



VRV
Airconditioning
Beyond The Ordinary
Benefits to "insert end user"

The ultimate in comfort.

Designed with the highest quality in mind.

Global No1. HVAC manufacturer.
Established in Japan in 1924.
95 years of experience in HVAC
Specialists in Renewable Systems.
Specialist Partner Network
Quality After Sales Support
More than 10 years of spare parts available

Leaders in innovation and new developments :

- Inventor of VRV® in 1982.
- Inventor of VRT (Variable refrigerant temperature) and only our VRV uses this technology.
- First company to use and manufacture R32 refrigerant.
- Patented swing compressor
- The only manufacturer to offer Flash Streamer air purification technology on the Daikin Perfera split unit.



Why
Daikin?

Daikin Southern Africa The ultimate in Service.

Present for over 50 years
Offices in all major cities
Supply through network of installers
Training Academies
Technical Support in all centres
Largest VRV Supplier
Export and support other Southern African countries

Why
Daikin?



Have you been:

- presented with many Air-conditioning brands for your new *Office*
- told they are all the same

Are you unsure of :

- which one to choose
- why there are price discrepancies
- what all the jargon is

Concerned that:

- The sales talk is just that
- Have asked Why a system over another and not received a concrete answer

Introducing The VRV IV Solution: Beyond The Ordinary

In the following slides we would like to give you some summarised and practical examples of the Daikin VRV Solution that will directly impact you and your clients, colleagues

Every client has 7 main requirements

1. *Energy efficiency system* – not just a claim but what is energy efficient
2. *Occupant comfort* and ease of use
3. Superior *life cycle performance and reliability* of the equipment thus prolonging the lifetime and systems and avoid downtime
4. The need to reduce the *operational costs*
5. Flexibility of *tailor made solution* for your premises
6. Ensure adequate *pre and post service*
7. *Sustainability of systems*



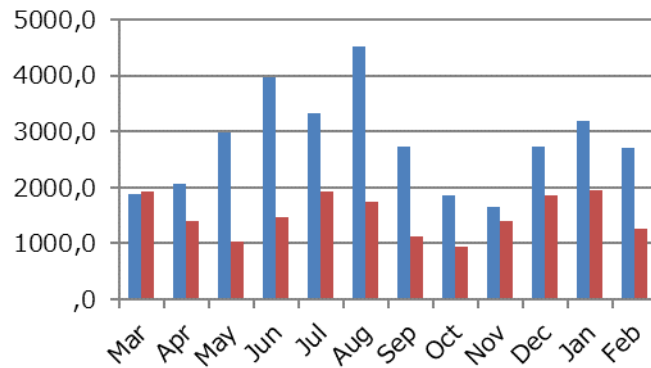
In the following slides we would like to give some practical examples of the Daikin VRV Solution targeting the above requirements



Variable Refrigerant Control Technology



Automatically adjusts your system to meet individual building and climate requirements



Continuously adjusts both the inverter compressor speed and the refrigerant evaporation temperature to match the room cooling load changes, thus providing the necessary capacity to meet the building load.

The first weather accommodating control on the market

The result: always giving the highest seasonal efficiency

Power Saving = 28%

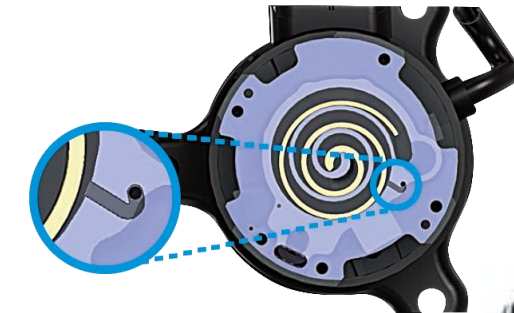
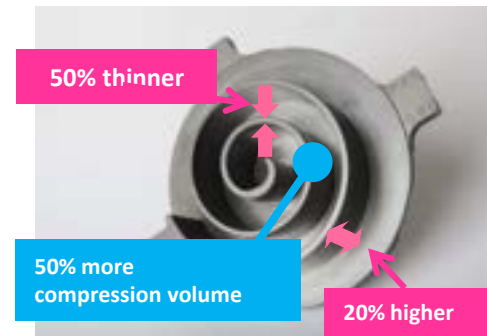
Ref Site: Takko Store R50 346
saving / year
46% less energy consumed



High Strength Scroll Inverter compressor with back pressure control



Increased capacity due to new K-type compressor



- High EER, also at part load
 - Low noise levels
- Low or no maintenance

Efficiency Saving = 2%

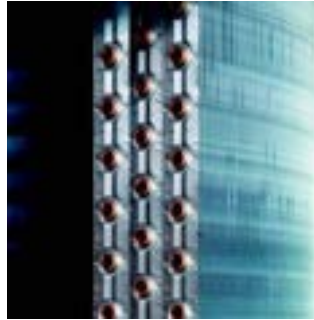


37
patents

Heat Exchanger



One of the densest heat exchanger designs on the market



50% larger heat exchange surface
(up to 235 m²)

Heat exchange efficiency = +40%

New Outer-Drive Motor



Over 50 fan speed steps



Higher air flow efficiency
Lower fan power consumption
Lower weight
Stable rotation and volumetric efficiency

fan motor efficiency = +3%

Inverter Fan

Auto-cleaning Panels



Self-Cleaning decoration panels make life easier.



