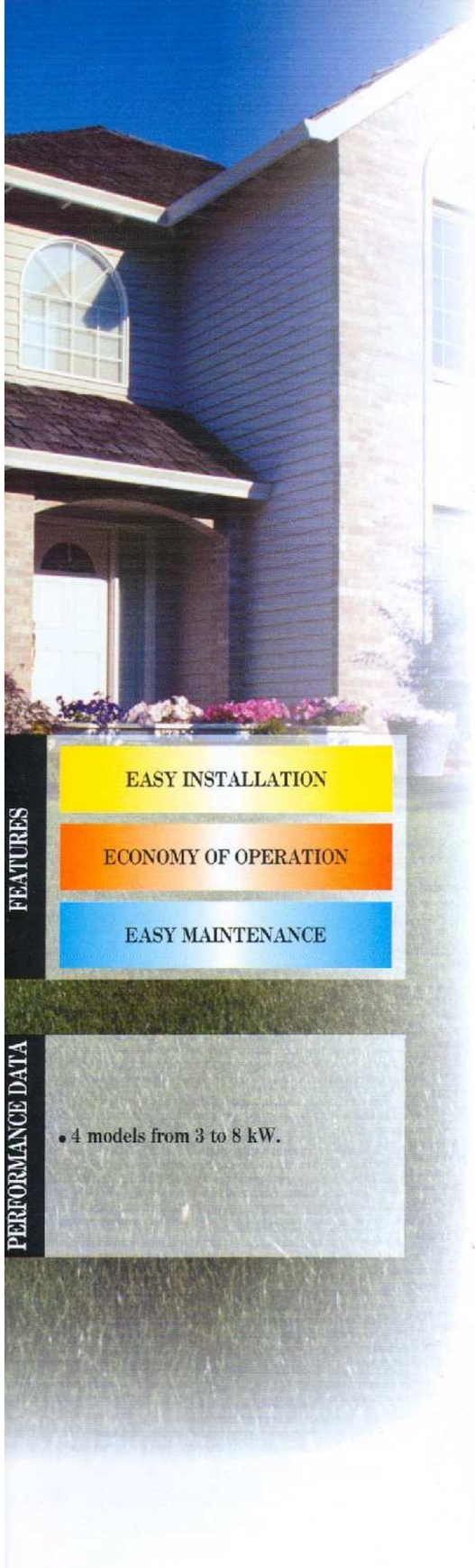
Cassette

Cassette

Group Controller

Cassette

CRC



FEATURES

EASY INSTALLATION

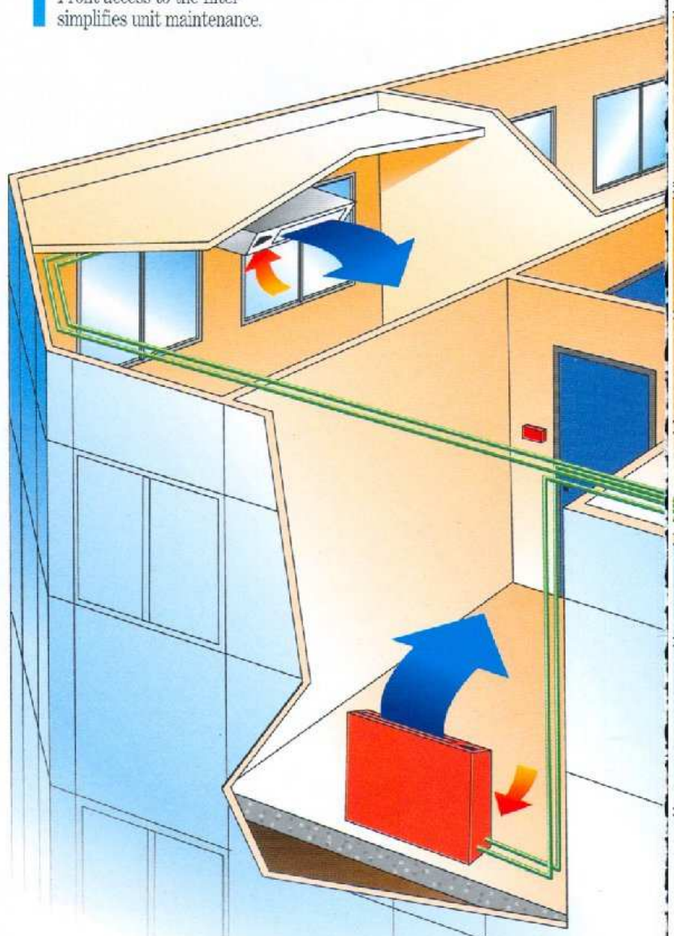
ECONOMY OF OPERATION

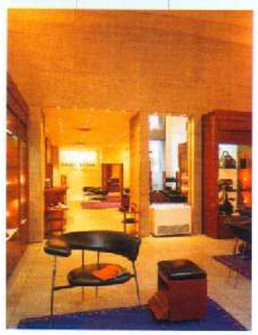
EASY MAINTENANCE

PERFORMANCE DATA

- 4 models from 3 to 8 kW.

