A Globally Trusted Air Conditioning Brand

With roots going back 56 years, the Panasonic Air Conditioning Business Division has grown to become a multinational company recognised around the world. Driven by a never-ending quest for product innovation, the group has evolved from manufacturing compressors to providing comprehensive air conditioning solutions. Panasonic has become a brand that people trust to deliver products with superior quality and reliability.

1971  
Starts production of absorption chillers

1985  
Introduces first GHP [gas heat pump] VRF air conditioner

1989  
Introduces world’s first simultaneous 3-pipe heating/cooling VRF system

1993  
Releases world’s first large-capacity modular combination VRF system

1995  
Releases world’s first large-capacity modular combination VRF system with simultaneous heating/cooling
## History of the Panasonic Air Conditioning Business Division

**1958**
- Panasonic (using the National brand) introduces its first Home Cooler, a window-type air conditioner model.
- Electrical Appliance Business Group (Kadoma) starts manufacture of Home Coolers
- Sales of Home Coolers begin

**1961**
- Starts exports of Home Coolers to South Vietnam

**1965**
- Launches Room Coolers

**1968**
- Begins development of rotary compressors
- The high efficiency and quality of these compressors draw interest from domestic and overseas air conditioner manufacturers
- External sales begin

**1972**
- MAICO, the Division’s first overseas manufacturing base, established in Malaysia
- Starts exports from MAICO to Japan, Indonesia, Australia, and other markets
- Begins operating twin-base system out of Japan and Malaysia

**1983**
- Launches inverter air conditioners
- Starts sales of Panasonic’s first inverter air conditioners
- Inverters grow to become core technology in air conditioner industry
- Starts shipments of air conditioners to Panasonic America

**1985**
- Begins development of scroll compressors
- Scroll compressors bring high efficiency, low noise, and low vibration in comparison to rotary compressors

**1990**
- Launches world’s first air conditioner equipped with compact scroll compressor

**1993**
- Establishes Matsushita-Wanbao (Guangzhou) Air Conditioner (MWAC)
- Establishes Matsushita-Wanbao (Guangzhou) Compressor (MWCC)
- Establishes Matsushita Air Conditioner Engineering (Matsushita ACE)

**1995**
- Releases world’s first large-capacity modular combination VRF system with simultaneous heating/cooling

**2003**
- Debuts quiet, lightweight, compact EcoCute systems with improved energy-saving technology
- EcoCute adopts highly efficient, accumulator-less CO2 scroll compressor
- Begins production of new energy-saving mini-VRF series multi-split packaged air conditioners for residential use
- CO2 heat-pump hot water heater (EcoCute) uses non-toxic, non-combustible natural refrigerant (CO2) instead of Freon, to reduce environmental impact
- Launches automatic filter-cleaning function for air conditioners (AC robot)

**2005**
- Panasonic products become extremely successful in Japan’s air conditioner market
- Innovations such as airstream robots and motion sensors help grow Panasonic’s market share

**2006**
- Cumulative global production of Panasonic compressors reaches 200 million units

**2008**
- At the Energy Conservation Grand Prize awards, Panasonic air conditioners win Chairman’s Award, whilst EcoCute wins Director General Prize (prizes presented by Energy Conservation Center of Japan)

**2009**
- Establishes Sales company in Europe (PHAAE) dedicated to selling air conditioners
- Panasonic HA Air-Conditioning Europe (PHAAE) strengthens company’s commercial air conditioning business

**2010**
- Begins collaboration with SANYO air conditioner business
- Through share exchange, SANYO and Panasonic Electric Works become wholly owned subsidiary

**2011**
- Launches FSV series of large-capacity VRF air conditioners

**2012**
- New Panasonic Group inaugurated

**2013**
- Expands VRF operation in Malaysia
Panasonic Delivers Eco-Friendly Air Solutions

In any indoor environment, eco-friendly air conditioning plays a vital role in maintaining our health, comfort, and productivity. Whether it’s an office, a hotel, or a shopping mall, every building matters. That’s why Panasonic has developed energy-efficient large-scale air conditioning solutions to suit a variety of business applications.

As one of the pillars of Panasonic’s B2B operations, our air conditioning sector provides comprehensive solutions to businesses around the world. Harnessing our advanced technology and extensive on-site expertise, we serve clients in a diverse range of environments throughout the world.

Panasonic air conditioning solutions are designed from the ground up to meet the specific needs of each location, whilst placing a premium on efficiency and reliability. At every stage, we seek to make optimal use of resources and energy to create solutions that benefit the environment.

PACT Training Facilities

The 24 Panasonic Air Conditioning Training Centers (PACTs) around the world provide a wide range of support for Panasonic’s business-use air conditioning systems. PACT represents Panasonic’s unwavering commitment to our sales partners, distributors, and service teams in Europe, Asia, Oceania, and the Americas.
Quality Assurance from Japan to the World

With a diverse network of production and R&D facilities, Panasonic delivers innovative products incorporating cutting-edge technologies that set the standard for air conditioners worldwide. As our business expands globally, we strive to transcend borders with our superior-quality products.

