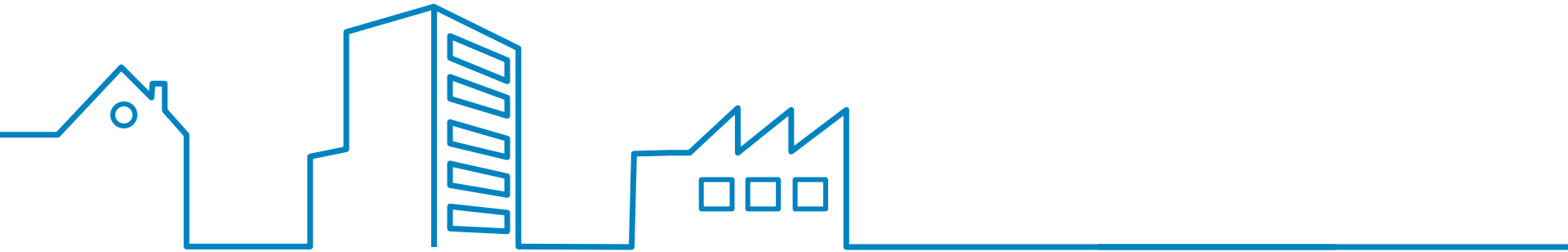
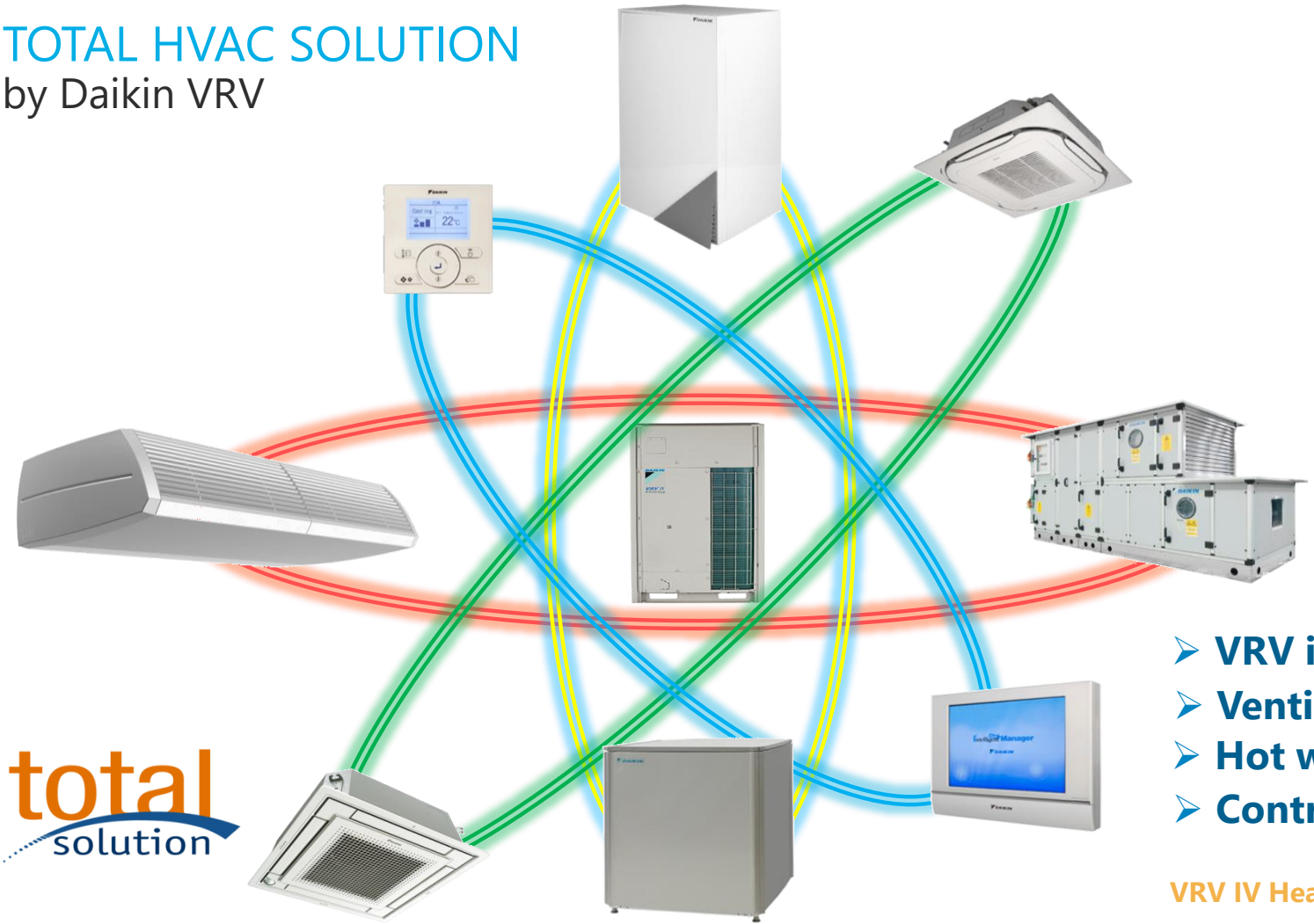
HVAC Total Solution VRV