Front access to the filter simplifies unit maintenance.





The infra-red control enables the user to select all functions on the air conditioning unit:

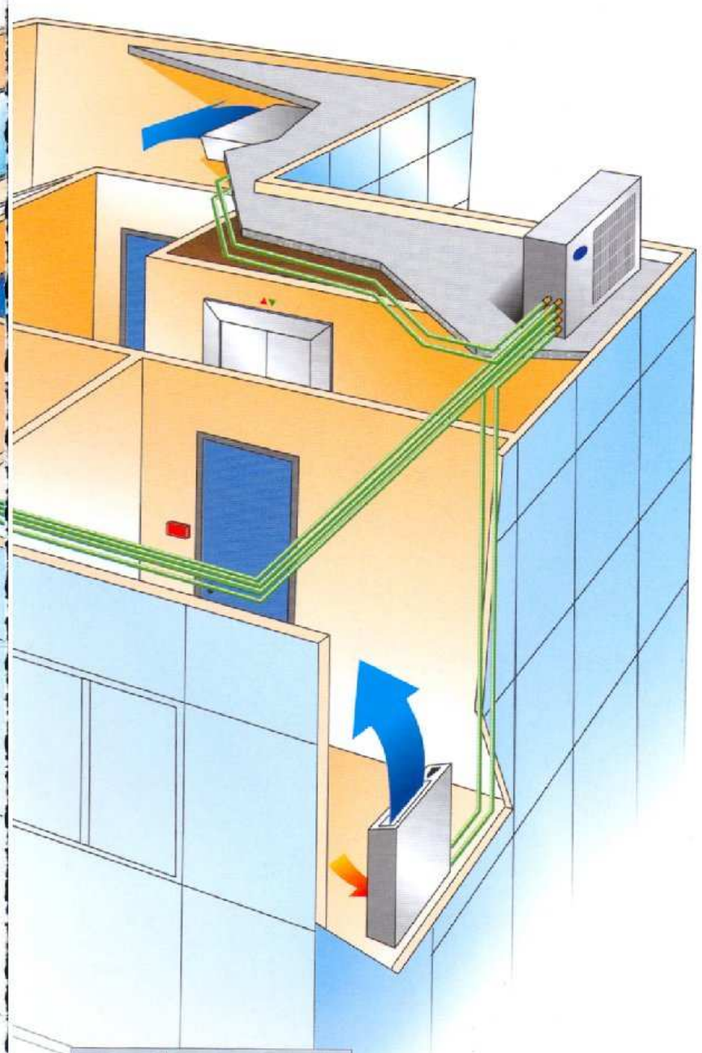
- programming the full 24 hour cycle,
- selecting operating modes,
- selecting the fan speed,
- selecting the air distribution mode.

