MITSUBISHI ELECTRIC

Changes for the Better

for a greener tomorrow eco Changes

AIR CONDITIONING SYSTEMS

CITY MULTI
Case Study
–2nd Edition–

HOTELS & RESIDENCES

OFFICES

SCHOOLS

LEISURE FACILITIES

HOSPITAL & HEALTHCARE FACILITIES

CULTURAL FACILITIES

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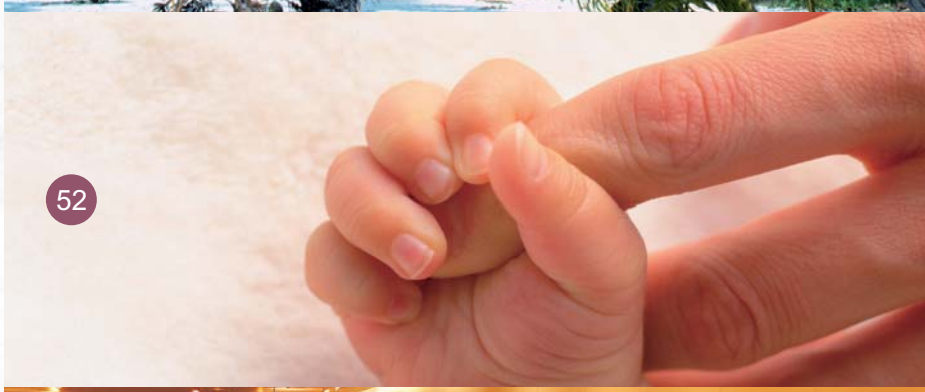
Unsurpassed air conditioning from Mitsubishi Electric

In today's competitive world, it can be difficult to detect differences between products. Yet sometimes, these differences can safely remain unseen – because some products just become part of our lives and beyond comparison. These are the products that satisfy our needs – products that improve life by making it simpler.

At Mitsubishi Electric, we design and manufacture all our products believing that concepts such as technological innovation, inspiration, and comfort, can be translated into a single word: satisfaction.

And this makes one of our most inspiring challenges – building solutions that meet the needs of every client. Discover why a Mitsubishi Electric project is always emblematic.



Hotels & Residences

A hotel is measured by its excellence. Mitsubishi Electric air conditioning systems are built not only with excellence in mind but also with the latest in design and technological innovation. Our expertise adds another star to a hotel. We further raise quality by bringing together technology and excellence in the same space. The ease of installation of our products maximizes the aesthetic qualities of the hotel.

Hotels

Italy
U.S.A.
Spain
India
Japan
United Kingdom
Bulgaria

Residences

Thailand
Australia

01


01

Installed System

Outdoor unit

Water-cooled R2 series

PQRY × 64

Air-cooled R2 series

PURY × 1

Indoor unit

Air to Water series

PWFY × 6

Ceiling Concealed

PEFY × 65

Controller

Centralized Controller

AG-150A × 2

Local Remote Controller

PAR-W21MAA × 7

Hotel Milano Scala,

Milan, Italy

The Challenge

Milano Scala Hotel is a new charming accommodation facility opening in Milan in spring 2010. Located in Via dell'Orso, the heart of Brera, the city's renowned cultural and art district. Milano Scala Hotel, as represented by its name, is a prominent landmark whose interior is designed in the motif of worldwide famous theater and traditional opera house. The hotel is also located in a XIX century building and offers 62 rooms, including 11 Suites and Junior Suites, a restaurant, lounge bar, Sky Terrace Bar, three meeting rooms, a fitness and relaxation area and private car parking. The air-conditioning systems needed to cover all over the different types of rooms.

The Solution

Mitsubishi Electric has managed to provide the hotel, residential property and service industry markets with a complete product allowing providing air conditioning and producing hot water at the same time.

Air to Water system provides hot water supply using a VRF system.

The units in the series adjust the refrigerant flow depending on the thermal performance of the building. The system uses the direct expansion multi air conditioning system where the several indoor units or Air to Water series units can be connected to a single outdoor unit.

This technology makes the hotel to the city's first zero-emission facility, since all the necessary energy is produced without release carbon dioxide in the environment. Also, the system reducing the operating costs due to high efficiency.

01

Installed System

Outdoor unit

Air-cooled R2 series

PURY × 9

Indoor unit

Ceiling Concealed

PDFY × 63
PEFY × 34

Wall Mounted

PKFY × 10

Controller

Centralized Controller

G-50A × 2

Simple Remote Controller

PAC Simple MA Remote Controller
× 103

Hotel Terra

Teton Village, Wyoming, U.S.A.

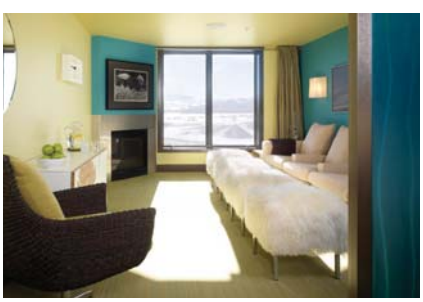
The Challenge

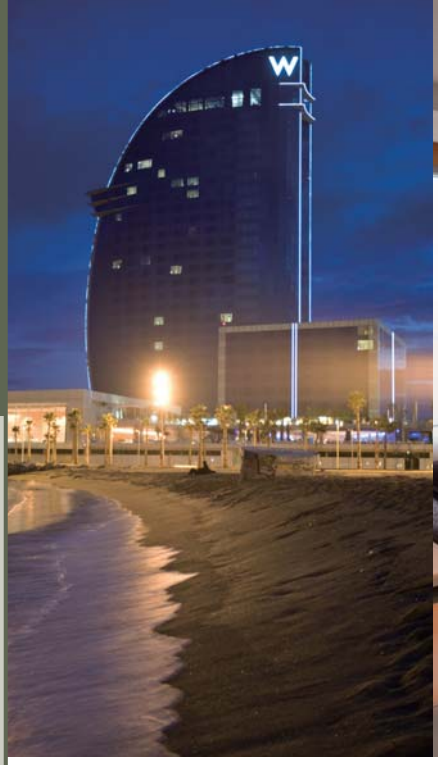
The Terra Resort Group (TRG), Jackson, Wyo., opened the 72-room, six-story Hotel Terra, the first in a collection of green luxury hotels. Located at the Jackson Hole Mountain Resort, Teton Village, Wyo., this “Eco-Boutique” hotel seeks to prove that luxury and environmental sustainability are not only similar in temperament but also ideal for delivering forward-thinking design and an exceptional guest experience.

The Solution

CITY MULTI VRFZ system was ideal because it allows TRG to provide each individual space (guest rooms, lobby, spa, restaurants, and retail) with its own zoned comfort system while realizing energy savings in the process. CITY MULTI VRFZ systems cool and/or heat only the spaces occupied, thus saving valuable resources that would otherwise be wasted by conditioning air in unoccupied spaces.

“CITY MULTI systems brought us through our first winter and summer season with flying colors,” Rob DesLauriers, TRG’s chairman said. “All of us at TRG have been impressed with the simplicity, reliability, comfort and success of its performance. Because of this achievement, I have asked my design team to specify CITY MULTI systems for our 36-suite Hotel Terra II now under construction adjoining this property.”





01

Installed System

Outdoor unit

Water-cooled R2 series

PQRY × 64

Indoor unit

Ceiling Concealed

PEFY × 566

Controller

Centralized Controller

G-50A × 12

Local Remote Controller

PAR-21MAA × 55

Simple Remote Controller

PAC-YT51CRB × 496

W Hotel Barcelona,

Barcelona, Spain

The Challenge

The W Hotel Barcelona is listed as one of the most modern hotels in Barcelona beach, where is surrounded by the Mediterranean Sea.

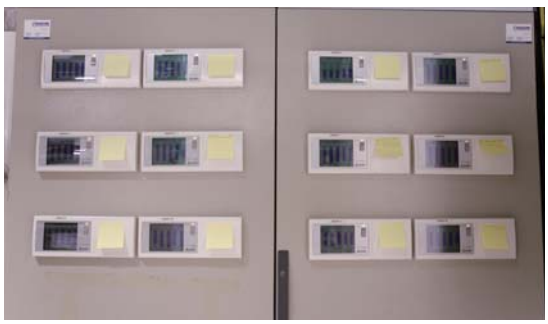
The building, work of the architect Ricardo Bofill, has 476 guestrooms in its more than 99 meters high and 42,818 m^2 of floor area. The monumental structure overed with a reflective glass facade, includes many spaces to be air-conditioned. But surely, the great challenge that had to overcome Mitsubishi Electric was to air-condition the hotel without exporsing the equipments.

This work is aimed at pursuit of excellent appearance, so the company responsible for the air conditioning had to face a great challenge. At the same time, energy efficiency is also required under the strictest standards.

The Solution

Mitsubishi Electric's unique WR2 heat recovery condensers provided effective simultaneous heating and cooling throughout the branch without the need to locate any equipment outside. This was allowed to adapt the appearance of the building.

Use of the unique water cooled system overcame the challenge. Today, the W Hotel Barcelona is not only modern design, but also has an advanced technology in air-conditioning systems.



01

Installed System

Outdoor unit

Air-cooled Y series-High COP

PUHY-EP × 2

Indoor unit

Ceiling Concealed

PDFY × 21

Wall Mounted

PKFY × 17

Controller

Centralized Controller

G-50A × 1

Local Remote Controller

PAR-27MEA × 27
PAR-FA32MA × 22

Ganga Kutir Resort,

Raichak, West Bengal, India

The Challenge

Ganga Kutir is a luxury resort located in Raichak, West Bengal. The hotel was seeking an air-conditioning system that was robust, environmentally friendly, and energy efficient in part load operation. Also, a variety of indoor units were required for many different areas such as guest rooms, the spa, the pool, and the fine-dining restaurants.

The Solution

CITY MULTI high COP air-cooled Y series, which uses R410A refrigerant, was selected. High COP Y-series, with their all inverter scroll compressor are the most energy efficient systems in the market today. Ceiling Concealed and Wall Mounted indoor units were chosen, and to control the entire air conditioning systems, a G-50A centralized controller was installed.

For Ganga Kutir, the CITY MULTI air-conditioning system provides ideal comfort by combining these outdoor and indoor units.

01

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 32

Air-cooled R2 series

PURY × 1

Indoor unit

Ceiling Concealed

PEFY × 223
Others × 41

Controller

Simple Remote Controller

Daiwa Roynet Hotel,
Wakayama, Japan

The Challenge

Located in the capital of Wakayama Prefecture, Daiwa Roynet Hotel overlooks the Wakayama castle. In addition to the 221 guest rooms, the hotel has a banquette hall and a restaurant. The hotel required a total air conditioning system that will satisfy guest's needs and offer a pleasant stay.

The Solution

To satisfy these demands, Mitsubishi Electric's PEFY indoor units play an important role in providing the guests a comfortable environment. The PEFY ceiling concealed models are designed to be neither seen nor heard but to perform. They are also flexible in design which allows variety of installation adapting to different room layouts.

To give the guest their own control of temperature to suit their needs, the guest room air conditioning are switched on with the room key card.

