



Arena Centar, Zagreb



Delivering energy-efficient climate control for Croatia's premier shopping centre

A combination of McQuay and Daikin chillers are at the heart of an energy-efficient water loop-based climate control system in this busy retail and entertainment centre in south west Zagreb.

Location

Country: Croatia
City: Zagreb



Installed systems:

- > Chillers
- > VRV standard



Water loop-based HVAC is helping keep customers and staff comfortable all year round at Arena Centar

Project requirements

- Air conditioning
- Air curtain
- Air purification
- Control
- Heating
- Hot water
- Refrigeration
- Ventilation

Year of installation
2010

Total capacity
8,000 kW

Arena Centar, in the south west of Zagreb, is known as Croatia's premier shopping centre.

This architecturally-impressive building features wide shopping malls and glass ceilings and is home to 10 large, and more than 200 small to mid-sized, stores plus a large supermarket and entertainment venues.

As with any large shopping centre, it is important to ensure shoppers' comfort as they move around the mall areas and in individual shops, whatever the weather.

Climate control is provided by a water loop-based HVAC system using McQuay chillers. Each shop has its own water source heat pump to deliver heating and cooling, connected to a central building management system.

Ventilation and air conditioning of the mall areas is provided by air handling units linked to a Daikin chiller. Offices in the supermarket and bowling alley are served by VRV III heat pump systems.

Daikin and McQuay chiller systems deliver effective, reliable and efficient cooling for a wide range of commercial applications, such as large shopping centres.

Solution and system components

- › 9 McQuay and Daikin chillers
- › 4 VRV III outdoor units
- › McQuay water source heat pumps



Daikin and McQuay chillers are at the heart of the water-cooled system.



The chiller units are mounted on the roof of the shopping centre and provide climate control to more than 200 shops and entertainment venues.



Each shop has its own water source heat pump to deliver heating and cooling, connected to a central building management system.



BIPA, Croatia



Daikin has supplied BIPA stores across Croatia with VRV systems for monovalent heating and cooling.

Daikin has become BIPA's HVAC supplier of choice in Croatia, providing tailored VRV solutions that not only meet heating and cooling demands in its shops but also save energy and reduce running costs.

Installed systems:

- › VRV: Cold Region, Continuous Heating and Standard
- › VAM Heat reclaim ventilation
- › Intelligent Touch Manager

Location

Country: Croatia





VRV systems are providing a comfortable shopping environment for staff and customers in BIPA's Croatian stores.

Project requirements

- Air conditioning
- Air curtain
- Air purification
- Control
- Heating
- Hot water
- Refrigeration
- Ventilation

Year of installation
2010 to date

Total capacity
30 kW per shop

BIPA operates a chain of about 80 stores across Croatia, selling personal hygiene and household products.

Daikin began working with BIPA in 2010 and since then has developed tailored climate control solutions, based on VRV monovalent heating and cooling systems, for its stores throughout Croatia.

VRV Cold Region and Continuous Heating systems have been installed in stores in the continental part of Croatia, where design temperatures are below -10°C. Standard VRV heat pumps are used for those stores on the Adriatic coast, where winters are mild but summers are hot, with the focus on cooling.

VAM heat reclaim ventilation units have also been installed in some stores to recover heat, helping reduce system load further and to increase efficiency.

HVAC systems are controlled by Daikin's intelligent Touch Manager, providing full control over stores' climate, improving efficiency and lowering operational costs.

Daikin's partnership with BIPA is an excellent example of how close working relationships can deliver benefits for businesses and their customers.

Solution and system components

- › VRV Cold Region or Continuous heating outdoor units
- › VRV Heat Pump outdoor units
- › Ceiling cassettes
- › VAM Heat reclaim ventilation units
- › Intelligent Touch Manager



VRV Cold Region, Continuous Heating and Standard Heat Pump units are used, depending on where the stores are located.



The ceiling cassettes fit discretely into the stores' interior and provide all year round comfort to customers and staff.



Daikin intelligent Touch Managers allow close control of the store's climate, improve efficiency and result in lower running costs.



