



## Billa Palaca, Split



Integrated refrigeration and climate control meets modern HVAC demands within an ancient building.

Daikin's compact and quiet Conveni-Pack and Zeas refrigeration systems proved to be the ideal solution for a supermarket constructed within several buildings of a Fourth Century Roman palace in Split.

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#### Installed systems:

- > Conveni-Pack
- > Zeas
- > Multi-split

#### Location

**Country:** Croatia  
**City:** Split





## Integrated refrigeration and climate control using heat recovery is delivering energy efficiency in a supermarket in Split.

### Project requirements

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

Year of installation  
2013

Total capacity  
150kW

**This Billa supermarket in Split is located within the walls of Diocletian's Palace, built at the turn of the Fourth Century.**

Putting a supermarket inside such an historic and sensitive building was a significant challenge, not least when it came to installing the systems for climate control, refrigeration and cold storage. Space was limited and noise restrictions were imposed.

Billa has been using Daikin equipment for many years and chose an integrated refrigeration and climate control system, comprising two Conveni-Pack (CVP) units and one Zeas unit (for deep freeze applications).

Daikin's compact and quiet solution offers a highly-efficient integrated approach to supermarket refrigeration and climate control, recovering up to 100% of waste heat from refrigeration, which is used to heat the store via ceiling cassettes, creating a comfortable shopping environment all year round.

CVP and Zeas units minimise energy consumption, reduce CO<sub>2</sub> emissions and cut energy bills.

Additionally, a Multi-split system supplies three wall-mounted units in the back-office area.

This is a perfect example of how an ancient building can be treated sensitively when installing the latest HVAC-R technology.

### Solution and system components

- › 2 Conveni-Pack units
- › 1 Zeas unit
- › 1 ERQ unit
- › 7 FXUQ indoor cassettes
- › 1 Multi-split system
- › 3 Wall-mounted units
- › Intelligent Touch Controller
- › Modbus interface for remote control of refrigeration system



The system recovers waste heat from refrigeration to heat other parts of the store.



The quiet and discrete indoor units were ideal for the sensitive historic building.



Daikin controls allow staff to control store comfort via an intuitive and user-friendly interface.





## 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.

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#### 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.



# Spar, Budapest



## Integrated refrigeration and climate control drives efficiency for Spar supermarket

Daikin's integrated approach to refrigeration and climate control using heat recovery is ensuring customers' comfort, while providing energy-efficient food storage in a Budapest supermarket.

### Installed systems:

- > Conveni-pack
- > Zeas
- > Roundflow cassettes

### Location

**Country:** Hungary  
**City:** Budapest







## Daikin's Conveni-pack and Zeas units are using heat recovery to provide energy-efficient refrigeration and climate control for a Spar supermarket in Budapest.

### Project requirements

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

Year of installation  
2012

Comfort cooling:  
30 kW

Comfort heating:  
60 kW

Refrigeration cooling:  
36 kW

Deep freeze cooling:  
10 kW

**Meeting the varying refrigeration demands of the supermarket, while ensuring energy-efficiency and customer comfort, was key to the success of this project. Additionally, as the store is in a residential area, noise disturbance had to be minimised.**

Two of Daikin's Conveni-pack (CVP) refrigeration units, combined with a Zeas refrigeration unit, proved to be the ideal solution for the 500m<sup>2</sup> store. CVP offers a highly-efficient integrated approach to supermarket refrigeration and climate control by recovering up to 100% of waste heat from refrigeration, which is used to heat the store and to create a comfortable shopping environment all year round.

CVP and Zeas inverter-controlled units use R-410A refrigerant gas which, combined with heat recovery, minimises energy consumption, reduces CO<sub>2</sub> emissions and cuts energy bills, while maintaining high levels of performance. The compact and very quiet outdoor units were installed on the roof of the building, 30m above the shop floor.

This was one of the first Spar supermarkets in Budapest to be fitted with a CVP and Zeas system. The project was so successful that the approach has been rolled out to other branches across the city.

The Conveni-pack system recovers up to 100% of waste heat from refrigeration, which is used to create a comfortable shopping experience.

### Solution and system components

- > 2 Conveni-Pack: LRYEQ16AY1
- > 1 ZEAS: LRLEQ10AY1
- > 5 Roundflow cassette indoor units: FXFQ
- > 2 ceiling suspended units: FXMQ
- > 1 set FTXS20J-RXS20J
- > Biddle Air curtain: CAVS200DK



The compact and quiet outdoor units were installed on the store's roof, 30 m above the shop floor.