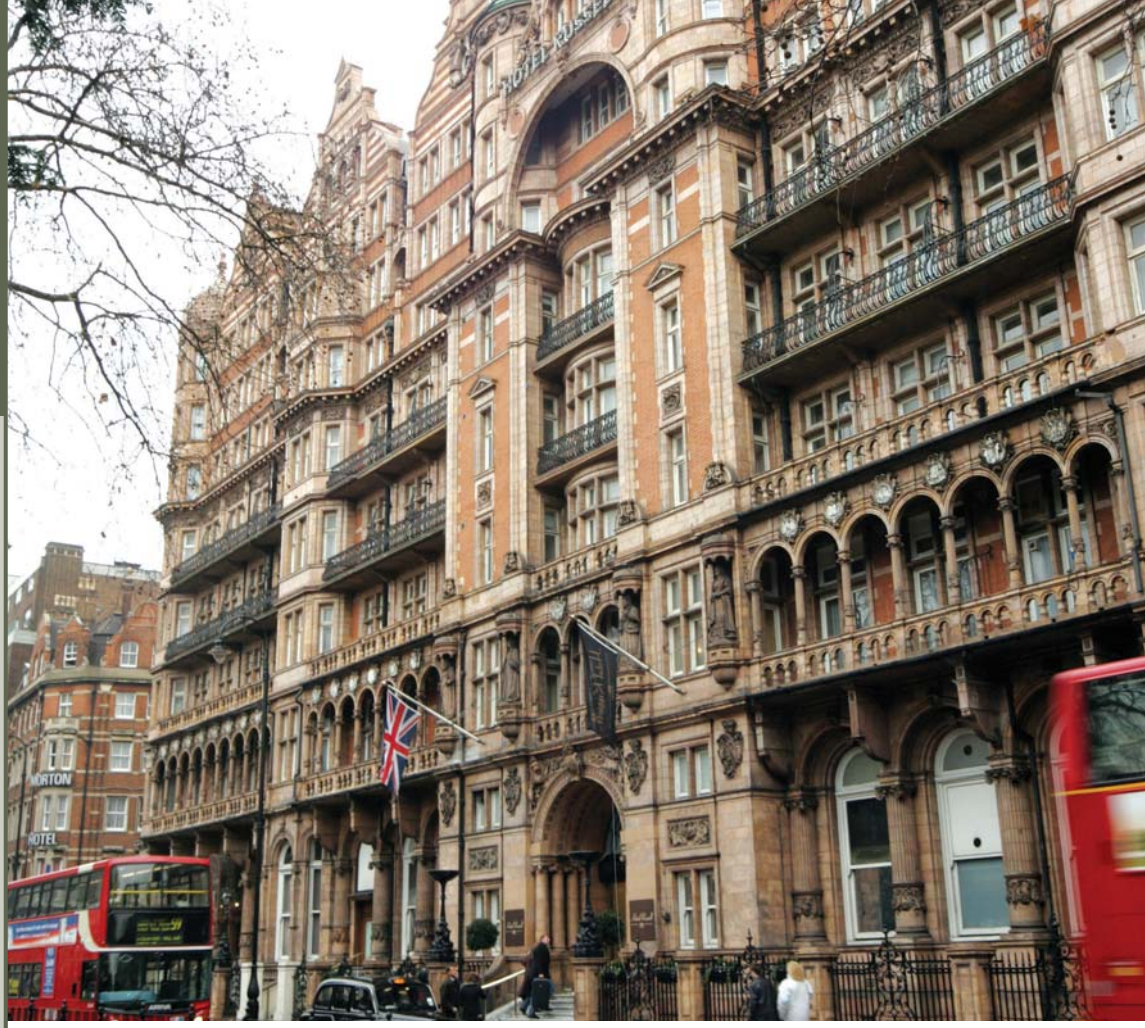
01

Installed System

Outdoor unit

Air-cooled Y system

PUHY



Russell Hotel,

London, United Kingdom

The Challenge

Few working hotels can afford the luxury of a complete shut down whilst refurbishment work is carried out. In the case of The Russell Hotel careful scheduling and meticulous planning was needed, to ensure that the hotel was still able to function and guests could still book in and enjoy their stay unaware that any building work was taking place. To make the job even more challenging, the hotel is a Grade II listed building, with no room for false floors or ceilings and little room available for pipework, plant or controlling equipment.

The Solution

The backwards compatibility of our VRF system meant that the contractors were able to link the older models to the new with ease. This flexibility of design ensures that older equipment in a building only needs to be replaced when it has finally reached the end of its productive life.

That is the simplicity of our VRF system, it can be installed in separate stages so that any project, large or small can be phased in to match building schedules or budgets.

01

Installed System

Outdoor unit

Water-cooled WR2 system

PQRY × 7

Indoor unit

Floor standing

PFFY

Controller

Centralized Controller

G-50A

Zenter Hotel,

London, United Kingdom

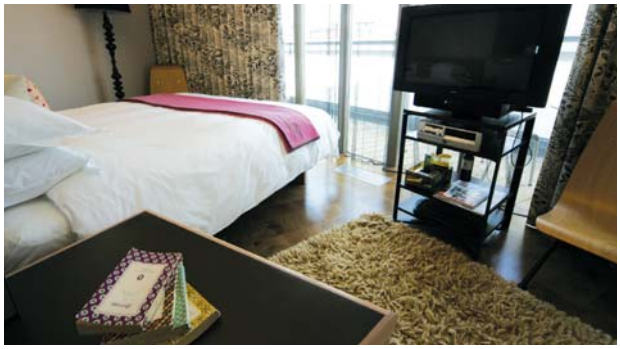
The Challenge

To meet the objects of the stylish refurbishment of The Zenter Hotel in the heart of London City, the architects needed an air conditioning system that was energy efficient, sustainable and avoided using the valuable roof space, earmarked for profit-making penthouse suites. A dominant feature of the rooms are the large sash windows, which on the south side of the building, can leave rooms hot as the guests walk in, so it is vital for the air conditioning to cool quickly to a comfortable level.

The Solution

Mitsubishi Electric's WR2 Water-Cooled VRF system links to the hotel's water loop and offers great efficiency by transferring heating or cooling energy from water pumped from a bore-hole in a lake 130m below ground. This unique 2-pipe system is easily installed and provides simultaneous heating and cooling to cope with varied temperature requirements throughout the hotel.

In addition to using this water to take away excess heat from the air conditioning systems, the Zetter Hotel filters it and offers it to guests in the form of bottled spring water, too!



01

Installed System

Outdoor unit

Air-cooled R2 system

PURY × 5

Packaged type

PUHZ × 4

Indoor unit

Ceiling Concealed

PEFY × 35

PEH × 1

PEAD × 7

Wall mounted

PKFY × 1

Controller

Centralized Controller

G-50A

Centralized Control Software

TG-2000A

Others

LOSSNAY

LGH × 6

Les Fleurs,

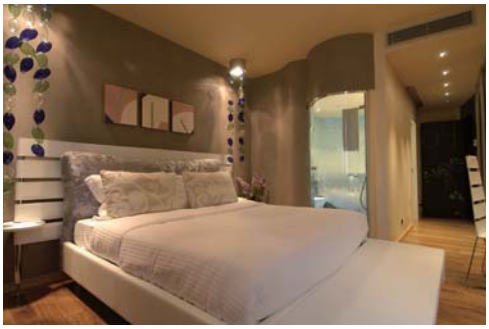
Sofia, Bulgaria

The Challenge

Situated in the heart of Sofia, Les Fleures is a new Boutique hotel with a stunning design. The new Les Fleurs Hotel has appeared with its floral concept as a result of refurbishment of the building with one of the earliest modern structures in Sofia. It offers 31 non-smoking rooms, each room with its own floral theme. As a result, each room is different from the others in terms of size, form, materials, and colors.

The Solution

The system chosen for this uniquely designed layout was Mitsubishi Electric's CITY MULTI R2 series for its first and only "2-pipe" simultaneous cooling and heating system. Ensuring personalized comfort and individual climate control adds the joy of staying at a stylish accommodation.



01

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 75

Air-cooled S series

PUMY × 133

Indoor unit

Ceiling Concealed

PDFY × 602
PEFY × 49

Ceiling Suspended

PCFY × 19

Controller

Centralized Controller

GB-50A × 16

Centralized Control Software

TG-2000A × 1

Local Remote Controller

PAR-FL32MA × 604
PAR-FA32MA × 604
PAR-21MAA × 65

Q Langsuan Condominium,
Bangkok, Thailand

The Challenge

This building was originally designed with water-cooled chiller system for a hotel and serviced apartment type building. In Thailand, the project consultant and designer would mainly select water-cooled chiller system, due to their familiarity to the system.

In late 2007, while the ground and foundation of the building had already been under construction, the concept of this market building was changed to "for-sale condominium," even though the project owner concern about the difficulty of managing air-conditioning system charges for such split apartment unit usage. And so, originally rejected CITY MULTI multi-split system was re-proposed. The problem of our design in 2008, when CITY MULTI was back into the project, was the public corridors of all apartment floors, which have to be air-conditioned but there was no space in-between floors to install outdoor units.

The Solution

No other VRF system was able to solve the problem without requiring some serious structural design changes. Normally a building at such construction stage is impossible to change design or A/C system. However, the switching from water-cooled chiller system to CITY MULTI did not interfere in the original architectural and structural design of the building almost at all. In fact, the building actually gained more public space. Overall, the change was made so smoothly with cooperation of the owner, designer, and consultant.

Also, the extra vertical height extending mechanics made it possible to install units on top floor and parking area located on the 7th floor. This is for the first time in Thailand, such long vertical distance piping installation is done for VRF system.

In addition, this building has been designed A/C automation system with our TG-2000A and GB-50A. Monitoring the system would be managed by the building management office.

01

Installed System

Outdoor unit

Air-cooled R2 system

PURY × 17

Indoor unit

Ceiling Concealed

PDFY × 96

Controller

Centralized Controller

G-50A

Centralized Control Software

TG-2000A

Oaks Horizon,
Adelaide, Australia

The Challenge

As a new development, the opportunity existed to incorporate air conditioning into the Oaks Horizons complex from the very beginning. However, as the apartments were to be individually owned, the challenge was how the operating costs could be fairly distributed to the owners. As this was to be a residential complex, noise was also a major concern, as were simple controls and the ability to get good performance while saving energy.

The Solution

The best solution for Oaks Horizons was Mitsubishi Electric's CITY MULTI R2 series, combined with the G-50A centralized controller and TG-2000A centralized control software.

Assistant manager at Oaks Horizons described the system as very user friendly, explaining "Using the G-50A controller gives us complete access and control at the hit of a button."

As the apartments are individually owned, the ability to charge based on usage in a fair and equitable way was important.

Offices

Office spaces have special requirements because they are often open plan. As a result, the inevitable refurbishments in the years ahead must always be taken into account. Air conditioning systems supplied by Mitsubishi Electric play an important role in preserving flexibility, by enabling control to be maintained of the whole building, as well as independent control of floors and spaces. In this way, whatever changes lie ahead, everyone can be guaranteed the right temperature at each moment.

Commercial Offices

France
Canada
United Kingdom
China
Brazil
Australia
Phillipines
Cyprus
India
Japan
Singapore

Official Organizations

Czech Republic
Portugal
Vietnam

02

02

Installed System

Outdoor unit

REPLACE MULTI series

PUHY-RP × 1

Indoor unit

Wall Mounted

PKFY × 1

Floor Standing

PFFY × 8

Controller

Centralized Controller

AG-150A × 1

Local Remote Controller

PAR-21MAA × 11

Climat Systems,

Chanteloup En Brie, France

The Challenge

With over twenty years of business experience, Climat Systems is an expert on providing a huge variety of air conditioning systems (VRF, Chillers, Commercial Refrigeration, Ventilation, Professional Kitchens, etc.) for residential and commercial use. They employ 50 people and undertake maintenance for the major French companies.

