

ENERGY-EFFICIENT AIR CONDITIONING SYSTEMS



// **Generator Hostel Amsterdam**

Budget design hostels are the latest trend, offering low-priced accommodation in comfortable surroundings characterised by inspirational design. The Generator Hostel in Amsterdam has achieved BREEAM certification with the quality seal for sustainable building. A Hybrid VRF air conditioning system was one of the factors responsible for this award.

EVERY GENERATION HAS
**SHINING
EXAMPLES**



// Generator Hostel Amsterdam

Achieving BREEAM certification with a Hybrid VRF system

The Generator Hostel is situated to the east of Amsterdam. Overlooking the Oosterpark, it can accommodate 564 guests in 168 twin and quadruple rooms. It also boasts a luxury apartment for six people with views of the park. This unusual hostel was put forward for the quality seal of the Building Research Establishment Environmental Assessment Method (BREEAM). BREEAM is the oldest, most widely used certification system for sustainable building. It was developed in Great Britain in 1990 and awards a four-level quality seal based on a points system that covers eight evaluation categories.

The evaluation categories focus on management, energy, water use, land use and ecology, health and wellbeing, transport and materials. Certification takes the phases from design and execution up to utilisation into consideration, along with the overall

life cycle. A key element in achieving certification is the building technology. This has an impact on energy usage, ecology and wellbeing, and so the more efficient, energy-saving and convenient an air conditioning system is, for example, the more points can be scored.

Former faculty building receives a stylish makeover

Erected in 1916, the building was formerly part of the University of Amsterdam. As part of the conversion into a design hostel for the young and young at heart, two glassed-in floors have been added to the building. To retain the connection with the building's former use as the Faculty of Health Sciences, the original features of various rooms, such as the lecture hall and library, have been retained in the refurbishment process.



Reference



In contrast, the air conditioning system provides highest quality: here the developer has opted for the latest technology so as to offer guests the ultimate in comfort and a peaceful, homely atmosphere. A Hybrid VRF system has been used, which combines the benefits of a direct evaporation system with those of a water system. The technology is based on Mitsubishi Electric's City Multi R2 heat pump system for simultaneous cooling and heating with heat recovery. With the new Hybrid VRF system, much smaller quantities of refrigerant are needed, a positive effect with regard to the applicable regulation covering F gas.

Energy savings of up to 40 %

The HVRF system consists of an R2 outdoor unit in the City Multi series and the new Hybrid BC controller, which permits the combination of refrigerant and water as heat carriers. In this process, the refrigerant circulates from the outdoor units to the individual distributors, the so-called Hybrid BC controllers. There energy is transmitted via specially designed, optimised plate heat exchangers. The separation of the water and refrigerant circuit results in simple, flexible installation, as plastic pipes can be laid between the Hybrid BC controllers and the indoor units in the building instead of copper ones. This is because, unlike the classic R2 heat pump system, the refrigerant only flows between the outdoor unit and the Hybrid BC controller in the Hybrid R2 system. All the guest rooms in the hostel have their own ceiling concealed unit, with which the temperature can be set to suit the guests' requirements via a permanently installed cable remote control.

A gentle discharge of air creates a very comfortable climate. Each individual indoor unit can be operated independently in heating

and cooling mode. Heat that is removed from the rooms being cooled is used to heat those rooms where warmth is required. The higher energy efficiency achieved by heat recovery thus enables energy savings of up to 40 % to be made compared with conventional cold water systems for heating or cooling. 14 Hybrid VRF R2 outdoor units in all are located on the roof, along with two outdoor units to supply the heat register of the central ventilation system. Here, too, a Mitsubishi Electric system is used, which can provide optional heating or cooling. The base heating and cooling load is thus covered in all guest rooms and public areas.

Conclusion

The modern concept for air conditioning of the guest rooms at the Generator Hostel in Amsterdam is a winner. The Hybrid VRF air conditioning system with heat recovery plays an important role in meeting the strict EU standard for the reduction of partly fluorinated hydrocarbons. The high degree of heat recovery, in which energy is not discharged unused into the environment but is "relocated" in the building, is a key factor in the certification of the building by BREEAM and the award of the quality seal for sustainable building following its redesign.



