DAIKIN

VRV® III

3rd Generation of VRV

The professional solution for your professional project

CONTENT

What is VRV®?

Definition, History, Concept

VRVIII Range

Outdoor units, indoor units.

VRVIII features

Piping limits, ESP, Back-Up, Quietness, Foot print.

VRVIII environmental benefits

Efficiency, R410A.

VRVIII controllers

Individual, centralized controllers, BMS interfaces.

VRVIII easy design

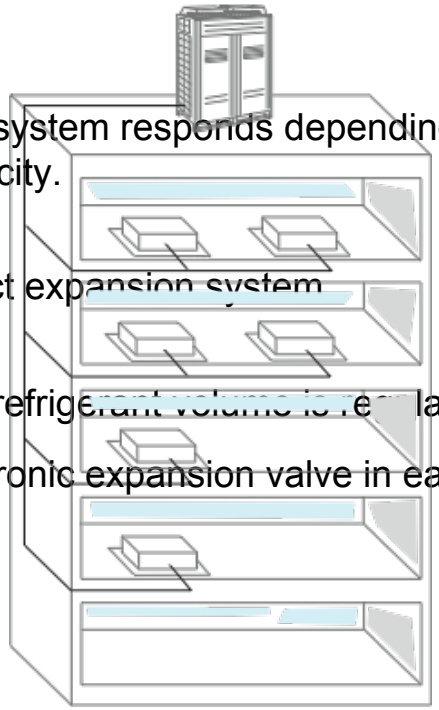
WHAT IS VRV®? - DEFINITION

VRV® = Variable Refrigerant Volume

Variable: The system responds depending on the required capacity.

Refrigerant: Direct expansion system

Volume: The refrigerant volume is regulated by an electronic expansion valve in each indoor unit...



POSITION AMONG OTHER AIR CONDITIONING SOLUTIONS

RESIDENTIAL

single room

SPLITS

multiple room

MULTI SPLITS

cooling/heating
by refrigerant

VRV III

COMMERCIAL

mid – to – large size buildings

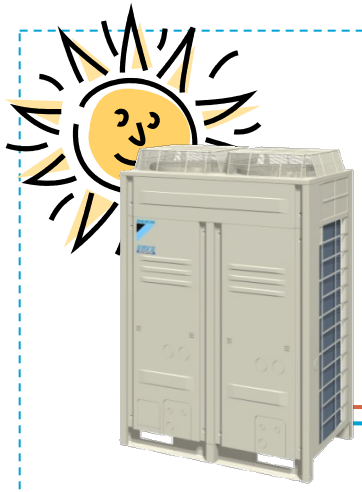
cooling/heating
by air

ROOFTOPS
AHU

cooling/heating
by water

CHILLERS
+ FANCOILS

HOW DOES IT WORK? - VRV® Concept

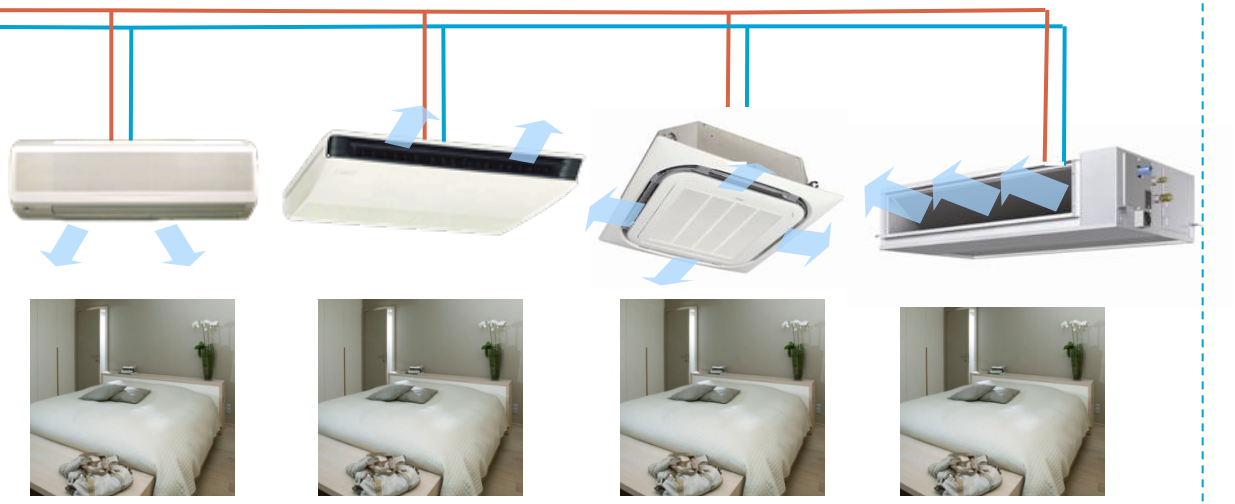


VRV III

Liquid
Gas

6 – 29 T.R.
Cooling Capacity

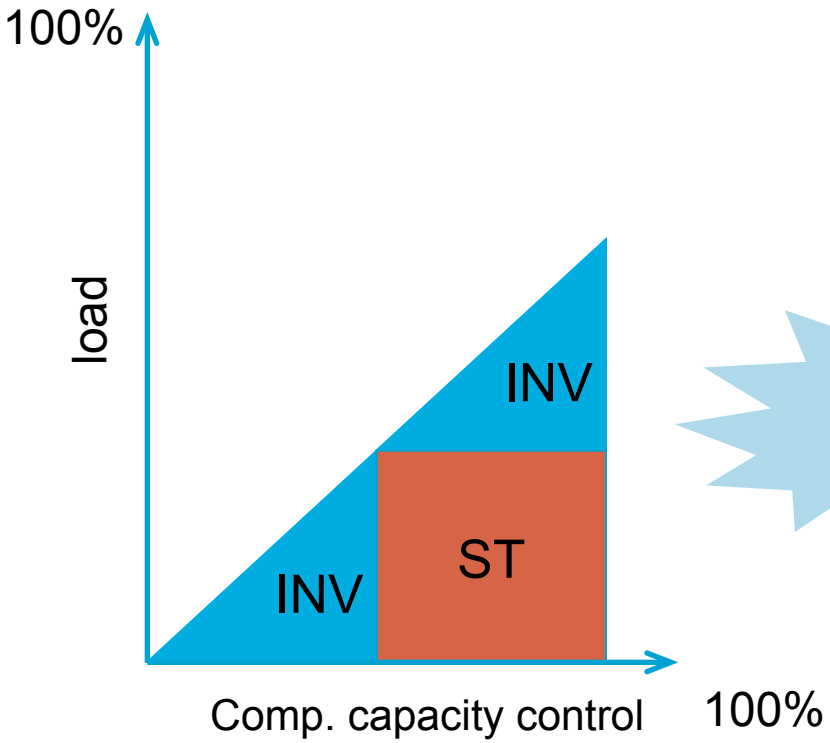
Up to
58 Different Type and Capacity Indoor Units
190 m pipe run