### Japan

- **Air Conditioning Division (Appliances Company) [Shiga, Japan]**
  - Established April 1972
  - Air conditioners
  - Air-to-water heat pumps

- **PAPAR**
  - Panasonic Appliances Air Conditioning & Refrigeration Systems [Gunma, Japan]
  - Established July 1959
  - Air conditioners
  - Cold-chain/refrigeration products

### Malaysia

- **Malaysia PAPAMY**
  - Panasonic Appliances Air Conditioning Malaysia Sdn. Bhd.
  - Established April 1972
  - Air conditioners
  - Air-to-water heat pumps

- **PAPARADMY**
  - Panasonic Appliances Air Conditioning R&D Malaysia Sdn. Bhd.
  - Established June 1991
  - R&D for air conditioners
  - Air-to-water heat pumps

- **PAPAMY Compressor**
  - Established January 1987
  - Rotary compressors for air conditioners

- **PAPAMY Compressor R&D**
  - Established September 1997
  - R&D for rotary compressors

### China

- **PAPAGZ**
  - Panasonic Appliances Air Conditioning (Guangzhou) Co., Ltd.
  - Established June 1993
  - Air conditioners

- **PWAPGZ**
  - Panasonic Wanbao Appliances Compressor (Guangzhou) Co., Ltd.
  - Established June 1993
  - Rotary compressors for air conditioners
  - Compressors for automotive air conditioners

- **PROCS**
  - Panasonic R&D Center Suzhou Co., Ltd.
  - Established April 2002
  - Air conditioners
  - R&D for home appliance products

- **DSR**
  - Sanyo Refrigeration Co., Ltd.
  - Established December 1995
  - Air conditioners

### Taiwan

- **PTW**
  - Panasonic Taiwan Co., Ltd.
  - Established October 1962
  - Air conditioners
  - Automotive air conditioners
  - Home appliance products

### Indonesia

- **PMI**
  - Panasonic Manufacturing Indonesia
  - Established September 1965
  - Air conditioners
  - Home appliance products

- **PMPC**
  - Panasonic Manufacturing Philippines Corporation
  - Established September 1967
  - Air conditioners
  - Home appliance products

### Philippines

- **PMPC**
  - Panasonic Manufacturing Philippines Corporation
  - Established September 1967
  - Air conditioners
  - Home appliance products

### PACT Headquarters and Bases

**EUROPE**

- **Germany Wiesbaden**
  - [Image]

- **Nordic Stockholm**
  - [Image]

- **Hungary Budapest**
  - [Image]

- **Russia (CIS) Moscow**
  - [Image]

- **Spain Barcelona**
  - [Image]

- **France Paris**
  - [Image]

- **Spain Madrid**
  - [Image]

- **Italy Milan**
  - [Image]

- **Czech Rep. Prague**
  - [Image]

- **UK Bracknell**
  - [Image]

**ASIA**

- **Malaysia Shah Alam**
  - [Image]

- **Vietnam Hanoi**
  - [Image]

- **India New Delhi**
  - [Image]

- **Thailand Bangkok**
  - [Image]

- **Taiwan Zhongjie**
  - [Image]

- **Indonesia Jakarta**
  - [Image]

- **OCEANIA**
  - **Australia Sydney**
    - [Image]
  - **New Zealand Auckland**
    - [Image]

- **AMERICAS**
  - **Latin America Panama**
    - [Image]
  - **USA Atlanta**
    - [Image]
Testing Products to Ensure Reliability and Durability

At Panasonic, we believe that the best air conditioner is one that works quietly and effectively in the background whilst minimising its impact on the environment. People who use our products can look forward to long years of high-quality performance without the need for constant maintenance.

As part of our rigorous design and development process, Panasonic air conditioners undergo a variety of stringent tests to ensure their effectiveness and long-term reliability. Tests for durability, waterproofing, shock resistance, and noise are conducted on component parts or on the finished products themselves.

As a result of all of these painstaking efforts, Panasonic air conditioners meet even the most demanding industrial standards and regulations in every country where they are sold.

Applying advanced technologies that truly make life better, we live by an unparalleled commitment to product quality. Our approach to product development originates in the DNA of Japanese craftsmanship.

Panasonic is building on the Japanese tradition of uncompromising quality control worldwide, developing and manufacturing fine products and delivering them to customers everywhere.

Durability
At Panasonic we know the importance of a long service life with minimal maintenance. That’s why we subject our air conditioners to a wide range of stringent durability tests.

Long-Term Durability Test
To ensure durability and stable operation for many years, we conduct a long-term continuous operation test under conditions that are much more severe than actual operating conditions.

Compressor Reliability Test
After the continuous operation test, we remove the compressor from a selected outdoor unit, disassemble it, and examine the internal mechanisms and parts for potential failure. This helps ensure reliable long-term performance under harsh conditions.

Waterproof Test
The outdoor unit, which is subject to rain and wind, complies with IPX4 waterproof specifications. Contact sections on printed circuit boards are silicone coated to prevent adverse effects caused by exposure to water (an unlikely occurrence).
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The outdoor unit, which is subject to rain and wind, complies with IPX4 waterproof specifications. Contact sections on printed circuit boards are silicone coated to prevent adverse effects caused by exposure to water (an unlikely occurrence).