Maintenance is simplified by removing the need to climb up to open a round flow cassette in order to clean it.

Reducing time required for maintenance

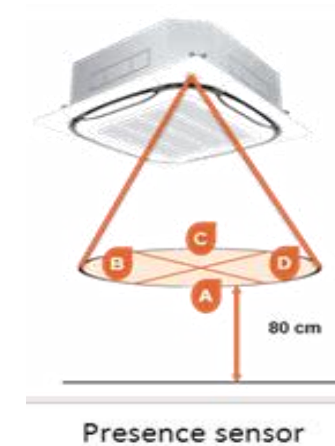
With its unique self-cleaning mechanism, you can ensure consistently high system efficiency, all year round

Efficiency Saving = +2%
Running costs = -50%

Ref Site: Coral Betting:
49% vs normal unit

Absence Sensors

Built in Absence Sensors



No motion detected (after a period of time) and the temperature setting changes to reduce capacity

Efficiency Saving =
dependent on occupation

greenstar
credits

Drastically reducing running costs

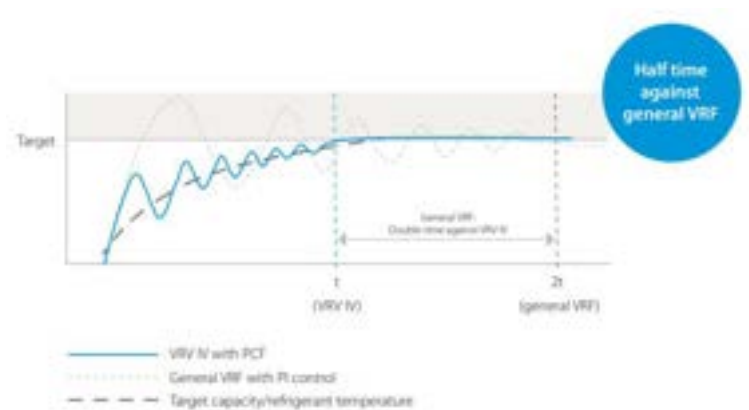
- Innovative technologies to offer market-leading efficiencies
- +Flexibility to meet the building load at the highest efficiency

Predictive Control Function (PCF)

Reaching targets faster

- › Reaching targets without overshooting, so there is no waste, resulting in improved efficiency

The large number of Daikin systems already in operation and which are monitored by our i-Net software puts us in the unique position of being able to analyse this data and develop the predictive control function



Comfort guaranteed - at all times

User Friendly Network Solutions

Detailed, easy monitoring and
operation of indoor units



Slim outlook enabling easier integration to/in the wall
Large screen for easy interaction

Monitoring

Leak Detection

Built in leak detection monitoring



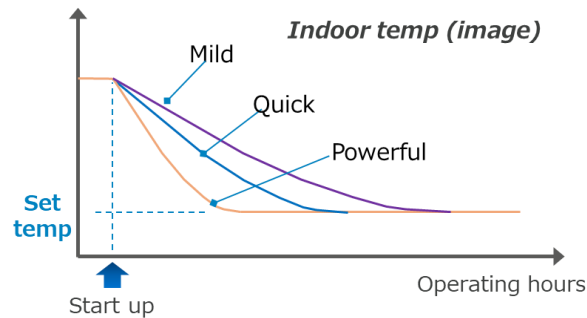
Using historical data to activate an alarm in
the event of a potential leakage and to report
on occurrences and frequency over time

Monitoring / Prevention

Variable Refrigerant Control Technology



Automatically adjusts your system to meet individual building and climate requirements



Better user comfort – Increases comfort levels by reducing colder air supplied into rooms and more pleasant heating