The office had been heated and air conditioned via R22 VRF system for 12 years and wished to develop effective, economic, and reliable system. Climat Systems sought a technical solution which did not oblige it to replace the old air conditioning pipes, so as to avoid major and long works.

The Solution

REPLACE MULTI, which is designed to simply replace the existing R22 / R407C VRF equipment, was perfectly suited for the project. With a unique technology, reusing of existing refrigerant piping work on R22 VRF system, and charging correct volume of new refrigerant is easily possible without any use of special kit.

As a result, 95% of the refrigerant pipes, communication buses, and power cables were reused. This makes the work shorter compared to ordinary systems and took only few days to complete the replacement.

Also, the indoor units were replaced with its latest models, which are more compact, better designed and quieter. The system is centrally controlled, and the energy consumption is monitored with AG-150A centralized controller.

02

Installed System

Outdoor unit

Air-cooled ZUBADAN series

PUHY-HP × 3

Indoor unit

Ceiling Concealed

PDFY × 15

Wall mounted

PKFY × 17

Controller

Centralized Controller

AG-150A × 1

LOSSNAY Remote Controller

PZ-52SF × 9

Others

LOSSNAY

LGH-RX3 × 9

Enermodal Engineering Ltd.,

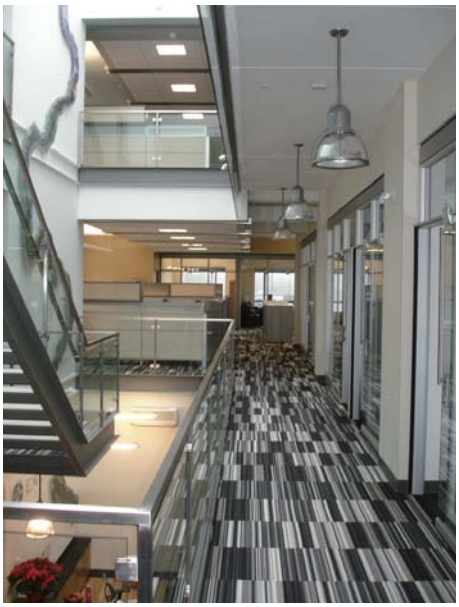
Kitchener, Ontario, Canada

The Challenge

Enermodal Engineering is one of Canada's largest green building consulting firms. So far, Enermodal has helped over 85% of LEED certified projects in Ontario alone. As their green business rapidly grows, so does their need for office space. Therefore, Enermodal designed and built their new 22,000 sq. ft. headquarters in Kitchener, Ontario, striving for LEED Platinum certification. One of their biggest challenge is to ensure they can meet the heating loads under Canada's cold climate.

The Solution

They have entrusted the performance and quality of CITY MULTI VRF system as the HVAC solution to provide precise climate control in every office while achieving high energy efficiencies. This entire office building is designed to only consume about 15 percent of the energy consumption by a typical Canadian office building.



02

Installed System

Outdoor unit

Water-cooled R2 series

PQRY × 121

Indoor unit

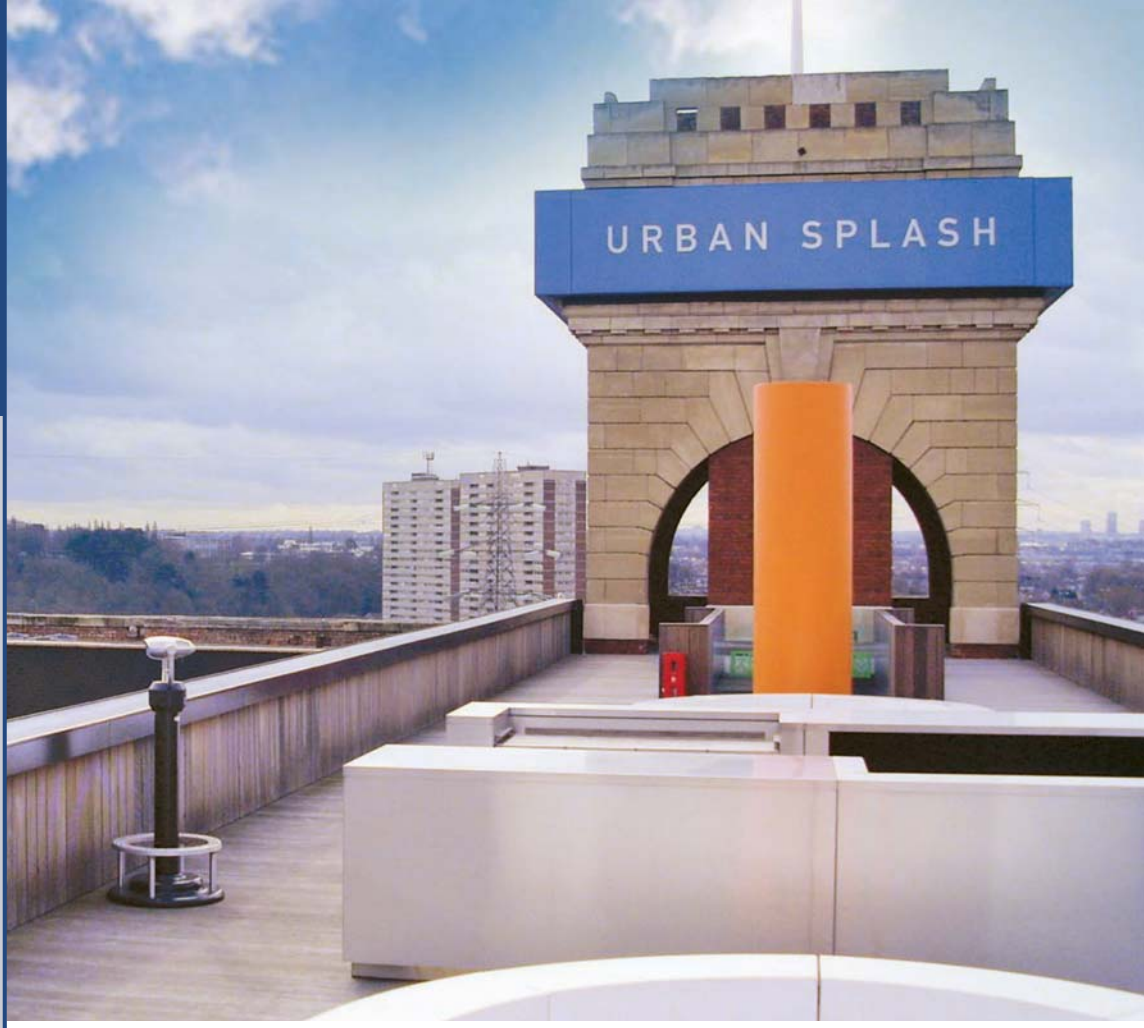
Ceiling Concealed

PEFY × 700

Controller

Centralized Controller

G-50A × 24



Fort Dunlop

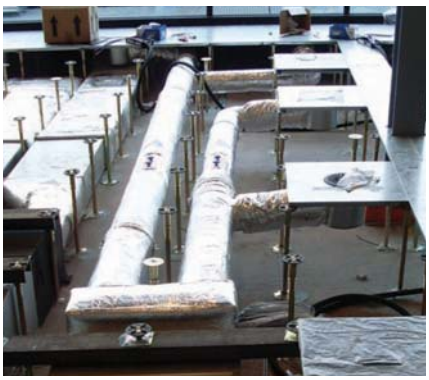
Birmingham, United Kingdom

The Challenge

Fort Dunlop, Birmingham, a landmark building which was historically the location of the construction of spitfire planes during World War II has now been transformed into contemporary office and retail space as well as a 100-bedroom Travelodge hotel, under the management of Urban Splash.

With Fort Dunlop being a listed building, the challenge Urban Splash were facing was to transform the building for modern application without compromising the existing features and unique architecture.

To achieve this, internally, the floor was raised to create a void underneath to conceal all air conditioning piping and ducting as well as electrical, telecommunications and controls cables.



The Solution

121 Mitsubishi Electric water cooled VRF systems were specified and installed by Skyline Air Conditioning to meet the heating and cooling demands of the building.

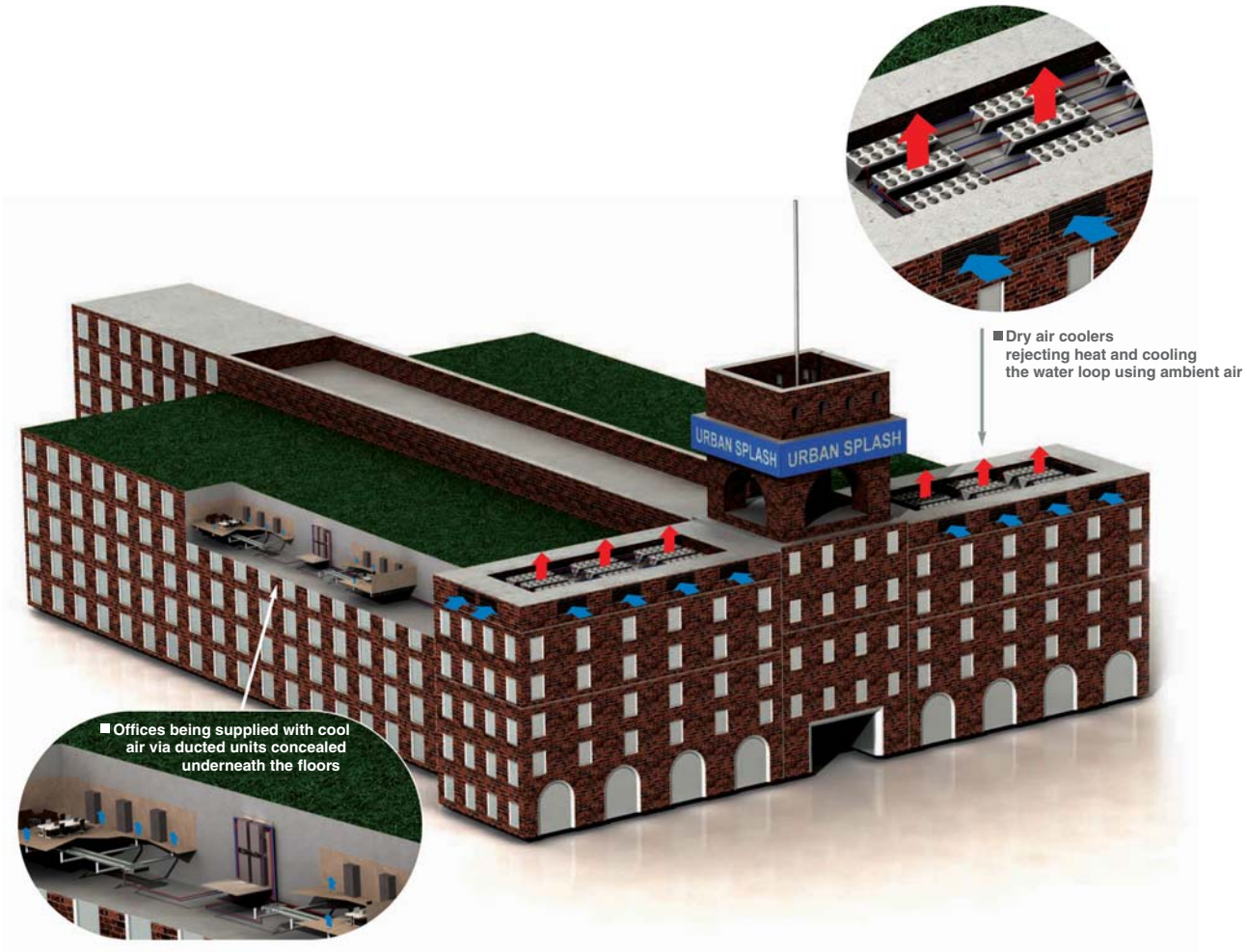
Ten condensing units are 'housed' in a plant room of which there are 2 per floor providing heating and/ or cooling to each floor via a total of 700 Mitsubishi Electric ducted fan coils. With 121 multi port BC controllers installed, the building also benefits from heat recovery, whereby waste heat energy generated from a part of the premises that requires cooling is used to heat another part of the building, therefore offering the highest total building efficiencies as well as lowered running costs and excellent CO_2 emissions reductions. Mitsubishi Electric LOSSNAY heat exchanger ventilation units installed in conjunction with the water cooled systems provide effective ventilation and total heat recovery therefore ensuring a comfortable air temperature within a room.