**Waterproof Test**

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**Reliability**

In every country where they are sold, Panasonic air conditioners comply with all required industrial standards and regulations. In addition, Panasonic conducts stringent testing to ensure the reliability of parts and materials.

**All Panasonic parts and materials comply with Europe’s strict RoHS/REACH environmental regulations. During the development and production of parts, stringent inspections are conducted on over 100 materials to ensure that no hazardous substances are included.**

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**Drop Test**
Packaging has been strengthened to help products withstand large impacts caused by improper handling during transportation. Testing includes conventional vertical drops, along with more severe tests in which the sides, edges, or corners hit the ground first. This ensures that the products’ rigidity and shock-absorbing materials are strong enough to prevent damage.

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**Shock Resistance**
Impact and vibration tests ensure that the product’s quality and performance at the time of final inspection are maintained upon delivery to the end user.

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**Comfort**
To keep every person in the room comfortable, Panasonic designs its air conditioners to work quietly in the background, without making their presence known.

**Noise Test**
The operating noise of the indoor and outdoor units is measured in a high-performance anechoic chamber. These tests verify that operating noise is low enough to allow the user to talk and sleep comfortably whilst the product is operating.

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**International Standard Quality**
To uphold the company’s reputation around the world, Panasonic strives continuously to offer the highest quality with the lowest possible environment impact.

**Reliable Parts That Meet or Exceed Industrial Standards**
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**RoHS/REACH Compliant Parts**
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**Sophisticated Production Process**
Panasonic’s air conditioner production lines employ state-of-the-art factory automation technologies to ensure products are manufactured efficiently and with uniformly high levels of quality and reliability.
In a VRF system, where lengthy piping and a large number of indoor units need to be controlled collectively, the key to maintaining the system’s reliability is to ensure an optimum amount of oil in the compressors. Generally, when a compressor runs out of oil, systems work to forcibly recover oil from the indoor units. This method, typically employed in a standard VRF, causes the system to overheat or overcool and thus waste energy.

In Panasonic VRF systems, a sensor for detecting oil levels is mounted in each compressor. In installations with multiple outdoor units, a shortage of oil in one compressor can be compensated for by recovering oil either from another compressor in the same unit, from a compressor in an adjacent outdoor unit, or from a connected indoor unit. Panasonic VRF systems provide users with a comfortable environment whilst saving energy.
UNIQUE TECHNOLOGIES

INTRODUCING ORIGINAL PANASONIC TECHNOLOGY

Advanced Oil Management

Panasonic’s energy-saving VRF inverter systems can now be optionally equipped with ECONAVI sensors and control technology for cutting down on wasteful operation. ECONAVI automatically senses the presence of people and their activity levels, in order to detect any wasteful cooling or warming of the air. It then prompts the indoor units to operate in the most energy-efficient way. Now offices can save energy in a way that matches the varying activity levels in different areas of the room.

Cutting Down on Wasteful Air Conditioning in the Office

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Effective oil management is vital for ongoing performance, efficiency and reliability. A special sensor detects oil levels inside the compressor.

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Indoor Unit Air Intake and Discharge Sensors

The indoor units of a Panasonic FSV system are equipped with both air intake and air discharge sensors that detect the temperature of the air in the room. These unique sensors enable precise control of room temperature and minimise cold drafts during heating.

ECONAVI detects activity levels to enable fine-tuned energy savings

Optimally positioned ECONAVI sensors eliminate “blind” areas to enable maximum energy savings

Energy Savings
HOTELS

Hotel proprietors are dedicated to giving their customers the best possible hospitality service. This extends to ensuring that the physical environment inside their hotels provides the highest degree of comfort. With Panasonic VRF systems, hotel owners can ensure a comfortable environment for their customers whilst also making their establishments more energy-efficient. For customer and proprietor alike, Panasonic VRF systems are a highly satisfying solution.
Australia
Travelodge Hobart

This Travelodge Hotel is located in the historic part of Hobart, close to the city’s top tourist attractions. The hotel is owned by the Toga Group, an Australia-based group of companies specialising in property development, construction, investment, and management. When Toga decided to upgrade the hotel’s conventional split-type air conditioning, a number of VRF suppliers offered solutions. But in the end the owners opted for a sophisticated solution proposed by Panasonic Australia.

Air Conditioning System:
- VRF 3-way FSV MF2 series: 8 systems
- Cooling Capacity: 302 kW

Indoor Units:
- Wall mounted K1 series: 112 units
- 4-way cassette U1 series: 4 units

Control System:
- P-AIMS central controller: 1 system
- Wired remote controller: 116 units

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A High-Class Modular Air Conditioning Solution

Hotel Claris was built in 1992 behind the curtain wall façade of a neoclassical mansion that dates back to 1883. Major refurbishment of this five-star Grand Luxe-class hotel took place in 2012, with the installation of Panasonic VRF air conditioning systems.

The main challenge for this project was to replace the old air conditioning system without affecting the day-to-day operations of the hotel. The client was also concerned with reducing energy consumption, improving the comfort level of the temperature in the rooms, and maintaining a quiet environment throughout the hotel. Also influencing the hotel’s decision was Panasonic’s guarantee of excellent after-sales service and reliable 24-hour operation throughout the year.

