

Case Study

Precision Piping Method (Tightfit, HEADER PACK, WORKSHOP)



FAST & RELIABLE

with Daikin's unique method of system installation



Yoshihiro Mineno
(Senior Executive Officer)

Message

Dear all,

More than 30 years have passed since the launch of the revolutionary *VRV* air-conditioning system, and its high reliability and energy-saving performance have been highly regarded on the market.

In addition, with the demand for *VRV*s growing significantly, competition is intensifying with many other manufacturers having entered the *VRV* market, yet Daikin maintains an overwhelming market share.

In the second half of this year, a new *VRV* will be released, further strengthening our product line-up. We are also publishing a “*VRV* Case Study” document that compiles many examples of *VRV* use cases from all over the world.

In order for *VRV* to fully demonstrate its performance, high-quality installation work is essential, but since *VRV* installation work involves long refrigerant piping work, installation requires high installation capacity by skilled workers. However, due to the rapid increase in demand for *VRV*s in recent years and the shortage of skilled workers, it is becoming difficult to perform high-quality installation work.

Therefore, this case study document focuses on the Precision Piping Method, which makes refrigerant piping work possible at low cost and with a short installation period.

People's movement is currently restricted due to COVID-19, and construction work is being delayed as a result, but when economic activity returns to normal there will be a strong demand for a limited number of people to complete quick installation in order to regain lost time, and that is when the Precision Piping Method will come under the spotlight.

We are confident that the many case studies introduced here will give ideas to building owners, architects, and air-conditioning engineers to help them to solve the issues of air-conditioning design.

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Precision Piping Method Lineup

Products and solutions

Tightfit

Fire-free copper tube connector

Standard joint



Asymmetrical joint



90° bend



Test plug



Size

Φ6.35
Φ9.52
Φ12.7
Φ15.88
Φ19.05
Φ22.22
Φ28.58
Φ34.92
Φ41.28

Size

Φ12.7 — 9.52
Φ15.88 — 12.7
Φ19.05 — 15.88
Φ22.22 — 19.05
Φ25.4 — 22.22
Φ28.58 — 25.4
Φ34.92 — 28.58

Size

Φ6.35
Φ9.52
Φ12.7
Φ15.88
Φ19.05
Φ22.22
Φ28.58

Size

Φ6.35
Φ9.52
Φ12.7
Φ15.88
Φ19.05
Φ22.22
Φ28.58

HEADER PACK

Packaged Refnet Headers



4-port / 6-port

WORKSHOP

Factory quality prefabrication piping



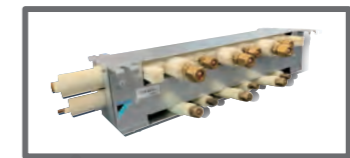
Precision Piping Method

Precision Piping Method is a new method of piping for VRF installations.

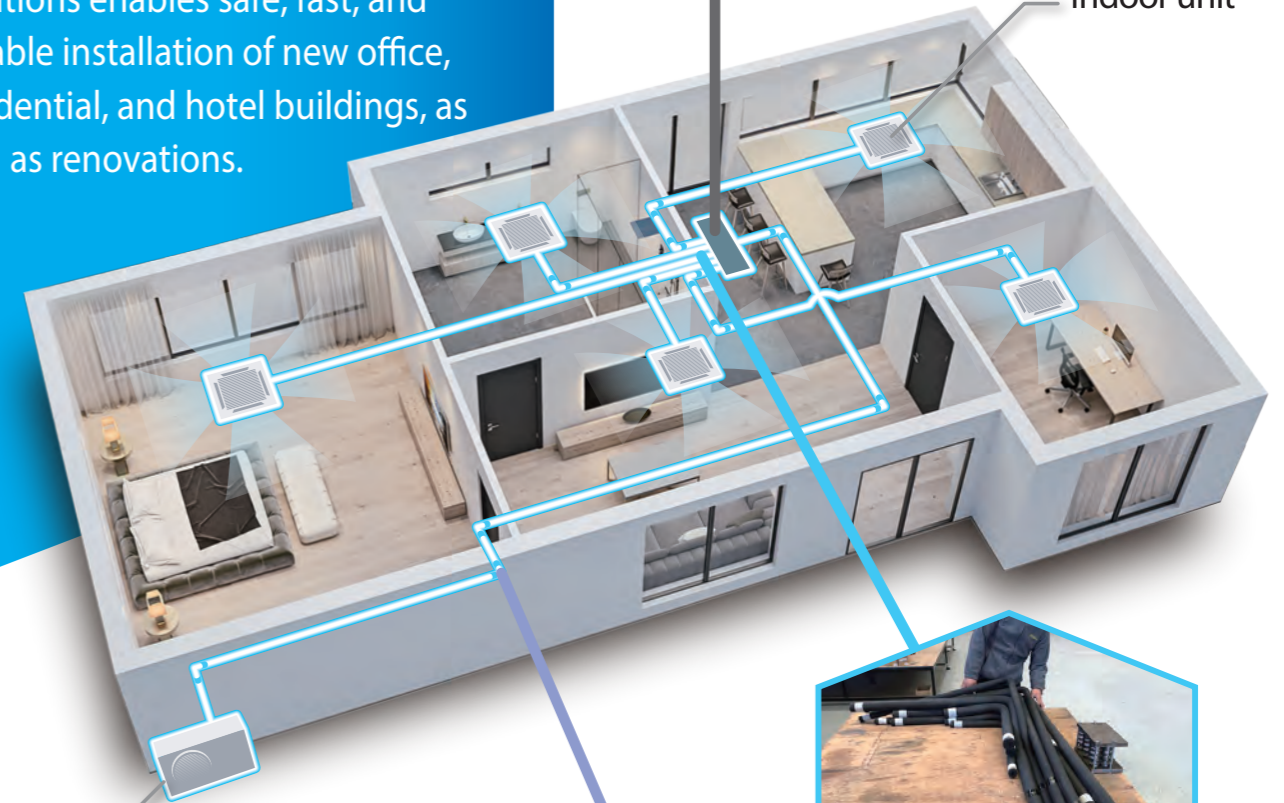
The combination of products and solutions enables safe, fast, and reliable installation of new office, residential, and hotel buildings, as well as renovations.

Outdoor unit

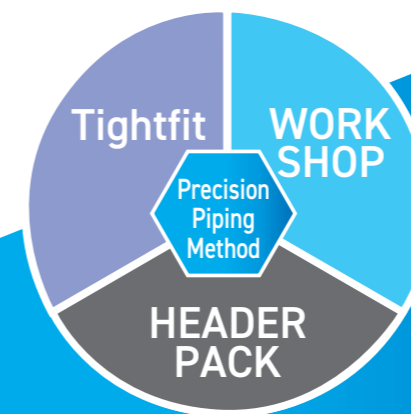
HEADER PACK



Indoor unit



WORKSHOP



Precision Piping Method consists of 3 solutions, Tightfit, HEADER PACK and WORKSHOP.



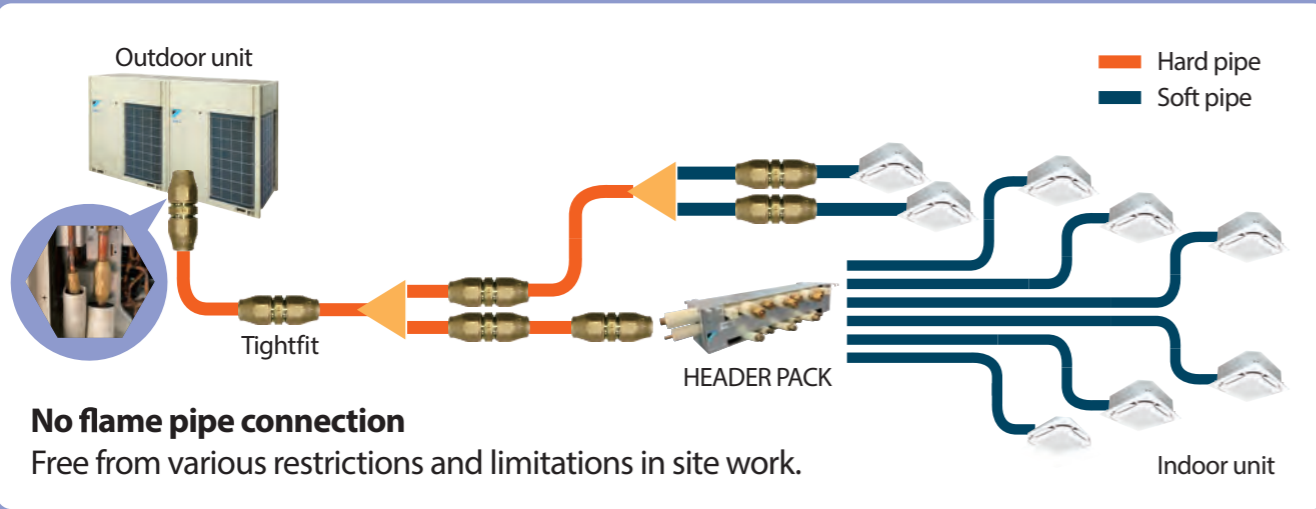
Tightfit

Tightfit

Fire-free copper tube connector



NO FLAME CONNECTION FOR REFRIGERANT PIPING



HEADER PACK

Packaged Refnet Headers



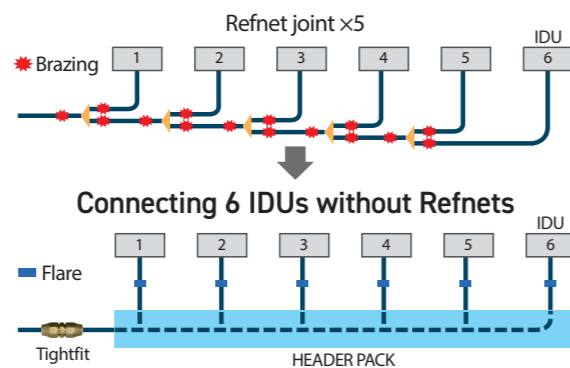
COMPACT, QUICK & EASY CONNECTING MULTIPLE INDOOR UNITS



The HEADER PACK is a manifold box that allows you to connect multiple pieces of equipment to a single pipe branch for VRF. Thanks to its FLARE connection outputs, it makes it possible to locate at a central point of the installation, a manifold derived from threaded connection to each of the indoor units mounted in the different environments. It can be connected to the rest of the installation using the Tightfit quick connect settings, which will allow you to continue laying the installation.

Advantages

For limited ceiling height



WORKSHOP

Factory quality prefabrication piping



UNIQUE METHOD: PIPING DESIGN, FORM & TEST IN WORKSHOP AND DISPATCH TO ON-SITE

Precision Piping Method assembly in workshop

Precision Piping Method is a new method of piping for VRF installations in which pipework preparation, bending, brazing and testing are completed in factory-controlled conditions before the pipework sections are delivered to site. It requires no special skilled workers for pipe installations.