A series of dry air coolers are located on two sides of the roof of the building in purposely built roof voids, making sure that the units are completely out of sight therefore keeping within the restrictions on preserving the building architecture as well as providing no obstruction to the view that office workers, hotel occupants and customers can enjoy from the roof terrace.

With large amounts of air conditioning installed, control is absolutely paramount in ensuring that the equipment meets the buildings demands as well as working as efficiently as possible.

Having installed 24 G-50A centralized controllers per floor and 180 wired remote zone controllers, Mitsubishi Electric's control technology allows the client to monitor and control each and every indoor unit according to room requirements, as well as demonstrating a high level of precision in fault detection, guaranteeing the smooth running of units at all times.

The installation of Mitsubishi Electric air conditioning and controls equipment has aided Urban Splash in converting Fort Dunlop into a building fit for modern use, as well as preserving one of Birmingham's heritage buildings, not only in a cost effective manner but also with an attitude aimed at reducing carbon emissions.



02

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 169

Indoor unit

Ceiling Cassette

PLFY × 1,133
PMFY × 114

Ceiling Suspended

PCFY × 3

Ceiling Concealed

PEFY × 353

Controller

Centralized Controller

GB-50A × 32

Centralized Control Software

TG-2000A × 2

Wuxi Industrial Design Building,

Wuxi, Jiangsu Province, China

The Challenge

Wuxi Industrial Design Building locates beside the Taihu Lake beauty spot, and it's a work of a senior designer from W.S.Atkins Studio, which is the designer of the Burj Al-Arab Hotel.

As the most luxurious office building in Wuxi, surely it deserves a high-quality air conditioning system, especially on cooling and heating ability, low noise and energy saving. The owner claimed that the air conditioning system should request the smallest installation and service space. That means more office space should be available for the building.

Furthermore, the building is for sale or for lease to different users, who have different work time and different air conditioner usage. So, the air conditioning system must be stable and can operate independently, run under all weather and has a long operation life. Central charge system is absolutely needed to calculate electric fee for every tenants.

The Solution

The best solution for this case should be Mitsubishi Electric's CITY MULTI YHMC series air conditioning system, which has powerful heating and cooling ability. And the modularized outdoor units of CITY MULTI YHMC series which minimize the installation and service space, can run under all the weather and have a long operation life. Various indoor units, such as, PLFY-P VAM, PMFY-P VBM and PEFY-P VMM-S, are easy to be installed and need small service space, provide comfortable airflow as well. For building managing staff, GB-50A can not only monitor and control all the units, set the daily/weekly/yearly schedule plan but also supply the electric charge function. All the indoor units can operate independently depending on all the different users' requirements without energy wastes.

02

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 38

Indoor unit

PFAV-Series

PFAV × 4

PFD-Series

PFD × 6

Ceiling Cassette

PLFY × 46
PMFY × 6

Ceiling Concealed

PDFY × 236
PEFY × 17

Wall mounted

PKFY × 10

Controller

Centralized Controller

GB-50A × 10

Centralized Control Software

TG-2000A × 1

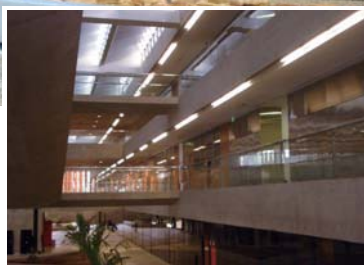
Local Remote Controller

PAR-20MAA × 38

Others

LOSSNAY

LGH-RX4 × 53



POUPEX-FHE Building,

Brazilia, Brazil

The Challenge

This project was the architecture competition winner for new head office of FHE-Poupex. Project was divided in three main areas, offices, auditorium, and CPD.

The main idea for the offices was the use of regular indoor VRF indoor units, but it was adapted to ceiling structure which gives flexibility for the future changes in the system. And high capacity units, high static-pressure, low noise, and long pipe line allowance were required for the auditorium. The challenge for the CPD was sensitive requirements such as comply high sensible load, meeting temperature, and humidity close control.

In all, the system flexibility must be needed for the various uses.

The Solution

Based on the previous successful projects in the same city, the consultant specified that VRF ceiling concealed units were able to meet the system flexibility without changing or installing units in the future. Also, big package inverter units (PFAV-series), for auditorium, and close control system (PFD-series) allowed to meet all customer's requirements using the same basic VRF inverter technology in a simple way. And the outside air is treated with LOSSNAY energy recovery ventilator which saves energy.

All buildings' automation is provided by GB-50A centralized controller and PLC units. CITY MULTI technology and design was able to provide the best comfort without disturbing the architecture design.

02

Installed System

Outdoor unit

Air-cooled R2 series

PURY × 7

Indoor unit

Ceiling Concealed

PEFY × 48

Controller

Centralized Controller

AG-150A × 1

Local Remote Controller

PAR-21MAA × 48

Ferrari/Maserati Showroom,

Sydney, Australia

The Challenge

Ferrari/Maserati eptiomizes unique design and glamorous style, qualities they wanted reflected in their newest showroom, office space and warehouse facilities located in Waterloo, Sydney. A high degree of challenge for this project was the ability to provide an air-conditioning system that would satisfy the specific orientation of the building, which required the unique solution of simultaneous heating and cooling.

The Solution

Mitsubishi Electric supplies the latest in air-conditioning technology, VRF Heat Recovery, a two-pipe system. This is controlled by the advanced AG-150A centralized controller. CITY MULTI full inverter, energy efficient utilizes DIDO-controller which allows year round scheduling of fresh air and exhaust fans. A side-by-side comparison to alternative products provided clear proof that the installation of a two-pipe system was the best choice for this project.

02

Installed System

Outdoor unit

Air-cooled ZUBADAN series

PUHY-HP × 3

Indoor unit

Ceiling Concealed

PEFY × 30

Controller

Centralized Controller

AG-150A × 1

Local Remote Controller

PAR-21MAA × 11

ATC Group Building,

Rilleux-La-Pape, France

The Challenge

ATC Group (Lyon, Paris, and Annecy) holds 75 employees, and is one of the leading companies in the advertising industry which handles signs (for indoors and outdoors) and events.

Also, the group promotes eco-friendly activities by using 100% vegetable ink for printing catalogs of communication products.

When the group's new building was designed, the designers were looking for a high-performance air conditioning system within the scope of HQE (High Quality Environmental Standard) that can be operated under the low outside temperature of –15°C in the winter.

Not enough heating systems had been installed in their previous building, and they had to use some additional electric heaters.

The Solution

ZUBADAN systems have been installed for its high heating performance. The installer was satisfied with the compact-sized indoor and outdoor units allowing easy installation. The amount of refrigerant was 20% lower compared to standard outdoor unit.

02

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 202

Air-cooled S series

PUMY × 4

Indoor unit

Ceiling Cassette

PLFY × 871

Ceiling Concealed

PEFY × 986

Wall Mounted

PKFY × 8

Controller

Local Remote Controller

PAR-20MAA × 1,196

Net Plaza Center Building,

Bonifacio Global City, Taguig City, Phillipines

The Challenge

The Net Plaza building is a 23-story commercial office building in Bonifacio Global City, and is the largest in the portfolio owned and managed by The Net Group. The tenants in this building provide worldwide support services to their global operations on a 24/7 basis. The challenge was to be able to provide intelligent air conditioning control throughout the entire structure's 55,438 square meters of gross leasable area that would result in more efficient use of the equipment and lower power consumption.

The Solution

The CITY MULTI VRF system utilizes state of the art, full inverter compressor technology which allows low starting currents. Indoor units can be fully controlled individually, and operated specifically to the needs of the tenants. Variable refrigerant flow from the system adapts to demands placed on the air conditioning load, thereby improving peak demand requirements and effectively lowering power consumption.

02

Installed System

Outdoor unit

Water-cooled R2 series

PQRY × 39

Air-cooled R2 series

PURY × 3

Air-cooled S series

PUMY × 2

Indoor unit

Ceiling Concealed

PDFY × 200
PEFY × 177

Wall mounted

PKFY × 1

Controller

Centralized Controller

G-50A × 10

PI Controller

PAC-YG60MCA × 7

Local Remote Controller

PAR-21MAA × 48

Simple Remote Controller

PAC-SE51CRA × 300

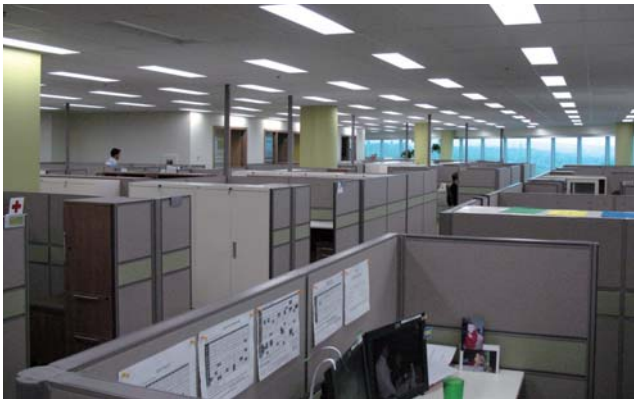
Place de l'Escarpement,
Québec, Canada

The Challenge

Located in a new commercial development near the major freeways of Québec City, the designers of Place de l'Escarpement aim at a LEED-NC GOLD certification, making this building the largest geothermal installation in Québec City. To achieve such high level of expectations, the developer needs a reliable HVAC system that has optimized energy efficiency while providing their occupants advanced control over thermal comfort.

The Solution

By installing capacities of nearly 4 million BTU/H of CITY MULTI WR2 systems, the building now serves simultaneous heating and cooling using geothermal energy over its 148,000 sq. ft. of floor space. From a combination of geothermy, heat recovery and lighting fixtures, this office building is designed to reduce energy consumption by more than 55 percent compared to the reference model building based on CMNEB standards. The amount of energy saved annually will be able to provide electricity to 110 standard single family homes each year. This building will also be one of the 10 most efficient buildings in their class in Canada.