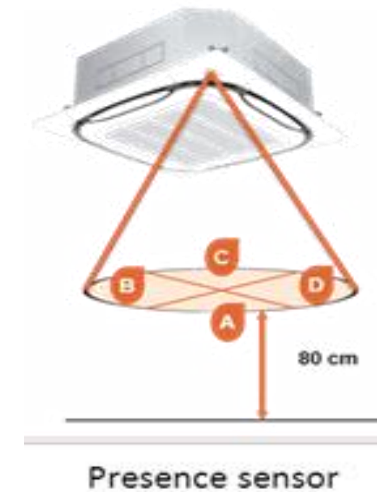
More even Temperature Control



VRV IV +

Floor And Presence Sensors

Built in presence sensors



Presence sensor detect people in the room and diverts the air away

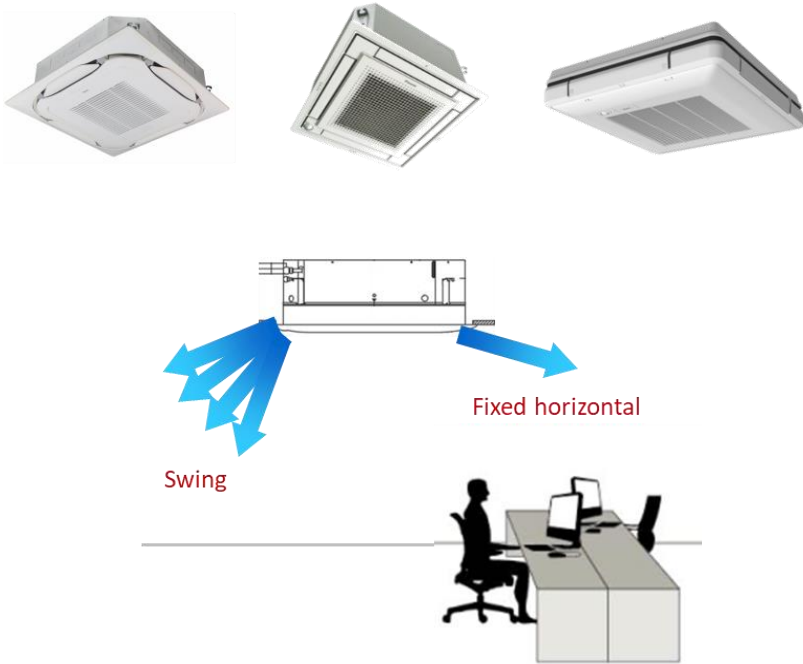
No cold drafts



DAIKIN

Flap Control

Every swing flap of the decoration panel can be operated individually



Benefits to suit your exact needs

Fresh Air Intake

Allows to bring in up to ~20% of fresh air
Brings fresh air into the suction, so it is pre-cooled / pre-heated

Whisper Quiet



The operating of the unit can hardly be heard. The sound pressure level goes down to 19dBA

Draft Prevention

When starting to warm up or when the thermostat is off, the air discharge direction is set horizontally and the fan to low speed, to prevent draught.

After warming up, air discharge and fan speed are set as desired.