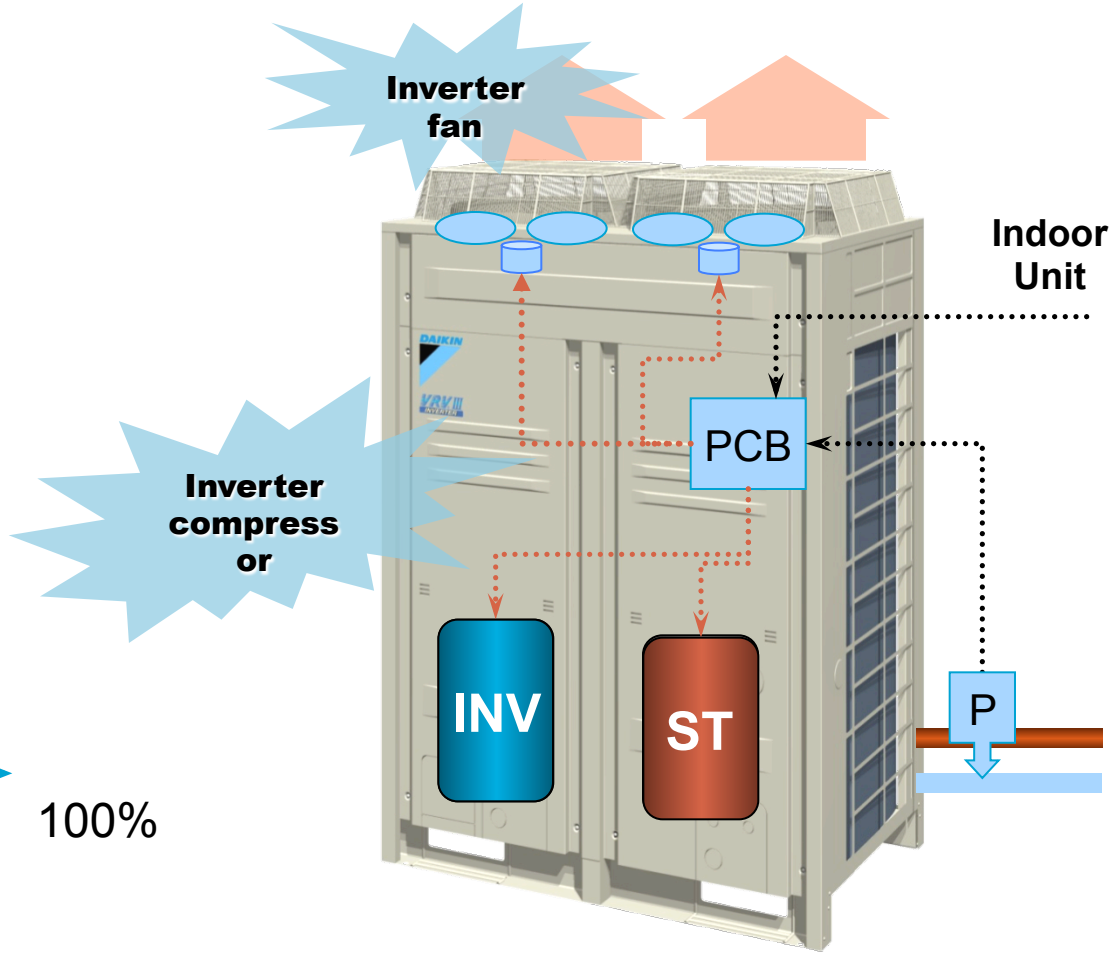


VRV® Concept - OUTDOOR UNIT

- Control of the refrigerant volume by inverter compressor:

VRV III

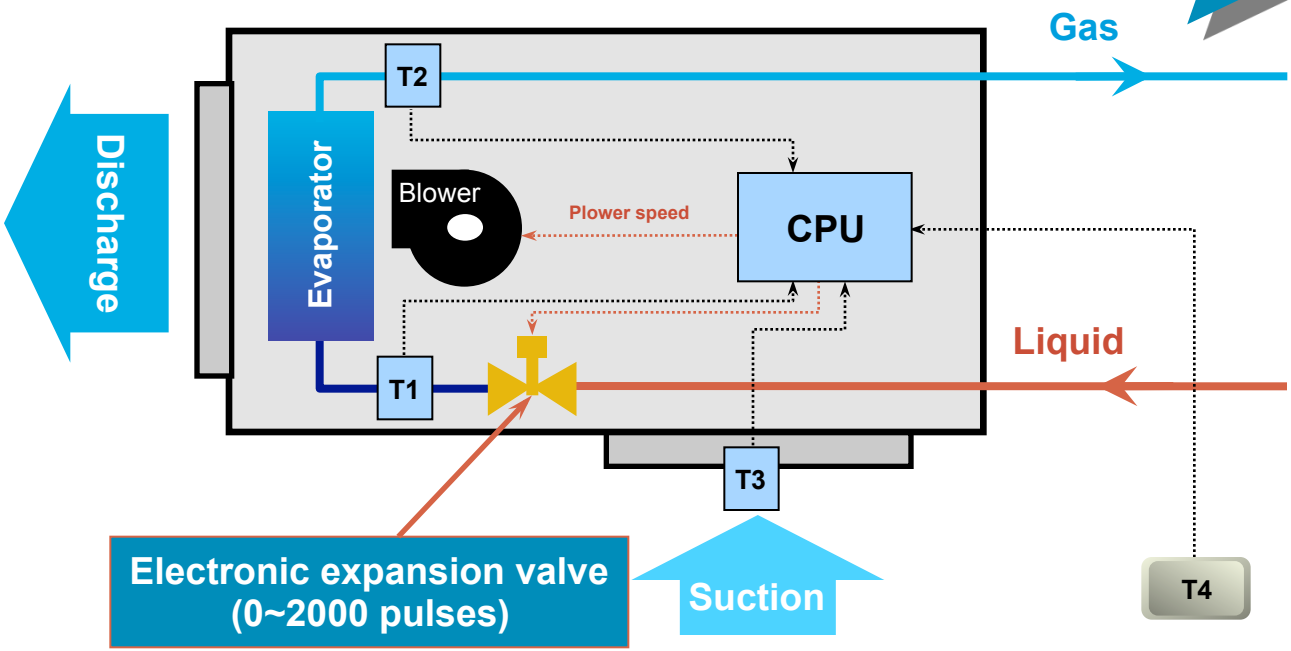




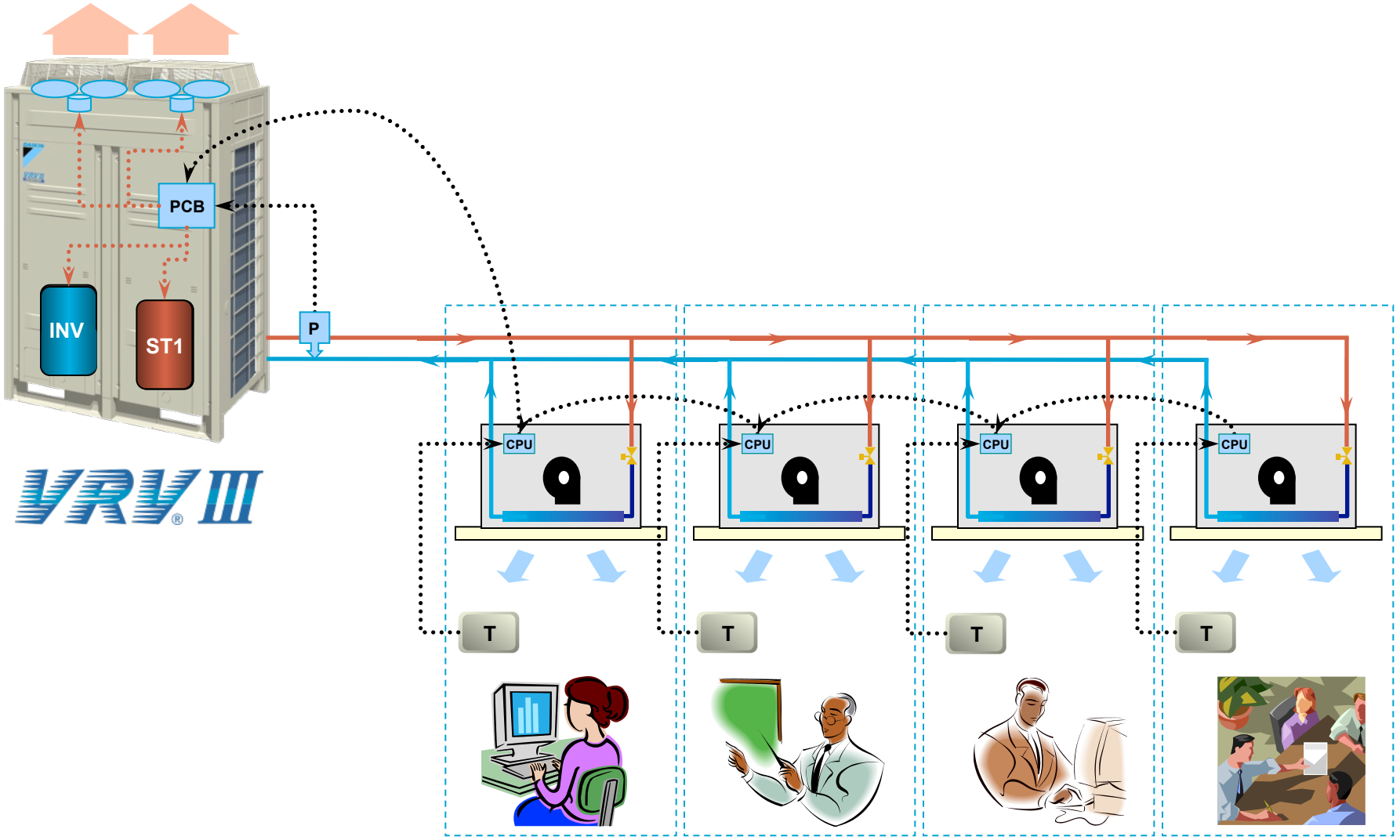
VRV® Concept - INDOOR UNIT

T1 = Inlet refrigerant temperature sensor (liquid)
T2 = Outlet refrigerant temperature sensor (gas)
T3 = Suction air temperature sensor
T4 = Set temperature from Remote controller air temperature

Modulating cooling capacity gives optimum comfort



HOW DOES IT WORK? - VRV® Concept



VRV III®

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VRVIII features

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VRVIII environmental benefits

Efficiency, R410A.

VRVIII controllers

Individual, centralized controllers, BMS interfaces.

VRVIII easy design

VRV® Capacity RANGE

14 models

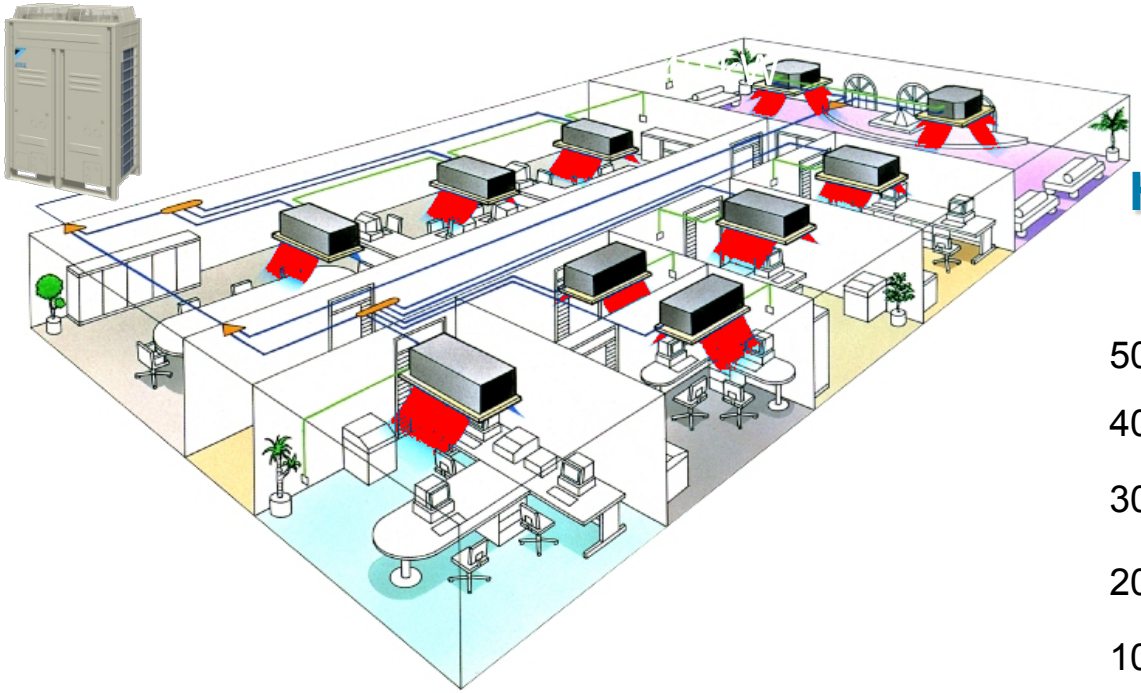
VRV III

Model	8	10	12	16	18	20	22	24	26	28	30	32	34	36
VRV III														

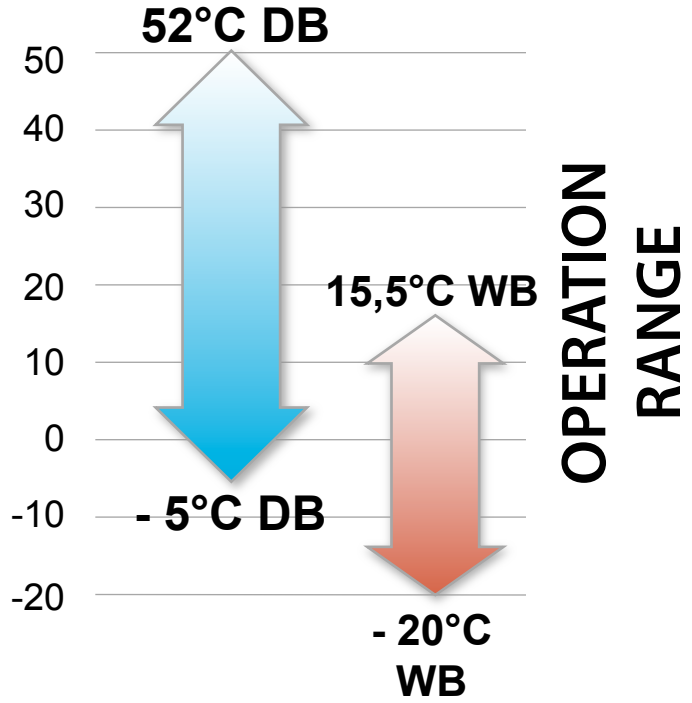
6.4 / 8 / 9.6 ton | **12.8 ~ 19.2 ton** | **20.8 ~ 28.6 ton**

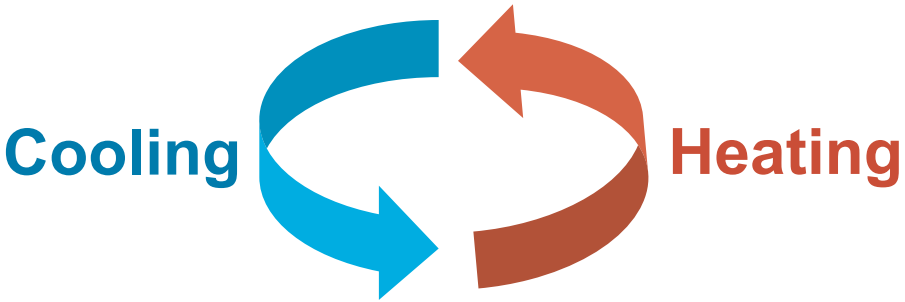
6.4 to 28.6 ton

VRV® Outdoor temperature operation range.