TOTAL HVAC SOLUTION
by Daikin VRV



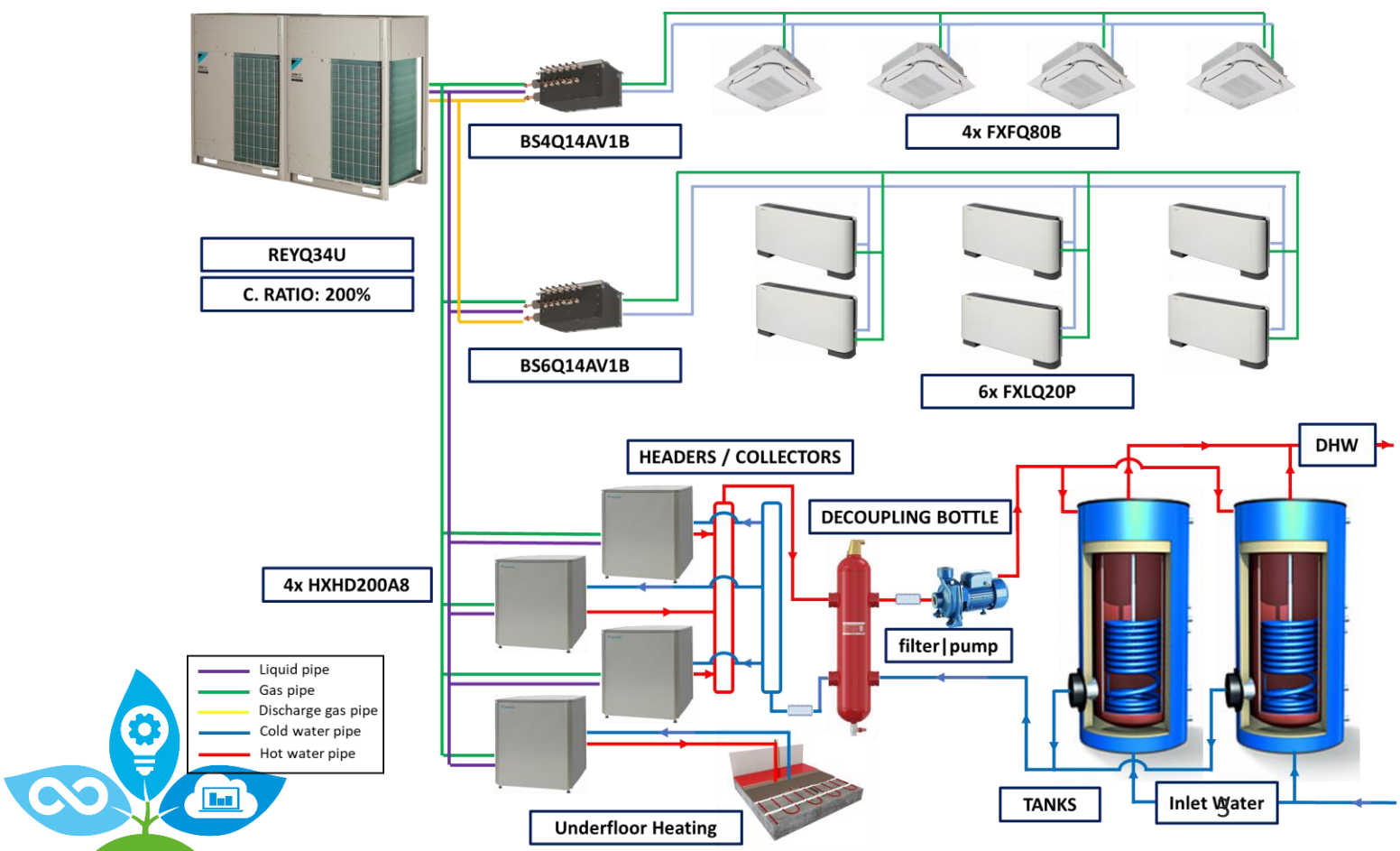
total solution

- VRV indoors
- Ventilation
- Hot water up to 80°C
- Controls

VRV IV Heat Recovery

DAIKIN

TOTAL SOLUTION by Daikin VRV: Cooling, Heating and preparation of hot water



DAIKIN

VRV –VRT
heat recovery system

Domestic hot water tank
200 or 260L

High temperature
hydrobox 25~80C

45~75C

25~45C

New MADOKA wired user interface with Bluetooth connection

Floor by Floor installation using duct

DAIKIN

VRV IV W+ series

Water cooled VRV –VRT heat recovery system

Domestic hot water tank 200 or 260L

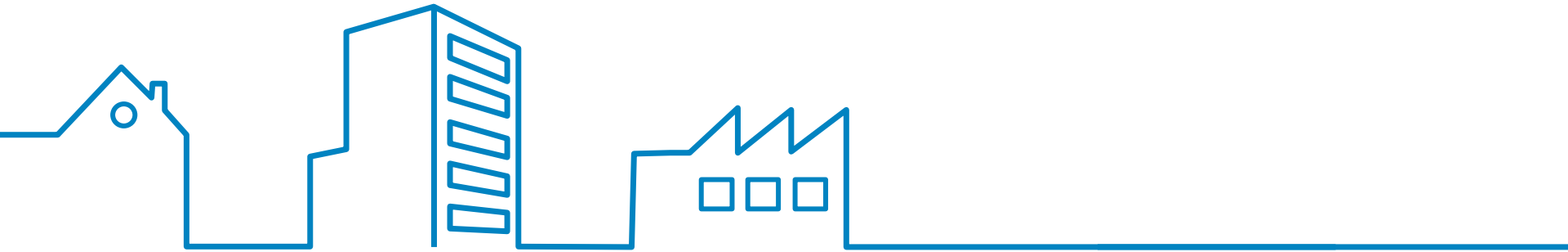
High temperature hydrobox 25~80C

New MADOKA wired user interface with Bluetooth connection

DAIKIN

Hotel (Belgium)

Daikin total solutions



Hotel (Belgium)

Different functional areas:

- Reception front desk
- Hotel rooms
- Large indoor spaces (meeting Rooms, Restaurants)
- Kitchen area