Workflow



1. Design & layout



2. Cut with electric cutter



3. Safe and fast brazing in dedicated workshop

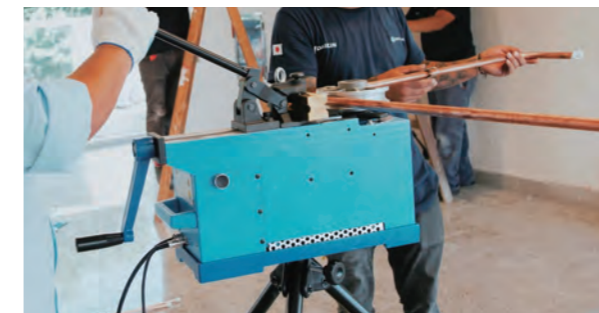


4. Airtight test



5. Wrapping up the thermal insulation, final check and dispatch to site.

Advantages

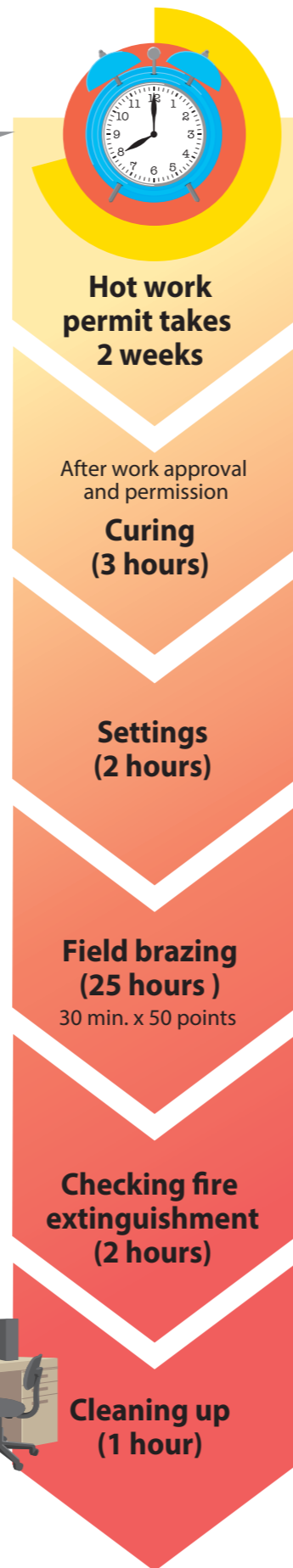


Why Precision Piping Method is recommended ? (1)

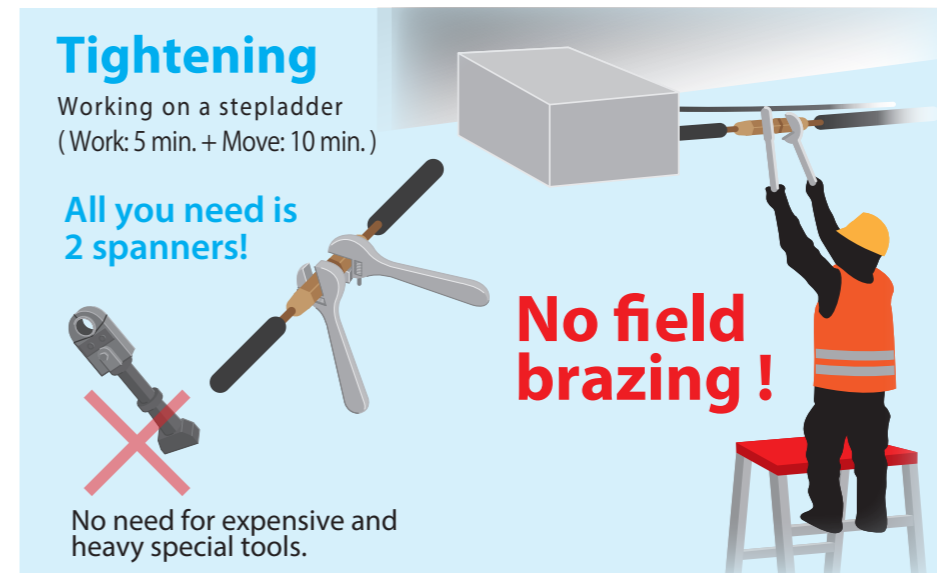
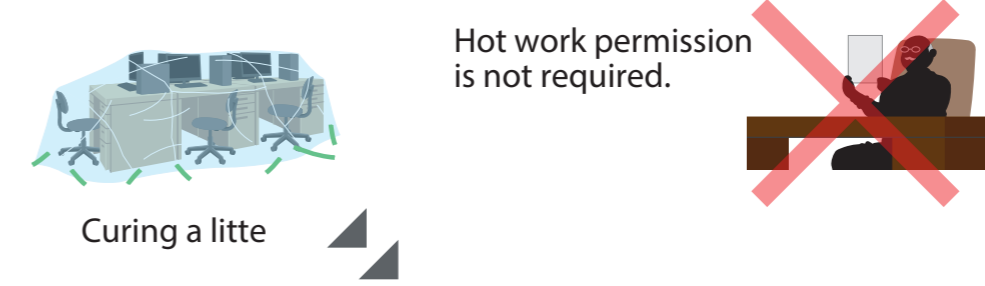
Comparison with conventional methods

Project profile : 30F building, 2,000m²/ floor, office renovation, VRV 20HP 1 unit x 6 indoor units

Conventional Method takes 2 weeks and 33 hours
Take time, risk & worry of fire, need skilled labour



Precision Piping Method takes only 6.5 hours
No flame, no brazing & cleaning, reducing time on-site



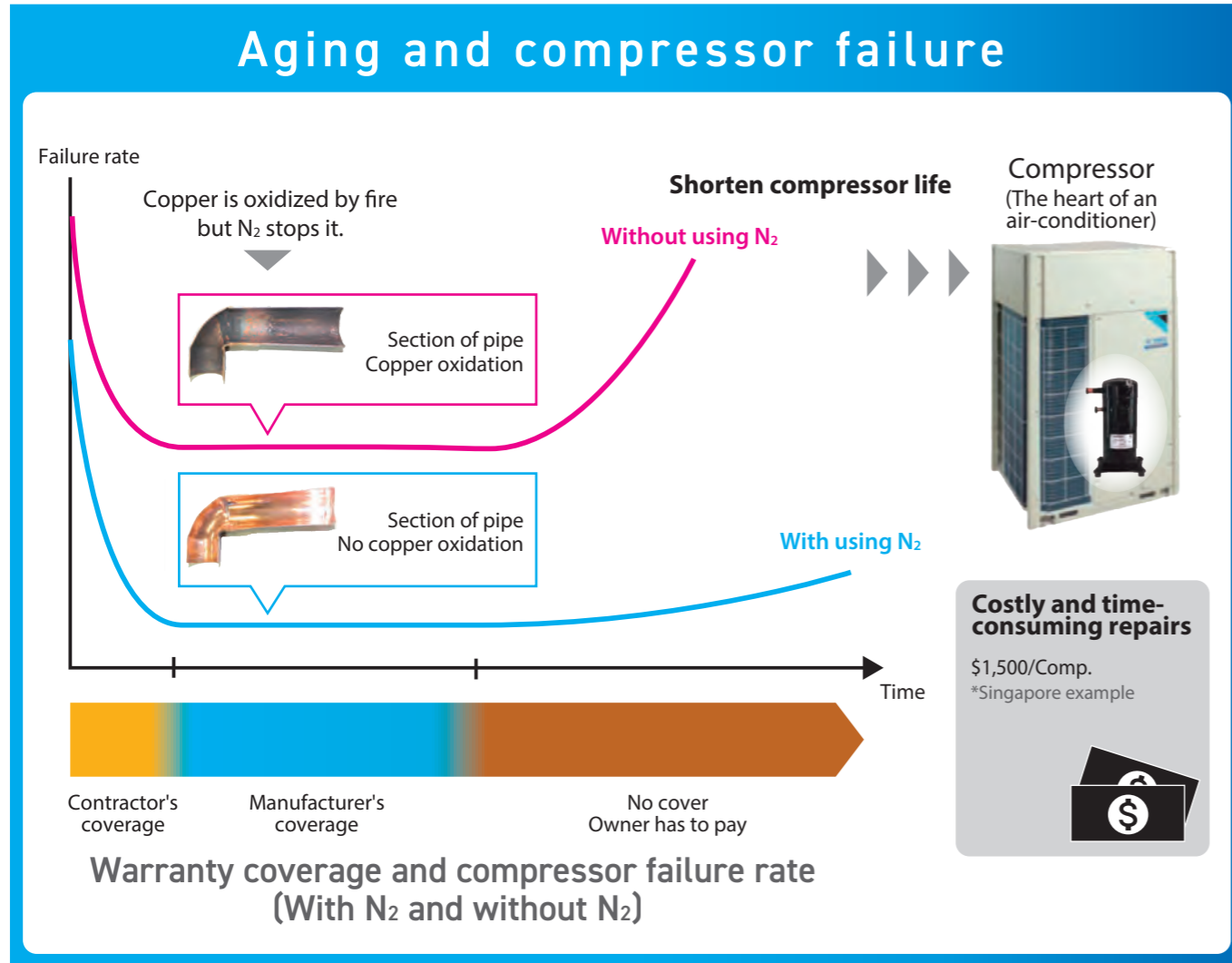
Precision Piping Method significantly reduces the construction time.

No prior preparation is required.

No fire, safe, easy, quick installation.

Why Precision Piping Method is recommended ? (2)

Hot work may oxidize copper pipe and damage a compressor



Result

Copper oxidation creates scales and damages compressor.

Precision Piping Method ensures no oxidation. No need of costly time consuming hot work.