For a hotel of this type, an effective heat-recovery system is vital. Combining smartly with Panasonic’s two-way design, the heat-recovery system helped to reduce fixed costs without compromising hotel standards. The modularity of Panasonic’s VRF systems allowed them to be installed on a floor-by-floor basis, without affecting normal hotel operations.

Air Conditioning System:
- VRF 2-way ME1 & LE1 series: 11 systems
- VRF 3-way MF1 series: 14 systems

Cooling Capacity:
- 769 kW

Indoor Units:
- High- & mid-static ducted: 23 units
- Slim low-static ducted: 189 units

Control System:
- Wired controller: 233 units
- Intelligent controller: 1 system
- KNX/EIB IFU PAW-AC-KNX-128: 2 systems

Located in the heart of Barcelona and close to the city’s world-famous tourist attractions, Hotel Claris was established on the remodeled premises of a grand 19th century mansion. The five-star Grand Luxe hotel boasts 124 rooms and suites, along with meeting rooms, event spaces, an outdoor pool, and a range of top-class amenities. Rooms are decorated with unique works of art that create an atmosphere of luxury and comfort. In keeping with this theme of high-class comfort, the hotel sought a comprehensive Panasonic VRF system when renovating its rooms in 2012.

Hotel Claris
Spain

Hotel Claris in Barcelona is part of the Derby Hotels Collection of art-themed luxury hotels. When upgrading the air conditioning systems at the Claris, a flexible, modular solution was sought that would allow separate floor-by-floor installation of indoor units. Panasonic stepped up with the perfect solution to a challenging installation setting.

The hotel’s previous water chiller system was unable to support simultaneous heating and cooling and it did not allow guests to adjust the room temperature. Panasonic sales staff therefore proposed a solution of VRF units that employ heat recovery to enable heating or cooling of two rooms sharing the same system.

Panasonic’s duct-type indoor units help to maintain the aesthetic appeal of the hotel’s stylish rooms and common areas. Our choice of the Panasonic solution was further bolstered by its competitive cost and promise of significant energy savings.

Mr. Jordi Clos
President, Derby Hotels Collection

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Securing long-term tenants is a major imperative for owners of office buildings. Thanks to Panasonic’s VRF system, building owners can provide office space with flexible air conditioning solutions that can be adapted to match the business needs of each individual tenant.

**Malaysia**

**Gapurna Project**

This commercial office building is located 20 kilometers from Kuala Lumpur. Project development was handled by the Gapurna Group, one of Malaysia’s most successful construction and development groups. Panasonic had worked with Gapurna before, supplying security cameras for Kuala Lumpur International Airport (KLIA) during the airport’s second phase of construction. On that project, Panasonic was commended not only for providing the products but also for offering a one-stop design and installation service through Panasonic System Engineering (M) Sdn. Bhd., a subsidiary of Panasonic Malaysia. The Gapurna Group therefore had no hesitation in looking to Panasonic when it began construction of this new office building. The building owner asked for the VRF system to be integrated with the building management system (BMS) via the BACnet communications protocol, and Panasonic complied accordingly.
Air Conditioning for a Large Floor Area

Using four-way cassette air conditioners and a mixed-mode ventilation system allows us to enhance indoor air quality and thus provide our tenants with a comfortable office environment. The building has a large floor area, but we are able to cover this large area with an energy-saving Panasonic VRF system.

Air Conditioning System:
- VRF 2-way FSV ME1 series: 109 systems
- Cooling Capacity: 5,370 kW
- Indoor Units:
  - 4-way cassette: 537 units
Control System:
- System controller: 10 systems
- Communication adapter: 5 systems (for 3rd party BACnet IFU)
Air Conditioning System:
VRF 2-way FSV ME1 series: 99 systems
Cooling Capacity:
3,667 kW
Indoor Units:
High-static ducted: 153 units
Control System:
System controller: 2 systems; Schedule timer: 2 systems; Intelligent controller: 1 system (with web monitoring)

Plaza 33 is a grade-A commercial complex located in the bustling commercial district of Petaling Jaya, near central Kuala Lumpur. It comprises two blocks—Towers A and B—that contain modern, high-spec office space along with a variety of restaurants and retail establishments.

The building complex was built to meet the demanding IT, design, and power supply needs of today's technology-powered corporations. Each floor of one of the buildings has been fitted with Panasonic VRF systems that are connected to outdoor units in a space-efficient installation design. Because each floor of the building is sold or leased separately, an air conditioning system was required that would support independent operation on different floors. The Panasonic VRF ducted unit system fitted the bill, offering high quality, cost-efficiency, low noise levels, and the assurance of a Japanese brand.

The Plaza 33 building comprises two blocks, one of which uses a Panasonic system and the other of which uses a rival system. Clients prefer the Panasonic system, as it operates with much less noise. Along with the benefit of its quiet operation, the VRF system was able to be installed without the need for additional system equipment.
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Words from M&E Contractor

Managing Director
Chuah Kee Cheng

Panasonic

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RETAIL

Anywhere you look in the world, the retail sector is a place of fierce and relentless competition. Proprietors of retail establishments have to manage their budgets carefully, which means they need solutions that are both energy- and cost-efficient—solutions like Panasonic’s VRF air conditioning systems.