Different requirements:

- Heating
- Air conditioning
- Production of Hot sanitary water
- Ventilation
- Cooling (cold storage)
- Management & control & (remote) monitoring of total HVAC solution

1. RECEPTION / FRONT DESK

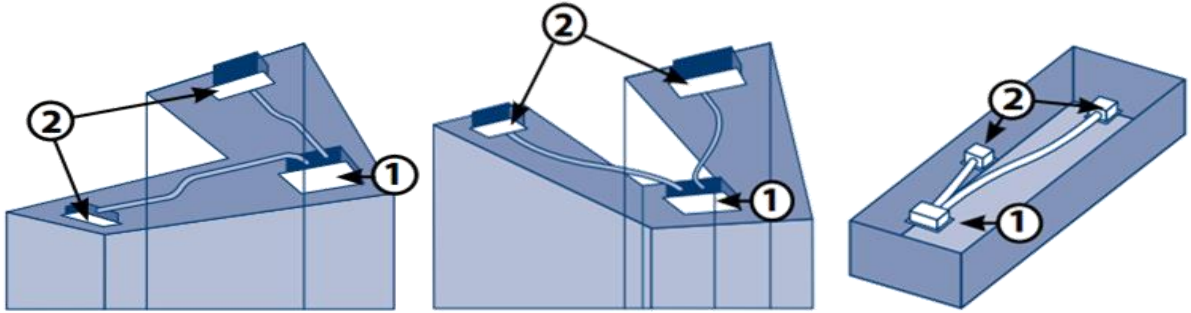
Typical characteristics for a reception zone

- Large open space
- Frequent open & closure of the main entrance door
- First experience with the hotel environment
- 24/7 operation

Reception

- ***Zoning (different indoors)***
- *Air curtain*
- *Underfloor heating/cooling*
- *Control*

Ducted air conditioning



1 Suction grille 2 discharge grill after flexible duct

- 10 models from 2,2kW up to 16,0kW
- Same height (245mm) for all models
- Up to 140Pa ESP
- Drain pump is standard equipped!

Reception

- *Zoning (different indoors)*
- ***Air curtain***
- *Underfloor heating/cooling*
- *Control*

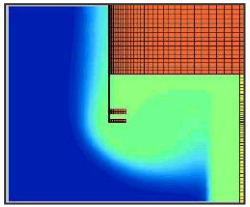
You only get one chance to make a first impression

Biddle air curtain

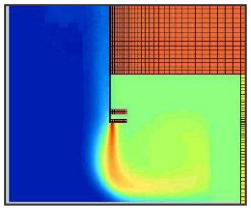
Cassette

Free Hanging

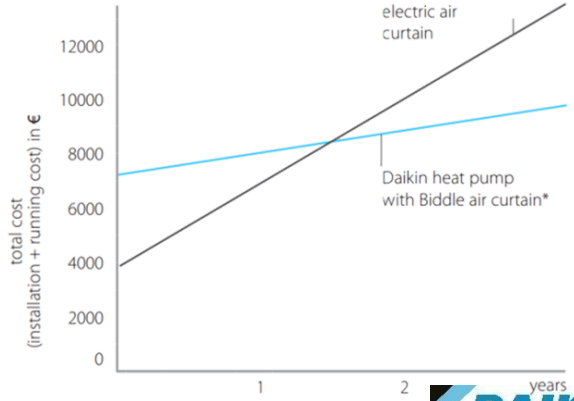
Recessed



Without air curtain



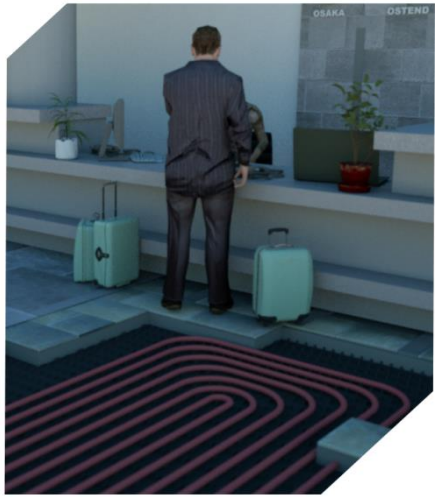
With Biddle air curtain



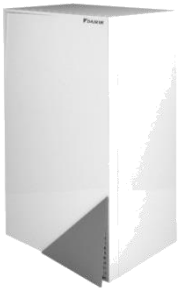
Reception

- *Zoning (different indoors)*
- *Air curtain*
- ***Underfloor heating/cooling***
- *Control*

Low Temperature warm water (45°C) by VRV system



Invisible floor loops



Heating

- Underfloor loop
- Good for rooms with high ceilings

		HXY080A	HXY125A
Cooling Capacity	kW	8,0	12,5
Heating Capacity	kW	9,0	14,0
Dimensions (HxWxD)	m m	890x480x344	

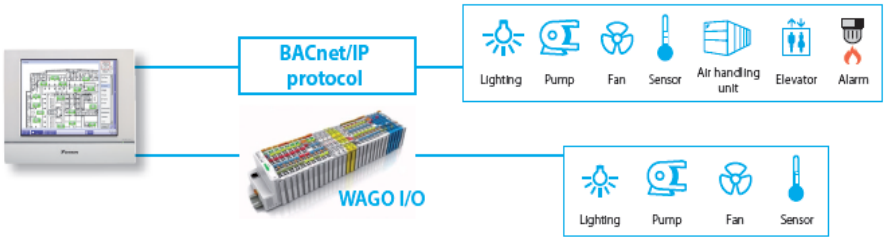
DAIKIN

Centralised control & management

Daikin Solution: touch intelligent Manager

- Centralised control of VRV indoor units
  - Timer functions
  - Control of groups of indoor units
- Web-based user interface:
  - easy to integrate in frontdesk
- BMS functions: integration of
  - Air handling units
  - Fire alarms
  - Lights (DALI platform)

Plug & play



DAIKIN

2. ROOMS

Typical characteristics for BEDROOMS

- Comfort
- Low sound levels
- Clean air
- Domestic hot water
- Easy control

Slim duct indoor unit
FXDQ-A

Sound level

Down to 27dBA

Suction

suction possible from back and bottom

External static pressure

Up to 44Pa to overcome all duct & grill setups.