N₂-replaced compressor parts by Precision Piping Method

Case Studies

19 installation examples from around the world

RESIDENCES

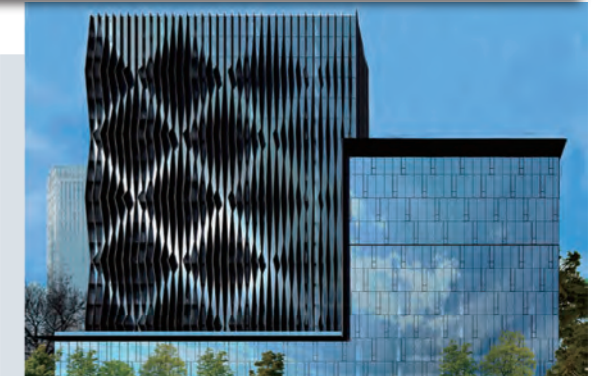
- Ruparel Ariana, Mumbai (India)
- BW Residential Building (Brazil)
- MANSÃO BAHIANA DE TENIS (Brazil)
- Residência Samuel Locks (Brazil)
- Villa 91 Vinhome Central Pack (Vietnam)
- Villa Mr Kien - My Tho (Vietnam)
- Vineet Bhatt Residence, Delhi (India)
- Trump Tower (Philippines)



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OFFICES

- Nueva Córdova's Building (Chile)
- Twin Engine, Pune (India)
- Vasanth & Co, Chennai (India)



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HOTEL

- St. Regis
- Bermuda Hotel & Residences (Bermuda)



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RENOVATION

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Ruparel Ariana, Mumbai (India)



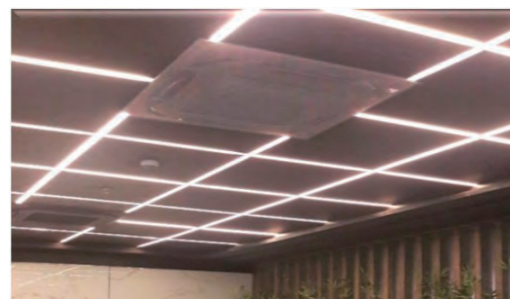
Project Outline

Ruparel Ariana is a 73-story tower with earthquake resistant RCC framed structure. Offering 2 BHK and 3 BHK spacious and luxurious homes with mesmerizing sea view of South-Mumbai Bay. Building entrance lobby is fully air-conditioned and each apartment has its own independent V/VRV system.

Location : Mumbai, India
 Total floor area : 16,000m²
 Completion : June 2022
 Project nature : Apartment
 Consultant : Integrated Technical Services
 Architect : Ar. Rahul Kamathi
 Developer : Ruparel Realty
 Installer : Dasmesh Aircon

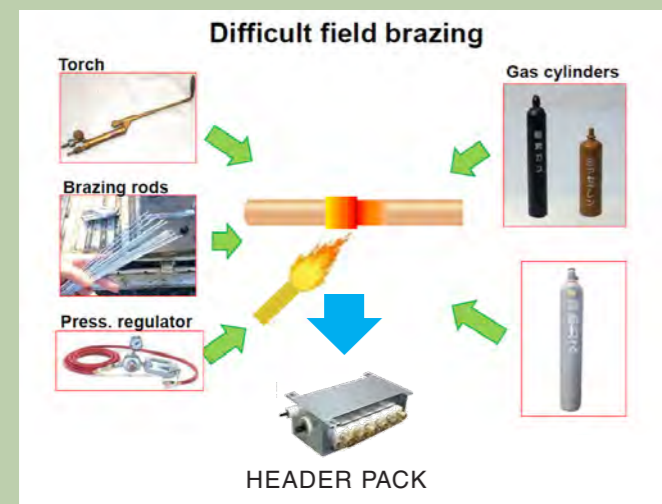
Systems Installed

- 300 V/VRV units
- 1,320 Indoor units
- 300 Header Packs



Why HEADER PACK was adopted?

In high-rise buildings, elevators are mostly busy during construction, so it is difficult to carry out cylinder movement necessary for brazing.



Without N₂ replacement, equipment performance may drop.



Ruparel Ariana, Mumbai (India)

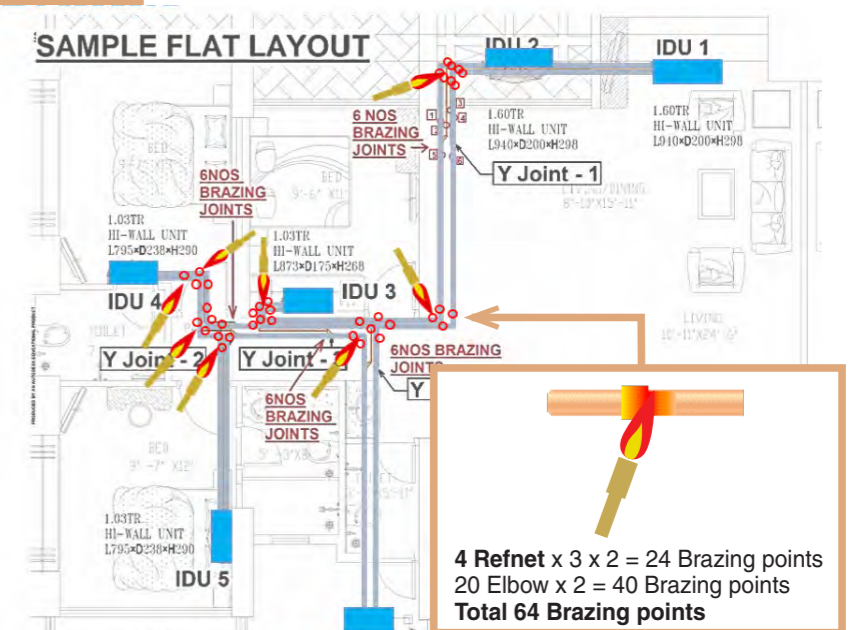
Why HEADER PACK was adopted?

Ruparel Realty is an existing customer of DAIKIN India. In earlier projects (RUPAREL SEAPALACE), Precision Piping Method was used at the construction site. The developer appreciated following advantages while using Header Pack for this project:

- 1) Installation completed in less time
- 2) Avoided fire hazards during brazing
- 3) No need to shift cylinders to the upper floors

Reference

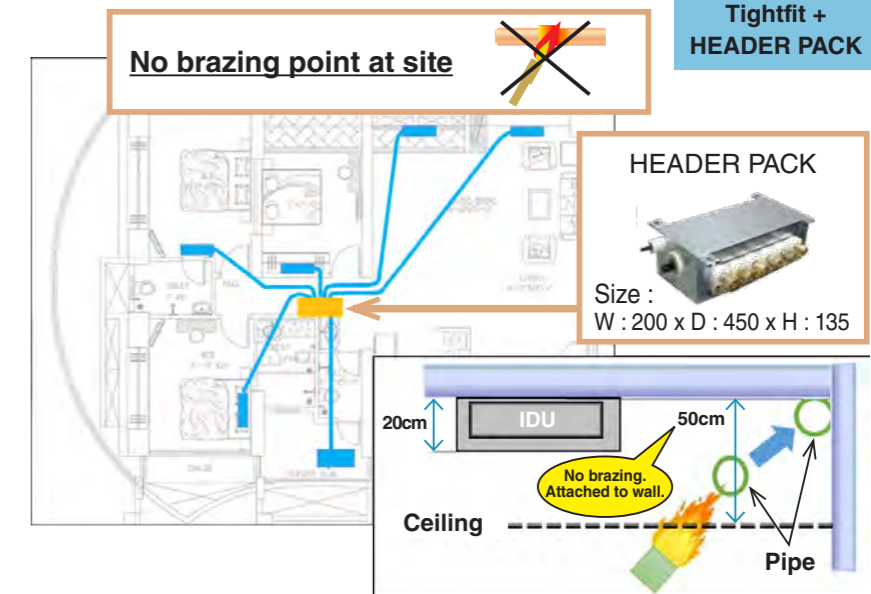
Conventional method



Reference

Precision Piping Method (Header with flare)

Precision Piping Method + Tightfit + HEADER PACK



RUPAREL SEAPALACE

BW Residential Building (Brazil)



BW Residential Building (Brazil)

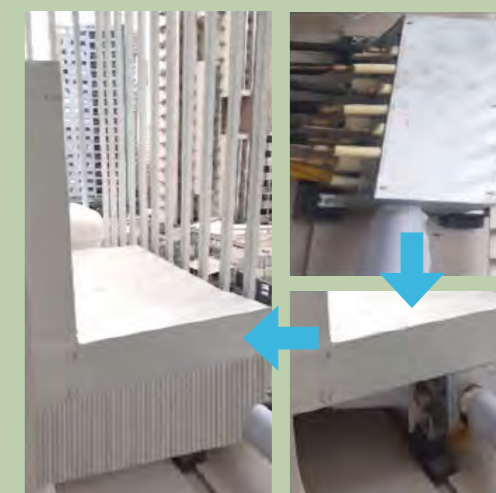
Why Precision Piping Method was suitable?

Daikin's partner Sann Remo, in the Palazzo Lumini and Queen Victoria buildings, set up this residential building, BW, to be air-conditioned with a multi-split system, using two condensers on the balcony.

Our installer partner, Pro Ar, worked on the project and used the Header Pack to unify all the apartment's air-conditioning in just one condenser, releasing more than 50% of the balcony for leisure use.

The use of the Header Pack was essential in the approval of the construction company, since the location of the condensers was considered to be a fire risk, due to the proximity of butane gas.

The decorated floor has become a model in the city and the construction company is already considering using Precision Piping Method in new developments.



Project Outline

Location	: Curitiba, Brazil
Total floor area	: 470m ² x 21 floors
Completion	: 2021
Project nature	: Apartamento BW
Consultant	: Michelena
Architect	: Suelen Parizotto www.sparquitetos.com.br
Developer	: San Remo
Installer	: Pro Ar

Systems Installed

- 21 VRV-S outdoor units
- 63 Indoor units
- 21 Header Packs



Installer comments (Pro Ar)

“The Precision Piping Method system makes the installation process more agile and safe, PROAR is investing in the Precision Piping Method and incorporates it in daily installation processes. The Precision Piping Method brings more reliable jobs.”



MANSÃO BAHIANA DE TENIS (Brazil)



MANSÃO BAHIANA DE TENIS (Brazil)

Why Precision Piping Method was suitable?

In Brazil, refrigerant piping is often done in advance for residential project by RA planning. The situation is the same for high class residences. In addition, owners may order an air conditioner after the interior work is completed. Therefore, brazing work using fire can be very difficult to implement, which meant it was difficult to propose VRV systems. By using Header Pack & Tightfit, the installer can work safely and in a short time without using fire and interference with interior work. In this way, the Precision Piping Method has made it possible to propose VRV.



Project Outline

Location : SALVADOR-BA
 Total floor area : 6,000m²
 Completion : 2021
 Project nature : Residence
 Consultant : DAIKIN Recife
 Developer : moura dubeux
 Installer : MARUY-COMERCIO

Systems Installed

- 24 VRV-IV outdoor units
- 170 Indoor units
- 42 Header Packs
- 130 Tightfits



Installer comments (MARUY-COMERCIO)

“We believe that the use of Precision Piping Method was the main reason why we won the work ahead of our competitors. We were able to reduce costs and present to clients that our work would be clean and quick without major inconvenience for the clients.”