Italy

Le Centurie Centro Commerciale

Opened in 2012, Le Centurie is a shopping complex located in the province of Padua in northeastern Italy. So that it could integrate with a surrounding area rich in historical buildings, the mall was built primarily with natural materials. Just over half of its total area of 40,000 m² is devoted to merchandising, with 40 commercial spaces offering fashion, electronics, homeware, and health and beauty products.
Air Conditioning System:
   VRF 3-way MF1 series: 18 systems
   Cooling Capacity: 656 kW
   Indoor Units:
      4-way cassette: 6 units
      High- & mid-static ducted: 51 units
   Ventilation System:
      ERV ZDY2 series: 46 units
   Control System:
      Wired remote controller: 51 units
      T10 connection for ERV: 36 points
      Intelligent controller: 2 systems

The main challenges in selecting an air conditioning system for this shopping mall were finding one that could maintain a certain degree of flexibility and give our client the perception of independent air conditioning and heating whilst taking into account the energy costs that must be met by each store. After evaluating a range of systems, we chose Panasonic products for their flexibility and reliability as well as for the availability of on-the-spot assistance from qualified Panasonic personnel. We are very satisfied with our choice and intend to adopt Panasonic products in future shopping mall projects.
When we were designing this project, we had to maintain a balance between cost, reliability, and technical parameters. A major issue was the climate in Novosibirsk, which is extremely tough on VRF systems—it's common to see rapid and very large temperature changes here. So the installed system had to be able to function effectively within stable operational parameters and provide totally reliable air conditioning for the shopping mall.

In the end, our decision to choose a Panasonic VRF system was influenced by our own personal experience, as well as by the recommendations of some business colleagues who were already using a Panasonic system.

Sun City Mall, Novosibirsk
Russia

Air Conditioning System:
VRF 2-Way ME1 series: 47 systems

Cooling Capacity:
1,655 kW

Indoor Units:
Wall mounted: 115 units
4-way cassette: 49 units
Ceiling: 59 units
Low-static ducted: 60 units
Russia
Sun City Mall, Novosibirsk

Words from the designer and installer:
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Cooling Capacity:
1,605 kW
Indoor Units:
Wall mounted: 115 units
4-way cassette: 49 units
Ceiling: 59 units
Low-static ducted: 60 units
In homes around the world, Panasonic’s residential-use air conditioners have long maintained a high level of customer satisfaction. Today, we go beyond simply providing air conditioners for individual homes; Panasonic is now established as a comprehensive B2B partner in large-scale residential developments. Residents of these new developments now enjoy the same levels of satisfaction as past customers using our conventional residential-use air conditioners.

The primary reason we chose Panasonic was its brand image. Our Star River Group Haiyi Peninsula Luxury Condominium development is one of the most prestigious apartment buildings in Guangzhou, and our customers naturally set a high standard for quality and brand image. We chose Panasonic mainly because we found the brand more reliable than Chinese joint-venture brands in terms of quality. Another reason was its proximity. Because Panasonic has its local plant in Guangzhou, we can rely on quick and thorough before- and after-sales technical support. In fact, Panasonic already provided an excellent solution to our problem by securing sufficient installation space for outdoor units.

Words from the Decision Maker

Air Conditioning System:
- VRF FSM series: 966 systems
- Room air conditioners: 458 systems

Cooling Capacity:
- 16,737 kW

Indoor Units:
- Slim low-static ducted: 3,062 units
- Wall mounted: 886 units

Control System:
- Wired controllers: 1,178 units
- Wired remote controllers: 2,682 units
Panasonic Appliances Air-Conditioning (Guangzhou) Co., Ltd. [PAPAGZ] installed energy-efficient VRF inverter-type air conditioners in a new deluxe condominium in Guangzhou. To preserve the exterior appearance of the buildings, Panasonic held in-depth consultations with the client regarding the installation space for the outdoor units. The client chose Panasonic because of the company’s excellent brand image, the proven cost performance of its products, and its adherence to strict Japanese levels of quality control. Another key factor was the close location of its plant in Guangzhou, which allowed Panasonic to respond quickly to customer needs before, during, and after the installation process.

China
Star River Group Luxury Condominium

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Located at the waterfront in Wanchai, this modern and well-appointed 41-floor residential building contains 177 units, each of which enjoys an expansive harbour view. Units in the 160 metre-high building feature 3.5-metre ceilings and range in size from 46 to 372 m². Amenities include the Skyclub on the top floors, which includes a gym and an indoor heated swimming pool, and the third-floor podium garden with mini lawn-bowls court. The Gloucester has already received the BEAM Society of Hong Kong’s coveted Platinum accreditation.
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Why Panasonic?

The Mosaic team of engineers and architects looked far and wide at the available alternatives and found that Panasonic offered the most cost-effective and space-efficient solution. The choice was bolstered by the high level of hands-on expertise offered by Panasonic staff and the assurance provided by a globally respected brand. Furthermore, members of the Mosaic team reported having previously had highly favourable personal experiences with Panasonic A/C units installed in homes and offices.