Height

Only 200mm high, possible to install in small ceiling void

Filtration

Standard Air filter included

+ Self cleaning filter module available (NEW!)

Drain pump

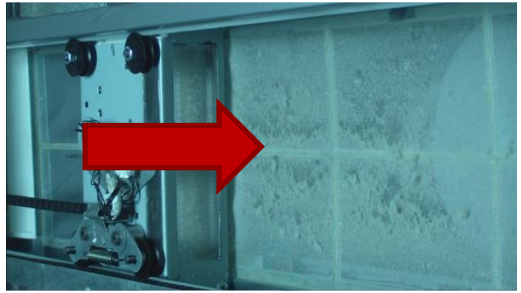
Standard drain pump included

Slim duct indoor unit
FXDQ-A – Self Cleaning Filter functionality

FXDQ-A – Self Cleaning Filter functionality
The result?

Cheaper maintenance

Better room aesthetics and air quality



Comparison of electric consumption of indoor units

Size indoor unit	Daikin	Best of competition	Difference
32	32 W	50 W	+ 56 %
50	85 W	90 W	+ 6 %
80	106 W	120 W	+13 %
100	105 W	220 W	+209 %
125	173 W	320 W	+185 %

Attention point!

The consumption of indoor units fans counts for almost 30% of global system's **consumption.**

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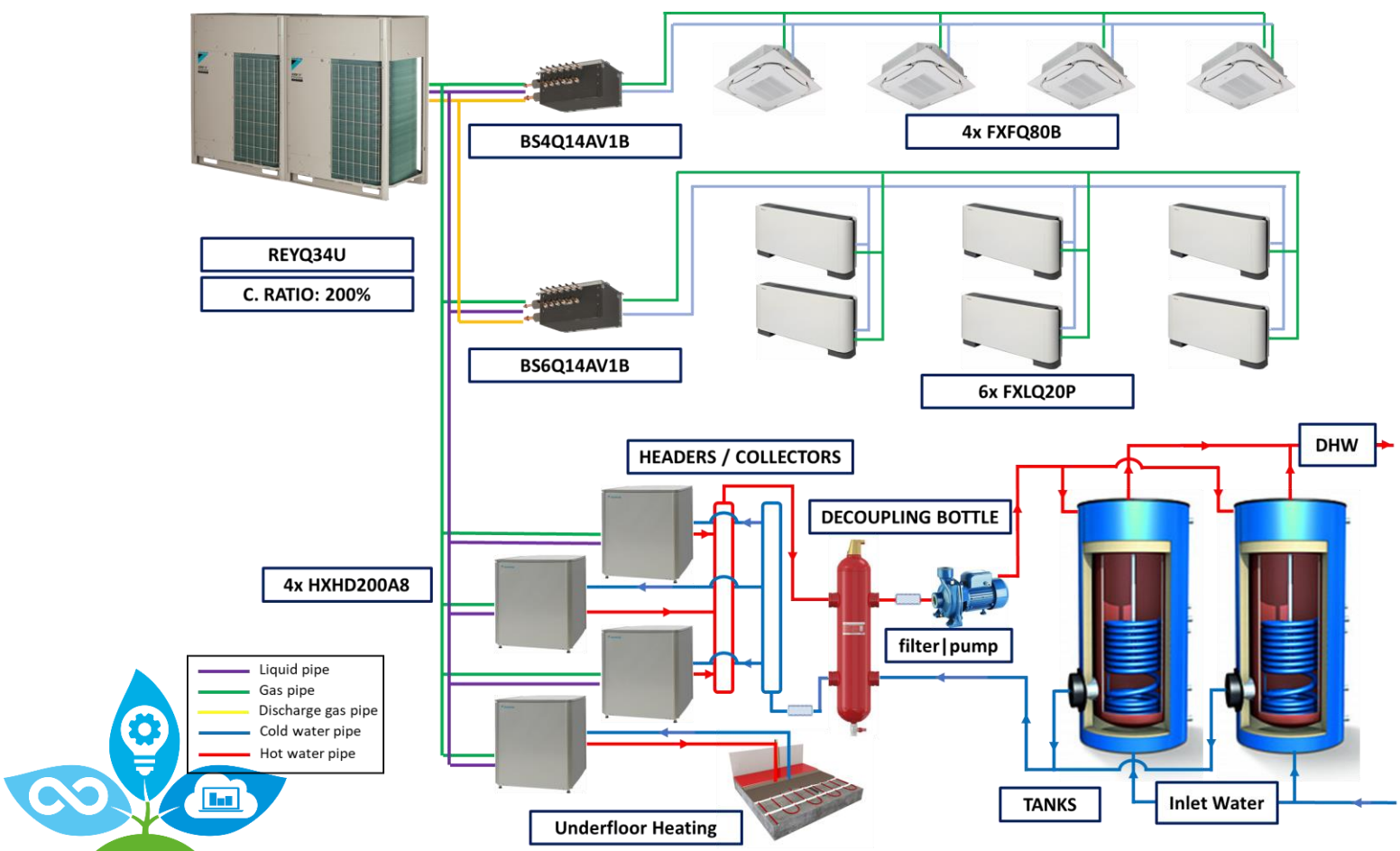
Domestic hot water

