

The background of the cover is a photograph of a forest floor. The ground is covered with a dense carpet of small, purple-blue flowers, likely bluebells. Several large, light-colored tree trunks are visible, standing vertically. The lighting is soft, suggesting a dappled sunlight effect.

# Environmental report 2017

Daikin Europe N.V.



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## Editorial policy

Reporting period fiscal year 2016  
(1st April 2016 to 31st March 2017)

Activities covered:

Manufacturing: Daikin Europe N.V.

Rotex Heating Systems GmbH

Sales: Daikin Europe N.V. and its affiliates.

This report is also available on [www.daikin.eu](http://www.daikin.eu)

If you are interested in learning more about  
Daikin's worldwide environmental initiatives,  
please consult the Daikin Industries Ltd  
Sustainability Report and website:  
[www.daikin.com/csr/report/index.html](http://www.daikin.com/csr/report/index.html)

Whenever a year is mentioned, it refers to the fiscal year (e.g. 2016 = fiscal year 2016)





**Frans Hoorelbeke (left)**

Chairman  
Daikin Europe N.V.

**Masatsugu Minaka (right)**

President  
Daikin Europe N.V.

**In all of us,  
a green heart**



## Environmental sustainability is a fundamental objective for Daikin

Daikin is committed to providing homes, businesses and industry with the most efficient and safest solutions to meet all your cooling and heating needs, today and in the future.

We are keenly aware of our responsibility to protect the environment in everything we do and all our policies, practices and processes are developed and implemented with environmental sustainability at their heart.

Environmental sustainability is a fundamental objective for Daikin. We conduct our business in accordance with green principles, because it makes economical as well as ecological sense. We are proud to share with you our achievements of the past year and would like to thank all our employees who contributed to these remarkable results.

Enjoy your reading!



# Environmental policy

## Our environmental policy is based on the following fundamental principles

1. Taking into account the total product life cycle, we will design our products and processes to minimise the use of energy and resources. This includes recycling where possible, and limiting packaging waste.
2. Measures will be taken to efficiently manage refrigerant and to stimulate the design and manufacture of refrigerant-based products with a reduced environmental impact.
3. The necessary information and training will be given to employees in order to continually realise these policy objectives.
4. Our environmental management initiatives will be communicated in such a way that all levels of the organisation are well informed concerning its objectives and application.
5. These environmental management initiatives will be periodically evaluated via checks and audits in order to continuously improve our environmental performance.
6. All Daikin products, processes and services will meet at least the applicable legislation.



# Environmental objectives

## Daikin Europe N.V. environmental objectives

### Use energy sustainably

Daikin Europe N.V. is constantly seeking ways to reduce the energy consumption of its production facilities and to make use of sustainable energy sources.

### Reduce environmental impact from refrigerants and improve the energy efficiency of our products

Daikin Europe N.V. is committed to reducing the greenhouse gas emissions of its products by reducing the impact of refrigerants and improving energy efficiency.

### Increase product recycling and waste reduction

Daikin takes recyclability into account in the product development phase making use of the principles of Lansink's ladder\*. This concern for recycling and waste reduction continues through all phases of the product (production, transport and logistics, installation, maintenance, etc.), up to and including responsibly dealing with the product at the end of its useable life.

### Manage chemical substances and preparations

Daikin Europe N.V. strives for optimum safety with respect to the handling and storage of chemicals. This includes the search for newer and safer products to replace existing technologies.

### Develop products with reduced environmental impact

Daikin is committed to complying with all environmental legislation. In addition, its green procurement guidelines further ensure that its products are state of the art with respect to reduced environmental impact.

### Continue efforts at European level

Daikin Europe N.V. continually adapts its environmental policy to the changing global, European and local legislative frameworks. It stimulates and promotes the strict application of all relevant legislation and formulates recommendations to facilitate implementation.

### Be a model of environmental responsibility

Daikin intends to be a model company by providing training and information on the environmental impact of its activities. It supports and communicates with external organisations, its neighbours and the community at large, and is represented in working groups within the relevant industries.

\* Lansink's ladder: principles or methods of waste management established by a Dutch Member of Parliament – Ad Lansink – represented by a ladder with a number of rungs. The rungs represent a hierarchy of increasingly better ways to deal with waste in an environmentally responsible manner.

Daikin Europe N.V. is recognised as a well-managed business that is committed to protecting the environment. ISO Standards, the “sustainability charter” and the Super Green Heart factory award are evidence of this ongoing commitment.



### ISO 14001:2015 – Environmental Management

ISO 14001 is the most widely recognised environmental management system standard in the world. It demonstrates commitment to controlling the impact of business activities on the environment. Daikin Industries Ltd. first achieved ISO 14001 certification in 1996, followed by Daikin Europe N.V. in 1998. In the past years, several affiliates and production facilities have followed suit.

A revised version of ISO 14001 was released in September 2015. Although companies already certified before the new version came into force were allowed 3 years to update their management systems to the new standard, Daikin Europe N.V. achieved its certification to the updated standard in March 2015 and this is valid until March 2019.