Mr. Emilio Rivadeneira
Mosaic Project Architect

Air Conditioning System:
VRF 2-way FSV LE1 series: 156 systems
Cooling Capacity:
2,338 kW
Indoor Units:
Slim low-static ducted M1 series: 210 units
Mid-static ducted F2 series: 147 units
Control System:
Wired remote controllers: 357 units

Targeting business people working in the Panama Pacifico area, Mosaic is a sophisticated urban residential development comprising 145 condo apartments. The team of engineers and architects working on the Mosaic project considered many alternatives before deciding on a Panasonic air conditioning solution. Influencing the client's choice was Panasonic's track record of quality and reliability, allied to the fact that it offered the most cost-effective and space-efficient solution. After analysing the architectural plans, Panasonic engineers proposed a solution incorporating multi-split systems that allow each apartment to use a single outdoor unit to service several indoor units.

Mosaic Building Panama Pacifico
Panama
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HOSPITALS/SCHOOLS

For institutions in the medical and educational sectors, nothing is more important than the reliability of equipment. To satisfy customers in these sectors, we must do more than simply provide highly reliable air conditioning products; we must also provide continuous support in the form of totally dependable after-sales service.

The Bekasi Hospital is a government hospital that serves the community of the Indonesian city of Bekasi, West Java. For our new hospital block, we sought an efficient and centrally controllable air conditioning solution. Among the companies proposing solutions, we felt that Panasonic provided the best quality system. It incorporates the latest technology, it can be controlled centrally, and it runs efficiently, without any hassles.

This year we are building another eight floors onto the hospital. We will definitely consider choosing Panasonic again.

Air Conditioning System: VRF 2-way FSV ME1 series: 42 outdoor units
Cooling Capacity: 1,834 kW
Indoor Units: Wall mounted: 135 units
4-way cassette: 128 units
High-static ducted: 20 units
Control System: Intelligent controller: 2 systems (with web monitoring)
Wired remote controller: 283 units

Vice Finance and General Director
Dr. Hedi Moh Hadiat H.
Indonesia
Bekasi Hospital

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Vice Finance and General Director
Shippensburg University is a public university located on a rural campus in south-central Pennsylvania. Founded in 1871 as Cumberland Valley State Normal School, the university serves the educational, cultural, and social needs of students not only from throughout Pennsylvania but also from other states and from overseas. Shippensburg currently has a student base of around 7,000 full-time undergraduates and 1,300 full-time graduates, taught by around 300 full-time and 130 part-time academic staff. Since 1985, many of the university’s original historic buildings have been listed on the National Register of Historic Places.

An Ideal Choice for Educational Institutions

A Panasonic VRF system was recently installed in one of Shippensburg’s student residences. Having earlier considered a four-pipe hydronic system, the university found the Panasonic solution to be more cost effective. The system allows each dormitory room to be heated or cooled as needed, and heat recovery makes the entire building highly energy efficient. Panasonic’s local representative, Envirocon Associates, Inc., designed and implemented the project. As well as ensuring correct installation, Envirocon performed extensive system diagnostics and programming. Shippensburg’s satisfaction is evident in its plans to install Panasonic VRF systems in three further buildings.

**United States**

**Shippensburg University**

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**Air Conditioning System:**

- VRF 3-way MF1 series: 55 systems
- Cooling Capacity: 1,498 kW
- Indoor Units:
  - 1-way cassette: 235 units
  - 4-way cassette: 61 units
  - Slim low-static ducted: 142 units
  - Low-silhouette ducted: 74 units
  - Wall mounted: 18 units
- Control System:
  - Intelligent controller: 3 systems
  - Communication adapter: 3 systems
  - Simplified remote controller: 530 units
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<td>1-way cassette: 235 units</td>
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<tr>
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<tr>
<td>Slim low-static ducted: 142 units</td>
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<td>Low-silhouette ducted: 74 units</td>
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</tr>
<tr>
<td>Simplified remote controller: 530 units</td>
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</tbody>
</table>
Corrosion resistant models are available.

**Cooling or Heating Series**
- Wide range of systems from 22.4kW to 118kW
- Class-leading EER of 3.94, COP of 4.49 (for 22.4kW model)
- Long maximum pipe length (up to 1,000 m)
- Increased maximum number of connectable indoor units (up to 64)
- Up to 200% connectable capacity
- Extended operating range allows heating with outdoor temperatures as low as -25°C
- Cooling operation possible with outdoor temperature as high as 46°C
- Suitable for R22 renewal projects

**Simultaneous Cooling and Heating Series**
- Wide range of systems from 22.4kW to 118kW
- Class-leading EER of 3.94, COP of 4.49 (for 22.4kW model)
- Long maximum pipe length (up to 500 m)
- Increased maximum number of connectable indoor units (up to 52)
- Cooling operation possible with outdoor temperature as high as 46°C
- Heating operation possible with outdoor temperature as low as -20°C

**New FSV Systems**

**Actual length:**
- 180m
- 15 m
- 50 m *

**Difference in elevation between indoor units:**
- System difference
- Max. total length: 1,000 m
- *40 m if the outdoor unit is below the indoor unit.