02

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 14

Indoor unit

PFD-Series

PFD × 9

Controller

Centralized Controller

GB-50A × 1

Global SP,

Paris, France

The Challenge

Specialized in IT hosting and service, Global SP wanted to modify the cooling system of its server rooms. The previous models were rooftop iced water units with 200 kW which were not powerful enough, obsolete as it had no backup, and consumed a great deal of energy. The requirement was to increase the cooling capacity of the system, add a redundant server (backup in case of fault), and improve energy performance. Also, the installation work needed to be performed without stopping the cooling operation in the server rooms.

The Solution

Close Control System (PFD series) is specifically designed for computer rooms, laboratories etc, where strict control of humidity and temperature is a must.

It possesses “High Reliability”, “Energy Saving Technology”, and “Easy Installation/ Maintenance”.

High air outputs and the large surface area of the exchangers give a significant heat coefficient greater than 93%, by combining PFD series and Y series. And, the backup function and automatic rotation of cabinets are able to increase life expectancy and secure the products in the case of fault on one of the circuits. It also guarantees with the outside temperature dropping to –15°C throughout a year.

In addition, compact design Y series makes it possible to double the installed power in the same place as the initial iced water unit with the installation of long pipe.

02

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 10

Air-cooled S series

PUMY × 1

Indoor unit

Ceiling Cassette

PLFY × 93

Ceiling Concealed

PEFY × 23

Floor Standing

PFFY × 63

Controller

Local Remote Controller

PAR-21MAJ × 111

ON/OFF Remote Controller

PAC-YT40ANDRA × 8

Neocleous Law Offices,
Limassol, Cyprus

The Challenge

A seven-story building owned by Neocleous & Co LLC, one of the largest lawyer firms in Cyprus, wanted to ensure the highest standards of comfort, quality and energy consumption for air conditioning. This building is located in the center of Limassol and is used for commercial purposes.

In the basement there is an amphitheater for lectures, a bank in the ground floor and more than 80 offices and meeting rooms in the other six floors. The main challenge was to install an air conditioning system that provides an efficient air environment, in the individual air conditioning requirement of each office with a small number of outdoor units.

The Solution

Mitsubishi Electric CITY MULTI series was selected for this project. It suited for each office giving independent control in accordance with how much cooling or heating is required in each place.

The outdoor units were installed in the basement and on the rooftop to preserve the aesthetically pleasing building appearance. 4-way-cassette units were selected for the offices, and ceiling/floor concealed units were selected for the communal spaces.

02

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 19

Indoor unit

Ceiling Cassette

PLFY × 169

Ceiling Concealed

PEFY × 35

Wall mounted

PKFY × 12

Controller

Centralized Controller

GB-50A × 4

Local Remote Controller

PAR-21MAA × 20
PAR-F27MEA × 55

Wireless Remote Controller

PAR-FA32MA × 69

Rolta India Ltd.,

Bombay, India

The Challenge

Rolta India Ltd. is a leading, global-market information technology solutions company. Chiller system had been installed in Rolta's first office building space. However, sufficient energy efficiency could not be obtained by the chillers for the entire building because each room with many IT devices had different load, and each room was used at different hours of the day.

For their second building, they considered including ducted indoor units to save on floor space, and considered multi-split system, because the space available for outdoor units was limited.

The Solution

Mitsubishi Electric's VRF system was proposed.

The compact energy efficient outdoor unit that connected to and a wide line-up of indoor units through a flexible piping system was ideal for their new building. Also, GB-50A centralized controller was installed to insure easy system control.

CITY MULTI system saved the second building a significant amount on energy cost as compared to the first building.

02

Installed System

Outdoor unit

Air-cooled R2 series

PURY × 21

Indoor unit

Ceiling Concealed

PDFY × 133

Controller

Centralized Controller

G-50A × 1

Local Remote Controller

PAR-21MAA × 133

Discovery Green Building,

Burnaby, British Columbia, Canada

The Challenge

Located in the heart of a busy city, the Discovery Green Building is a 150,000 sq. ft. sustainable structure that incorporates comprehensive, energy-efficient features to provide improved occupancy comfort levels, increased productivity and performance, while minimizing the impact on the environment. The developer also seeks that through proper design, the capital cost for contracting green buildings will not be much more expensive than traditional buildings, but will result as having the potential for significant operational savings.

The Solution

CITY MULTI R2 systems were chosen for this job to reduce energy costs and consumption, as well as recovering rejected heat from cooling zones to provide heating for other zones. Other major factors also includes the system's operational cost savings, precise temperature control, and providing simultaneous heating and cooling to occupants. This LEED Gold building is one of the most energy-efficient office buildings of its size in British Columbia and in Canada. It has also received multiple awards including the BC Hydro 2008 Smart Power Award in the category of Innovation in Sustainable Building Design, and City of Burnaby Environment Award for Planning and Development!

02

Installed System

Outdoor unit

Water-cooled R2 series

PQRY × 7

Indoor unit

Ceiling Cassette

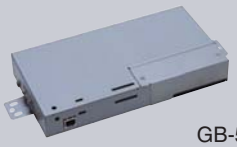
PLFY × 25

Ceiling Concealed

PEFY × 39

Controller

Centralized Controller



GB-50A × 2

PI Controller

PAC-YG60MCA × 1

Local Remote Controller

PAR-21MAA × 56

Franck Immobilier,

Nancy, France

The Challenge

The company had been seeking the air conditioning system that allows simultaneous cooling and heating, and they had only a limited space to install the system. Also, the heat source unit must function exothermally via vertical boreholes on a water table of between 8 and 12 meters. The water temperature at this depth varies between +12°C in winter and +14°C in summer. The consumption of units must be below 2 W/m², in order to comply with Thermal Regulation 2005.

The Solution

CITY MULTI WR2 series, water-cooled heat source unit that is designed for simultaneous heating and cooling with two refrigerant pipes via the BC Controller, was chosen. Not only does it produce heat recovery from the indoor units on the same 2-pipe refrigerant circuit, it also produces heat recovery via the water circuit between heat source units, making it a very economical system.

Also, two pieces of screen-free centralized controllers GB-50A were installed, and the PI controller PAC-YG60MCA was also installed to perform charge calculation.

02

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 175

Air-cooled S series

PUMY × 1

Indoor unit

Ceiling Cassette

PLFY × 790

Controller

Local Remote Controller

PAR-20MAA × 790

Net Quad Center Building,

Bonifacio Global City, Taguig City, Phillipines

The Challenge

The Net Quad building is a 21-storey commercial office development, the fourth in a series of buildings in the portfolio owned and managed by The Net Group at the Bonifacio Global City, the premiere commercial business district in the Philippines. With a roof deck area of roughly 1,800 square meters, the challenge was to install the outdoor units efficiently and intelligently without compromising space allocation for other critical building equipment and services.

The Solution

The CITY MULTI VRF system answers the challenge. With a footprint area of less than 1 square meter, Air-cooled Y-series outdoor units were installed collectively, thereby allowing The Net Group to arrange the equipment alongside the demands for other building operation equipment.

02

Installed System

Outdoor unit

Air-cooled R2 system

PURY × 353

Indoor unit

Ceiling Concealed

Total 1,960 units

Packaged Type

Total 2 units

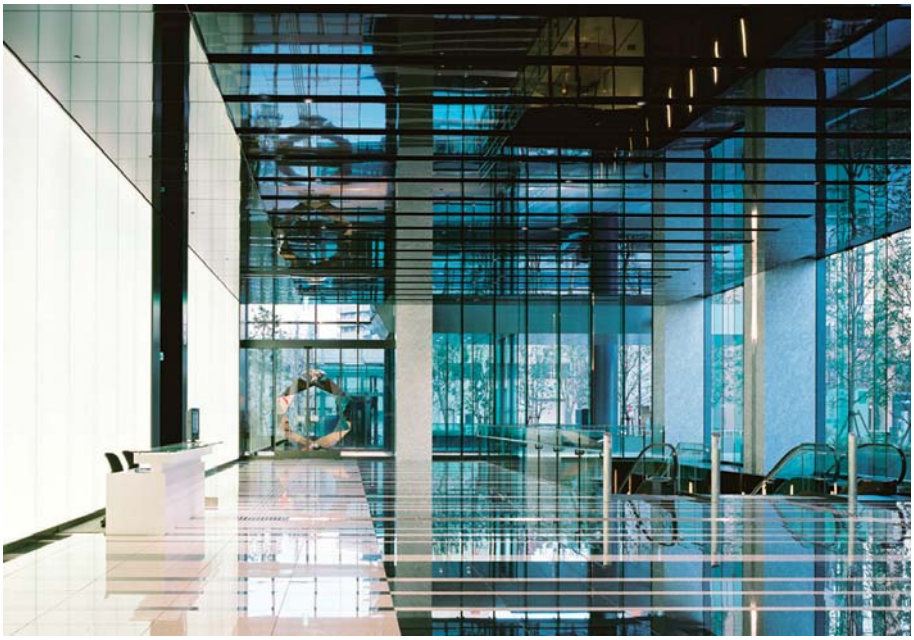
Mr.Slim

Total 3 units

Controller

Centralized Controller

G-50A



Nagoya Lucent Tower

Nagoya, Japan

Voice from Ushijima District Redevelopment Union

Central Air-conditioning Systems are commonly used for this size of building; however, to make it possible to run simultaneous cooling or heating operations whenever they are required, even during overtime or on weekends, we chose Mitsubishi Electric's CITY MULTI R2 series. We were worried about where to install the outdoor units; however, great space saving was realized by installing the outdoor units collectively on a balcony on each floor.

We would say it is a must to have an open network for this size of building, therefore, We adopted a BACnet® building network system.

Outline of Building

Name	: Nagoya Lucent Tower
Site area	: 14,100.54m^2
Business owner	: Ushijima District Redevelopment Union
Design & supervision	: Nikken Sekkei Ltd.
Constructed by	: TAISEI Corporation
Completed in	: January 2007
Structure	: Steel construction, partly reinforced concrete
Height	: Building height 180m
Number of floors	: 3 floors underground, 40 floors above ground
Application	: Offices, Shops, Parkings
Building area	: 115,200.34m^2
Air-conditioning system	: Mitsubishi Electric Air-heat source CITY MULTI R2 system
Zoning	: Temperature control 80-150m^2 per unit OA processing units : 2 units per floor Outdoor units : 6-8 units per floor