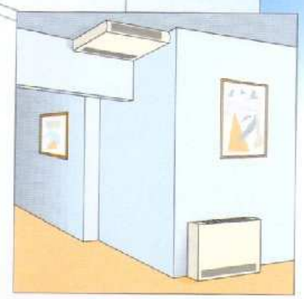
A Group Controller can be used instead of an infra-red control and performs the same basic functions. Additionally, it is able to control from 1 to 6 different indoor units all operating to the same parameters within a large space.
In addition, a Zone Manager makes it possible to optimise management the whole system (see p. 28).

DIRECT-EXPANSION CONSOLE SYSTEM

FACTORS AFFECTING CHOICE

- Refrigerant-based system.
- Heating/cooling.
- Installation flexibility: below window sill or under-ceiling.





Thanks to its compact design, it can be easily incorporated into any residential or small business environment.

DESCRIPTION

This refrigerant-based system can be installed in either of two ways: below a window sill or mounted directly under the ceiling. Compatible with a vast range of air and water-cooled units, it has a quiet, three speed fan ventilation system and an adjustable diffuser grille.

FEATURES

- FLOOR AREA KEPT CLEAR
- LOW NOISE
- STYLISH DESIGN
- DIFFUSED AIR QUALITY
- ECONOMY OF OPERATION

PERFORMANCE DATA

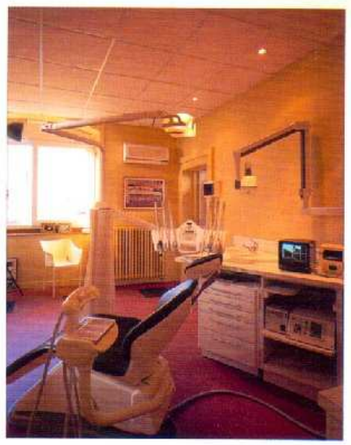
- 5 sizes.
- Cooling capacity: 2 to 6.5 kW.

With the infra-red control, the user can select all functions on the air conditioning unit:

- programming the full 24 hour cycle,
- choice of operating modes,
- selecting the fan speed,
- selecting the air distribution mode.

A Group Controller can be used instead of an infra-red control and performs the same basic functions. Additionally, it is able to control from 1 to 6 different indoor units all operating to the same parameters within a large space.

In addition, a Zone Manager makes it possible to optimise management of the whole system (see p. 28).



DIRECT-EXPANSION HI-WALL SYSTEM

FACTORS AFFECTING CHOICE

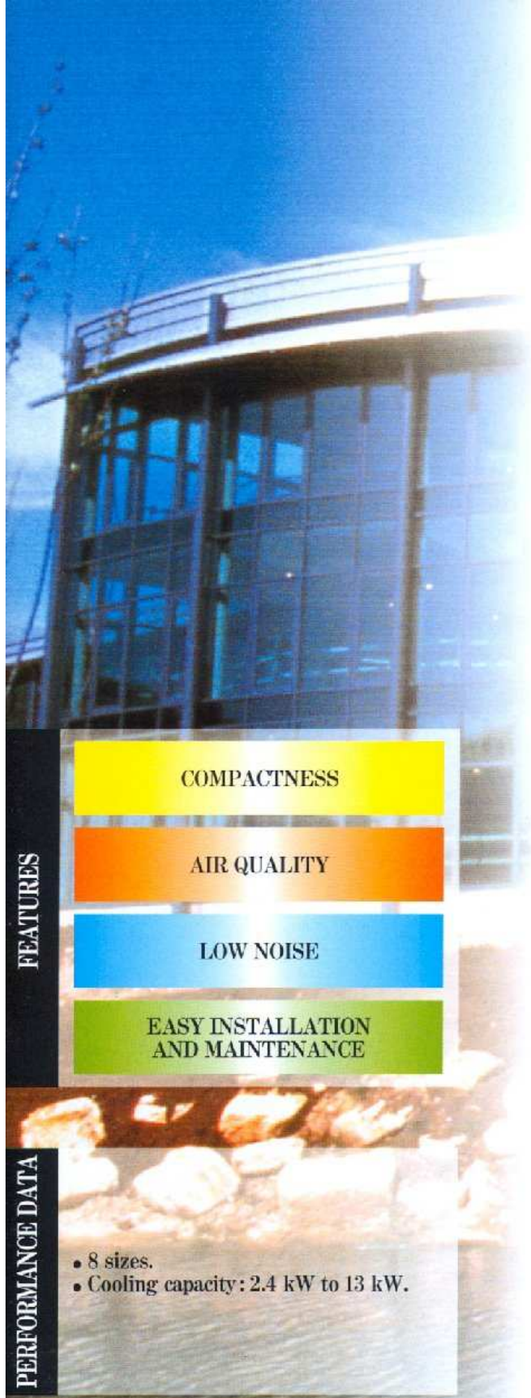
- Refrigerant-based system.
- Heating/cooling/dehumidification.
- Applications: shops and apartments.
- Comfort controlled by individual room with possibility of centralised management.