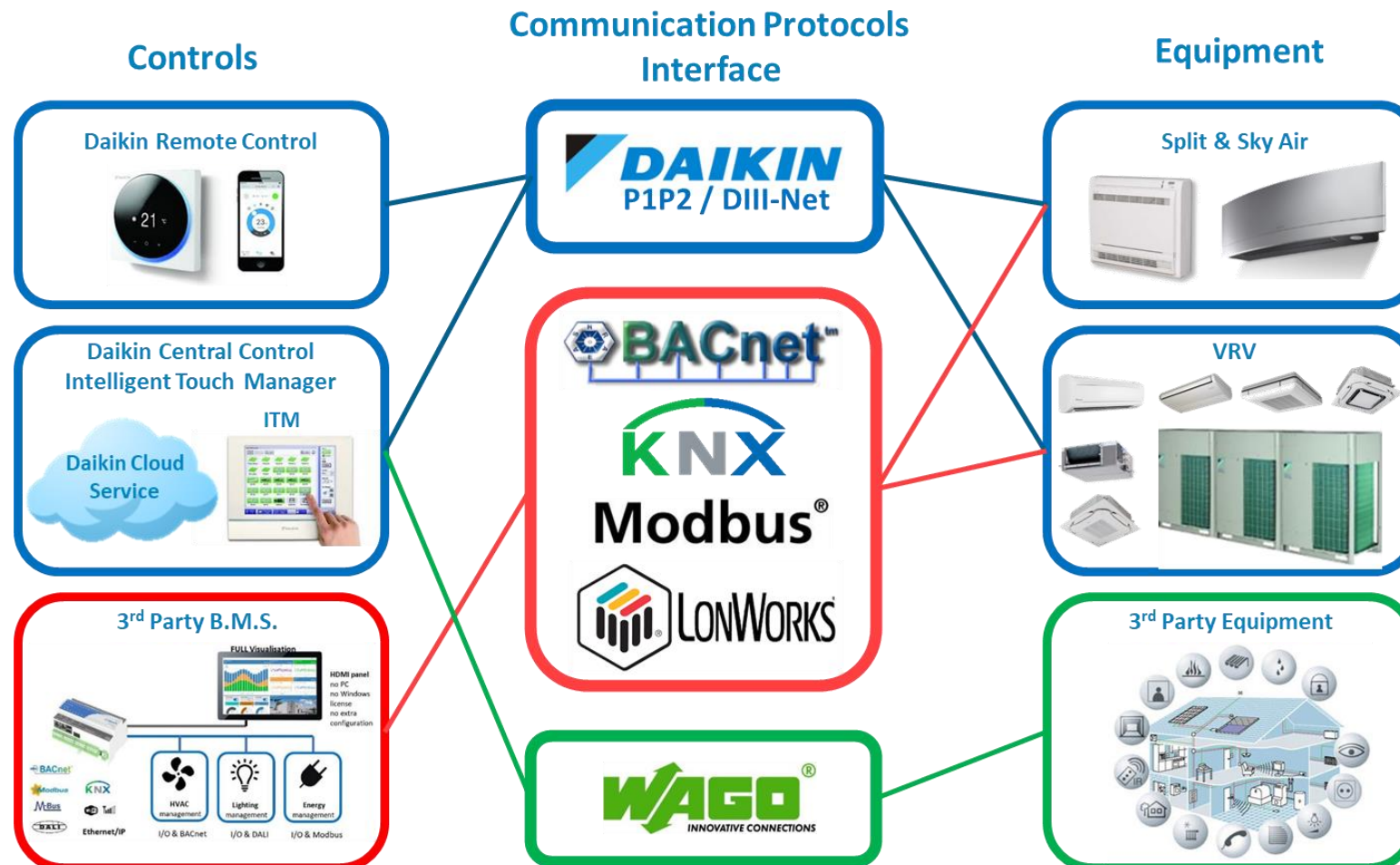
High Aesthetics

Focus on designing high aesthetics indoor units.



Control Products

Whether you or your customer has one building or several buildings worldwide
No matter if you have already installed a controller and want to integrate your Daikin unit or want Daikin to deliver the complete controls package
From basic control possibilities to advanced BMS systems



Multiple Control Options

greenstar
credits

DAIKIN

VRV IV +

Most extensive testing before new units leave the factory
Designed to perform

Duty Cycling extends operation life

The cyclical start-up sequence of multiple outdoor units systems equalises compressor duty and extends operating life.



Back-up function

In the event of a compressor malfunction another compressor or outdoor unit will take over in order to maintain 8 hour interim capacity, allowing time for maintenance or repair while comfort remains guaranteed



Single outdoor unit
with multiple compressors



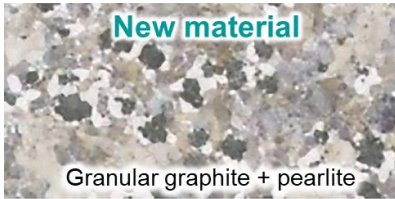
Multi outdoor
unit system

37 patents

Compressor



New compressor manufacturing technology



- SSC (smooth step control)
- PFC (predictive Functional Control)
- 620 different operating steps on the compressor
- Quick and stable operation can be realized
- 50% more compression volume

Strength/Durability = x 2.5

Compressor Motor

6-pole compressor motor



50% stronger magnetic force
Higher rotation efficiency

Longevity Increased

Heat Exchanger



One of the densest heat exchanger designs on the market



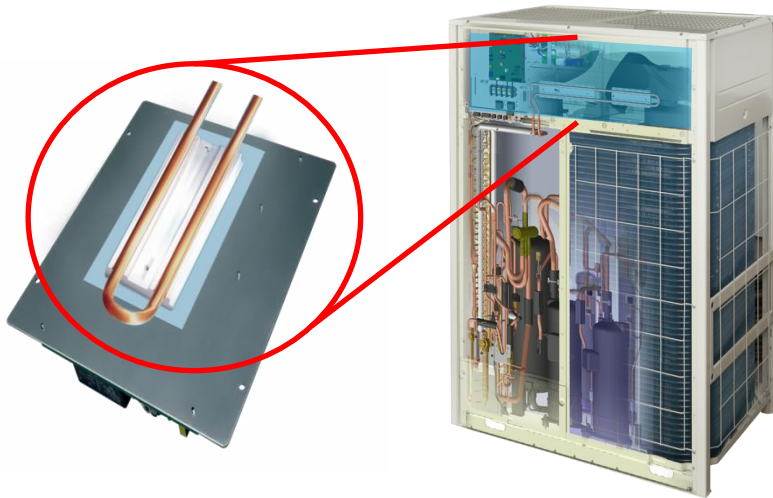
Condensers manufactured in Copper Coils/
Aluminium Fins which are far superior to
Aluminium Coils used on competition system.
Standard hydrophilic treatment on condensers to
increase longevity
50% larger heat exchange surface (up to 235 m2)

Longevity Increased

Refrigerant Electronic Cooling



Refrigerant cooled PCB's



Reliable cooling without any influence
from ambient air temperature
Smaller switch box for smoother air flow
through the H/E for better performance

Longevity / Protection

Efficiency +5%

Variable Refrigerant Control Technology



Outdoor unit's condenser fans operate less due
to having to only reject the necessary quantities
of heat from the indoor load.