Comfort

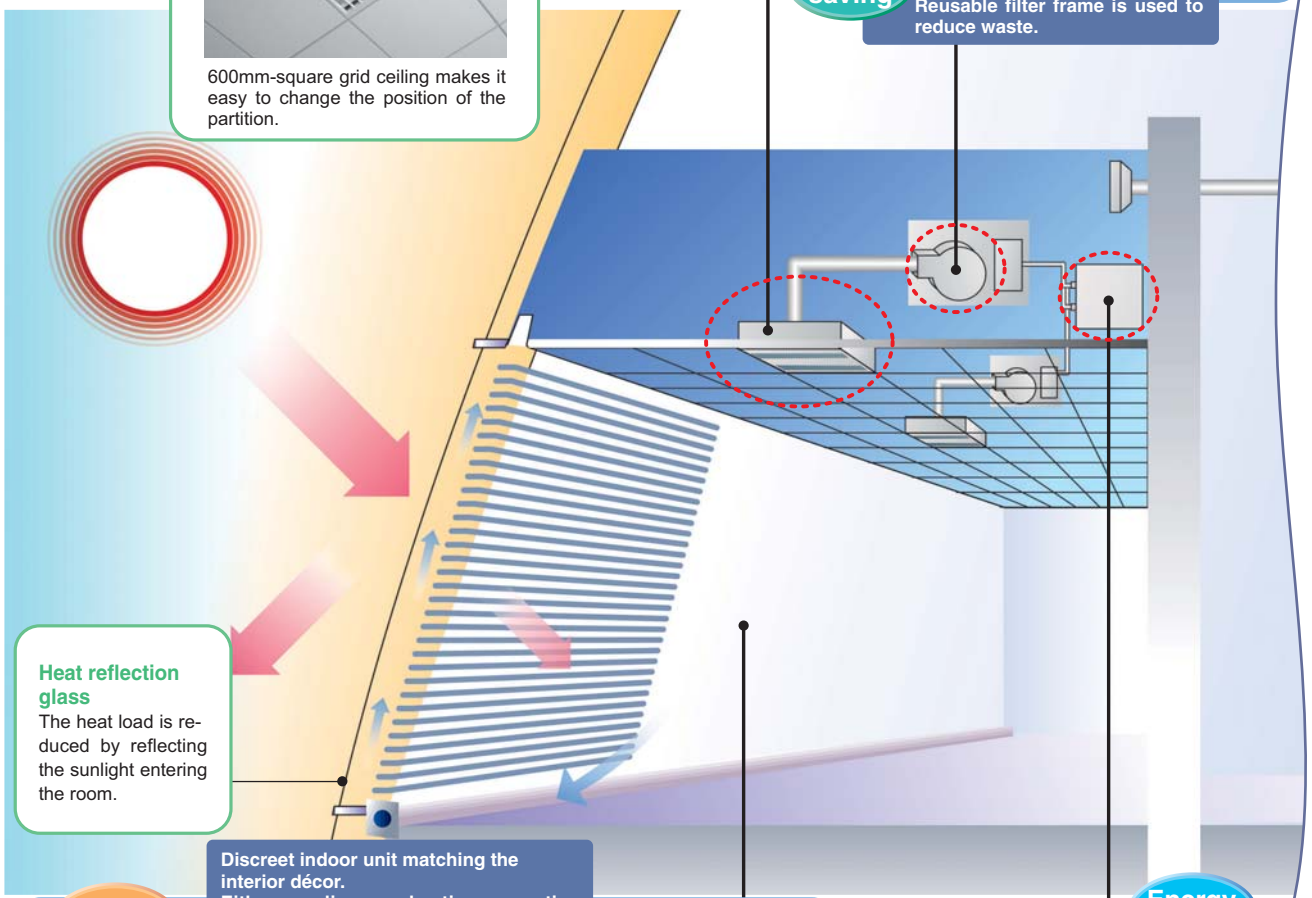
Ceiling concealed indoor unit
To provide high-quality air, pre-filter and high-performance filter (disposable) (NBS 65%) are equipped with all indoor units.

Source saving

Reusable filter frame is used to reduce waste.

Easy installation

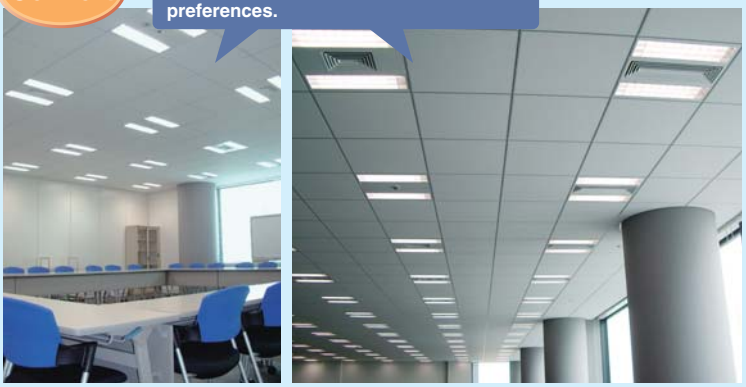
600mm-square grid ceiling makes it easy to change the position of the partition.



Heat reflection glass
The heat load is reduced by reflecting the sunlight entering the room.

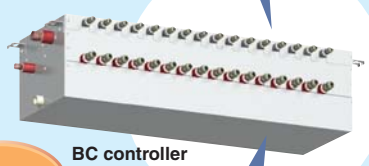
Comfort

Discreet indoor unit matching the interior décor.
Either cooling or heating operation according to each user's individual preferences.



Energy saving

Efficient operation
Reduction in the amount of electricity



BC controller

Comfort

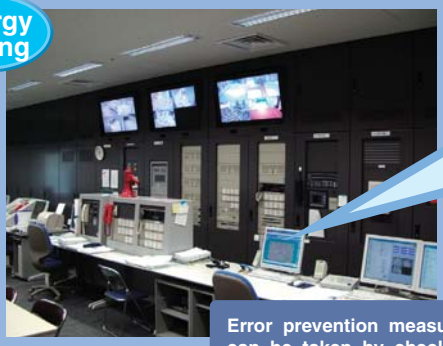
The world's first and the only "2-pipe" system.
The system does not stop between cooling/heating changeover.

BACnet® : NSI/ASHRAE 135-1995. A Data Communication Protocol for Building Automation and Control Networks

Comfort

+

Energy saving



Compatible with the Building Management System, BACnet®

Convenience

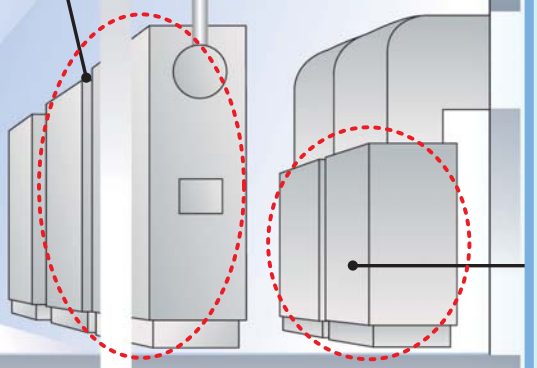
With the use of G-50, charge calculation for each tenant is possible.

All the units within a building can be controlled centrally using a personal computer.

Error prevention measures can be taken by checking the status of each unit.

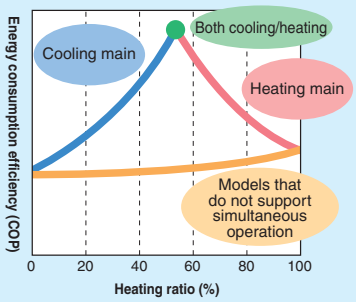
OA processing package unit

The heat load is reduced by collecting the heat exhausted from the room and using it to heat ventilating air entering the room.



The simultaneous cooling/heating operation is possible. The energy efficiency is enhanced with the heat recovery operation under cooling/heating mixed operation.

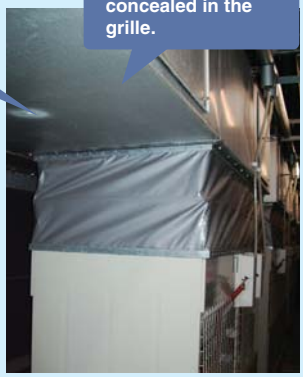
■ CITY MULTI R2 COP at heat recovery operation



Installed on each floor

New HFC refrigerant, zero ozone depletion potential, is used.

Exhaust air duct for outdoor unit can be concealed in the grille.



The outdoor units are installed in the northwest direction to avoid the great heat load generated from the sunlight from the west.

High-static pressure outdoor units are installed on the balcony in the northwest or the southwest direction.

02

Installed System

Outdoor unit

Total 18 units

Indoor unit

Ceiling Cassette

PLFY × 13

Ceiling Concealed

PDFY × 94

Controller

Centralized Controller

G-50A

Centralized Control Software

TG-2000A

Regent Motors Car Showroom

Singapore

The Challenge

A five-story building owned by Regent Motors, a Singapore Agent for motor vehicle brands of FORD, LAND ROVER, and PEUGEOT, had not only wanted to ensure the highest standards of comfort but also concerned with the installation work and energy consumption. Specifically, for this Motor Vehicle Center for offices and showroom, the main demand was to install an air conditioning system that will provide an efficient air environment with a small number of outdoor units.

The Solution

The initial design proposed with a R22 VRF system was dismissed because it required about 26 units. In order to reduce the amount of main pipes and units, a CITY MULTI R410A VRF system was proposed. With this, only 18 outdoor units were required meaning 30% reduction was achieved. Resulting in small installation space and cost saving for installers. The CITY MULTI system met the challenges of keeping free space and also ensured capability of providing ample air conditioning.

02

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 20

Air-cooled R2 series

PURY × 1

Indoor unit

PFD-Series

PFD × 7

Ceiling Cassette

PLFY × 4
PMFY × 26

Wall mounted

PKFY × 101

Controller

Centralized Controller

GB-50A × 2

Centralized Control Software

TG-2000A × 1

Prague City Hall,

Prague, Czech Republic

The Challenge

Prague City Hall was originally built in the early 14th century and is located in the historical city centre which is well-known as a UNESCO world heritage site. The city hall needed to stay open in the daytime, and the installation work of the air-conditioning system must be performed in nighttime. Also, the outdoor units must be hidden from the people's sight to preserve the historical landscape.

The Solution

Mitsubishi Electric's compact outdoor units could be a solution with less impact on the appearance of the building. To hide the outdoor units, small walls were placed around the units. Also the sound level is low enough to operate the system even in the midnight.

The wide selection of indoor units, such as PFD series (Close Control System), ceiling cassette, and wall mounted, can meet various requirements, and can provide optimal comfort in each room. GB-50A centralized controller and TG-2000A centralized control software have been installed in order to centrally control the systems more reliable.

02

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 21

Indoor unit

PFAV-Series

PFAV × 21

Controller

Local Remote Controller

PAR-21MAA × 21

OTAN - LISBON,

Lisboa, Portugal

The Challenge

During two days in November 2010, the Summit of Heads of State and Government of NATO and partner countries was held at FIL (Feira International de Lisbon) in Parque das Nações (Nations Park).

With FIL's large-size rooms, media centre, press rooms, and the famous oval room for the heads of state, the summit's air-conditioning system had to be suitable for many different room types.

The Solution

PFAV Fresh Air Intake units were chosen for their easy and flexible installation in big spaces. The indoor units were hidden in technical rooms and connected to grills through ducts. This solution provided a high level of comfort to the summit.

Another necessary feature was that the air-conditioning systems had to be able to be reused in other projects after the summit was over. After the summit was over, the air-conditioning system was disassembled, and the units are now installed in other buildings.

02

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 50

Indoor unit

Ceiling Cassette

PLFY × 592

Controller

Centralized Controller

AG-150A × 6

Expansion Controller

PAC-YG50ECA × 14

Local Remote Controller

PAR-F27MEA × 592

Lai Chau Province's Administrative Area,

Lai Chau Province, Vietnam

The Challenge

Lai Chau Province is located in Northwestern Vietnam and has a population of about 300,000.

The owner of the project requested the following elements, such as product quality, energy efficiency, and easy installation. Also, the reliable control system must be installed to control the multiple units.

The Solution

VRF system, which has obtained favorable testimonials in other projects in Vietnam, was introduced. Mitsubishi Electric's full inverter technology has put us on clear advantage over what the market offers and we convinced customers on its benefits on energy efficiency. Easy installation design and maintenance leaded to owner choosing Mitsubishi Electric products. For the feature expansion of the buildings, AG-150A centralized controller and the expansion controller were also installed in the systems.