TOTAL SOLUTION by Daikin VRV: Cooling, Heating and preparation of hot water



Hotel room HVAC solution

Requirement: easy controls

Solution: Simplified wired remote controller

- Symbol driven (no language problem)
- Functions for basic customer needs:
  - On/off
  - Cool/heat
  - Fanspeed
- Interlock with window contact to stop A/C when window is opened

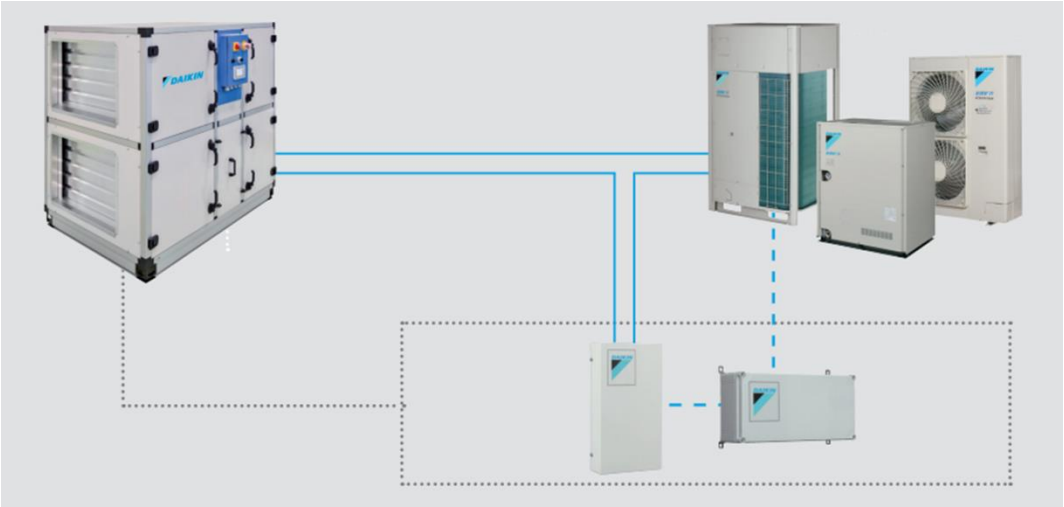
3. LARGE INDOOR SPACES

1. Fresh air
2. Round flow cassette
3. ceiling suspended cassette

Large volumes of fresh air for conferences/large spaces

AHU Coil for DX circuit: Single or interlaced multi circuit

Modular AHU
(up to 15000 m³/h)



VRV IV or ERQ
condensing unit

Factory fitted Expansion valve kit EKEXV & control box EKEQ

Advantages

- Integrated air conditioning and air handling solution from one supplier!
- Efficiency of DX system both for cooling and for heating!
- Quick reaction
- Capacity up to 54 HP (150kW)

DAIKIN VENTILATION PORTFOLIO

Professional

Up to 144,000m³/h

150
125
100
75
50
25
20
15
10
5
0

750m³/h

Modular R

Up to 25,000m³/h

500m³/h

Modular P

Up to 15,000m³/h

500m³/h

Energieeffizienzklasse A+

NACH VDI-RICHTLINIE GEPRÜFT VDI 6022 CERTIFIED IN ACCORDANCE WITH VDI-GUIDELINE

EUROVENT CERTIFIED PERFORMANCE ENERGY EFFICIENCY www.eurovent-certification.com A+ 2016 A+ A B C D E Report to performance data

NEW

Modular Light

Up to 3,400m³/h

300m³/h

NEW

VAM-J

Up to 2000m³/h

150m³/h

VKM

Up to 900m³/h

500m³/h

DAIKIN

ROUND FLOW

Round flow cassette

Top efficiency

Presence sensor + Auto cleaning panel

The Selfcleaning cassette

FXFQ20~125A:
main body of cassette

BYCQ140DG:
Auto-cleaning panel

BRYQ140A
(sensor kit for presence of people)