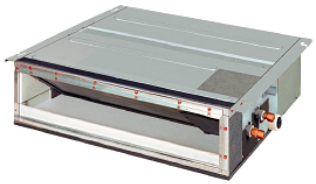
VRV III
Heat Pump High Ambient





VRV® Indoor units range.

Super wide range of well-designed indoor units

Roundflow Ceiling mounted	4 way blow ceiling mounted	2-way blow ceiling mounted	Ceiling mounted corner	Small concealed ceiling unit
				
Slim concealed ceiling unit	**Concealed ceiling unit**	**Concealed ceiling unit**	**Wall mounted unit**	**Ceiling suspended unit**
				
4-way blow ceiling suspend unit	**Floor standing unit**	**Concealed floor standing unit**		
				

VRV® New indoor units

Super wide range of well-designed indoor units

VRV III
Round Flow Cassette

→Excellent comfort through 360° air discharge

→ Low noise: 28 dB(A)

→ Low height (204mm up to 8kW)

→ Up to 20% fresh air intake

→ Standard drain pump with 850mm lift

→ 9 models up to 4 ton

VRV® New indoor units

Super wide range of well-designed indoor units

VRV III
Inverter Ducted Unit

Automatic adjustment of the fan static pressure

→ Adjustable ESP α CFM.
→ Inverter fan motor
→ 3 fan speeds.
→ Low sound level.

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VRVIII easy design

VRV® Piping limits

Flexible piping design: max. total piping length: 1000 m

Extended piping lengths:

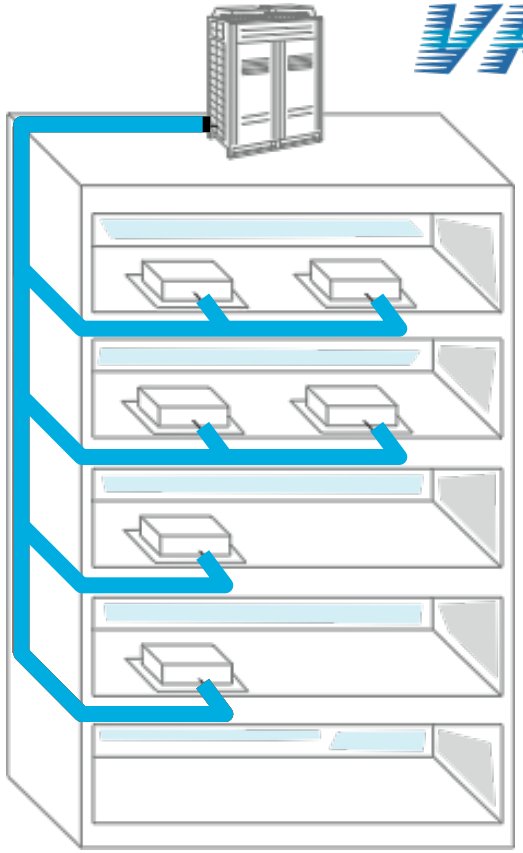
Height difference outdoor-indoor
Up to 90 m