Schools

Learning means improving every day. At Mitsubishi Electric we learn every day. For this reason, our products offer the best solutions for schools. For every type of schools we have an air conditioning system that offers clean, fresh air every moment of the day.

Schools

Brazil

U.S.A.

03

03

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 30

Indoor unit

PFAV-series

PFAV × 6

Ceiling Cassette

PLFY × 15

Ceiling Concealed

PEFY × 25
PDFY × 104

Ceiling Suspended

PCFY × 4

Wall Mounted

PKFY × 40

Controller

Centralized Controller

GB-50A × 10

Centralized Control Software

TG-2000A × 2

Group Remote Controller

PAC-SC30GRA × 1

Local Remote Controller

PAR-20MAA × 81
PAR-FL32MA × 22

Others

LOSSNAY

LGH-RX3 × 89

Mackenzie University,
SÃO PAULO, Brazil

The Challenge

Mackenzie University is one of the most traditional Universities in Brazil. Remarkable comfort, low running cost, and energy saving were required for this project. Original project was a regular VRF system using inverter driven outside air fan and VAV. After this project customer adopted VRF system as standard for new buildings because of high reliability, flexibility and low maintenance.

The Solution

Mitsubishi Electric presented a alternative project changing the inverter driven fan plus VAV to LOSSNAY energy recovery ventilator, so they reduced 26% of capacity compared to original design. Additionally system become more simple to maintain and operate. In class rooms number of indoor unit was reduced from 3 to 2 units plus a LOSSNAY unit.

The old auditorium was retrofitted, and solution was the big inverter package PFAV series to comply with high capacity and static pressure for long ducts.

When University build, "Prof Luiz Carlos Salomão" building, Mitsubishi Electric was appointed for a air conditioning solution based on VRF CITY MULTI.

Now, the system is considered as a customer's first choice in terms of air conditioning solutions.

03

Installed System

Outdoor unit

Air-cooled R2 series

PURY × 2

Indoor unit

Ceiling Concealed

PEFY × 2

Floor Standing

PFFY × 31

Controller

Centralized Controller

G-50A × 1

Centralized Control Software

TG-2000A × 1

Simple Remote Controller

PAC Simple MA Remote Controller × 32

Others

LOSSNAY

LGH × 1

Archdale Hall, Guilford College,

Greensboro, North Carolina, U.S.A.

The Challenge

Established by the Quakers in 1837, Guilford College is the third oldest co-ed college in the U.S. Archdale Hall was built in. Committed to Green Building Guilford College's Associate Vice President of Operations and Facilities, Jon Varnell, is part of the industry's growing corps of facility managers committed to green building. With an interest in sustainable, eco-friendly solutions, Varnell was looking at options for renovating the oldest building on the 350-acre campus, Archdale Hall. His goal was to have the building achieve Leadership in Energy and Environmental Design (LEED) certification.

In addition to frequent complaints from faculty (individual cooling and heating discomfort, noise and indoor air quality), Varnell was unhappy with Archdale's outdated 1950's renovation which included soaring costs for energy inefficiencies.

To solve the problem, Varnell found the best technology he could buy was CITY MULTI VRF (Variable Refrigerant Flow), manufactured by Mitsubishi Electric Cooling and Heating Solutions, Suwanee, Ga. It includes INVERTER technology that maximizes individual comfort, improves indoor air quality and often cuts energy costs in half. Additionally, the Mitsubishi Electric HVAC technology could help Varnell earn valuable credits toward LEED certification.

The Solution

To help implement the CITY MULTI installation, Varnell turned to Spectrum Design, PC, Roanoke, Va., known for environmentally friendly designs in education facilities. "We liked the CITY MULTI system recommendation immediately," said Mark Garland, Spectrum green building coordinator. "We learned it was a great concept for Archdale Hall, an excellent choice for renovating old buildings and a good fit for achieving LEED certification. The CITY MULTI installation contributed to 7 of 39 points on the LEED-NC Version 2.2 Registered Project Checklist. Achieving Silver certification requires 33-38 points," Garland said.

Varnell hired Tom Foster, PE, CBCP, LEED AP, founder of Commissioning WorCx, Jamestown, N.C. "This was my first experience with commissioning a VRF system," Foster said. "I am very impressed with the performance of Mitsubishi Electric's technology.

The R2-Series system specified has solved complaints from the occupants of Archdale Hall. The CITY MULTI installation and equipment saved the college a large six-figure price tag from the water-source heat pump originally specified."

"CITY MULTI VRF systems are a great solution for the many challenges presented by this 124-year-old structure," Varnell said. "Environmentally, the CITY MULTI system's efficiency has set the standard and will assure LEED Silver certification.

Mitsubishi Electric's floor-standing exposed indoor units are ideal for offices with no ceiling space for ducting. They have a highly efficient air-conditioning performance and low operating.

Because of the satisfaction of the Archdale Hall installation, the Guilford Board of Advisors made a new directive that all future campus renovations must strive to achieve LEED certification," Varnell concluded.

Leisure Facilities

CITY MULTI systems incorporate the latest technological advances so that an optimum and intelligently controlled environment can be obtained in any type of space. Leisure facilities are not the exception. Mitsubishi Electric systems are versatile and offer the most advanced control on the market providing the maximum comfort for everyday life.

Leisure Facilities

Australia
Poland
Bahrain

04

04

Installed System

Outdoor unit

Air-cooled R2 series

PURY × 28

Indoor unit

Ceiling Concealed

PEFY × 107

Controller

Centralized Controller

AG-150A × 3

Expansion Controller

PAC-YG50ECA × 4

PI Controller

PAC-YG60MCA × 6

DIDO Controller

PAC-YG66DCA × 6

Centralized Control Software

TG-2000A × 1

Local Remote Controller

PAR-F27MEA × 107

206 Bourke St.,
Melbourne, Australia

The Challenge

This was an old multi cinema complex- completely gutted and reconstructed to become a high end shopping, restaurant and office complex. The original building had Westinghouse/Email chillers, boilers and large air handling equipment, some 30 years old.

The Solution

The consultant was aware that tenancy usage may evolve and change, hence they chose VRF for its flexibility. Originally specified around Daikin, the winning contractor chose our equipment based on ease of installation, support and ability to provide all BMS functionality required across the building.

Olimp IV,
Lublin, Poland

The Challenge

Opened mid-2009, the Olimp IV shopping centre in Lublin is considered one of the largest shopping malls in Poland. 300 shops, restaurants and cafes vie for attention over a total of four floors.

Investors paid out a total of 34.5 million euros for this prestige project.

Since thousands of people move around this 60,000 m² shopping universe on a daily basis, the standards required of the air conditioning system were particularly high.

The Solution

A total of 192 indoor units from the CITY MULTI VRF, Mr. Slim and M-Series ranges were built into the walkways, stores and office spaces.

Each store owner can adjust their own indoor units using the wired remote control.

All units are also integrated into the building management system via the G-50A centralized controller. This enables air conditioners to be conveniently adjusted from a PC using Microsoft Internet Explorer.

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 11

Air-cooled R2 series

PURY × 32

Indoor unit

Ceiling Cassette

PLFY × 48

Ceiling Concealed

PEFY × 124

Wall Mounted

PKFY × 10

Controller

Centralized Controller

G-50A × 1

Centralized Control Software

TG-2000A × 1

Local Remote Controller

PAR-21MAA × 153

04

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 19

Air-cooled R2 series

PURY × 23

Indoor unit

Ceiling Cassette

PLFY × 9

Ceiling Concealed

PEFY × 200

Controller

Centralized Controller

G-50A × 10

Centralized Control Software

TG-2000A × 1

Simple Remote Controller

PAC-SE41TS × 209

Local Remote Controller

PAR-F27MEA × 110

Boardwalk Point Cook Town Center,
Melbourne, Australia

The Challenge

The existing building had to be altered from one large complex into four separate buildings, therefore a chilled and heating solution was rejected in favor of VRF.

The Solution

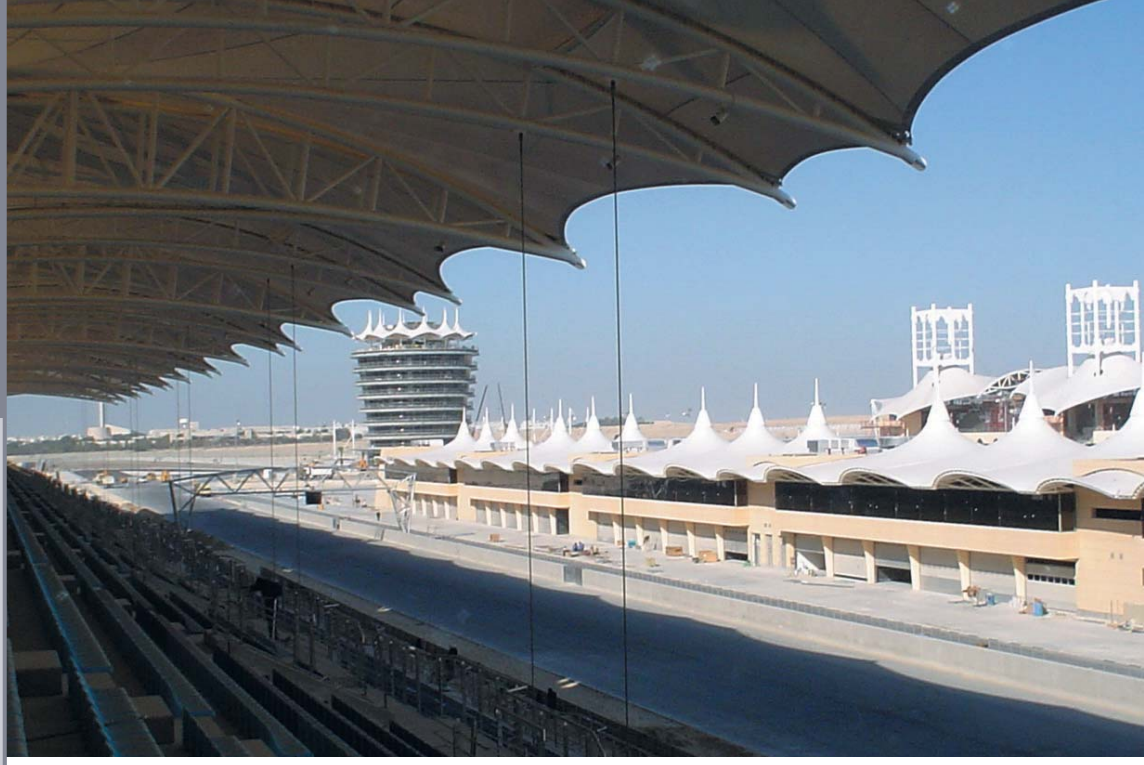
Mitsubishi Electric was chosen due to mostly our relationship with contractor and proving that cost savings could be achieved over 3 pipe version of VRF. Our controls systems and its ability to all talk across LAN system to 1 x TG-2000A from 10 separate G-50A's housed in 10 mechanical switchboards across the 4 building also worked in our favor.

Installed System

Outdoor unit

Air-cooled Y system

PUHY × 4



Formula-1 Bahrain International Circuit, Bahrain

The Challenge

Formula-1 is the first international circuit in the Arabian Peninsula in Bahrain. Not only is it a home ground for motor sports, it is designed to operate for various motor sports, corporate, social and community events throughout the year.