C&A, Prague



Water-cooled VRV delivers energy-efficient HVAC to refitted fashion retail store

Daikin Roundflow cassettes' automatic daily cleaning function, which maintains air flow, improves efficiency and lowers running costs, was a key factor in their selection as part of the water-cooled VRV system in C&A's store in the Nový Smíchov shopping mall.

Installed systems:

- > VRV-W
- > Self-cleaning Roundflow cassettes

Location

Country: Czech Republic
City: Prague





The store is kept comfortable all year round, efficiently and economically, by a water-cooled VRV system linked with self-cleaning indoor units.

Project requirements

- Air conditioning
- Air curtain
- Air purification
- Control
- Heating
- Hot water
- Refrigeration
- Ventilation

Year of installation
2013

Total capacity
180 kW

Nový Smíchov in Prague is one of the largest shopping malls in the Czech Republic, with a retail area of about 60,000m².

German fashion retailer C&A operates a 1,600m² store in the mall, which underwent a major refurbishment in 2013, which included replacing its HVAC system.

C&A needed a climate control solution that ensured comfort all year round, efficiently and cost-effectively.

It chose a Daikin system comprising four water-cooled VRV outdoor units (VRV-W) linked the shopping mall's water loop. These serve 20 indoor units, including 18 self-cleaning Roundflow ceiling cassettes throughout the shop. Three further VRV-W units are connected to an air handling unit delivering fresh air to the store.

The Roundflow cassettes' self-cleaning function was a key factor in the Daikin system being chosen. Daily auto-cleaning prevents dust accumulating on the filters, increasing efficiency, reducing running costs and improving comfort through consistent air flow distribution. Dust can be removed every six months using a vacuum cleaner.

The system is controlled via a Daikin intelligent Touch Manager, linked (via a RTD20 adaptor) with the Building Management System.

The self-cleaning units are ideal for busy shops. Easy to maintain, they only need emptying of dust twice a year and they also stay cleaner, for

Solution and system components

- › 7 VRV-W outdoor units: RWEYQ10P
- › 18 Self-cleaning Roundflow cassettes: FXFQ32A and FXFQ25A
- › 2 Ceiling cassettes: FXZQ25A
- › 1 intelligent Touch Manager
- › 1 RTD-20 adaptor



The VRV-W units are linked with the shopping centre's water-cooled system.



Self-cleaning Roundflow cassettes are low maintenance and highly efficient, saving energy and cutting running costs.



An intelligent Touch Manager controls the system inside the unit and links easily to the shopping centre's Building Management System.



DM, Čáslav



VRV IV delivers, efficient and cost-effective climate control

A Daikin VRV IV system is creating a comfortable shopping environment for DM's store in Čáslav.

Daikin VRV IV's Variable Refrigerant Temperature technology continually adjusts refrigerant temperature to match heating or cooling demand, saving energy and lowering running costs.

Installed systems:

- > RV IV
- > Self-cleaning Roundflow cassettes
- > VAM Heat Reclaim ventilation

Location

Country: Czech Republic
City: Čáslav





Customers in DM's Čáslav store are comfortable all year round, thanks to a highly efficient climate control system.

Project requirements

- Air conditioning
- Air curtain
- Air purification
- Control
- Heating
- Hot water
- Refrigeration
- Ventilation

Year of installation
2012

Total capacity
70 kW

A Daikin VRV IV system is delivering high levels of comfort in DM's store in Čáslav.

Heating and cooling demands in the shop can vary dramatically throughout the year.

A VRV IV system was the perfect solution. The latest version of Daikin's market-leading system features Variable Refrigerant Temperature technology, which continually adjusts refrigerant temperature to match heating or cooling demand and the outside temperature quickly. This means less power is needed, efficiency is higher and comfort is improved.

Heating and cooling on the shop floor is provided by five Roundflow ceiling cassettes, featuring self cleaning panels that reduce maintenance, improve performance and lower running costs.

Three wall-mounted indoor units control the climate in the back-office and warehouse areas and a Biddle air curtain is fitted above the store entrance.

Fresh air is supplied by two VAM heat reclaim ventilation units that recover heat to help reduce system load further and increase efficiency.

The VRV IV system creates a welcoming environment for all customers, efficiently and cost-effectively.