Therefore, less mechanical operation and less
dirty outside air having to be drawn through the
condensers

Longevity



High-spec Capacitors

Designed for 105°C operation temperature

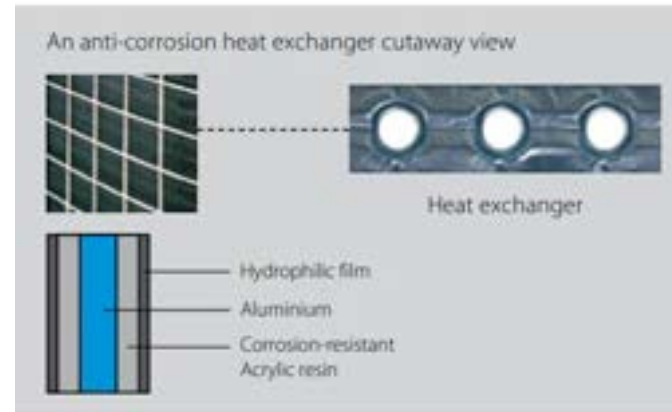


This increases the lifetime of the PCB by 3 times

Longevity – PCB x 3

Corrosion Treatment

Factory Standard Anti - Corrosion Treatment



Anti-corrosion treatment is rated at 1000 hours of salt spray endurance
This ensures a longer life of the heat exchangers provided by this special treatment
2 times longer heat exchanger lifetime (vs. industry standard)

Longevity x 2

New Compressor Manufacturing Tests



Failure rate of compressors decreased by 30%

Reliability = +30%

Double Power Surge Protection

1. Metal Oxide Varistor
M.O.V



2. Gas Filled Tube



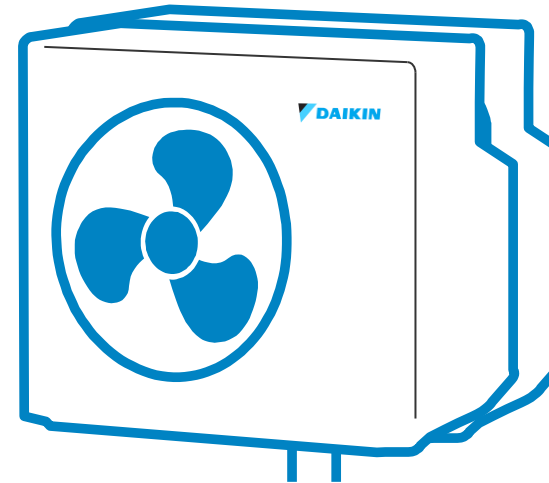
OR



Provides double over-voltage protection
through use of MOV and GFT.

Protection

Daikin Manufactures



Units for indirect & direct
temperature exchange

+

Refrigerant

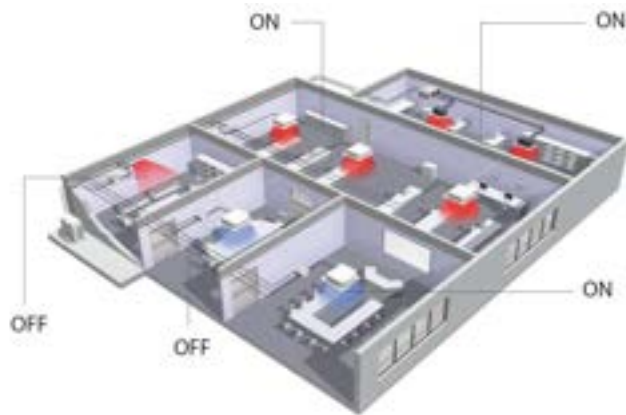
+

Compressor

}
= unique

Precise zone control

VRV systems have low running costs because it permits each zone to be controlled individually.



That is, only those rooms that require air conditioning will be heated or cooled, while the system can be shut down completely in rooms where no air conditioning is required.

Auto-cleaning panels



- Self-Cleaning decoration panels make life easier. Maintenance is simplified by removing the need to climb up to open a round flow cassette in order to clean it. With its unique self-cleaning mechanism, you can ensure consistently high system efficiency, all year round
- Improved indoor air quality
 - Less time is required for maintenance
 - Increases efficiency and saves up to 50% running costs



SEER

Daikins units are
specified to SEER
standards



SEASONAL Efficiency = Better
representation of real-life efficiency

Data that matches real life performance:

All data used in certification programs
and software matches with the units
actually sold and commercialized

Other brands often do not provide these
values and only use theoretical EER values
which are easily inflated to simulate good
ratings

Complete Product Solution

One Of The Widest Ranges In The Industry



Wide range of equipment to choose from.