The Solution

CITY MULTI was selected for this world's premier motor sport facility. The CITY MULTI series takes advantage of inverter technology; capable of providing precise amount of cooling and heating to each block in Formula-1. Furthermore, wide line-up of indoor units was connected with a flexible piping system configuring for wide range of applications.

Hospital & Healthcare Facilities

A hospital should be a center for health and rest – as well as comfort, well-being, and silence. At Mitsubishi Electric we create solutions for the needs of every hospital and medical centre. Solutions that incorporate the latest technology and guarantee efficiency and quality: together with reduced installation and energy costs.

Hospital & Healthcare Facilities

Germany

Spain

05

Installed System

Outdoor unit

Air-cooled R2 system

PURY

Indoor unit

Ceiling Concealed

PEFY

Controller

Local Remote Controller

Others

LOSSNAY

LGH

St. Anna Klinikum,

Sulzbach-Rosenberg, Germany

The Challenge

The St. Anna Clinic with its philosophy, “The caring hospital with competence”, expanded its facilities last year to include a computer tomography practice rented to a specialist. For accounting reasons, the existing system could not be expanded for the new tenant without incurring significant expense. For that reason, the decision was taken to purchase an additional system that would be used to cool and heat both the MRI examination room and the treatment rooms. The temperature in the control room also had to be maintained year-round without major fluctuations (max. 24ºC to min. 22ºC). In addition to climate control, all of the rooms had to be ventilated with fresh air in a way that efficiently recovered heat.

The Solution

State-of-the-art Mitsubishi Electric air conditioning control technology was installed in order to fit this tall order while at the same time creating a comfortable atmosphere for the patients. The costs even ended up being significantly lower than the version originally planned. Furthermore, the CITY MULTI R2 series perfectly met the clinic’s requirements. The biggest selling point of the simultaneous system is that the heat energy is recovered from one space and sent to another resulting in no energy waste and is highly economical for users.

05

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 14

Air-cooled R2 series

PURY × 2

Others × 9

Indoor unit

Ceiling Cassette

PLFY × 86

Ceiling Concealed

PEFY × 85
PEH × 82
PEAD × 12

Wall mounted

PKFY × 83

Controller

Centralized Controller

G-50A

Centralized Control Software

TG-2000A

Clínica Sagrada Família,

Barcelona, Spain

The Challenge

The surgery office building of the Sagrada Familia Clinic contains a number of medical consulting rooms with varied opening hours. The objective of the project was to install a system to optimise consumption while satisfying the individual air conditioning requirements of each medical office.

The Solution

Mitsubishi Electric's CITY MULTI was selected for the project. Its modularity and ability to localise consumption means that the surgery offices are only serviced when they are in use. Additionally, the independent operation of the indoor units means that each office can set its own ideal level of comfort.

Cultural Facilities

At Mitsubishi Electric we strive to install our equipment with the minimum possible intrusion. This objective can present a real challenge in historic buildings. We find the specific solutions for each building to ensure that our installations remain hidden from view, because we understand the importance of protecting our national heritage. Music and art enjoyed in comfort with Mitsubishi air conditioning.

Cultural Facilities

Australia
Canada
Spain
U.S.A.

06

06

Installed System

Outdoor unit

Air-cooled Y series

PUHY × 1

Indoor unit

Ceiling Cassette

PLFY × 3

Floor Standing

PFFY × 9

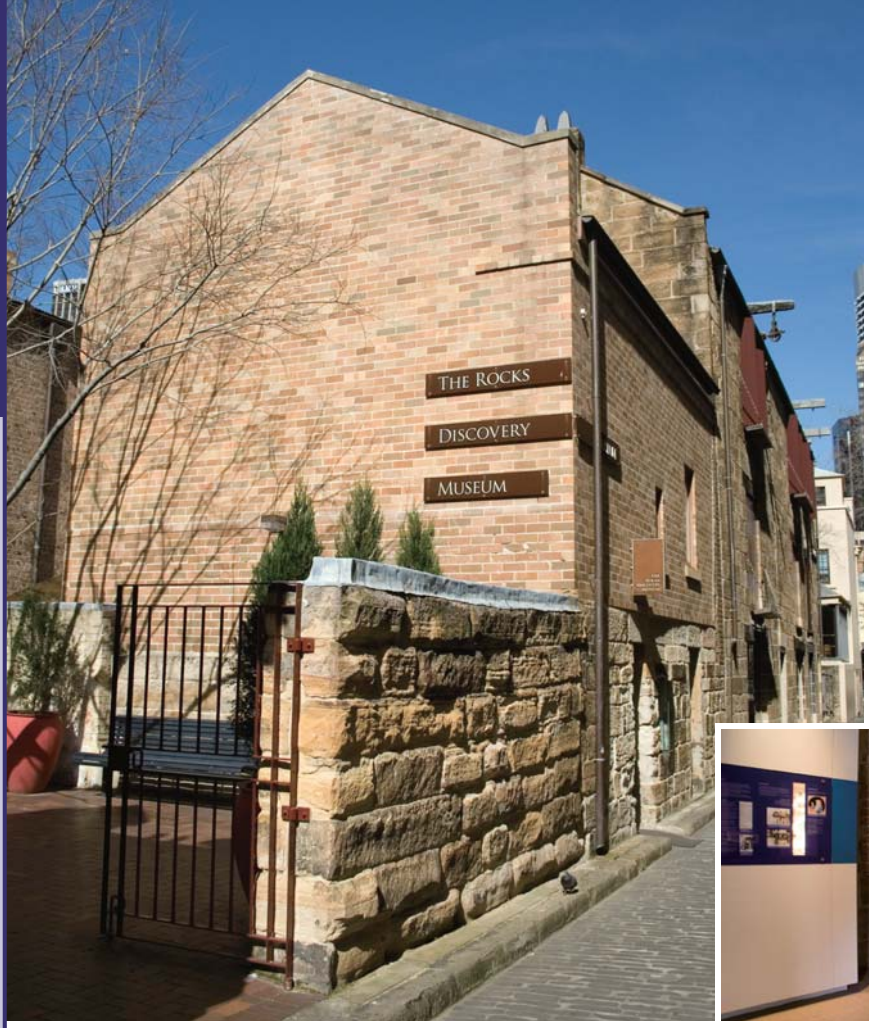
Controller

Centralized Controller

G-50A × 10

ON/OFF Remote Controller

PAC-YT40ANRA × 1



The Rocks Discovery Museum,

Sydney, Australia

The Challenge

The Rocks Discovery Museum was receiving complaints from staff and visitors regarding the warm temperature within the building during summer. They also noticed that the number of visitors was decreasing and they were staying less time due to the heat. In order to address these issues, it was decided that they should install an air conditioning system. The museum is a heritage listed building so extra care had to be taken in the installation to ensure the appearance of the building did not change dramatically and that the building was not damaged.

The Solution

Instead of drilling into the sandstone, it was decided that cables and refrigeration piping would run through the mortar between the sandstone or use existing penetrations. All overhead pipes originally running across the floor would be placed underneath floorboards and the refrigeration piping and electrical cables were to be installed within the existing risers. As with any heritage building, colors and materials needed to be matched exactly, so the exposed piping was to be painted with the color specified by the Sydney Harbor Foreshore Authority Heritage Architect to match the rest of the building.

06

Installed System

Outdoor unit

Air-cooled Y system

PUY 200 × 4

Indoor unit

Wall mounted

PKFY × 8

Controller

Group Remote Controller

Schedule Timer

St. Luke's Roman Catholic Church,
Quebec, Canada

The Challenge

St. Luke's Roman Catholic Church is located in Hamilton, Ontario and has a parish community of over 1,600 families who use the church for daily Mass, weddings and a variety of social functions.

St. Luke's needed a cooling system which was extremely quiet, economical to operate and reliable. The church contracted P.T. Engineering of Hamilton, Ontario to find a solution for this unique project.

The Solution

P.T. Engineering selected CITY MULTI series for a number of reasons. The inverter compressor ensured fast cool down times compared to conventional systems. It also features staggered soft-start and is designed to adapt to different air-conditioning loads depending on the number of people in the building. More over, the installation of the ductless PKFY wall mounted indoor units are quick and easy and the ultra-quiet operation satisfied one of the most important requirements for this project.

06

Installed System

Outdoor unit

Air-cooled R2 system

PURY × 4

Others × 11

Indoor unit

Ceiling Concealed

PEH × 3

PEAD × 1

Floor standing

PFFY × 46

Controller

Centralized Controller

G-50A

Palau Català Valeriola,

Valencia, Spain

The Challenge

The Català Valeriola Palace is an historic building and any alteration must be minimal. To achieve this, any air conditioning system must result in the least possible impact on the building structure and appearance.

The Solution

Mitsubishi Electric was chosen having had proposed an interesting and innovative installation. The outdoor units were installed on the rooftop to preserve the building's aesthetically pleasing appearance. Moreover, floor standing indoor units with a sophisticated design were selected to match the interior décor.

06

Installed System

Outdoor unit

Air-cooled R2 system

PURY × 1

Indoor unit

Ceiling Concealed

PDFY × 5

Wall mounted

PKFY × 8

Controller

Centralized Controller

G-50A

Doylestown Presbyterian Church,

Doylestown, Pennsylvania, U.S.A.

The Challenge

The Doylestown Church was built in 1872 and currently houses a congregation of 2,000 members who are served by two pastors.

The intended chilled-water, air-conditioning project was sent out to 10 contractors who received walk-through tours and were asked to bid. Eight out of the 10 declined to submit a proposal for the installation. They called the project too difficult, citing the building's age, stonework and lack of equipment access as issues too large to overcome. Additionally, the church's limited budget posed another problem, as it operates on a not-for-profit basis.

The Solution

Two contractors did answer the call, and CITY MULTI was chosen over the competitor's bid because it presented the most creative cooling alternative that would meet the financial, logistical and comfort requirements of the church. The use of CITY MULTI also satisfied a desire for energy-effective operation, another key issue for the church, given its limited operating budget.

What's more, CITY MULTI helped the church keep heating costs down in the winter, thanks to its ability to simultaneously cool and heat.

for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.

FM33568 / ISO 9001;2008

The Air Conditioning & Refrigeration Systems Works acquired ISO 9001 certification under Series 9000 of the International Standard Organization (ISO) based on a review of Quality management for the production of refrigeration and air conditioning equipment.

ISO Authorization System
The ISO 9000 series is a plant authorization system relating to quality management as stipulated by the ISO. ISO 9001 certifies quality management based on the "design, development, production, installation and auxiliary services" for products built at an authorized plant.

EC97J1227 051

The Air Conditioning & Refrigeration Systems Works acquired environmental management system standard ISO 14001 certification.

The ISO 14000 series is a set of standards applying to environmental protection set by the International Standard Organization (ISO).
Registered on March 10, 1998.

⚠NOTICE

■When installing or relocating the air conditioners, use only the specified refrigerant (R410A) to charge the refrigerant lines.
Do not mix any other refrigerant and do not allow air to remain the lines.
If air is mixed with refrigerant, then it can be the cause of abnormal high pressure in the refrigerant lines, and may result in an explosion and other hazards.
The use of any refrigerant other than that specified for the system will cause mechanical failure or system malfunction or unit breakdown.
In the worse case, this could lead to a serious impediment to securing product safety.
MITSUBISHI ELECTRIC CORPORATION cannot be held responsible for malfunctions or accidents resulting from the use of the wrong type of refrigerant.

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