Branch length
Up to 90 m

Max. actual piping length
165 m

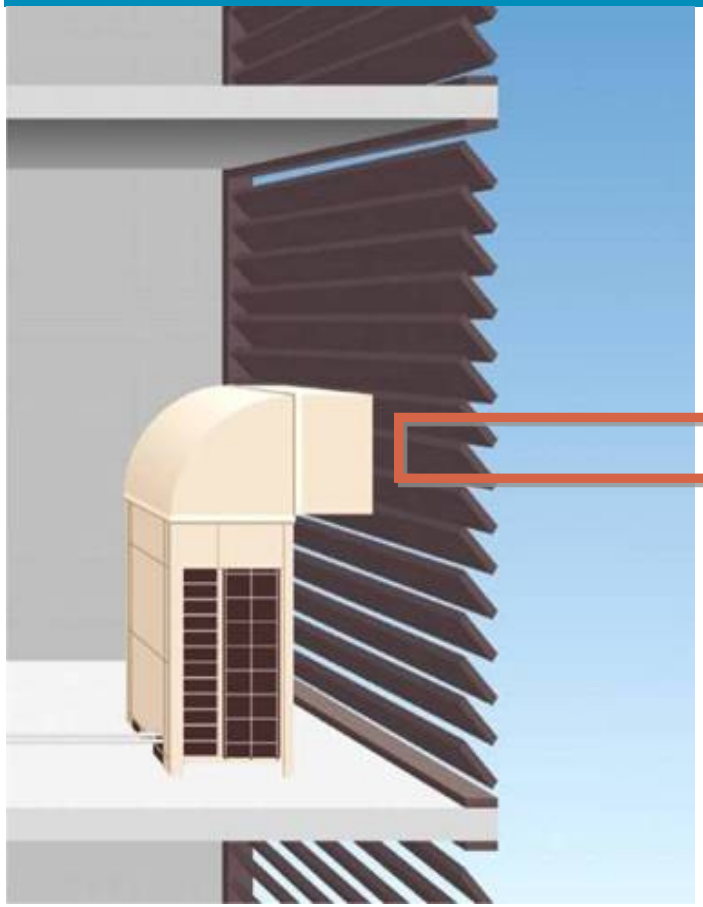
Max. equiv. piping length
190 m

Max. total piping length
1000 m



VRV® outdoor unit fan External Static Pressure

High external static pressure 78 Pa

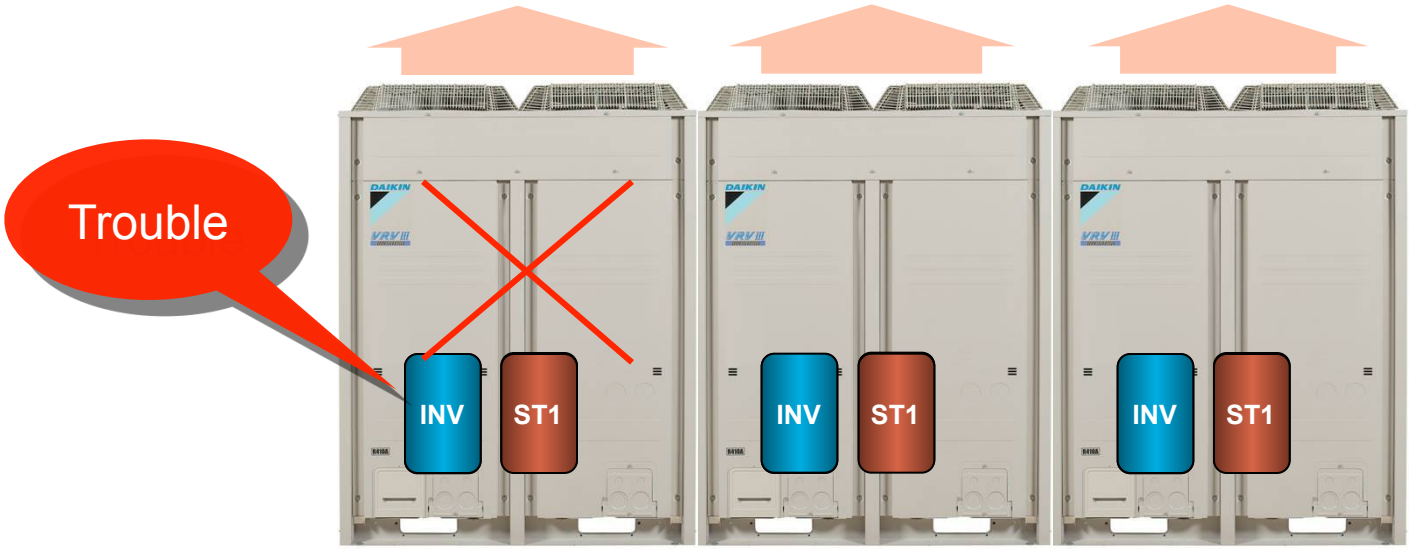


VRV III®

78 Pa

VRV® outdoor unit Back up function

Reliable operation of the compressors



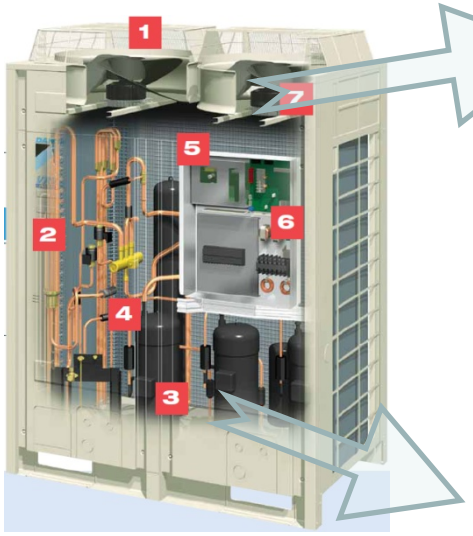
VRV® sound level

Low operation sound level

- **Indoor units:** very low sound operation, down to **25dB(A)**

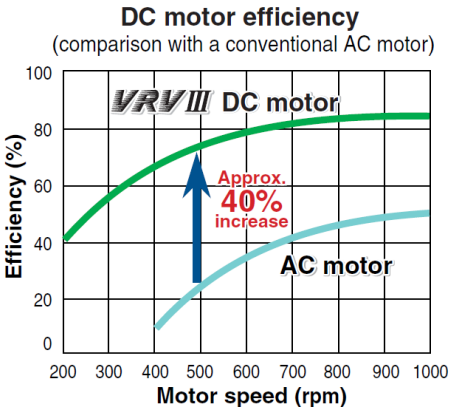
- Super Silent Mode function is reducing the **outdoor unit** sound level down to **45dB(A)***

- **65dB(A)** Full load operation sound level for the outdoor unit.



VRV III

- ✓ Inverted driven fan motor
- ✓ Optimized fan blades design



VRVIII features → Low sound level

VRV® sound level

On site observation

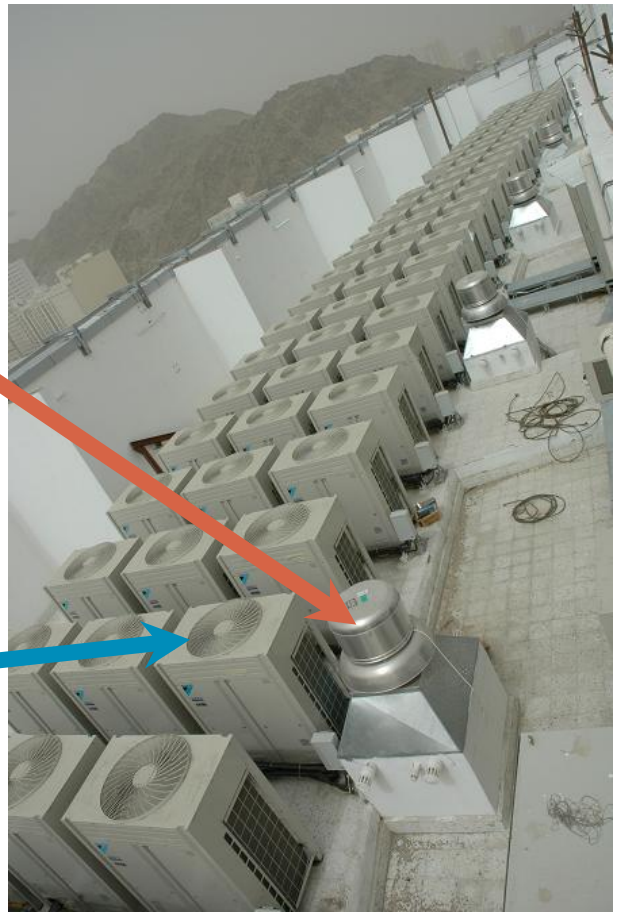
Dar El Hadi Hotel in Makkah Operated Nov 2007

VRVIII features → Low sound level

VRV® sound level

On site observation

The noise level of
This Extract fan
was
Higher than
The noise level of
The VRV outdoor unit
!



Dar El Hadi Hotel in Makkah Operated Nov 2007

VRV® foot print

Higher Capacity with the same small area

VRV III

28.6 ton

3 sqr. meters

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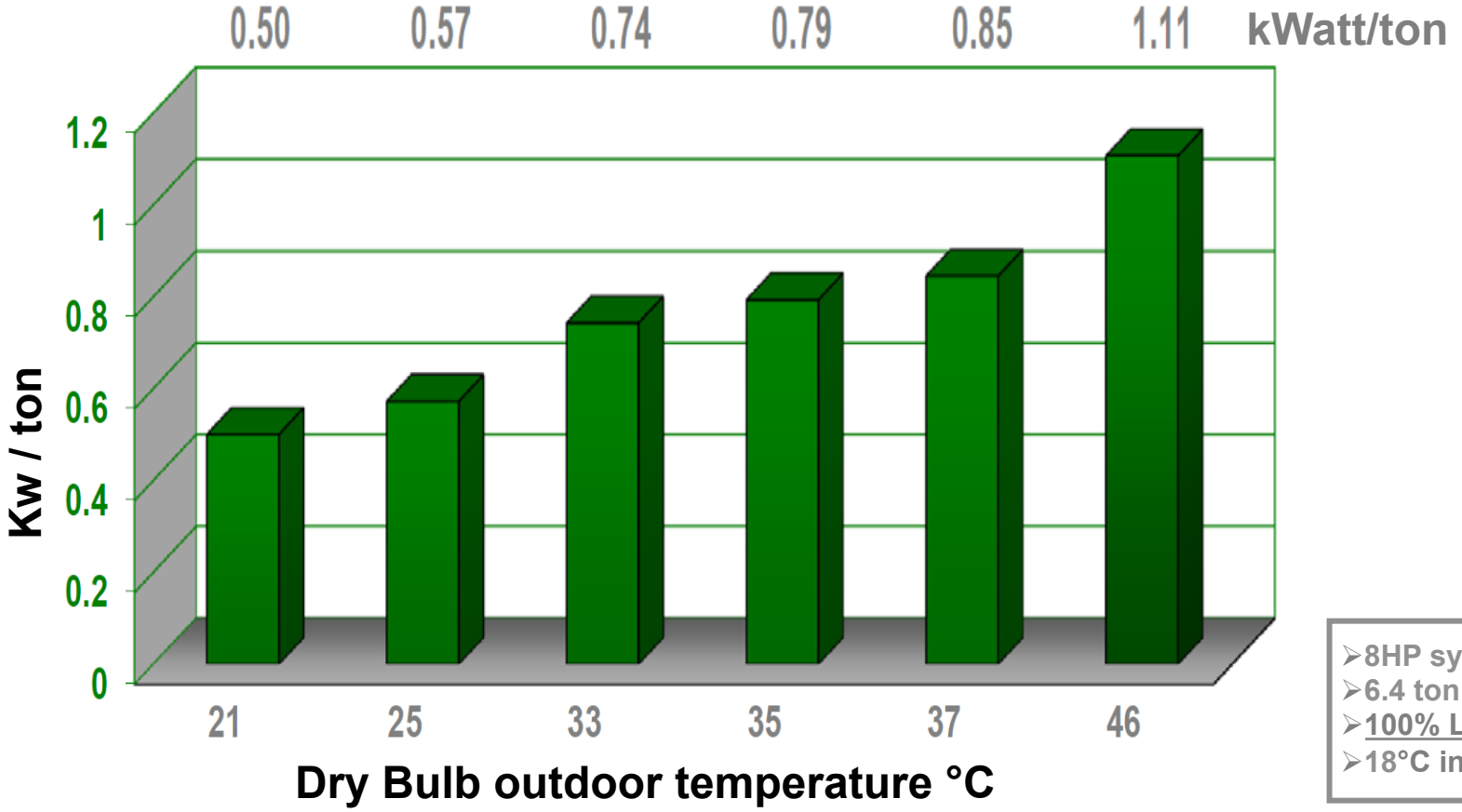
VRVIII easy design