Nominal Capacity (kW)								
2,2	2,8	3,6	4,5	5,6	7,1	9,0	11,2	14,0

Ceiling suspended cassette for rooms without false ceiling

FXUQ

Unique in the industry

Only by Daikin

Providing cooling

4-way air distribution

Ideal for refurbishment

No false ceiling required

Easy maintenance

Electrical box and fan motors can be accessed via the suction opening

Filtration

Standard Air filter included

Drain pump

Standard drain pump included

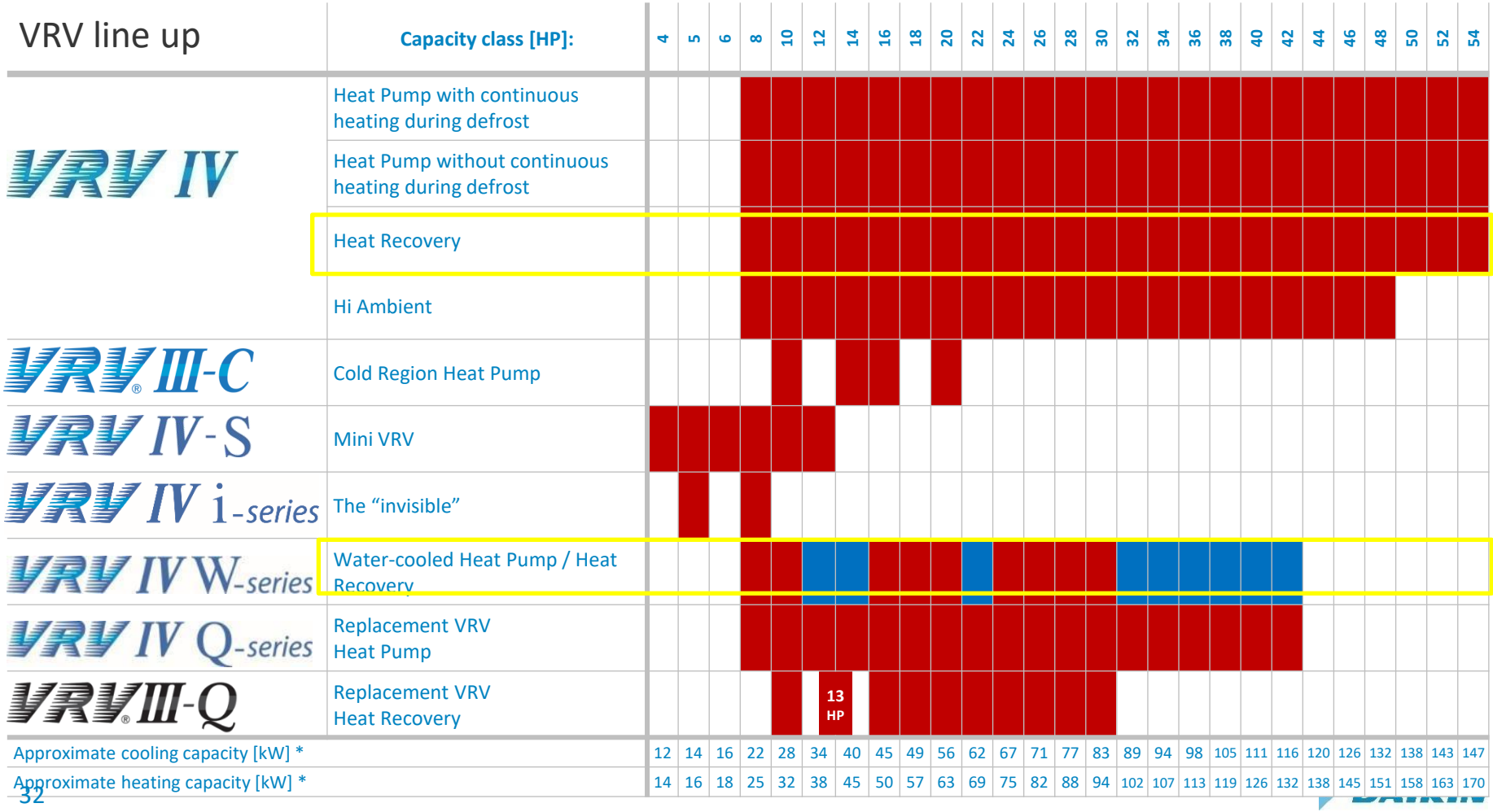

4.KITCHEN AREA

Cold room solutions

Solution: condensing unit “ZEAS”

- Inverter controlled compressor
- Reduces running costs to the maximum
- Future proof performant R410A refrigerant
- Precise temperature control
- Silent
- No visual impact

VRV line up


Capacity class [HP]:
4 5 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54
VRV IV
Heat Pump with continuous heating during defrost
Heat Pump without continuous heating during defrost
Heat Recovery
Hi Ambient
VRV III-C
Cold Region Heat Pump
VRV IV-S
Mini VRV
VRV IV i-series
The "invisible"
VRV IV W-series
Water-cooled Heat Pump / Heat Recovery
VRV IV Q-series
Replacement VRV Heat Pump
VRV III-Q
Replacement VRV Heat Recovery
13 HP
Approximate cooling capacity [kW] *
12 14 16 22 28 34 40 45 49 56 62 67 71 77 83 89 94 98 105 111 116 120 126 132 138 143 147
Approximate heating capacity [kW] *
14 16 18 25 32 38 45 50 57 63 69 75 82 88 94 102 107 113 119 126 132 138 145 151 158 163 170