Optimised cabinet design, coupled with the use of a tangential fan, ensures low operating noise.

Air flow is easily controlled with the aid of the motorised guide vanes, giving a choice of six directions with continuous sweep and automatic positioning.

DESCRIPTION

Discreetly and stylishly designed, the direct-expansion Hi-Wall system fits easily into any environment.
With its wide range of capabilities it satisfies the most exacting requirements of residential and business applications.
It can be connected equally well to air or water-cooled units, whether single or multiple split type.



FEATURES

COMPACTNESS

AIR QUALITY

LOW NOISE

EASY INSTALLATION AND MAINTENANCE

PERFORMANCE DATA

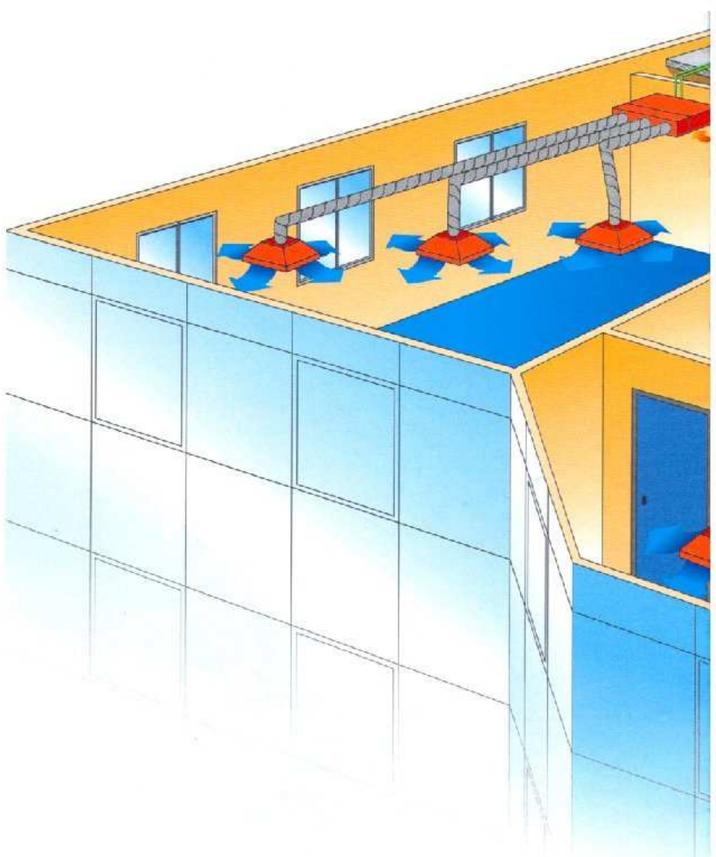
- 8 sizes.
- Cooling capacity: 2.4 kW to 13 kW.