VRV® Energy Efficiency

In all of us, a green heart

Optimized full and partial load efficiencies

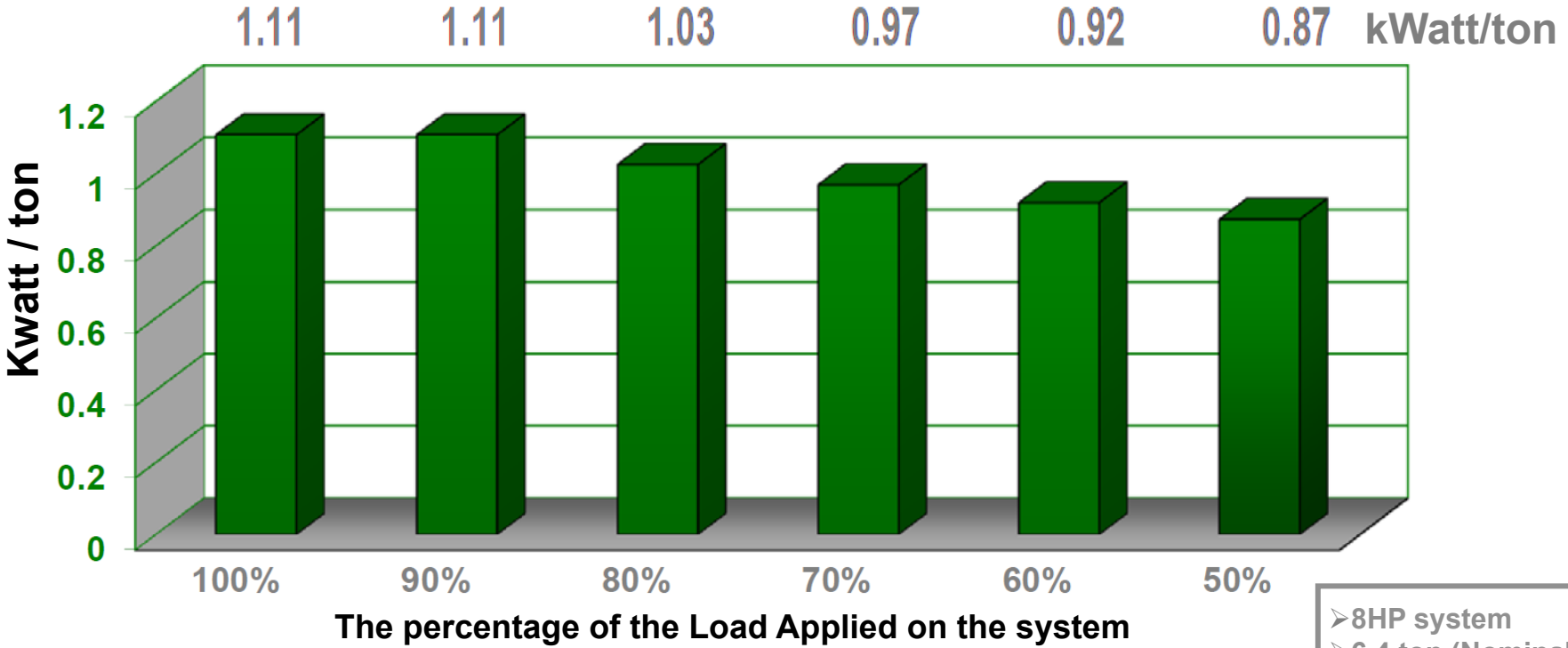


- 8HP system
- 6.4 ton (Nominal)
- 100% LOAD
- 18°C indoor WB

VRV® Partial Load Efficiency

In all of us, a green heart

Under partial load conditions power consumption is less



- 8HP system
- 6.4 ton (Nominal)
- 35°C outdoor DB
- 18°C indoor WB

VRVIII environmental benefits → Efficiency

VRV® Ozone-friendly refrigerant

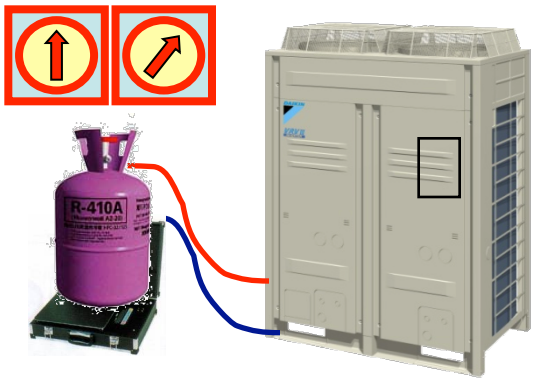
In all of us,
a green heart

Ozon-friendly refrigerant

R-410A

Automatic refrigerant charge

Automatic refrigerant containment check



Trouble	Indication on RC	Indication on CU PCB
Stop valve is closed	E3,E4,F3,F6,UF	trouble ●○○●●●●
Wiring and Piping mis-connection	UF	
Ref. Over charge	E3,F6,UF	OK, finish ●●○●●●●
Ref. short	E4,F3	
Malfunction of detectors	J3,J5,J6,J7,J9 JA,JC,H9,L4	