**VRF AIR CONDITIONER**

**3 types of single outdoor unit**
- From 22.4kW up to 168kW*

**Single outdoor units can be combined to work in unison and increase operational capacity to up to 168kW, thereby supporting expanded air-conditioned space.**

**Operational efficiency has been improved, using the highly efficient R410A refrigerant, a new DC inverter compressor, a new DC motor, and a newly designed heat exchanger.**

**Excellent energy savings**

**Increased piping length for greater design flexibility**

**High external static pressure on condensers**

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- High external static pressure on condensers
Exclusive Features for ME1 Series

**Up to 64* indoor units can be connected**

Flexibility in piping layout makes it easier to design air conditioning systems for locations such as train stations, airports, schools, and hospitals.

*Maximum number of indoor units depends on outdoor unit capacity.

**Increased piping length for greater design flexibility**

The ME1 Series supports greater distances between indoor units and outdoor units, making it adaptable to buildings of various types and sizes.

```
System difference of elevation: 50m*
15m
Actual length: 180m
```

```
Difference in elevation between indoor units:
Max. total length: 1,000 m
```

*40 m if the outdoor unit is below the indoor unit.

**Single outdoor units combine to expand capacity up to 168kW**

Single outdoor units can be combined to work in unison and increase operational capacity to up to 168kW, thereby supporting expanded air-conditioned space.

**High external static pressure on condensers**

With a newly designed fan, fan guard, motor, and casing, new models can be custom-installed on-site to provide up to 80 Pa of external static pressure. An air discharge duct prevents shortages of air circulation, allowing outdoor units to be installed on every floor of a building.

```
80 Pa
```

**Excellent energy savings**

Operational efficiency has been improved, using the highly efficient R410A refrigerant, a new DC inverter compressor, a new DC motor, and a newly designed heat exchanger.
VRF FSV Systems Air Conditioners

**Connectable Indoor/Outdoor Unit Capacity Ratio of up to 200%**

FSV systems attain maximum indoor unit connection capacity of up to 200% of the unit’s connection range, depending on the outdoor and indoor models selected. So for a reasonable investment, FSV systems provide an ideal air conditioning solution for locations where full cooling/heating are not always required.

**Extended Operating Range**

**Heating operation range:**
Extended heating operation range enables heating even when the outdoor temperature is as low as -25°C. Using a wired remote control, indoor heating temperature range can be set from 16°C to 30°C*.

**Cooling operation range:**
-10°C DB to +46°C DB

* Depending on the type of remote controller.

**Wide Range of Indoor Units**  Wide choice of models to meet different indoor requirements

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</tr>
</thead>
<tbody>
<tr>
<td>F2 type</td>
<td>2-5</td>
<td>2.0/2.5</td>
<td>9,600/11,000</td>
<td>23.2/27.4</td>
<td>36,000/39,000</td>
<td>10.1/11.4</td>
<td>7,070/7,420</td>
<td>19,000/21,000</td>
<td>5.6/6.4</td>
<td>130%</td>
<td>130%</td>
<td>130%</td>
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<td>130%</td>
<td>130%</td>
<td></td>
</tr>
<tr>
<td>K1 type</td>
<td>4-6</td>
<td>3.6/4.5</td>
<td>12,000/14,000</td>
<td>30,000/34,000</td>
<td>25,000/27,000</td>
<td>11.1/12.4</td>
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<td>22,000/24,000</td>
<td>6.6/7.5</td>
<td>130%</td>
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</tr>
<tr>
<td>P1 type</td>
<td>6-8</td>
<td>4.5/5.5</td>
<td>15,000/17,000</td>
<td>36,000/39,000</td>
<td>35,000/38,000</td>
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<td>25,000/27,000</td>
<td>7.5/8.5</td>
<td>130%</td>
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<td>130%</td>
<td>130%</td>
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</table>

**Note:** If more than 100% indoor units are operated with a high load, the units may not perform at the rated capacity. For details, please consult with an authorised Panasonic dealer.
Controllers to Suit All Applications

Small- to Large-Scale FSV Controllers

Panasonic Design Support Software for FSV

Modeling Large-Scale Customised Solutions

Panasonic knows that the air conditioning industry is one that places ever-greater emphasis on energy efficiency as well as on speed and precision in customer service. With these goals in mind, we are pleased to announce the launch of the latest generation of our VRF Designer software. This proprietary system design software gives architects, consultants, and end users the ability to calculate cooling and heating loads and generate data about the performance of FSV air conditioners under simulated usage conditions.

VRF Designer software allows the user to quickly and easily implement customised selections and design processes. Simple and complex systems alike can be created by utilising the software’s system wizards and import tools. Users can drag and drop icons representing outdoor and indoor units onto the interactive desktop. This enables them, for example, to make graphic installation guides or create realistic floor plans—including detailed piping and wiring schematics—that can be included with quotations sent out to potential clients.

VRF Designer software is compatible with PAC, FS Multi, and FSV series models.
Cutting-edge VRF technology is an ideal match for small or mid-sized spaces. With single-phase power sources working in tandem with advanced inverter technology, FS Multi opens up unlimited possibilities in the world of air conditioning.