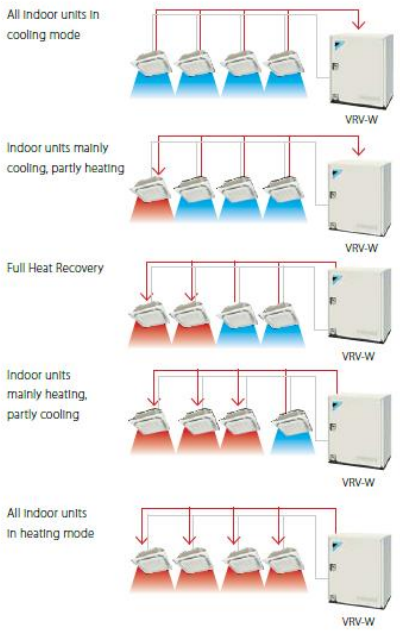
Hotel room HVAC solution

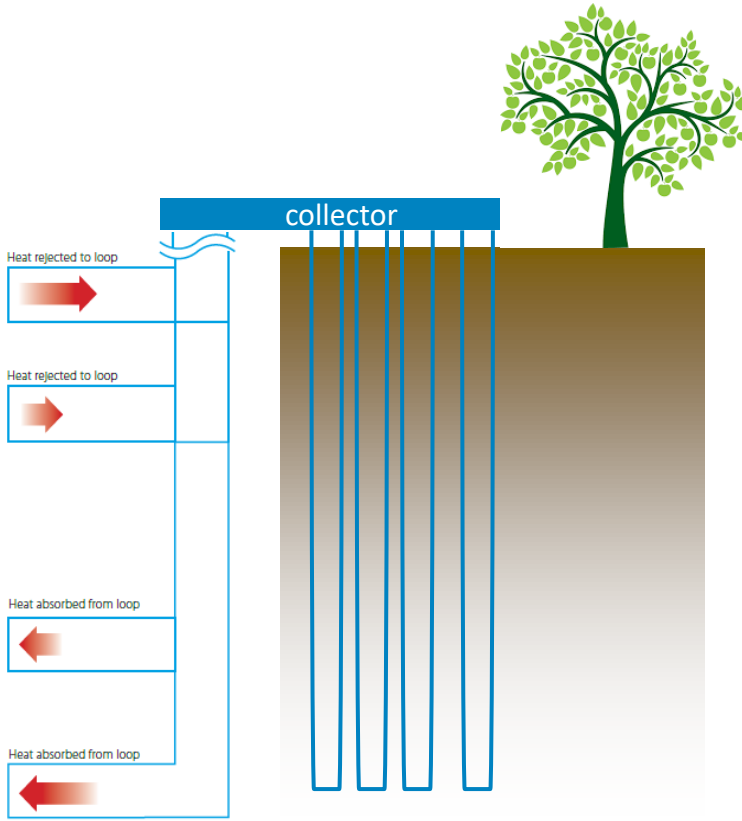
Requirements

- Independent cooling & heating
- Maximum heat recovery possibilities between hotelrooms

Solution:

- Watercooled VRV IV
  - No visual/sound impact
  - Compact
- Geothermal loops
  - Year-round high efficiency

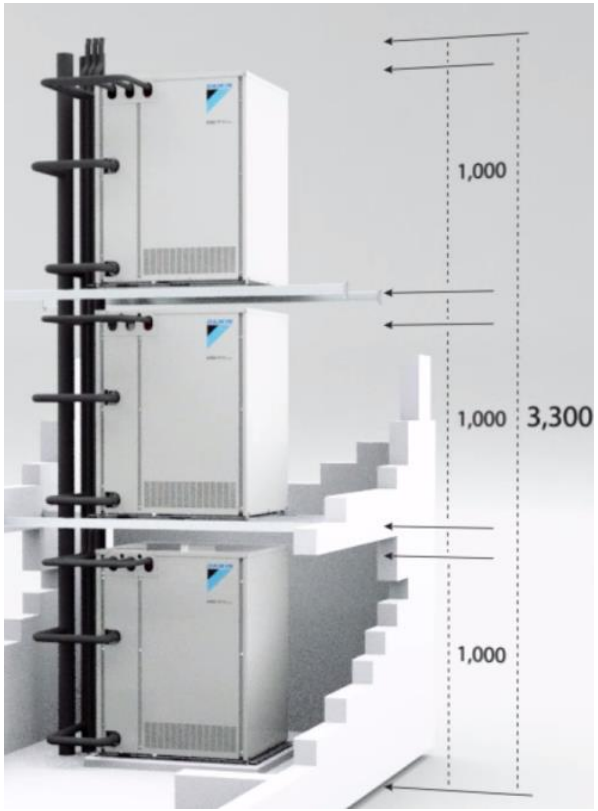




Watercooled VRV IV+

Plant Room layout

The units are intended for indoor installation only.
Space saving stacked installation possible.
Up to 42HP system can be installed in less than 0,5m^2 of floor space!



Mechanical room

Which solution?

A comparative audit has been carried on 14 hotels in Portugal, for one full year, by the company DomoServe. These hotels had different HVAC solutions:

HVAC/SHW System	4 tubes / energyraiser / Boiler SHW / Boiler-HVAC(75% Hotel) / Pp´s var Flow / BMS	2 tubes / Chillers / Boilers SHW&HVAC / 10% VRV / no BMS	2 tubes / Chillers - Heat Pump / Boilers SHW&HVAC / no BMS	VRV / Heat Pump SWH / Boilers SHW / BMS	2 tubes / Chillers / Boilers SHW&HVAC / no BMS	VRV / Boilers SHW / BMS	4 tubes / energyraiser / Boilers SWH / 120 el.boilers.SWH / Ps´s var. Flow / BMS	4 tubes / energyraiser / Boilers SWH / Ps´s var. Flow / BMS	2 tubes / Chillers-Heat Pump/ Heat Pump SWH (helioatmospheric system)/ Boilers SWH / no BMS	2 tubos / Chillers-Heat Pump/Boilres SWH / no BMS	4 tubes / energyraiser / Boilers SHW / Ps´s var. Flow / BMS	4 tubes / energyraiser / Boilers SHW / Ps´s var. Flow / BMS	6 tubes (recup HSW+HVAC) / Boilers SHW &HVAC(winter peaks) / Pp,s var Flow/ BMS	2 tubes / Heat Pump - combustion/ Boilers SHW / BMS
N° #	55	52	164	170	232	24	344	195	153	24	100	147	331	171
Oc #	53,1%	67,2%	71,2%	81,5%	44,6%	77,2%	25,2%	47,9%	72,0%	80,2%	58,9%	57,2%	67,6%	58,6%
N° pers	18.539	21.585	69.484	135.700	59.103	12.841	60.334	58.009	65.512	11.567	29.590	47.929	118.729	62.208
epkg	385.932	255.853	318.592	465.371	1.017.309	55.042	1.586.736	693.120	438.077	79.105	392.628	607.758	1.515.099	590.040
epkg/pers	20,82	11,85	4,59	3,43	17,21	4,29	26,30	11,95	6,69	6,84	13,27	12,68	12,76	9,48
kgep/m²const	61,95	60,63	31,53	23,96	50,27	34,27	67,51	34,74	38,62	31,48	47,98	67,66	46,67	35,45
m²const/#	113	81	62	114	87	67	68	102	74	105	82	61	98	97
epkg/m²use	69,92	61,06	53,04	30,56	64,55	37,39	81,37	41,36	43,90	35,79	55,78	79,60	51,19	58,69
Cont El Power(kW/#)	5,33	3,58	1,73	2,74	3,21	4,64	3,88	2,58	2,01	2,38	2,90	3,76	2,68	2,18
Inst El Power (kW/#)	11,45	7,69	3,84	5,88	6,90	10,42	6,98	4,10	4,12	2,38	4,00	4,29	4,83	4,68
Annual Energy Cost €	105.557	76.548	95.529	134.920	223.944	18.127	396.214	183.287	101.326	27.748	87.379	145.154	338.454	155.513
€/pers														2,50
N° Tec (mair														2