Residência Samuel Locks (Brazil)



Project Outline

Location : Cuiabá, Brazil
 Total floor area : 1,300m², 2 floors
 Completion : 2021
 Project nature : Residence
 Consultant : Gerlane Calabria
 Architect : ILANA SANTIAGO
 Installer : MAIS FRIO

Systems Installed

- 4 VRV-IV outdoor units
- 27 Indoor units
- 4 Header Packs
- 1 SVM Controller



Residência Samuel Locks (Brazil)

Why Precision Piping Method was suitable?

The Header Pack enables no-brazing installation. This is a high standard residence, located in Florais dos Lagos Condominium (Cuiabá-MT). This is one of the three Locks Brother's houses. They are similar in size and Header Packs can be found in all of them. There are two separated systems – one for the house rooms (40HP) and the other for the gourmet area (32HP).



Installer comments (MAIS FRIO)

“Working with Header Pack makes the installation work easier and saves a lot of time, due to the reduction of welding points (6 for each refnet). We are happy to have completed installation without fire, quickly, and with high quality and safety.”



Villa 91 Vinhome Central Pack (Vietnam)



Villa 91 Vinhome Central Pack (Vietnam)

Why Precision Piping Method was suitable?

The Header Pack enabled no-brazing installation. This is the 1st project in which Happy Friend has used the Precision Piping Method.



Installer comments (Happy Friend)

Owners were happy to accept our proposals for easy, quick, high quality and safe installation. Moreover, Daikin gave us practical training on how to install VRV-A and perform the Precision Piping Method.



Project Outline

Location : Vietnam
 Total floor area : 900m², 3 floors
 Completion : 2020
 Project nature : Villa 91 Vinhome Central Pack
 Consultant : Daikin
 Architect : Air Deco
 Developer : Vinhome
 Installer : Happy Friend

Systems Installed

- 2 VRV-A outdoor units
- 23 Indoor units
- 5 Header Packs
- 1 iTM (Centralized Controller)
- 1 SVM Controller

Villa Mr Kien - My Tho (Vietnam)



Project Outline

Location : Vietnam
 Total floor area : 480m², 3 floors
 Completion : 2019
 Project nature : Villa Mr Kien
 Consultant : HACOME
 Architect : Khong gian moi
 Developer : KATHY
 Installer : Lam Quang Dai

Systems Installed

- 1 VRV-A outdoor unit
- 9 Indoor units
- 1 Header Pack
- 1 iTM (Centralized Controller)
- 1 SVM Controller

Villa Mr Kien - My Tho (Vietnam)

Why Precision Piping Method was suitable?

The Precision Piping Method reduced construction time and ensured safety for the investor in this project. Labor cost was a concern for the contractor, but there was no need to ask for qualified workers when using the Precision Piping Method. HACOME has carried out consultations on VRV-A and Precision Piping Method solutions for the owner (Mr. Kien).

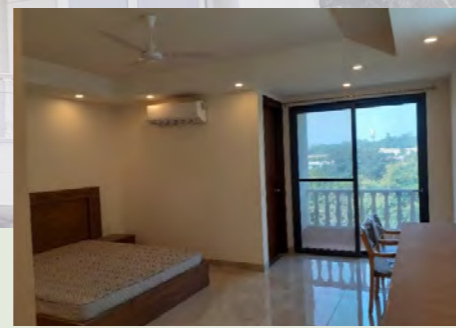


Installer comments (Lam Quang Dai)

“This was a wonderful solution for expanding VRV sales. This is the first project in which Proshop Lam Quang Dai (Daikin Elite Partner) has used the Precision Piping Method for its customers.”



Vineet Bhatt Residence, Delhi (India)



Project Outline

This is a builder project with 4 floor levels above ground, where air conditioning is independent for each floor level. The customer has selected VRV for better energy efficiency under partial load conditions and comfort thanks to the low noise level of indoor unit operation.

Location	: Faridabad, India
Total floor area	: 2,300m ²
Completion	: August 2020
Project nature	: Residence
Consultant	: Design and Build
Developer	: Mr. Bhatt
Installer	: Airsurge India

Systems Installed

- VRV (96 HP)
- 48 Indoor units
- 16 Header Packs

Vineet Bhatt Residence, Delhi (India)

Why Precision Piping Method was suitable?

One of the main reasons for adopting the Header Pack is quality assurance and easy installation. Header Pack installation involves soft copper pipe usage, which uses less ceiling space and provides better floor height. As all indoor units in one circuit are installed at a particular floor level, Header Pack makes it easy to execute project design.



Installer comments

- 1) Header Pack saves a lot of labor cost and time.
- 2) Its compact design fits into narrow attic spaces.
- 3) It eliminates difficult processes, and the quality of installation is improved.



Trump Tower (Philippines)



Trump Tower (Philippines)

Why Precision Piping Method was suitable?

Construction:
From June 2012
Completion: April 2017
Owner required HVAC installation to be completed within only 30 weeks.
Contractor Elite Air contacted Daikin to shorten installation period and ensure high quality.



Installer comments (Elite Air)

“Installation work such as plumbing, fire piping, electrical work, lighting and ducting is tough to do under tight schedules in high-rise buildings. I would recommend this system for saving engineers time on-site, as we all know good installation engineers are harder and harder to come by. With pipes preformed off-site, you can guarantee uniform bends and that the pipework comes tested. This means engineers have more time to get on with other tasks on-site.”



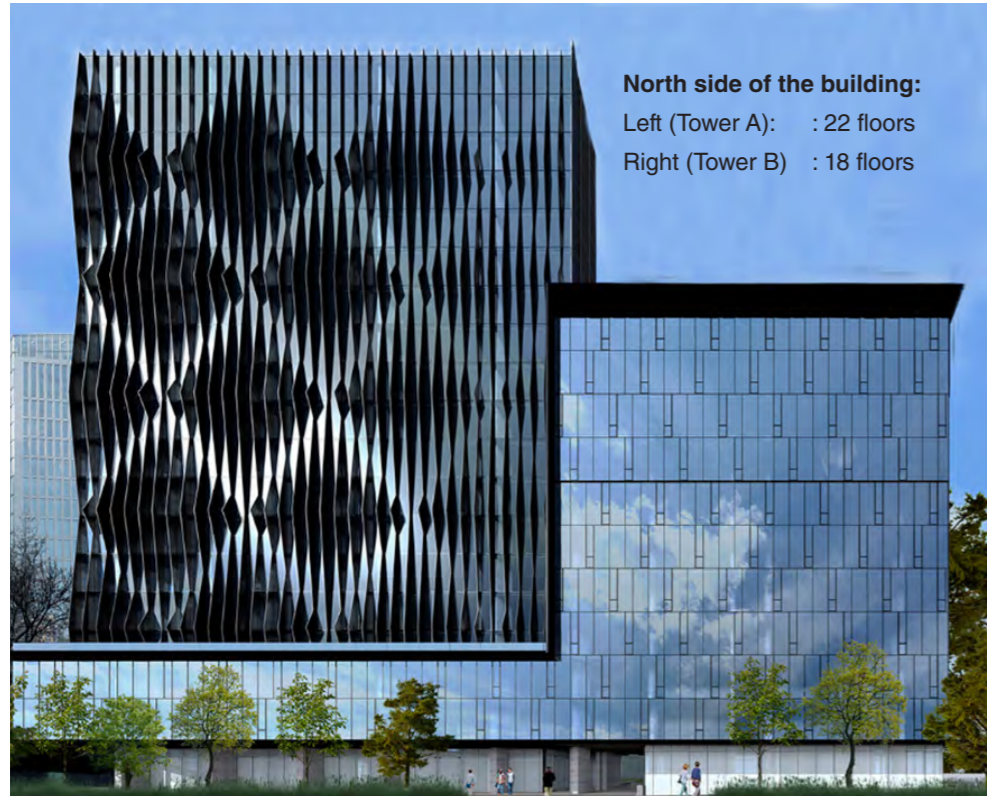
Project Outline

Location : Manila, Philippines
Total floor area : 34,000m² , 61 floors 250m tower
Completion : 2017
Project nature : High-class condominium
Consultant : RTM Engineering
Architect : Broadway Malyan
Developer : Century Properties Group inc
Installer : Elite Air

Systems Installed

- 115 VRV-A outdoor units
- 737 Indoor units
- 3 iTMs in the building with PPD option

Nueva Córdova's Building (Chile)



North side of the building:
 Left (Tower A) : 22 floors
 Right (Tower B) : 18 floors



Project Overview

For more than 50 years Sencorp has developed innovative, sustainable and well-designed projects. They recently won First Award at Euromoney 2020 for the Best Real Estate in Chile & Latin America. The Nueva Córdova LEED project will be the first building in Chile to have a façade built with an innovative photovoltaic solar panel technology. The objective is to self-supply the building's electricity consumption, as well as charging stations for cars and electric bicycles, etc., which combines attractive design and care for the environment.



Project Outline

Nueva Córdova's building covers 50,000m² built across 20 floors above ground and six underground. The building will be used as rental property, with about 20,000m² of offices and 2,000m² of commercial facilities. Daikin has a strong relationship with Sencorp thanks to continuous contributions for HVAC solutions.

Location : Santiago, Chile
 Total floor area : 50,000m² (Tower A : 22 floors, Tower B : 18 floors)
 Completion : July 2021
 Project nature : Commercial Building
 Consultant : IPC CLIMA
 Architect : ASL Architects
 Developer : Sencorp & Sura Asset Management
 Installer : MPT S.A.

Systems Installed

- 67 VRV(HR) outdoor units
- 7,170 Tightfits
- 723 Indoor units
- 3 SVM controllers



Nueva Córdova's Building (Chile)

Why Precision Piping Method was suitable?

The biggest concern was worksite quality and safety, and one of the most important requirements was to have clean site management. The Precision Piping Method makes it possible to achieve no brazing and no fire at the site. It ensures a clean site, high quality and quick installation under limited site working duration.



Installer comments (MPT S.A.)

"A great benefit of using the Precision Piping Method was that there was no brazing on-site, which enabled much faster installation and reduced labor cost by reducing the number of skilled welders on-site."



Twin Engine, Pune (India)



Project Outline

M/s Twin Engine is manufacturer of advanced spare parts, mostly used for engines. In this project, the building has a ground floor factory area and offices on the first floor, where VRV air-conditioning is installed.

Location : Pune, India
 Total floor area : 368m²
 Completion : August 2019
 Project nature : Office
 Consultant : R S Kulkarni
 Installer : HTL Aircon

Systems Installed

- VRV (36HP)
- 17 Indoor units
- 48 Tightfits



Twin Engine, Pune (India)

Why Tightfit was suitable?

- 1) **Flame free and safe solution**- No brazing / fire required at site.
- 2) **Quality enhancement**- Long life and highly reliable installation.
- 3) **Time-saving**- Quick installation.
- 4) **Site access**- Easy access to worksites, and less space used because gas cylinders are not required.