Solution and system components

- › 1 VRV IV RYMQ16
- › 1 VRV IV RYMQ8
- › 4 Roundflow cassettes: FXFQ40A-100A
- › 3 FXAQ25P Wall mounted indoor cassettes
- › 2 VAM2000FB Heat reclaim ventilation units
- › 8 BRC1E52B wired remote controllers
- › 1 RTD NET MODBUS adapter



Two VRV IV units serve seven indoor cassettes and two heat reclaim ventilation units.



The self-cleaning Roundflow cassettes are low maintenance, improving performance and reducing running costs.



A Biddle air curtain above the store entrance creates a welcoming environment for customers.



Drogeriemarkt, Vösendorf



VRV IV delivers flexible, efficient and cost-effective climate control

A Daikin VRV IV system is creating a comfortable shopping environment within DM's flagship superstore in Vösendorf, which features beauty treatment rooms and a hair salon.

Installed systems:

- › VRV IV
- › Roundflow cassettes
- › Concealed duct units

Location

Country: Vösendorf
City: Austria





Customers and staff in DM's Vösendorf superstore are comfortable all year round, thanks to a highly efficient climate control system.

Project requirements

- Air conditioning
- Air curtain
- Air purification
- Control
- Heating
- Hot water
- Refrigeration
- Ventilation

Year of installation
2013

Total capacity
76 HP

A Daikin VRV IV system is delivering high levels of comfort in DM's flagship store in Vösendorf, Austria, which features beauty treatment rooms and a hair salon.

Heating and cooling demands in the DM store can vary dramatically throughout the year, with the added complexity that the climates of the five treatment rooms and hair salon have to be controlled independently.

A VRV IV monovalent system was the perfect solution, as it could create the different climatic zones.

VRV IV features Variable Refrigerant Temperature technology, which continually adjusts refrigerant temperature to match heating or cooling demand and the outside temperature. This means less power is needed, efficiency is higher and comfort is improved.

In the DM store, one VRV IV Multi-system outdoor unit is linked with 10 Roundflow cassettes serving the shop floor, while another VRV IV unit is linked with three concealed duct units in the salon and one concealed duct unit in each of the five treatment rooms.

This allows the temperature and air flow in the salon and the treatment rooms to be controlled independently of one another and the main sales area.

The Daikin system creates a welcoming shopping environment, efficiently and cost-effectively, plus it makes the store a pleasant place in which to work.

Solution and system components

- › 1 VRV IV Multi-system RXYQ54T
- › 1 VRV IV RXYQ8T
- › 1 VRV IV RXYQ14T
- › 14 Roundflow cassettes: FXFQ20A-125A
- › 3 FXMQ100P7 duct units
- › 5 FXDQ14PF duct units



The three outdoor VRV IV units were installed on the building's roof.



Roundflow cassettes provide climate control on the shop floor, discretely, quietly and efficiently.



The VRV system allows independent control of the main shop, the hair salon and five treatment rooms.



Expert, Čáslav



Self-cleaning cassettes improve efficiency and reduce electronic retailer's running costs

Daikin Roundflow cassettes' automatic daily cleaning function, which maintains air flow, improves efficiency and lowers running costs, was a key factor in their selection for a new store in Čáslav.

Installed systems:

- > VRV IV
- > Self-cleaning Roundflow cassettes
- > Heat recovery ventilation

Location

Country: Czech Republic
City: Čáslav





Customers and staff are being kept comfortable all year round, efficiently and economically, by a VRV system linked with self-cleaning indoor units.

Project requirements

- Air conditioning
- Air curtain
- Air purification
- Control
- Heating
- Hot water
- Refrigeration
- Ventilation

Year of installation
2012

Total capacity
62 kW

Expert is an electronics retailer with outlets across the Czech Republic. When it planned to open a store in a new retail park near Čáslav, it needed a climate control solution that ensured comfort all year round, efficiently and cost-effectively.

It chose a system comprising two VRV IV outdoor units linked with indoor units in three main areas: a Biddle Air Curtain and two self-cleaning Roundflow ceiling cassettes in the entrance, as well as four Roundflow cassettes above the shop floor and one in the storeroom.