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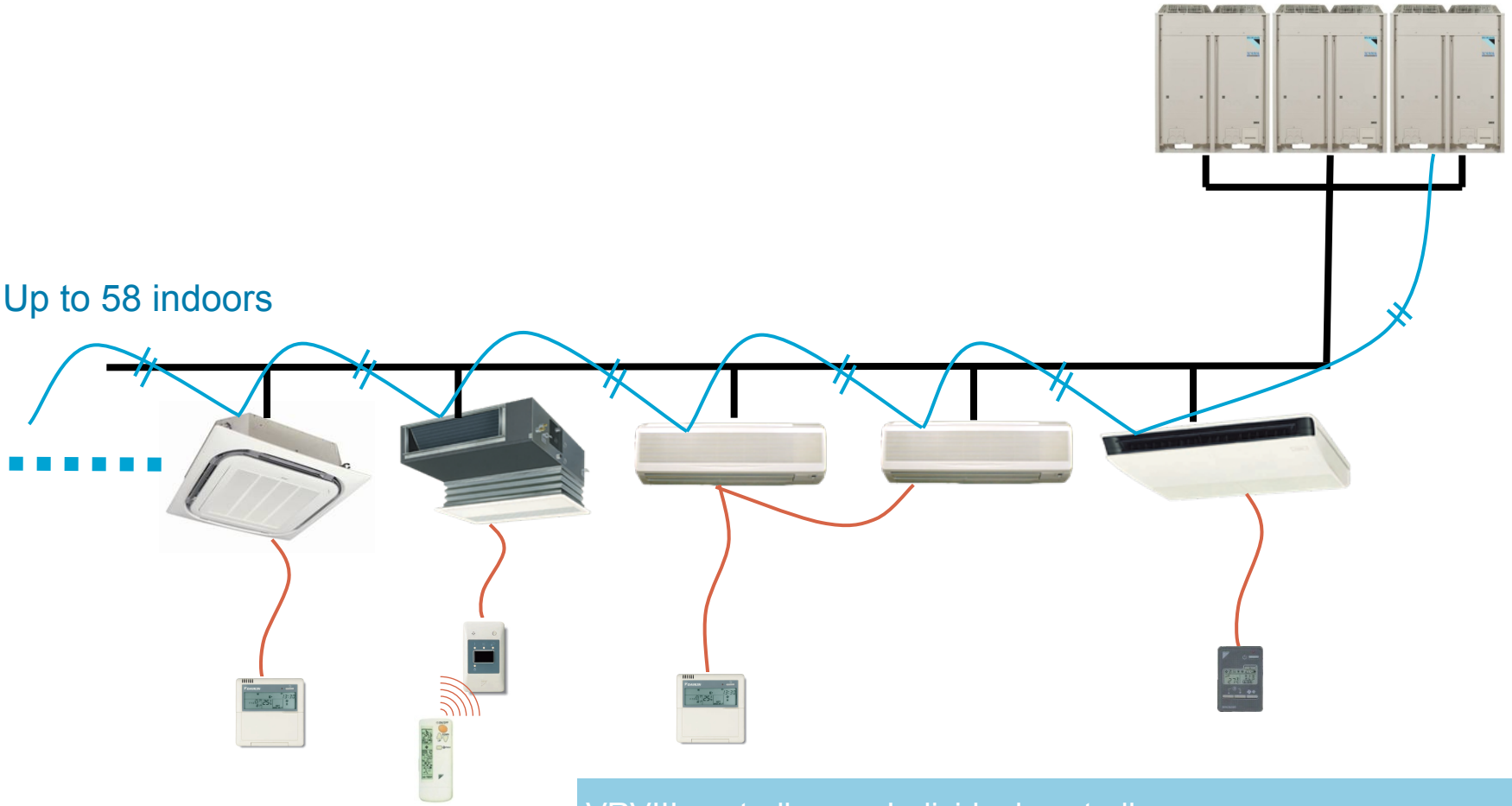
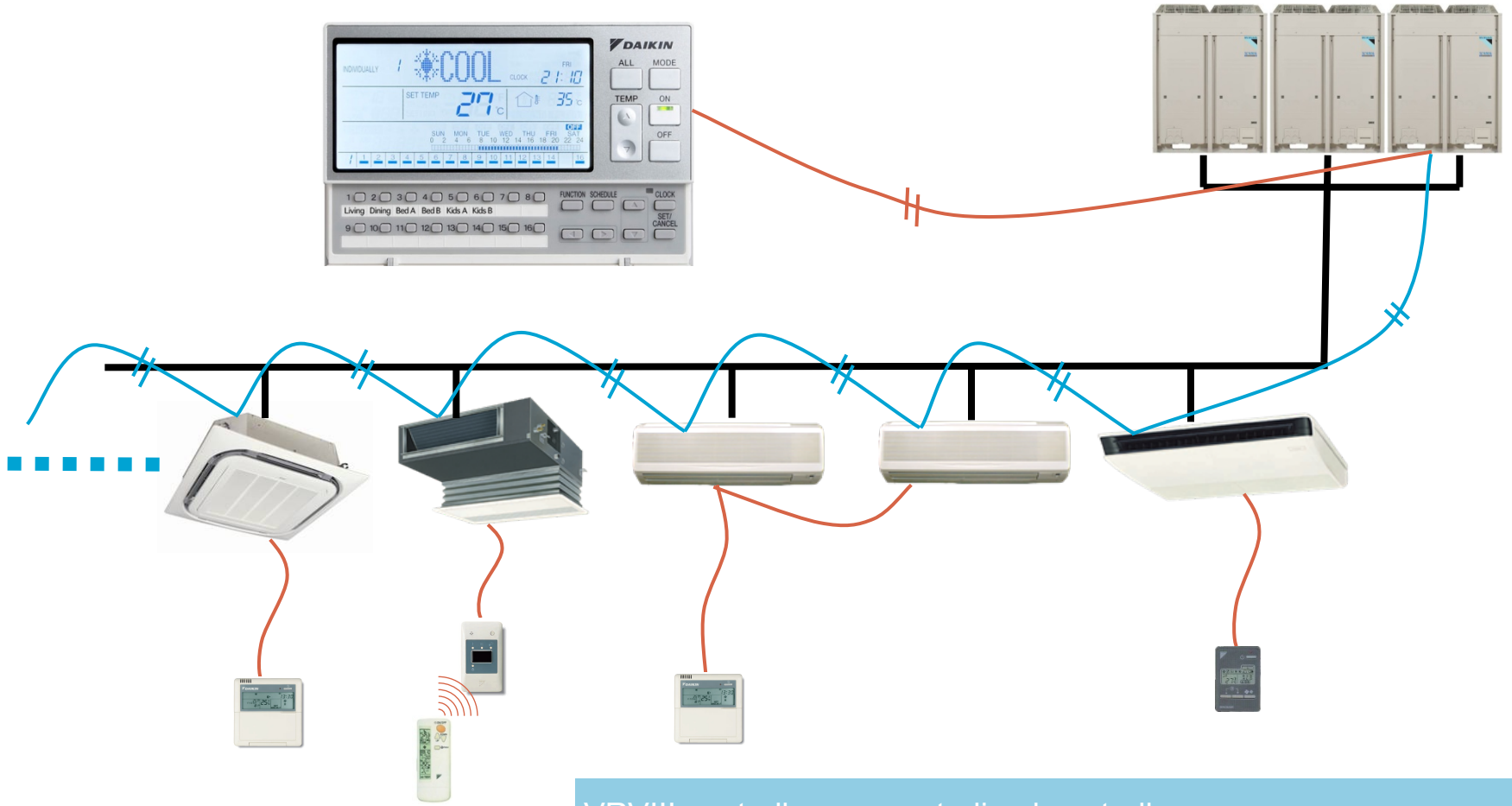
VRV® Individual controllers:

VRV Wiring control connection



VRV® Centralized Controllers:

Simply control up to 16 indoor units



VRVIII controllers → centralized controllers

VRV® Centralized Controllers:

User friendly control systems: network solutions

i-touch

Control 128 indoor units

i-manager

Control 1024 indoor units

VRVIII controllers → centralized controllers

VRV® Centralized Controllers:

Touch Screen Controller

- ✓Windows graphical user interface
- ✓Tenant Electricity Billing (PPD)
- ✓Fire alarm forced off connection
- ✓Yearly schedule timer
- ✓Password security

128 indoor units can be controlled

✓Web Access

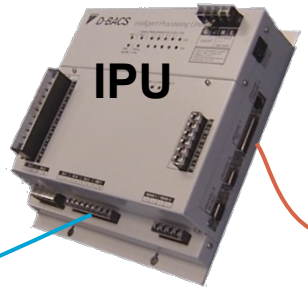
VRVIII controllers → centralized controllers

VRV® Centralized controllers:

intelligent Manager

I-manager Computer Controller

- ✓Controls up to 1024 indoor units
- ✓Import your own CAD layout.
- ✓Tenant Electricity Billing (PPD).
- ✓Energy Saving (Demand Control & ECO-mode)