VRV – 11 ranges, 5 special ranges for special application cases

Chillers – 37 ranges, covering capacity from 5 to +/-20000 kW

AHUs – 4 ranges, airflows from 150 to 144.000 m³/h

Refrigeration – 18 ranges, from 0.8 to 512 kW, providing temperatures from -20 to +350C



A complete line-up



VRV



Sky Air



Chillers & FCUs



Air handling units



Heat Pumps



Control systems



Biddle Air Curtains



Refrigeration

Great design flexibility Multiple Applications

Complete Product Solution

Installation possibilities:

Total piping length : 250 m

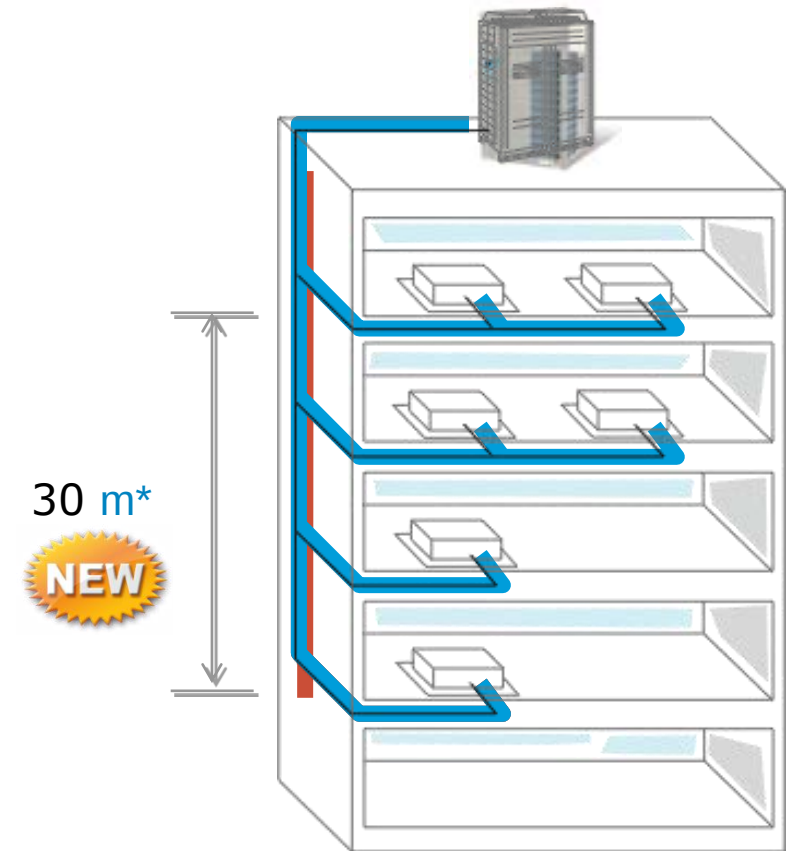
121 Different Type and Capacity Indoor Units

1000 m pipe run

Combination With Air Handling Units

Daikin offers 2 x separate condensers instead of a single system to cover the required cooling capacity.

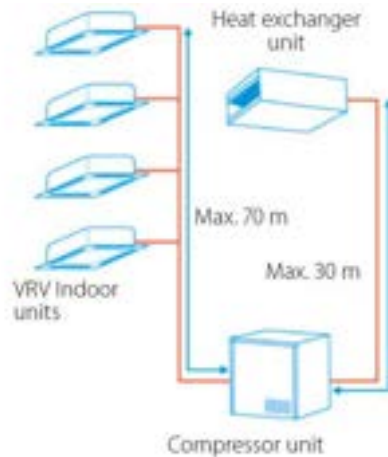
- More redundancy
- More accurate load control
- Total of 3 compressors
- Better efficiency due to larger surface area on coils and fins with 2 x separate cooling coils, better heat exchanging
- Much lower capacity drop over longer pipe runs
- Less refrigerant loss than single condenser, if any leaks occur



VRV IV "INVISIBLE"



A split outdoor unit that is made up by a heat exchanger module which is basically the inverter fans and the two-row heat exchanger, and the compressor module comprising of the compressor all the other control and refrigerant components.



Simple to service and to install!
Designed for silent and energy efficient operation
Long pipe runs for a flexible installation!

Hidden Condensers

BS BOXES

Widest Portfolio of Branch Selectors on the Market



Possibility to freely mix single-port and multi-port BS Boxes allows to efficiently design the system to minimize piping lengths and simplify installation

No limit on the number of unused ports on multi-port BS Boxes allows to efficiently design systems for speculative development, where indoor units will get added at a later time

Flexibility

DAIKIN FBA-A DUCTED SYSTEMS

- Standard drain pump with 625mm lift
- Slimmest yet most powerful ducted medium static unit in the market.
- Static pressure can be changed
- Seasonal efficiency ratings of between 5.8 and 6.19 which decreases initial investment payback period.