Comfort on the shop floor is maintained by Daikin's highly efficient Roundflow cassettes.



Daikin's simple controller ensures the integrated refrigeration and climate control system runs smoothly at all times.



## Szeged Nova, Szeged



### VRV IV provides year-round comfort for shoppers in Szeged's new mall

VRV IV's Variable Refrigerant Temperature technology, as well as the ability to control individual building zones, is allowing retailers in this large shopping mall in Szeged to achieve optimal comfort in their stores.

#### Location

**Country:** Hungary  
**City:** Szeged

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#### Installed systems:

- > VRV IV
- > Fully flat cassette
- > iTM





## VRV IV's modularity, plus Variable Refrigerant Temperature technology, were key to it being chosen for Szeged Nova shopping mall.

### Project requirements

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

Szeged Nova is a new shopping mall that opened in November 2014 in the suburbs of Szeged, Hungary's third largest city. The 11,500m<sup>2</sup> mall includes a 6,000m<sup>2</sup> hypermarket (occupied by food retailer CBA), plus 4,000m<sup>2</sup> of shops and 1,500m<sup>2</sup> of cafés, bistros and restaurants.

An estimated 3,500 to 4,500 shoppers visit the mall every day, so it is important to ensure their comfort as they move between different stores and food outlets, whatever the weather.

Year of installation  
2014

Comfort cooling:  
650 kW

Comfort heating:  
760 kW

The HVAC solution chosen was a VRV system from Daikin, comprising eight VRV IV outdoor units, 18 ERQ air handling units and a range of Daikin ceiling cassettes.

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.

Additionally, as VRV is modular, it allows the climate of building zones to be controlled individually. At Szeged Nova, along with the communal mall areas, owners can adjust the climate of their unit to their own preference. The entire system is controlled a Daikin intelligent Touch Manager linked with the Building Management System.

Retailers can adjust the climate of their unit to their own preference, ensuring that customers are comfortable and that retailers only pay for the energy they use.

### Solution and system components

- › 8 VRV IV outdoor units: RYYQ
- › 18 fresh air systems: ERQ
- › 37 fully flat cassette units: FXZQ
- › 18 Roundflow cassette units: FXFQ
- › 5 ceiling suspended units: FXMQ
- › Intelligent touch controller
- › Wired controllers



Eight VRV IV units serve 60 indoor units throughout the shopping mall.



VRV IV ensures the thousands of shoppers visiting the mall every day are kept comfortable at all times.



Daikin's intelligent Touch Manager controls the entire HVAC system and is linked with the mall's Building Management System.





## Vindija Trgovina, Varaždin



### Conveni-pack delivers efficient refrigeration and climate control in prestige supermarket

Daikin's integrated approach to refrigeration and climate control using heat recovery is ensuring customers' comfort, while providing energy-efficient food storage, in a new specialist supermarket in Varaždin.

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#### Installed systems:

> Conveni-pack

#### Location

**Country:** Croatia  
**City:** Varaždin





## Daikin's Conveni-pack is using heat recovered from refrigeration to provide efficient climate control in a new supermarket in Varaždin.

### Project requirements

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

Year of installation  
2012

Total capacity  
20 kW

**Meeting the varying refrigeration demands of Vindija's new store, while ensuring energy-efficiency and customer comfort, was key to the project's success.**

Daikin has supplied its Conveni-Pack and Zeas refrigeration and climate control systems to Vindija stores for some time, from individual replacement units to complete systems. The latest project was to supply a CVP system, plus a booster for deep freeze cabinets, for a new shop in Varaždin. Five ducted indoor units supply climate control to the shop floor.

Daikin's Conveni-Pack (CVP) offers a highly-efficient integrated approach to supermarket refrigeration and climate control, recovering up to 100% of waste heat from refrigeration and using it to heat stores to create a comfortable shopping environment.

CVP and Zeas inverter-controlled units minimise energy consumption, reduce CO<sub>2</sub> emissions and cut energy bills, while maintaining high levels of performance.

Daikin's integrated refrigeration and climate control is delivering energy savings of up to 60% in Vindija's stores.

### Solution and system components

- > 1 Conveni-Pack
- > 1 booster
- > 5 Ducted indoor units



Conveni-Pack is compact, maximising retail space in smaller stores.



Conveni-Pack recovers up to 100% of waste heat from refrigeration and uses it to heat other parts of the store.



Daikin's user-friendly controls allow staff to control the shopping and office environments easily.