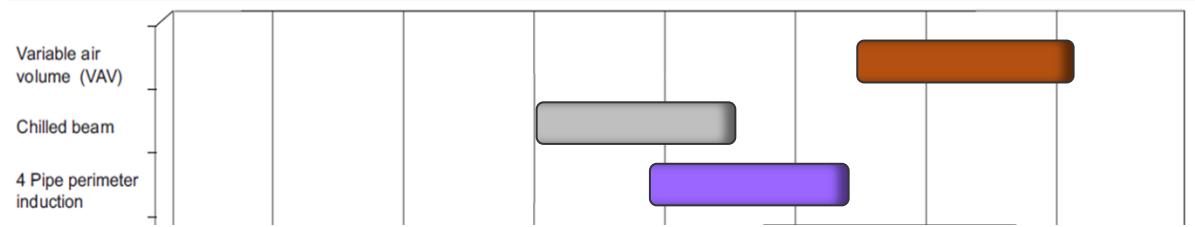
The measurements show that "VRV-based" hotels have the lowest running costs per person and per area.

AIKIN

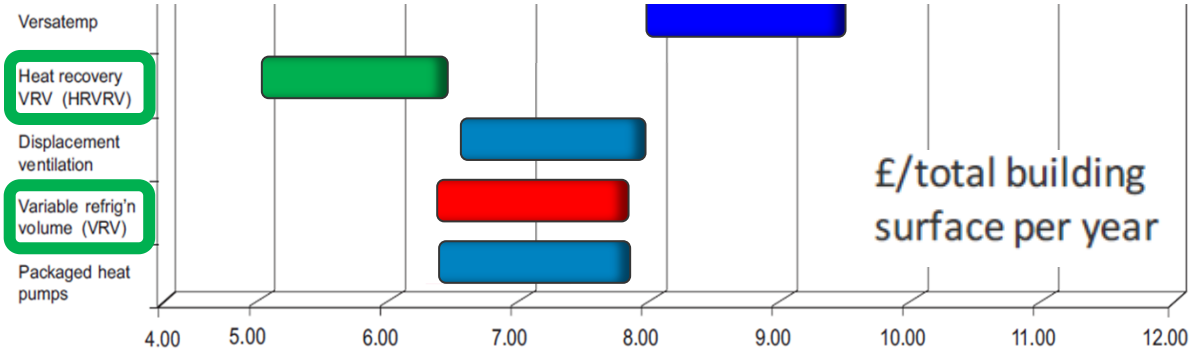
The results of Franklin Andrews running cost study on HVAC system.

Running costs compared among different technologies

VRV HEAT RECOVERY HAS THE LOWEST RUNNING COST



VRV solutions show lower running costs compared to equivalents used for commercial HVAC applications.



Source: UK Construction Benchmarks Property 2011-2012, Franklin Andrews

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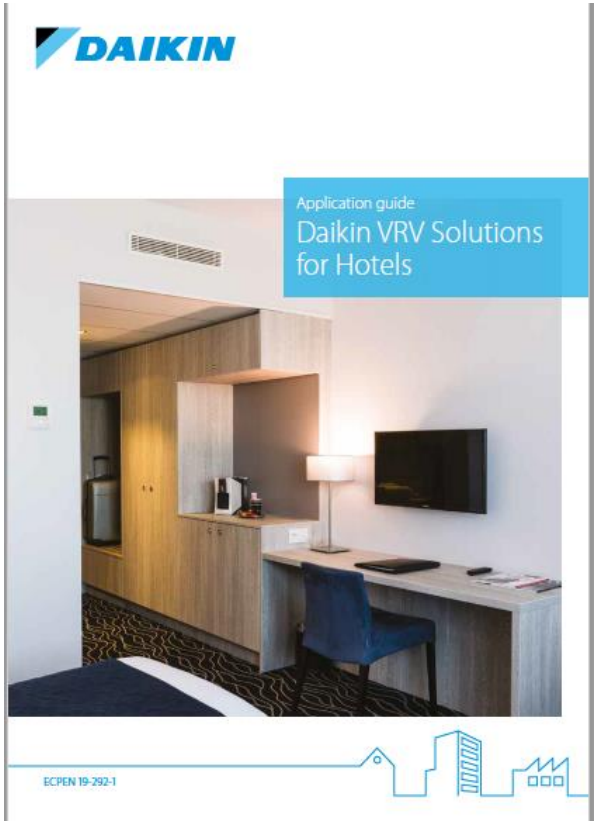
Summary video

Daikin Hotel Solution Guide - Booklet



The information in this booklet is the summary of Daikin Consulting Sales team experience with discussing and developing hotel HVAC solutions for different customers.
Here you will find the some solutions used and accepted by hotel designers and owners in real life, explanation of their working principle and some features as well as the answers to most common questions posed from customers' side.

We hope you will find this information useful.

Top secret
Secret
Internal use only
Public

Thank you