Background

The consultant had many issues with brazing, so they agreed to go ahead with the DAIKIN Precision Piping Method.

The consultant and developer agreed to use Precision Piping Method technology for the Twin Engine project.

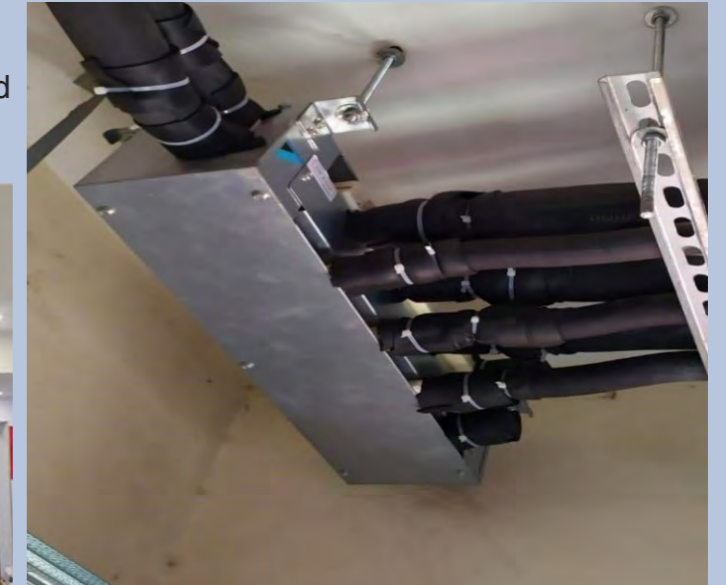
Twin Engine supply parts to top automobile companies in Pune, so they are more interested in trying new technology for quality installation.





Why the HEADER PACK was suitable?

Since the units were located in the same hall on each floor, Header Packs were used to save on piping cost. This also sped up the installation process as it was a running showroom.



Installer comments

“Using Header Packs was very flexible and easy. The time taken to complete installation work is drastically reduced and installation quality is also enhanced.”



Project Outline

This showroom of Vasanth & Co is located at T. Nagar, Chennai. This is a retail showroom for home appliances. They wanted energy-efficient systems for their showrooms and running at partial loads. As customer footfall varies during the day, the air-conditioner should be able to vary its compressor speed to accommodate fluctuating load.

Location : Chennai, India
Total floor area : 1,200m²
Completion : November 2019
Project nature : Showroom
Installer : Pooja Aircons

Systems Installed

- VRV (144HP)
- 32 Indoor units
- 10 Header Packs



St. Regis Bermuda Hotel & Residences (Bermuda)



Project Overview

The St. Regis Bermuda, a US\$120m investment project in St. George's Parish, Bermuda, is designed as a gentle arch spanning the beautiful beach at Achilles Bay, sitting between the historic Fort of St. Catherine and Fort Albert. The project will include the renovation of the Robert Trent Jones Golf Course and will complement St. George's UNESCO World Heritage Site designation. Developed by Hotelco, an experienced international real estate and hotel development group, the new five-star hotel will feature 122 beach and golf front rooms and 90 condominiums. Inspired by the Bermudian style, the buildings are richly articulated and woven into the gently sloping site. The hotel will provide a unique opportunity to experience elegant Bermudian living, while providing a robust economic anchor for the local economy.



Project Outline

Location	: St. Georges Parish, Bermuda
Total floor area	: Hotel 183,763ft ² , Residence 48,854ft ²
Completion	: March 2021
Project nature	: Hotel & Residence
Consultant	: Salas O'Brien
Architect	: OBMI
Developer	: Hotelco Bermuda Holding
Installer	: ARQUITEC (Elite Partner)

Systems Installed

- HOTEL**
- 37 VRV-IV Heat Recovery outdoor units
 - 238 Indoor units
 - 1 iTM (Centralized Controller)
 - 1 SVM Controller
- RESIDENCES**
- 16 VRV-IV outdoor units
 - 60 Indoor units
 - 16 Header Packs
 - 1 SVM Controller



St. Regis Bermuda Hotel & Residences (Bermuda)

Issues to be tackled

- Optimization of initial investment
- Reduction of operating cost and energy consumption levels
- Lack of skilled labor
- Complicated piping layout
- Centralized control of the entire air conditioning system of the Hotel and Residences buildings

Daikin's solution

This is the third hotel project in which Arquitec (Daikin Elite Partner) has carried out a reengineering process for the owner, Hotelco, in which the optimization of the initial investment and operating cost is considered, achieved with the incorporation of **VRV-IV Heat Pump** (for public areas, offices, and the Residence building) and **VRV-IV Heat Recovery** equipment (for rooms in the Hotel building), as well as the use of **Header Pack**, enabling fast execution and lower installation cost, since welding is eliminated and fewer man-hours are required for the installation of the systems.

Likewise, a total control system using **iTM (Intelligent Touch Manager)**, which enables strict energy monitoring and control, and **MSM (Multi Site Management)** has made it possible for the Hotel iTM and the Resident Building **SVM controller** to be integrated from a single control point in the Hotel's engineering room.





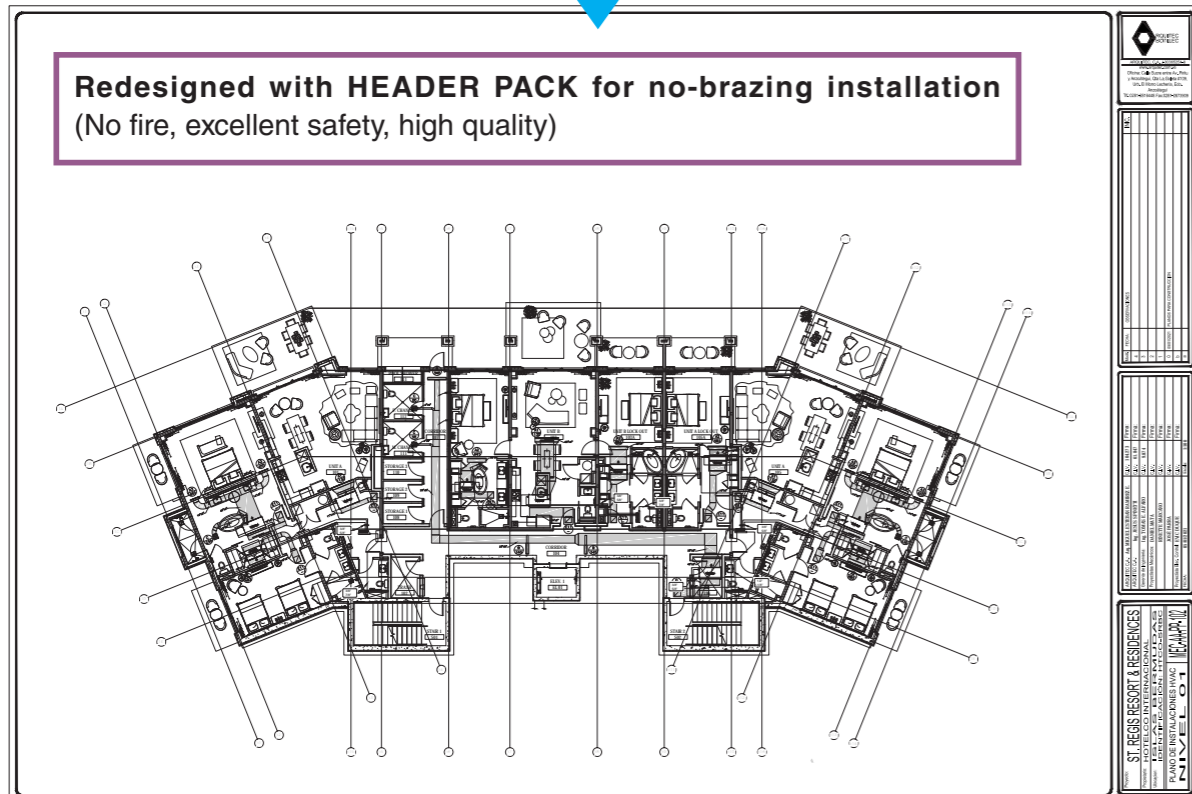
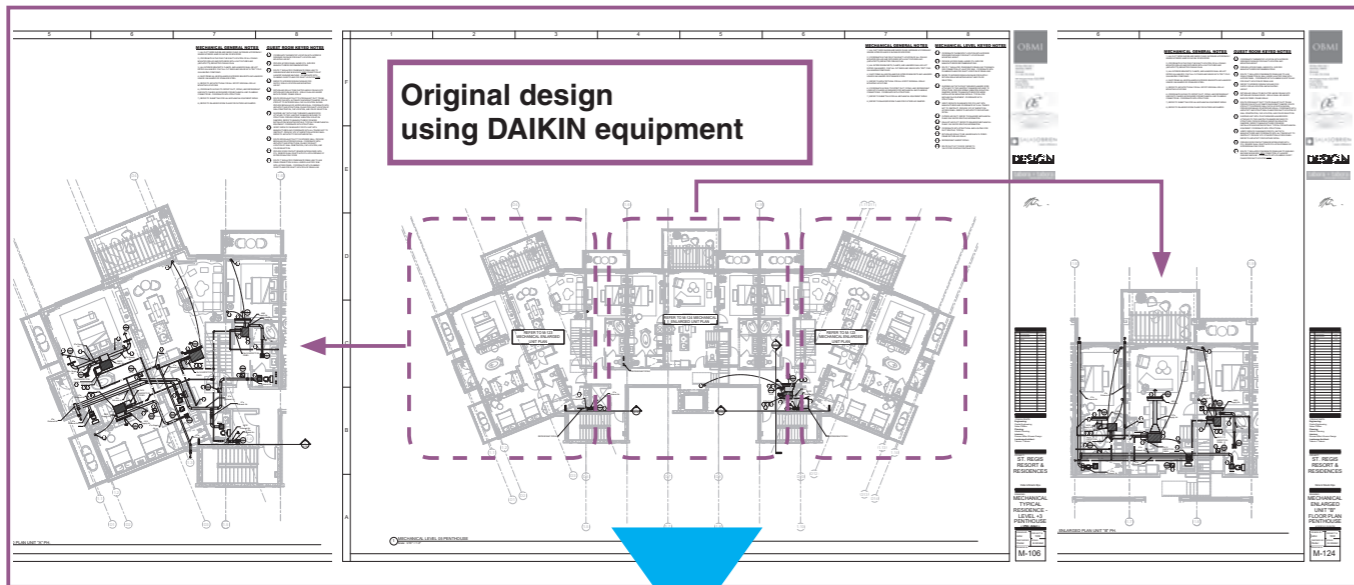
St. Regis Bermuda Hotel & Residences (Bermuda)

Why Precision Piping Method was suitable?