### ISO 50001:2011 – Energy Management

ISO 50001 is the international standard designed to help organisations establish systems and processes necessary to manage energy efficiency, use and consumption. The overall objective of the standard is to reduce workplace environmental impact, reduce greenhouse gas emissions and energy costs.

At the heart of ISO 50001 is the creation and operation of an Energy Management System (EnMS) that defines energy management and use reduction objectives and puts in place systems and processes to ensure these are achieved. Daikin Europe N.V.'s current certification is valid to January 2018.



### BES6001 Responsible Sourcing Standard

In March 2016 Daikin Europe N.V. achieved accreditation under the internationally respected BES6001 Responsible Sourcing Standard, which remains valid until March 2019.

The BES 6001 Standard was developed by the BRE (Building Research Establishment) to demonstrate responsible sourcing throughout the supply chain by proving product stewardship against social, economic and environmental sustainability criteria.



## Super Green Heart Factory

Daikin Europe N.V. was awarded the Daikin industries Ltd "Green Heart Factories" certificate in 2012 and in 2014 was the first Daikin factory outside Japan to receive the "Super Green heart Factory" certificate.

More information can be found on pages 12–13.



## Sustainability Charter

Assessed annually, the "West Flanders Sustainability Charter" aims to help companies with premises in Belgium to continuously improve their environmental, social and economic performance. By signing the charter, organisations commit to working proactively towards defined annual goals and actions grouped into ten themes. These include: the sensible use of energy, operating in a people-friendly way, communication and dialogue, and sustainable procurement. Participation is voluntary. After 16 successive years of participation, Daikin Europe N.V. remains committed to the Charter.

Daikin Europe N.V. receives the 2017 West Flanders Sustainability Charter. Left to right: Phillipe Tavernier (POM West-Vlaanderen), Jean de Bethune (Province West-Vlaanderen), Patrick Doms (Daikin Europe N.V.), Matthew Lammertyn (Daikin Europe N.V.), Patrick Snauwaert (Daikin Europe N.V.) and Dirk Reynaert (Bureau Veritas Certification Belgium).

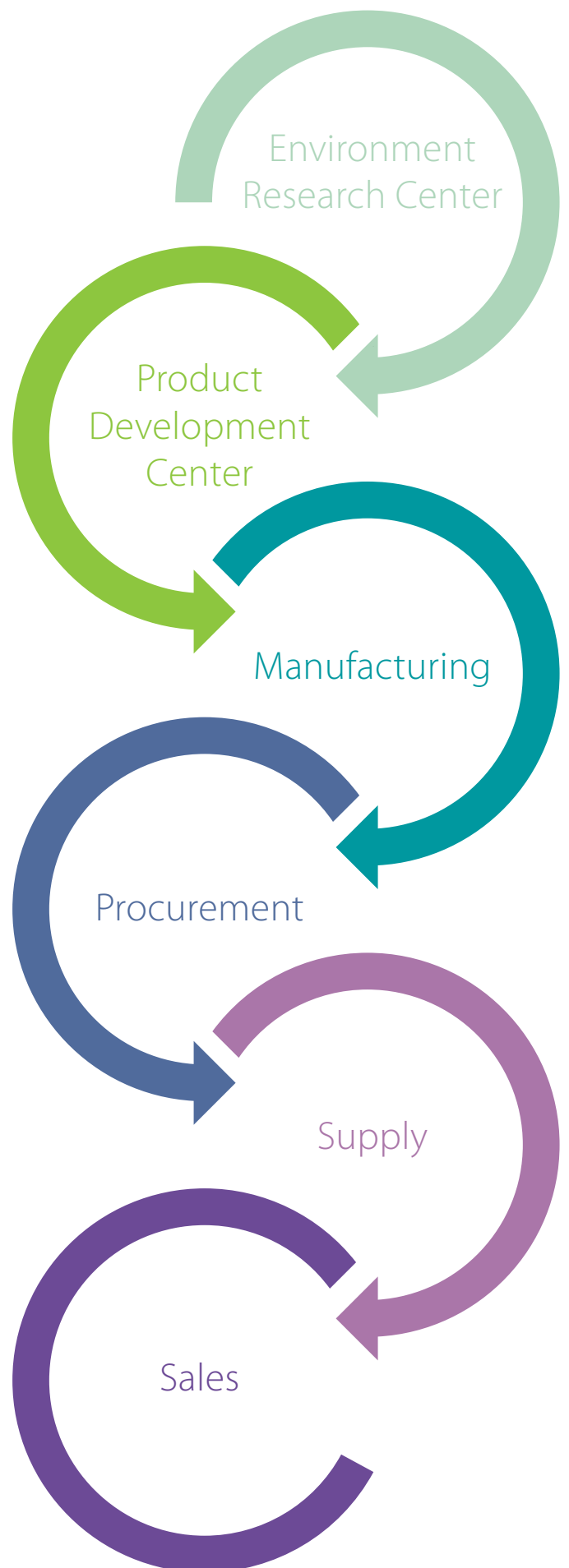


# Examples of last year's environmental actions by the Daikin Europe N.V. organisation

In all aspects of our business operations, we take initiatives to support our environmental policy and objectives.