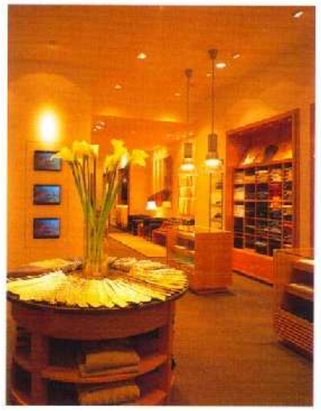
With its compact design, the Aran system fits easily into low-profile false ceilings. The concept of the Aran includes unique features such as the ability to remove the electrical box, simplifying electrical connection.

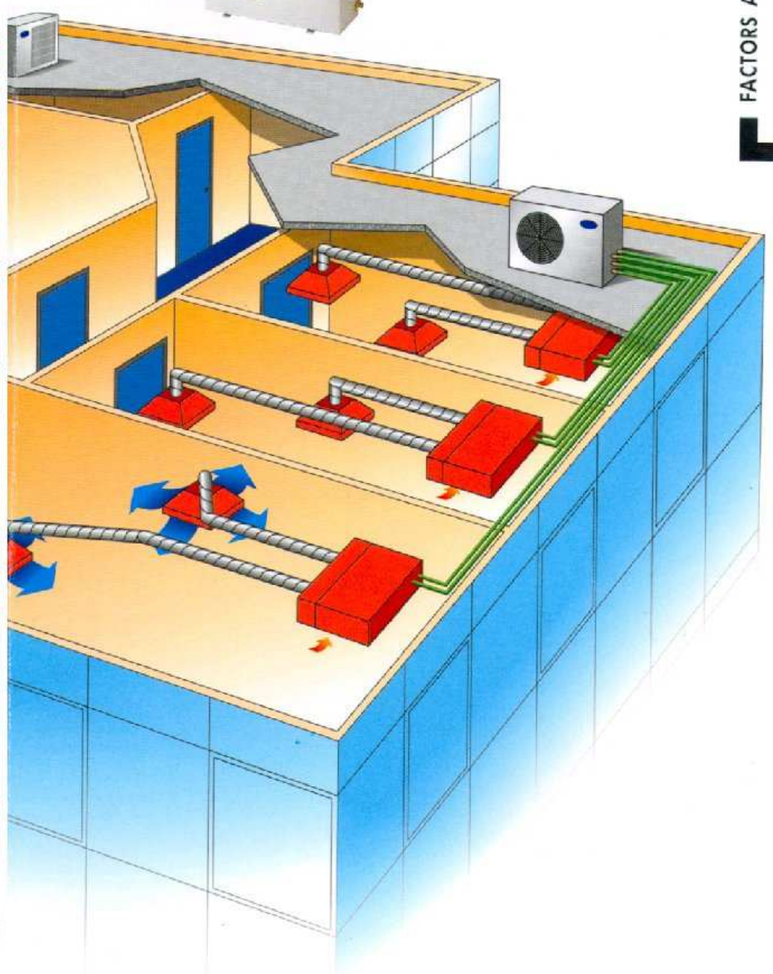
Each Aran system is fitted with an electronic controller which can be used to maintain the desired conditions in each zone, and the user can:

- choose the operating mode: occupied/unoccupied mode,
- adjust set-points,
- select the fan speed.

In addition, a Zone Manager makes it possible to optimise management of the whole system (see p. 28).







DIRECT-EXPANSION ARAN SYSTEM

FACTORS AFFECTING CHOICE

- Refrigerant-based system.
- Installation in a false ceiling: minimum recommended void height 250 to 350 mm.
- Heating/cooling/dehumidification.
- Large spaces of up to 130 m².

The Aran system offers excellent air quality. Adding an auxiliary filter achieves a very high level of filtration (EU4).

Cabinet sound insulation combined with a multi-speed fan provides excellent acoustic characteristics.

DESCRIPTION

The direct-expansion Aran system is installed in a false ceiling and linked directly to a single or multiple split, air or water-cooled unit.
The Aran unit is fitted with a fresh air inlet and an optional air mixing box.
Treated air is conveyed through an octopus and then through round ducts to the diffusers.