The consultant was Salas O'Brien, **designing the entire project using Daikin equipment at the request of the hotel owner.**

The hotel owner has been using Daikin for many years and has a good relationship with ARQUITEC (our elite partner). For that reason, they wanted to use Daikin equipment for this project.

ARQUITEC proposed **redesigning with Header Pack for no-brazing installation (no fire, excellent safety and high quality)**, and the hotel owner accepted the proposal.



St. Regis Bermuda Hotel & Residences (Bermuda)

Installer comments (ARQUITEC)

“The owner Hotelco was pleased to accept our proposed Header Pack solution.

Header Pack made it possible to complete a full no-brazing installation, ensuring a clean, flexible, fast and safe environment for the customer.

Hotelco is very happy with the outcome of the completed installation. The Header Pack solution exceeded the expectations of everyone involved in the project.

As the installer I was very pleased with the ease of installation and the drastically optimized number of man-hours required to complete the job, which generated savings – and most importantly, my workers’ reduced exposure to harm.”



Concessionaire Toyota Ferro (Argentina)



Project Outline

Location	: Buenos Aires, Argentina
Total floor	: 3 floors
Completion	: November 2020
Project nature	: Office
Consultant	: Bernabe Ferro
Architect	: Arq Marcelo Masso
Developer	: Centro Aire Acondicionado SRL
Installer	: Centro Aire Acondicionado SRL

Systems Installed

- 2 VRV-S units
- 2 Header Packs
- 8 Indoor units
- 4 Tightfits



RENOVATION



Concessionaire Toyota Ferro (Argentina)

Why Precision Piping Method was suitable? Installer comments (Centro Aire Acondicionado SRL)

TOYOTA FERRO is one of the most important dealers of the TOYOTA Distribution Network in the country.

The dealership building is 10 years old, with a showroom and offices on the lower levels, while the upper floors were used for parking. It was decided to transform the third level into a customer service area using the Precision Piping Method.

The Precision Piping Method is the practical and flexible system of joining pipes, without welding, and this made the difference, being able to complete in record time the pipes and installation of two VRV-S Daikin systems of 8HP each, with cassette-type IDUs.



Parking area



Customer service area

Toyota Panamericana (Argentina)



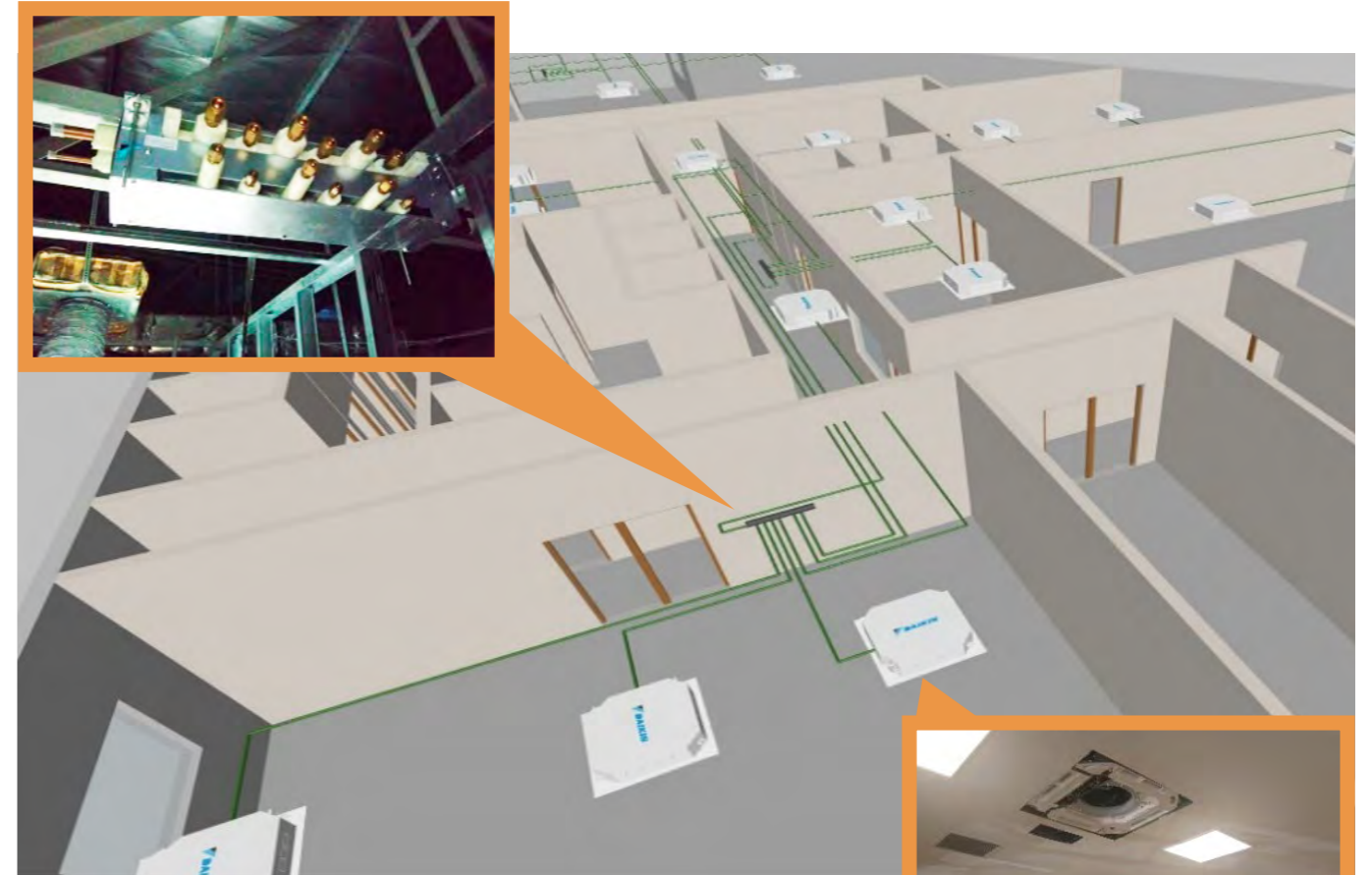
Toyota Panamericana (Argentina)

Why Precision Piping Method was suitable?

“The project includes the offices and customer service areas of a car dealership, where 2 systems of 20HP each were installed, with 24 round flow cassettes connected by Header Packs. The owner required that we carry out piping work during night hours since the showroom is open 7 days a week. The Header Pack enabled no-brazing installation.

Toyota accepted our proposal to install during night hours, and they were very pleased that the installation could be completed without shutting down the showroom.

To project Precision Piping Method we used a 3D model, which was very effective.”



Project Outline

Location : Buenos Aires, Argentina
 Total floor : 1 floor
 Completion : January 2020
 Project nature : Car dealership
 Consultant : Toyota Tsusho Argentina
 Developer : Centro Aire Acondicionado SRL
 Installer : Centro Aire Acondicionado SRL

Systems Installed

- 2 VRV-H units
- 24 Indoor units
- 5 Header Packs



RENOVATION

Oficina Laboratorio Casasco (Argentina)



Oficina Laboratorio Casasco (Argentina)

Why Precision Piping Method was suitable? Installer comments (Centro Aire Acondicionado SRL)

Laboratorios Casasco is an important pharmaceutical manufacturer, whose offices were fitted out around 20 years ago with Carrier Chillers. The plan was to install VRV Daikin in a remodeled area, and the execution deadline was only 10 days.

This is the first stage of an office renovation plan that will take place in the coming years.

Installation needed to be carried out over the weekend and in small spaces occupied by desks and workstations, as the offices continued to work.

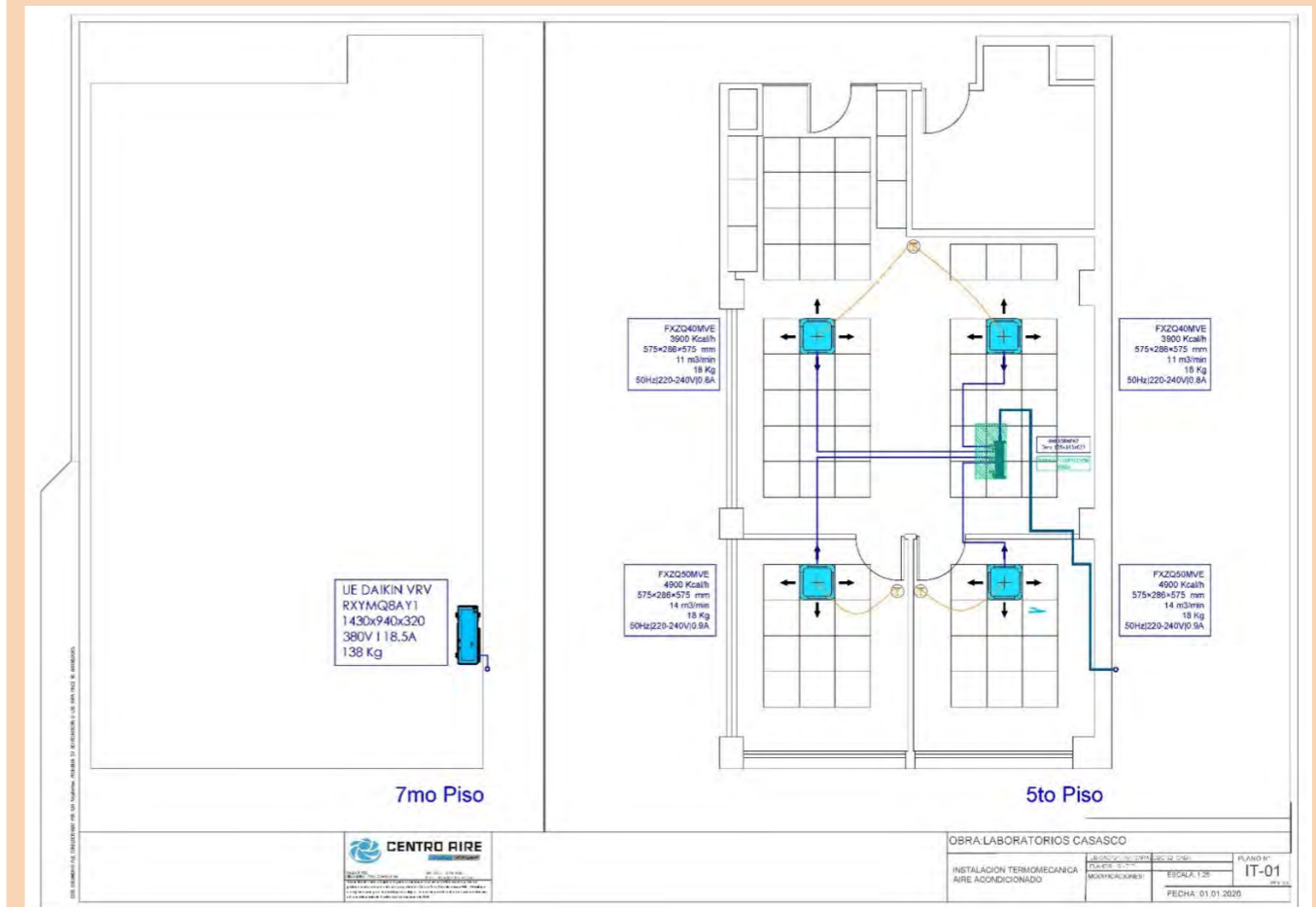
Header Pack and Precision Piping Method is the ideal solution that will be replicated in the next stages.