✓Web Access

VRVIII controllers → centralized controllers

VRV® Building Management System interfaces

VRV can be connected to any BMS system

BACnet Gateway

Lonworks Networks

Integrated control system connecting VRV® system with **BMS** system

Modbus adaptor for VRV indoor unit

Easy integration with **home automation** and **hotel room management** systems

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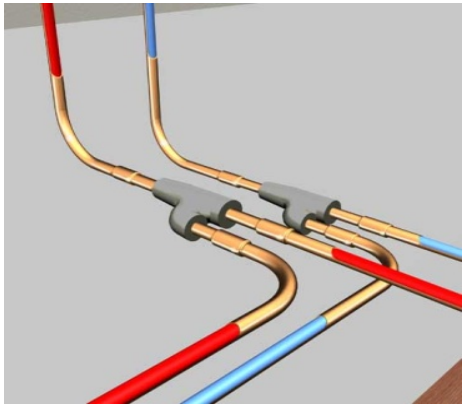
VRV® Design

VRV main system component

VRV indoor units

VRV outdoor units

VRV remote controllers



VRV refnet joints (Y joint)

Simple System

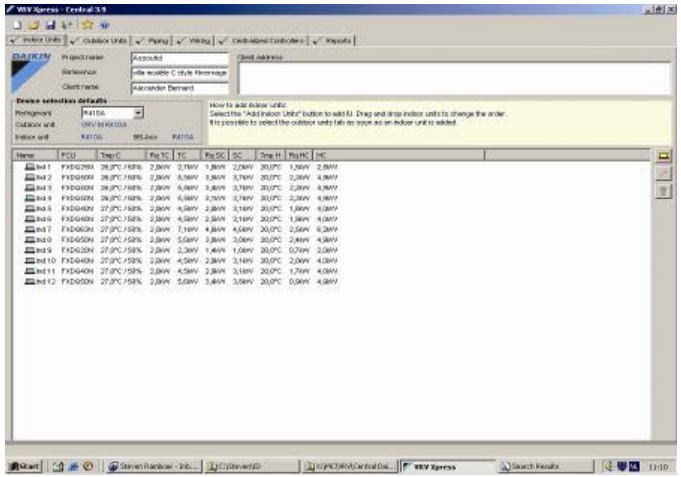
Advanced Technology

VRV® selection software

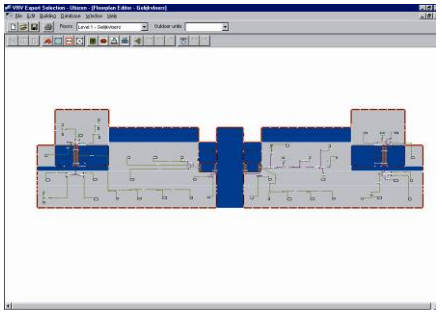
User friendly & powerful selection software

VRV® XPRESS

- **user friendly software**
- allows **rapid** VRV® selection of units and pipes



VRV® PRO



- **simple to use**
- **complete**

- 3 separate modes:
  - **expert mode:** selection of the most appropriate system
    + estimation of power consumption
  - **quick mode:** selection of the most appropriate system
  - **drawing mode** enables the user to design a system in no time

VRV® selection software

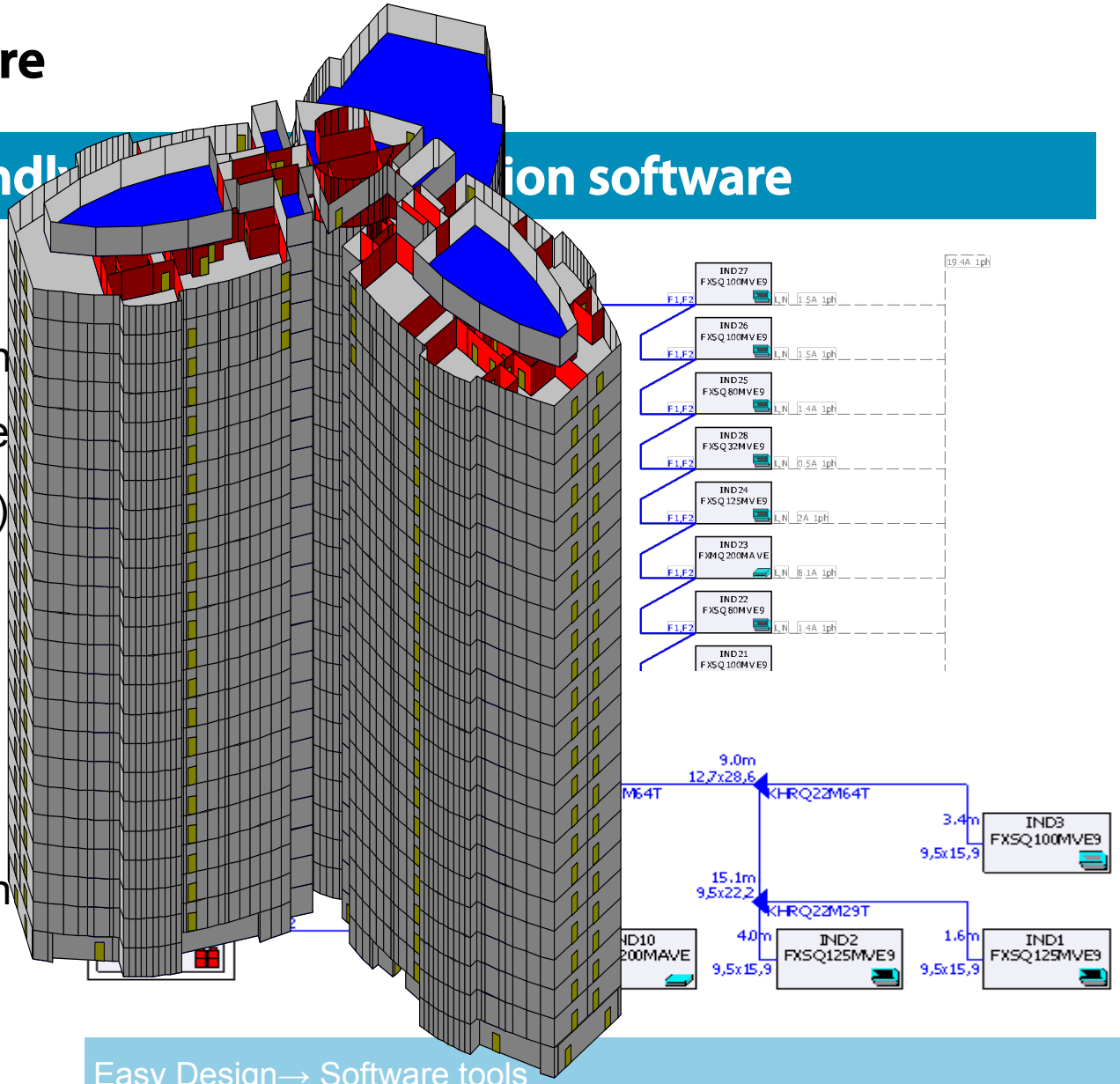
User friendl ion software

VRVxpress

- ✓ Indoor and outdoor un
- ✓ Copper pipes diamete
- ✓ Refnet joints (Y joints)
- ✓ Controllers selection.
- ✓ Piping diagrams.
- ✓ Wiring diagrams

VRV PRO

- ✓ Heat Load Calculation
- ✓ Energy Simulation



Easy Design→ Software tools

DAIKIN

Thank you for your attention