The Daikin Service Experience

Quality Manufacturing

1. Thorough incoming goods inspection
 - To make sure that all incoming parts have right specifications and quality.
 - 3D measuring with special equipment
 - Material specification check (e.g. salt spray test, UV test...)
 - Functional check (e.g. that the fan is well balanced)
 - Compliancy check (e.g. that part contains no Pb, Cd, Hg...)
2. Zero defect policy, thorough checks during assembly process in Belgium, Europe
3. Product and process audit



Design Phase

Assisting consultants in error-free design by offering tools for BIM design



Project Phase

Compulsory Inspection Plans with
Accredited Installers

Ensuring the correct installation and
equipment at start-up

Project feasibility
study and design

Equipment
supply and
installation

Commissioning

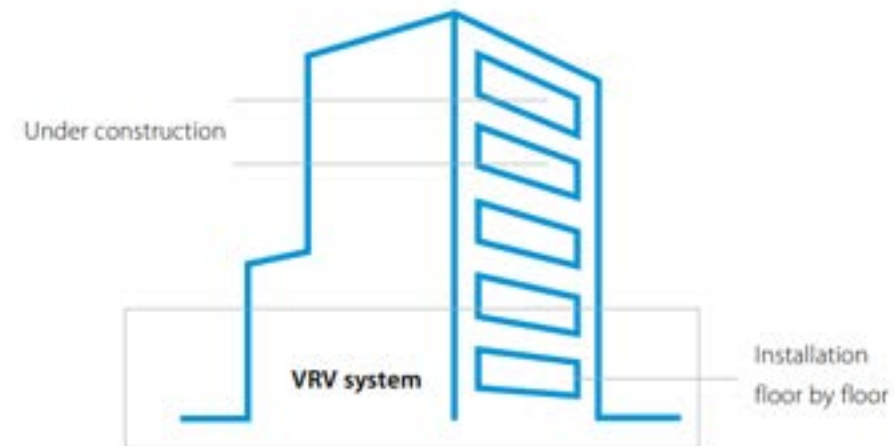
Use and
maintenance



The Daikin Service Experience

Phased installation

Installation of the VRV system can be implemented
floor by floor, so that sections of the building can
be put into use very quickly, or enabling the air
conditioning system to be commissioned and
operated in stages, rather than on final completion of
the project



The Daikin Service Experience

Post Project phase

Warranty period

Warranty period is 5 years on all parts provided that a Daikin partner installs equipment.

Spare parts -10 years

Daikin aims to keep critical spare parts stock for at least 10 years after last production of unit.

On average we have over 90% critical spare parts in stock available for immediate delivery.

Daikin South Africa stocks over 18 000 spare parts at a value of around R20 million.

Remote monitoring and cloud service

Remote monitoring and Cloud services

24/7 remote control, support & diagnostics and performance optimization

Control



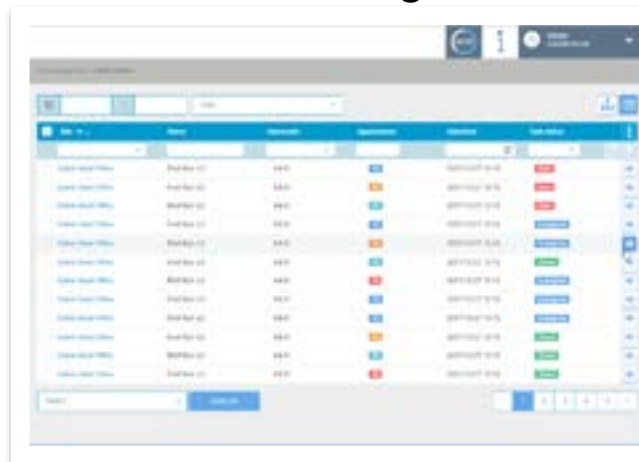
Comfort monitoring



Energy monitoring



Remote diagnostics



Daikin Cloud Service provides near real-time data:

- to help identify cost-saving opportunities
- increase the lifetime of equipment
- reduce the risk of unexpected issues.

- Periodical evaluation of the system with Daikin expert advise on health, comfort and/or energy saving opportunities
- Event and prediction indication and notification
- Access to operational system data for remote diagnostics
- Smart mobilization of authorized service personnel

BLUEvolution

Current VRV4

Reclaimed refrigerant:

Daikin VRV Heat Recovery units are supplied imported pre-charged with a mix including reclaimed refrigerant. This means a significant saving in virgin gas being produced each year.



Introducing R-32 refrigerant on VRV 5

Uses latest R32 refrigerant which is a standard in Europe due to the following:

- Lower Global Warming Potential (GWP): by 68% - only 1/3rd of R-410A
- › Lower refrigerant charge: 15% less compared to R-410A
- › Higher energy efficiency
- › Single component refrigerant, easy to handle and recycle



DAIKIN FOR GREEN BUILDINGS



1. Advanced [support and tools for commissioning and tuning](#) of green buildings
2. Market leading [building management controls](#) for facility management, end-users and technicians
3. First class [indoor environment quality](#), from [fresh air control](#) to innovations in [thermal comfort](#) and [acoustics](#)
4. [Exceptional seasonal energy efficiency](#), advanced heat recovery, variable refrigerant temperatures and occupancy sensing
5. Solutions for [water saving through air-cooled VRV](#)
6. [Reduced ducting materials](#) compared to VAV systems
7. [Reduced atmospheric impact](#) thanks to leading refrigerant practices
8. [Innovation](#) beyond certification, such as [reclaimed refrigerants](#), [indoor air monitors](#) and virus-killing [air purifiers](#)