Project Outline

Location : Buenos Aires, ARGENTINA
 Total floor : 7 floors
 Completion : February 2020
 Project nature : Office
 Consultant : Laboratorio Casasco
 Developer : Centro Aire Acondicionado SRL
 Installer : Centro Aire Acondicionado SRL

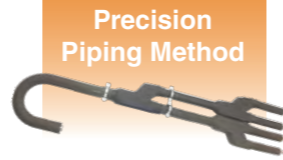
Systems Installed

- 1 VRV-H unit
- 4 Indoor units
- 1 Header Pack
- 1 Tightfit



RENOVATION

Great Eastern Street Hotel (United Kingdom)



Project Outline

The scheme required the demolition of existing derelict buildings on the site, which were classified as dangerous structures, together with the removal of substantial quantities of asbestos materials. In conjunction with the demolition works, the existing building façades were retained by a temporary support system to enable them to form a focal point of the new development.

Location	: London
Total floor area	: 7,000m ² , basement, ground floor, and 5 floors above ground
Completion	: 2019
Project nature	: Hotel(125 bedrooms)
Consultant	: SWP Ltd. Consulting Engineers
Architect	: 5 Plus Architect
Developer	: Seven Capital Hotels (Shoreditch) Limited
Main Contractor	: Vascoft Contractors Ltd. –Design and Build Main Contractors –We have engaged CRS Airconditioning Ltd to carry out the installation of Air Conditioning works.
Installer	: CRS Air conditioning Ltd. (Daikin D1 installer)

Project Overview

Great Eastern Street Hotel is a world-class heritage site, which has seen the transformation of a late Victorian warehouse façade and a Grade II listed pub into a 125-room boutique hotel within a 70,000 square feet “island” plot in the fashionable area of Shoreditch in London.

Systems Installed

- 13 VRF-IV Heat Recovery outdoor units
- 155 Indoor units



RENOVATION



Great Eastern Street Hotel (United Kingdom)

Why Precision Piping Method was suitable?

Given the site’s tight constraints within a busy junction in Shoreditch, Great Eastern Street Hotel was the ideal site on which to trial Daikin’s Precision Piping Method. In April 2017 Chris Staples, Director at CRS, partnered with Daikin UK and Vascoft Contractors Ltd to trial Daikin Precision Piping Method.

This Method **ensures consistency and quality**, while **saving time and reducing the demand for skills on-site**. As material costs continue to increase and refrigerant prices shoot up in response to the F-Gas phase down, Precision Piping Method is proving to be a **cost-effective solution** to delivering high quality pipework, as it reduces time on site and the need for outsourcing when skilled labor is in short supply, meaning that **installers can increase their project load and profitability**.

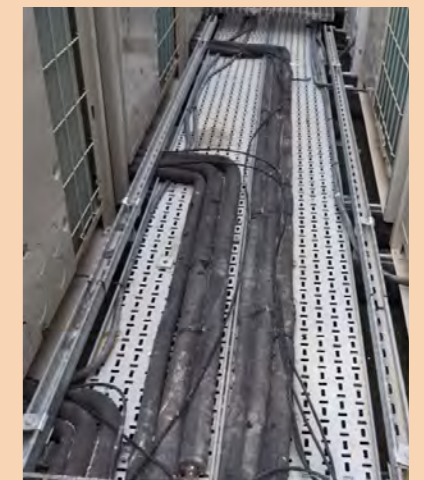
The pre-formed pipe-work can be used for multiple ref-net connections or larger pipe-work connections e.g. for connection to condensers. Engineers can measure multiple pipe bends and connections on-site and send them to the Precision Piping Method workshop for them to be **pre-formed, pressure tested and labelled, then delivered** to site when required.

During the Precision Piping Method exercise, the CRS team sent site measurements and sketches to the workshop where the pipes were preformed and sent to site. CRS installation engineers then completed the final connections to the condensing units **without having to use bending equipment in a tight area on-site**.

Key to the successful introduction of Precision Piping Method on the Great Eastern Street Hotel was to design the system using Precision Piping Method and, once the project is secured, manufacture the precision pipework in advance so that time on site is reduced to purely assembly. It is estimated that **Precision Piping Method reduced skilled labor time on-site by 20-30%**. This sped up the overall project delivery, while freeing up the labor to be deployed on other projects.

Installer comments (Chris Staples from Director at CRS)

“I would recommend this system for saving engineers time on-site, as we all know good installation engineers are harder and harder to come by. With preformed pipe, you can guarantee uniform bends and that the pipework comes tested. This means engineers have more time to progress other tasks on-site whilst this pipe-work is being pre-formed off-site.”



INTER-WA HOME OFFICE (Thailand)



INTER-WA HOME OFFICE (Thailand)

Why Tightfit was suitable?

This was a renovation project to replace air-conditioning.

The owner was mainly concerned with energy consumption and decided to use the VRF system to increase the efficiency of the air-conditioning system, while also attaching great importance to technology and safety. Therefore, Tightfit was chosen for the project thanks to its no-fire design, high quality and excellent safety.



Project Outline

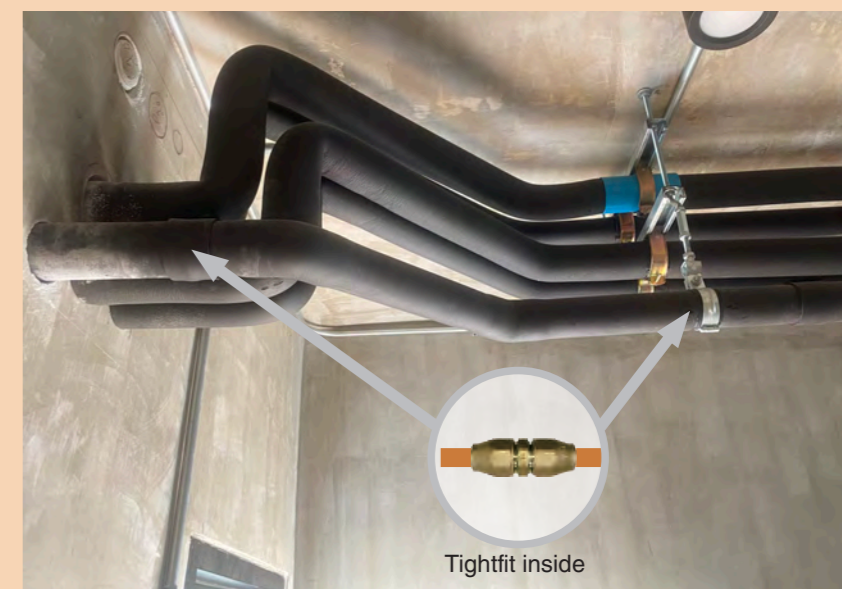
Location	: Thailand
Total floor area	: 181m ²
Completion	: 2020
Project nature	: Office
Architect	: PIL Studio
Developer	: INTER-WA GROUP CO., LTD
Installer	: INTER-WA GROUP CO., LTD

Systems Installed

- 2 Outdoor units (18HP)
- 9 Indoor units
- 144 Tightfits

Installer comments

“This project is for the office renovation of INTER-WA HOME OFFICE, which is an authorized Daikin contractor. We support and help to promote the Daikin brand, and we have a good relationship. We are interested in new technology to assist with installation (no-brazing installation (no-fire, excellent safety and high quality), which is new in Thailand. For that reason, it was decided to use Daikin equipment for this project.”

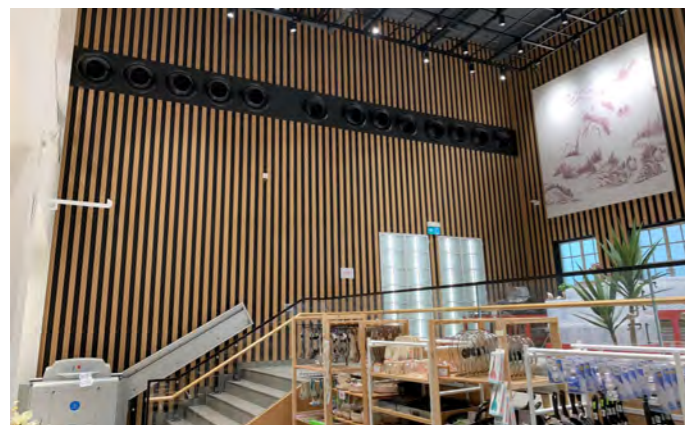


Tightfit inside



RENOVATION

Yue Hwa Building (Singapore)



Project Outline

Location : Singapore
 Total floor area : 4,600m²
 Completion : December 2019
 Project nature : Commercial Building
 Consultant : WSP
 Architect : VivATA Pte Ltd.
 Developer : Yue Hwa Chinese Products Pte Ltd.
 Installer : Wah Loon

Systems Installed

- 49 VRF-A outdoor units
- 91 Indoor units
- 1 RMS
- 1 SVM Controller
- 206 Tightfits



RENOVATION

Yue Hwa Building (Singapore)

Why Precision Piping Method was suitable?

The owners preferred low cost and simple control. Therefore, we proposed replacing the air-cooled chiller of another manufacturer with a Daikin VRF system. The renovation was limited in time and space. Under a tight schedule, the Precision Piping Method was able to minimize the use of fire under safe construction.

DAIKIN VRF system with simple control



Outdoor units were installed by means of a CFD solution



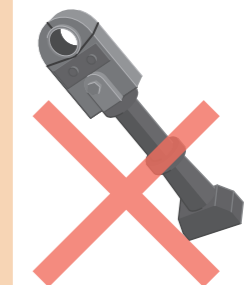
Installer comments (WSP & Wah Loon)

“There was an issue with hot air on the rooftop. Daikin provided a CFD (Computational Fluid Dynamics) solution and prepared detail planning and design. We then looked for other joints and spoke with Daikin about this matter. The consultant rejected rival joints as all Daikin accessories & Tightfit are under one brand. Daikin provided us with free Tightfit installation training. We are very appreciative of Daikin’s support.”