It was the cassettes' self-cleaning function that convinced Expert to choose the Daikin system. Daily auto-cleaning prevents dust accumulating on the filters, increasing efficiency, reducing running costs and improving comfort through consistent air flow distribution. Dust can be removed every six months using a vacuum cleaner.

Efficiency and cost savings in the store are improved by two Daikin VAM heat recovery ventilation units. These balance indoor and outdoor temperature and humidity, plus recover heat to reduce system load and increase efficiency.

Along with individual zone controls, the system is controlled by a Daikin intelligent Touch Manager, linked with the Building Management System.

The self-cleaning units are easy to maintain. They only need emptying twice a year and the lack of dust means they also stay cleaner, for longer.

Solution and system components

- › 2 VRV outdoor units: RYMQ12T and RYMQ10T
- › 7 VRV Self cleaning indoor cassette units: FXFQ-A 20, 40 and 100
- › 1 Biddle Air curtain: CYVM250DK140FBC
- › 2 heat recovery ventilation units: VAM 2000FB
- › 7 wired remote control units: BRC1E52B
- › 1 external outdoor temperature regulator: DTA104A61



The quiet and compact VRV IV outdoor units are mounted on the store's roof



The self cleaning Roundflow cassettes offer high efficiency and comfort



The system's control are simple to use, allowing staff to maintain a comfortable environment



Galerija Sjever, Čakovec



Delivering energy-efficient climate control for a new retail park

Nine out of ten stores in Čakovec's Galerija Sjever retail park are benefiting from the high energy efficiency and excellent levels of comfort provided by Daikin's integrated approach to climate control.

Installed systems:

- › VRV IV
- › Conveni-Pack
- › Zeas
- › VAM Heat reclaim ventilation

Location

Country: Croatia
City: Čakovec





Conveni-Pack and VRV IV help keep customers and staff comfortable all year round at Galerija Sjever.

Project requirements

- Air conditioning
- Air curtain
- Air purification
- Control
- Heating
- Hot water
- Refrigeration
- Ventilation

Year of installation
2013

Total capacity
600 kW

The Galerija Sjever retail park is situated on the northern edge of Čakovec, a town close to Croatia's borders with Slovenia and Hungary.

Keeping customers and staff comfortable all year round was crucial. Nine out of the ten stores in the retail park chose Daikin climate control equipment.

A Daikin Conveni-Pack system was installed in the Spar supermarket. This highly efficient system recovers up to 100% of waste heat from refrigeration units which is then used to heat other parts of the store. Deep freeze cold rooms and cabinets are connected to a Zeas condensing unit.

VRV IV monovalent heat pump systems provide heating to eight of the other (non-food) retail units, which have also installed air curtains and self-cleaning panels on their ceiling cassettes. Smaller areas are heated and cooled by Daikin Split systems.

Fresh air is supplied by Daikin VAM heat reclaim ventilation units that recover heat to help reduce system load and increase efficiency.

Bypass dampers protect the VAM units from freezing up, lowering energy consumption and improving the energy efficiency.

Integrating refrigeration, heating and ventilation can lower energy consumption, improve energy efficiency and save money.

Solution and system components

- > 14 VRV IV heat pumps
- > 4 Conveni-Pack
- > 1 Zeas unit
- > 60 Ceiling cassettes
- > 18 VAM Heat reclaim ventilation units



A Conveni-Pack system serves the supermarket, recovering heat from refrigeration to heat other parts of the store.



VRV IV monovalent systems heat eight non-food units in the retail park.



Self-cleaning ceiling units are used to heat all the stores.



Sportisimo, Čáslav



VRV IV delivers year-round comfort for new sports store

A whole-building VRV IV climate control system featuring Daikin's self-cleaning Roundflow cassettes is delivering energy-efficient comfort to customers and staff at Sportisimo's store in Čáslav in the Czech Republic.

Installed systems:

- > VRV IV
- > Roundflow cassettes
- > iTM

Location

Country: Czech Republic
City: Čáslav





Customers and staff at Sportismo's Čáslav store are comfortable all year-round, thanks to a highly efficient climate control system.

Project requirements

- Air conditioning
- Air curtain
- Air purification
- Control
- Heating
- Hot water
- Refrigeration
- Ventilation

Year of installation
2012

Total capacity
80 kW

Sportismo, one of the Czech Republic's largest sport retailers, wanted to create a comfortable environment for both customers and staff at its store in a new retail park near Čáslav.