Green Star South Africa categories impacted by Daikin:



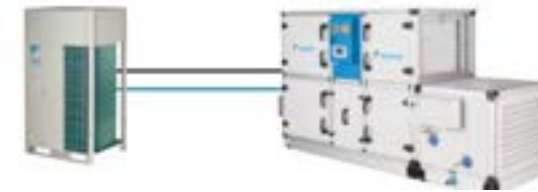
8 REASONS WHY VRV IS UNIQUE

1, Efficiency

- › Variable Refrigerant Temperature for high seasonal efficiency
- › Round flow cassette and concealed ceiling units with auto cleaning filter
- › The best partner for your Green Building Credit

2, Comfort

- › Provide high Indoor Air Quality though seamless integration of AHU's
- › Variable Refrigerant Temperature preventing cold draughts in cooling than to high outblow temperatures
- › True continuous heating during defrost
- › Presence and floor sensors direct the air flow away from persons, while ensuring an even temperature distribution
- › Auto cleaning filters to ensure optimum air quality



3, Reliability

- › Refrigerant cooled PCB
- › Most extensive testing before new units leave the factory
- › Widest sales network with all spare parts available in Europe
- › Preventive maintenance via Daikin Cloud Service
- › Auto cleaning filters to further enhance reliability thanks to clean air-filters
- › True technical cooling



8 REASONS WHY VRV IS UNIQUE

4, Design

- › Widest ever range of cassette panels
- Available in white and black
- Sleek designer panel range
- › Daikin Emura, unique iconic design
- › Fully flat cassette, fully integrated in the ceiling



5, Controls

- › Voice control via Amazon Alexa and Google Assistant through BRP069C51 online controller
- › Madoka: a sleek wired remote controller with intuitive touch button control
- › Intelligent Touch manager: A cost-effective mini BMS integrating all Daikin products
- › Easy integration in third party BMS via BACnet, LonWorks, Modbus, KNX
- › Dedicated control solutions for applications such as technical cooling, shops, hotels, ...
- › Daikin Cloud Service for online control, energy monitoring, comparison of multiple sites and predictive maintenance



6, Installation

- › Automatic refrigerant charge and refrigerant containment check
- › Unique 4-way blow ceiling suspended cassette (FXUQ)
- › Plug & play Daikin Air Handling Unit
- › VRV configurator software for the fastest commissioning configuration and customisation
- › Outdoor unit display for quick on-site settings and detailed readouts for improved customer support

VRV



7-segment display

8 REASONS WHY VRV IS UNIQUE

7, Inventor of VRV with nearly 40 years of history

- › Market leader of VRV systems since 1982
- › Over 90 years of expertise in heat pump technology
- › Designed for and produced in Europe
- › Innovator setting the market standard with technologies such as Variable Refrigerant Temperature, continuous heating, Shîrudo technology, ..



8, For every application a solution

- › Heat recovery for simultaneous cooling and heating
- › Maximum flexibility for geothermal applications with water-cooled systems
- › Hot and cold climate solutions offering efficient cooling up to 52°C and heating down to -25°C
- › Space saving mini VRV solutions, offering the most compact VRV
- › The invisible VRV, a unique solution when the outdoor unit must be compact and completely invisible
- › Replacement solutions to replace existing systems in the most cost-effective way



SUMMARY

1. Energy efficiency system

- ✓ Variable Refrigerant Control Technology
- ✓ High Strength Scroll Inverter Compressor
- ✓ Patented Heat Exchanger
- ✓ New Outer-Drive Motor
- ✓ Auto-cleaning Panels
- ✓ Absence Sensors

2. Life cycle performance and reliability

- ✓ New Compressor
- ✓ Compressor Motor
- ✓ High Performance Heat Exchanger
- ✓ Refrigerant Electronic Cooling
- ✓ Variable Refrigerant Control Technology
- ✓ High-spec Capacitors
- ✓ Corrosion Treatment
- ✓ New Compressor Manufacturing Tests
- ✓ Double Power Surge Protection

3. Occupant comfort

- ✓ User Friendly Network Solutions
- ✓ Leak Detection
- ✓ Variable Refrigerant Control Technology
- ✓ Floor And Presence Sensors
- ✓ Indoor Features: Flap Control / Fresh Air Intake
Whisper Quiet / Draft Prevention / High Aesthetics
- ✓ Large Range of Controllers

4. Operational costs reduction

- ✓ Auto-cleaning panels
- ✓ SEER Rating

5. Tailor made solution

- ✓ Complete Product Solution
- ✓ Wide Range of Indoor Options
- ✓ Multiple Applications
- ✓ VRV IV "INVISIBLE"
- ✓ BS Box options

6. Pre and post service

- ✓ Quality Manufacturing
- ✓ Design Phase / Accredited Installers
- ✓ Project Phase
- ✓ Post Project phase
- ✓ Remote monitoring and Cloud services

7. Sustainability

- ✓ Bluevolution
- ✓ Green Building