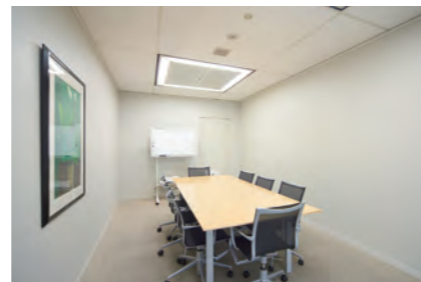
Tightfit inside

Only 2 spanners to tighten



No need for expensive and heavy special tools

Umeda Center Building (Japan)



Umeda Center Building (Japan)

Why Precision Piping Method was suitable?

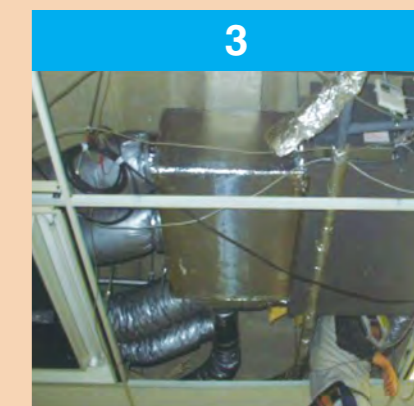
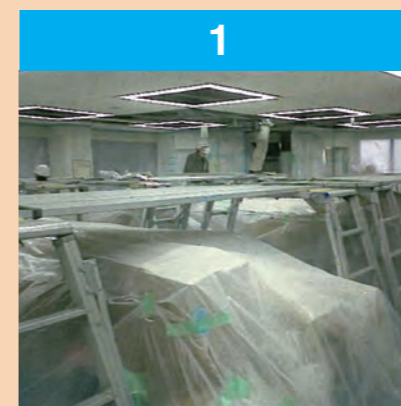
Project Overview

An area of 2,000 m² / floor 86HP (24 + 24 + 19 + 19 + HP) was renovated in 2 days on Saturday and Sunday.

Completed without interrupting office work on weekdays.

2-day construction schedule

Date	Time	Work
Friday	20:00 to midnight	1 Scaffolding / curing, miscellaneous work
Saturday	AM	2 Piping and equipment delivery ↓
	PM	
Sunday	AM	3 TC / tidying
	PM	
Monday	AM	Finishing & start of office work



Project Outline

Location : Osaka, Japan
 Total floor area : 80,088m², 32 floors above ground + 2 floors below ground
 Completion : 2009
 Project nature : Office
 Developer : Umeda Center Building
 Installer : Daikin Air Technology And Engineering Co., Ltd.

Systems Installed

- 104 VRV-Q outdoor units
- 780 Indoor units

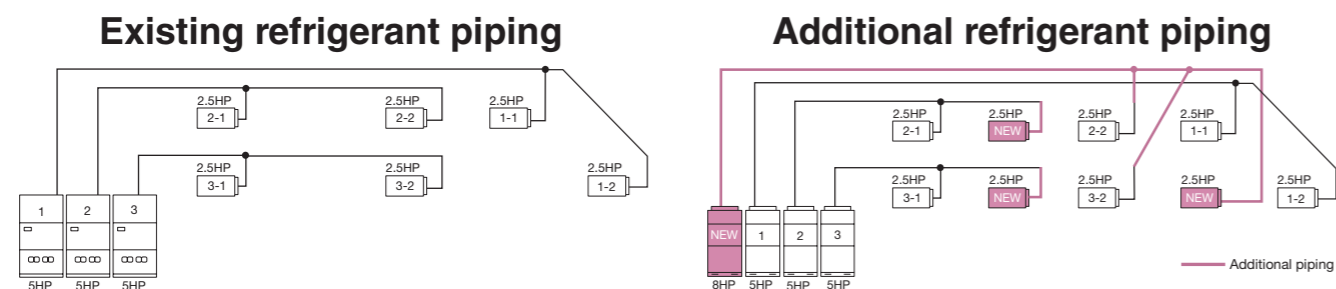


RENOVATION

Why Precision Piping Method was suitable?

Time-saving & cost-saving

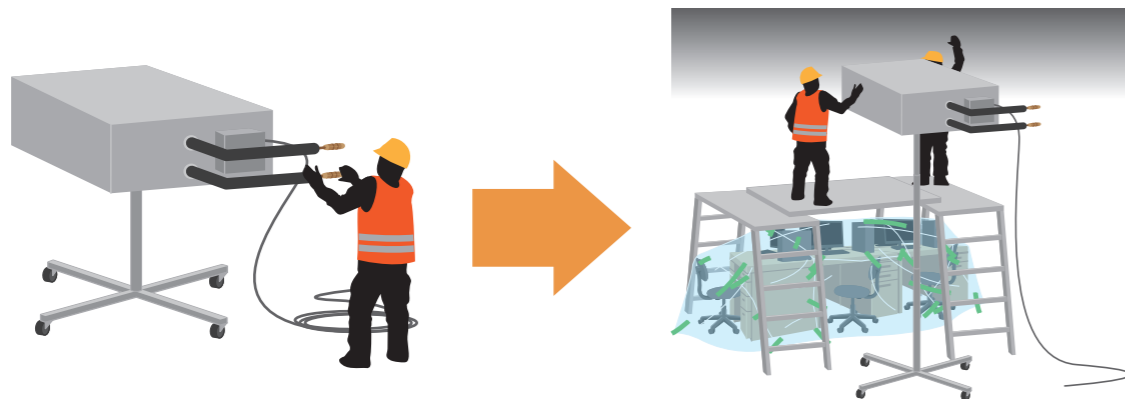
The reuse of existing refrigerant piping, ducting and drainpipes shortened the time for replacement. Despite the capacity increase, only a few parts needed new piping.



Preparation

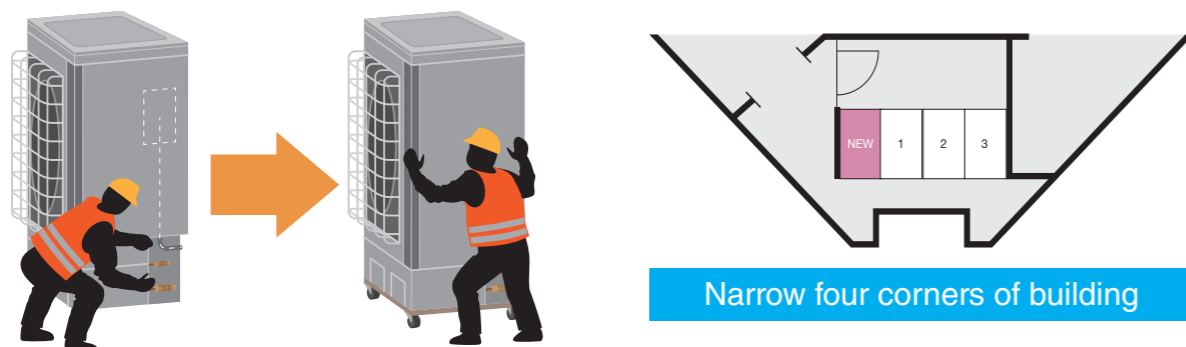
Indoor unit

- (1) Connect flare of coil tube and attach Tightfit to the end.
- (2) Install a communication line in the power supply box.
- (3) Install (1) and (2) in the ceiling after one worker attached indoor unit.



Outdoor unit

- (1) Mount copper tube on outdoor unit and mount Tightfit at the end.
- (2) Remove the electrical panel and install the communication line.
- (3) After installing (1) and (2) by one worker, install on the outdoor unit. (Narrow four corners of building)



Why Precision Piping Method was suitable?

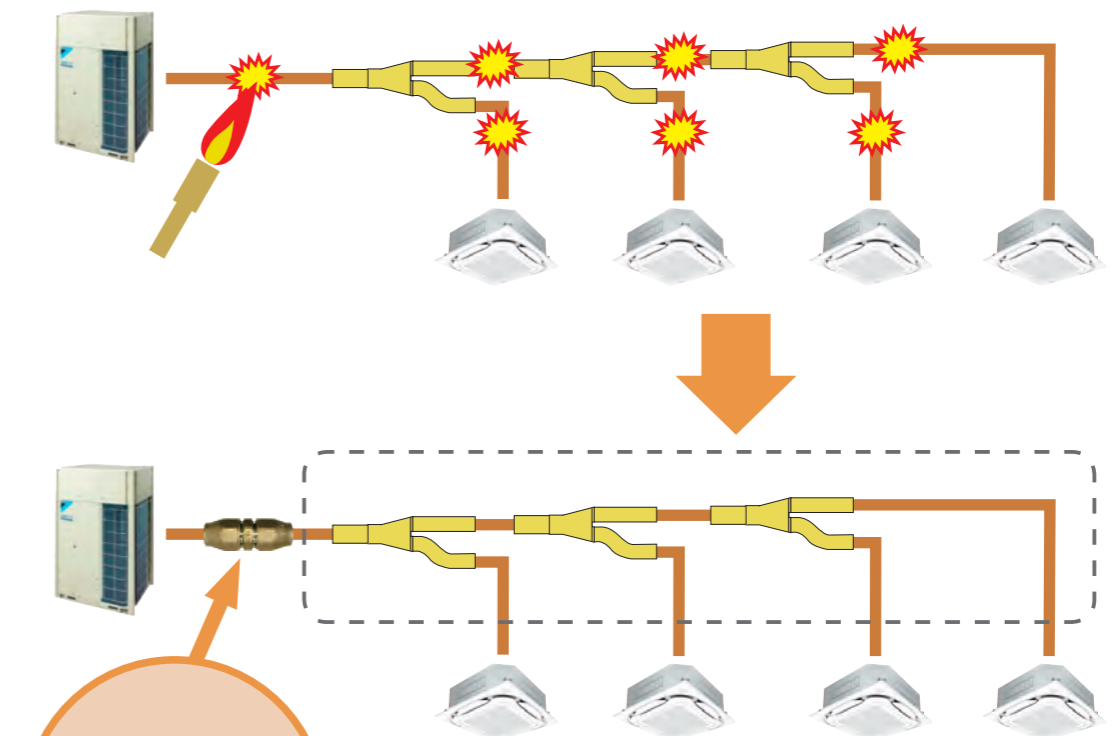
Oxidation equipment failure due to no-nitrogen charge occurs after 3-4 years.
The equipment warranty has expired after 3-4 years.
Cylinder for brazing (oxygen, acetylene, N₂)



No preparation required for brazing.

Since the inside the pipe does not oxidize, the life of the equipment is extended.

System overview



Piping parts are prepared at workshop

Precision Piping Method spread to the world



Precision Piping Method promoters





VRV is a trade mark of Daikin Industries, Ltd.

VRV Air Conditioning System is the world's first individual air conditioning system with variable refrigerant flow control and was commercialised by Daikin in 1982.

VRV is the trade mark of Daikin Industries, Ltd., which is derived from the technology we call "variable refrigerant volume."

Dealer

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