It chose a Daikin VRV IV system, comprising two outdoor units supplying a range of indoor units: a Biddle City DX air curtain and two self-cleaning Roundflow ceiling cassettes in the entrance; two Roundflow cassettes above the shop floor; three wall-mounted units in the backroom area (an office, kitchen and staff room) and a duct unit operating as an air curtain over the store room doors.

Fresh air is supplied by two Daikin VAM heat recovery ventilation units, which not only optimise the balance between indoor and outdoor temperature and humidity but also recover heat to help reduce system load and increase efficiency. Along with individual room controls, the entire system is controlled by a Daikin intelligent Touch Manager linked with the Building Management System.

"We are particularly impressed with Daikin's self-cleaning cassettes, which improve comfort and efficiency, while reducing running and maintenance costs."

Ing. Radovan Kosík,
Technical Manager of Sportismo

Solution and system components

- › 2 VRV outdoor units: RYMQ12T and RYMQ16T
- › 5 VRV self-cleaning indoor cassettes: FXFQ-A 40, 100 and 125
- › 3 VRV wall-mounted units: FXAQ20
- › 1 ducted unit: FXMQ80
- › 5 wired remote control units BRC1E52B
- › 1 Biddle air curtain CYVM250DK140FBC
- › 2 heat recovery ventilation units VAM 2000FB
- › 1 iTouch Manager
- › 1 external outdoor temperature regulator DTA104A61



The compact VRV IV outdoor units are mounted on the store's roof.



The self-cleaning Roundflow cassettes are ideal for retail applications, offering high levels of efficiency and comfort.



The system is controlled centrally using Daikin's intelligent Touch Manager.



Supernova, Zagreb



VRV IV delivers efficient comfort for a retail park in Zagreb

Shoppers visiting the Supernova retail park are being kept comfortable, whatever the weather, thanks to VRV IV heat recovery and monovalent heat pump systems.

Installed systems:

- › VRV IV heat recovery
- › VAM heat reclaim ventilation
- › Intelligent Touch Manager

Location

Country: Croatia
City: Zagreb





Highly efficient VRV IV systems are keeping customers at the Supernova retail park comfortable all year round

Project requirements

- Air conditioning
- Air curtain
- Air purification
- Control
- Heating
- Hot water
- Refrigeration
- Ventilation

Year of installation
2013-2014

Total capacity
1.300 kW

Zagreb's Supernova Shopping Centre and Shopping Park is home to some of Europe's best known brands.

Supernova has 30,900m² of retail space in two main areas: the Shopping Centre, a mall with many small outlets; and the Shopping Park, which has large individual stores.

Climate in the Shopping Centre is controlled by a Daikin VRV IV system incorporating heat recovery. This comprises 11 heat recovery heat pumps supplying indoor cassettes and Biddle City DX air curtains above the entrances to the building.

The system offers high levels of efficiency by integrating heating, cooling, ventilation and air curtains, recovering waste heat from areas requiring cooling and using it to heat other areas. It is controlled by a Daikin intelligent Touch Manager, giving control over the climate of their individual units and ensuring users only pay for the energy they use.

The Shopping Park's large retail units each have a VRV IV monovalent heat pump system to provide heating. Fresh air is supplied by Daikin VAM heat reclaim ventilation units that recover heat to help reduce system load and increase efficiency.

Integrating heating, cooling and ventilation can dramatically improve energy efficiency, lower carbon emissions and save on energy bills in small shops, supermarkets and superstores.

Solution and system components

- › 11 VRV IV heat recovery heat pumps
- › 8 VRV IV heat pumps
- › 23 ERQ Condensing units
- › More than 200 cassette units
- › 7 VAM heat reclaim ventilation units
- › Intelligent Manager



A range of VRV systems are used in the Shopping Centre and Retail Park.



Indoor units keep all areas of the retail park, including baby changing facilities, comfortable throughout the year.



The climate control system in the Shopping Centre is controlled via an intelligent Touch Manager.



Takko store, Havličkův Brod



VRV IV keeps customers comfortable in Takko's new store

A VRV IV climate control system is delivering energy-efficient comfort to customers and staff at fashion retailer Takko's store in Havličkův Brod.