Air-conditioned spaces can now take on a new dimension. Panasonic FS Multi is an extremely appealing choice for use in residential, office, or commercial property currently under construction or refurbishment.

The convenient FS Multi system requires no additional charge of refrigerant, even when pipe lengths of up to 90 m are being used. This helps to shorten installation times.

A single compact FS Multi system outdoor unit supports indoor air conditioning units in multiple rooms, helping you to make the most of limited installation space.
Inverter Enables Energy-Saving Operation

Panasonic’s inverter constantly adjusts compressor rotation speed to provide optimal performance at all times. This extremely precise operation enables quick cooling and heating whilst reducing power consumption.

Energy Saving Operation

- Hyper Wave Inverter
- DC Inverter Compressor
- New Large Diagonal Air Flow Fan

Hyper Wave Inverter

The Panasonic Air Conditioning Group has accrued a wealth of experience through rigorous testing of inverter technology. One area where the fruits of our labour can be seen is in the technology used to control inverters. The FS Series employs a Hyper Wave inverter that optimises compressor torque to rapidly cool a room to a set temperature and maintain it at that level. By matching its waveform to that of the motor voltage, this inverter delivers greater energy efficiency and savings.

Design Flexibility

Piping can be extended to 30 metres without additional gas charging, or to 50 metres with additional charging. This provides more flexibility in positioning the outdoor unit, giving you a wider range of installation options.
Panasonic’s multi-split air conditioning systems are designed to accommodate long lengths of piping. Because piping for each circuit can be extended up to 25 metres, more flexibility is available for setting up outdoor units. As a result, the exterior appearance of a building can be preserved.

Space-Saving Solutions — Multi-Split Room Air Conditioning Systems

Panasonic’s multi-split air conditioning systems are designed to accommodate long lengths of piping. Because piping for each circuit can be extended up to 25 metres, more flexibility is available for setting up outdoor units. As a result, the exterior appearance of a building can be preserved.

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Cooling Capacity</th>
<th>Max Connectable Capacity</th>
<th>Max Connectable Indoors</th>
<th>EER</th>
<th>COP</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU-4E23QBR</td>
<td>6.8kW</td>
<td>11.0kW</td>
<td>4 units</td>
<td>4.05</td>
<td>4.36</td>
</tr>
<tr>
<td>CU-4E27QBR</td>
<td>8.0kW</td>
<td>13.6kW</td>
<td>4 units</td>
<td>3.72</td>
<td>4.31</td>
</tr>
<tr>
<td>CU-5E34QBR</td>
<td>10.0kW</td>
<td>17.5kW</td>
<td>5 units</td>
<td>3.50</td>
<td>4.05</td>
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</tbody>
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**Space-Saving Solutions — Multi-Split Room Air Conditioning Systems**

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<tr>
<th></th>
<th>Unit A2</th>
<th>Unit B2</th>
<th>Unit C2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height Max.</td>
<td>5m</td>
<td>15m</td>
<td>15m</td>
</tr>
<tr>
<td>Piping Length Systems</td>
<td>7.6kW</td>
<td>60m</td>
<td>8.0kW</td>
</tr>
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</table>

The ECONAVI concept harnesses high-precision human-sensor and control program technologies to optimise air conditioner operation according to room conditions. These technologies enable the unit to save energy by detecting energy waste and automatically adjusting the cooling/heating power. Users enjoy uninterrupted temperature control, comfort, and convenience.

**ECONAVI Technology — Single-Split Air Conditioning Systems**

- The ECONAVI concept harnesses high-precision human-sensor and control program technologies to optimise air conditioner operation according to room conditions. These technologies enable the unit to save energy by detecting energy waste and automatically adjusting the cooling/heating power. Users enjoy uninterrupted temperature control, comfort, and convenience.

**Designed for Australian Temperatures**

Our air conditioning systems boast an outstanding operating temperature range. Cooling operation is possible even when it’s a scorching +46ºC outside, which is perfect for Australia’s hot summer days and the heating operation is designed to operate even when it’s a freezing -15ºC* outside, so even the coldest parts of Australia are covered.

*CS/CU-RE9NKR and CS/CU-RE12NKR operate down to -5ºC.

**ECONAVI Technology — Single-Split Air Conditioning Systems**

*Comparison of 3.5kW inverter model with ECONAVI dual sensor on versus off during cooling operation.

- Test conditions with ECONAVI dual sensor on: Outside temperature of 35ºC/24ºC, Remote setting temperature of 25ºC, Fan speed set to High, Vertical airflow direction set to ECONAVI Mode.
- With ECONAVI dual sensor off, test conditions were the same, except that horizontal airflow direction was set to front.
- Setting temperature increases 3ºC in total. 7ºC controlled by ECONAVI activity level detection, and 7ºC controlled by ECONAVI light intensity detection.
- Total power consumption was measured for one hour under stable conditions in the 16.4 m² Panasonic Assembly Room.
- The figure of 38% represents the maximum energy savings value. Results may vary depending on installation and usage conditions.
EVERY BUILDING MATTERS

www.panasonicair.com.au