The system continually adjusts refrigerant temperature to match the outdoor temperature and heating and cooling demand, saving energy and cutting running costs.

Installed systems:

- > VRV IV
- > Roundflow cassettes

Location

Country: Czech Republic
City: Havličkův Brod





Takko customers are benefiting from a welcoming shopping environment, thanks to intelligent climate control.

Project requirements

- Air conditioning
- Air curtain
- Air purification
- Control
- Heating
- Hot water
- Refrigeration
- Ventilation

Year of installation
2011

Total capacity
60 kW

Fashion retailer Takko, which operates 1,900 stores in 16 countries across Europe and Russia, wanted to create a comfortable environment for customers and staff at its new store in Havlíčkův Brod.

It chose a Daikin VRV IV system for monovalent heating and cooling. This comprises two outdoor supplying four wall mounted units and a Biddle air curtain above the entrance. An additional two VAM ventilation units provide fresh air to the store.

As in most retail environments, demands on heating and cooling in the store can vary dramatically throughout the year. It was vital, therefore, to ensure the chosen climate control system could react quickly, not only to changes in the outdoor temperature, but also to how many customers were shopping in the store.

VRV IV provided the ideal solution. Along with inverter control, the latest version of Daikin's market-leading system features Variable Refrigerant Temperature technology, which continually adjusts refrigerant temperature to match heating or cooling demand and the outside temperature quickly. This means less power is needed, efficiency is higher and comfort is improved.

The VRV IV system, which provides a cost-effective solution to meeting the varying demands of the store, all year round.

Solution and system components

- › 2 x VRV III outdoor units
- › 4 x FXFQ wall mounted units
- › 1 x Biddle air curtain (free hanging)
- › 2 x VAM ventilation units for fresh air



VRV IV outdoor units feature Variable Refrigerant Temperature technology that helps deliver higher efficiencies.



Self-cleaning Roundflow cassettes require lower maintenance and maintain their clean appearance for longer.



Daikin's control system was easily integrated into the overall Building Management System.



Vodafone store, Gyula



VRV IV keeps customers comfortable in Vodafone's new store

The ability to react quickly to rapid changes in demand, plus its quiet operation, was key to Vodafone choosing a VRV IV climate control system for its new retail outlet in Gyula.

Installed systems:

- > VRV IV
- > Suspended ceiling cassettes

Location

Country: Hungary
City: Gyula





Vodafone customers are benefitting from a welcoming shopping environment, whatever the weather.

Project requirements

- Air conditioning
- Air curtain
- Air purification
- Control
- Heating
- Hot water
- Refrigeration
- Ventilation

Year of installation
2014

Comfort cooling:
22 kW

Comfort heating:
30 kW

Daikin has supplied climate control systems to most of Vodafone's stores in Hungary. One of the latest to open is in Gyula, 250km south east of the capital Budapest.

As in most retail environments, demands on heating and cooling in the 250m² store can vary dramatically throughout the year. It was vital, therefore, to ensure the chosen climate control system had the ability to react quickly, not only to changes in the outdoor temperature, but also to how many customers were shopping in the store.

VRV IV provided the ideal solution. Along with inverter control, the latest version of Daikin's market-leading system features Variable Refrigerant Temperature technology, which continually adjusts refrigerant temperature to match heating or cooling demand and the outside temperature quickly. This means less power is needed, efficiency is higher and comfort is improved.

One VRV IV Classic outdoor unit serves four ceiling suspended units in the Gyula store. These discrete units match Vodafone's interior design schemes perfectly, with the added benefit that they are very quiet in operation and allow staff to set comfort levels simply and accurately.

The discrete indoor units match the interior design scheme perfectly; they are also very quiet and easy to control.

Solution and system components

- › VRV IV Classic outdoor unit: RXYCQ
- › 4 ceiling suspended units: FXMQ



The compact HVAC system components can be installed in small voids, making them ideal for refurbishment projects.



The ceiling suspended indoor units and fresh air inlets are hidden above the store's elegant false ceiling.



Daikin's wired controllers are simple to use, allowing staff to maintain a comfortable shopping environment.