The following pages illustrate how each division and every employee of Daikin Europe N.V. contributes to the Daikin corporate philosophy to "be a company that leads in applying environmentally friendly practices."

Examples of how other organisations within the worldwide Daikin group contribute can be found in the Daikin 2017 Sustainability Report on the following link : [www.daikin.com/csr/report/index.html](http://www.daikin.com/csr/report/index.html)





# Environment Research Center

The Environment Research Center is home to the Environment Readiness Section (ERS) and the Environment Application Research Section (EARS).

The Environment Readiness section is engaged in collaborative stakeholder consultations with European and international policy makers and standardisation bodies, such as the EU Regulation on fluorinated greenhouse gases, the Ecodesign Directive on Energy related products, the Energy labelling Directive, the Energy Performance of Buildings Directive, the Montreal Protocol and various EN , ISO and IEC standardisation committees.

The Environment Application Research section conducts research into sustainable cooling and heating solutions for the future “nearly Zero Energy Building” concepts.

The combination of these two activities allows Daikin Europe N.V. to stay on top of evolving environmental legislation, standards and research activities.



An environmental workshop is organised every year for Daikin Europe N.V. affiliated companies to coordinate efforts at European and National levels regarding legislation, standards and research activities.

# Product Development Center

The Product Development Center works to reduce the environmental impact of Daikin products by enhancing the energy efficiency of equipment, selecting refrigerants with a lower environmental impact and reducing the refrigerant charge volume. Because of this work, Daikin products are ahead of the requirements of the European F gas Regulation and Ecodesign legislation and also acknowledged beyond Europe for their outstanding environmental performance.

## From R-410A to R-32

In a worldwide first, Daikin launched air conditioners using R-32 refrigerant in Japan at the end of 2012 and in Europe in 2013. The range of air conditioner products has gradually expanded to the Daikin Split and Sky Air series. At the end of 2017 the first hydronic heat pump range with R-32 (Altherma 3) was launched.

The Global Warming Potential of R-32 is only one third of the commonly used refrigerant R-410A, and allows for a smaller refrigerant charge volume and high energy efficiency. As a single component refrigerant, R-32 is also easier to recycle and reuse, another environmental benefit in its favour.



## From R-134a to R-1234ze(E)

At the end of 2017, Daikin launched a complete range of air cooled and water cooled screw chillers using refrigerant R-1234ze(E). R-1234ze(E) has a low global warming potential of 7 and is a suitable alternative for refrigerant R-134a which has a GWP of 1430. Thanks to inverter compressor and Variable Volume Ratio technology, the chillers also achieve outstanding energy efficiency ratings.





### Daikin believes in diversity of refrigerant choice

On October 15th 2016, the parties to the Montreal Protocol made an historic agreement that will result in a significant mitigation of global climate change. This agreement, which took place in Kigali, Rwanda at the 28th Meeting of the parties, provides for a phase down of the global consumption of HFCs, in CO<sub>2</sub> equivalent, under the Montreal protocol.

Daikin welcomes the Kigali Agreement. As there is no "one-size-fits-all" refrigerant solution for all applications, Daikin advocates a policy of diversity of refrigerants. Many criteria need to be assessed, including the ODP and GWP values, safety, energy consumption, availability, affordability, resource efficiency, recyclability, recoverability and the total global warming impact of the equipment.

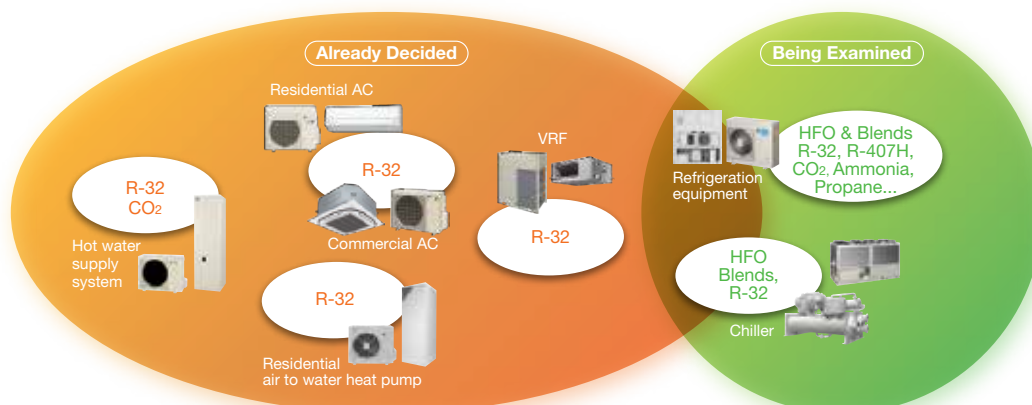
Daikin has identified the refrigerant R-32 as very beneficial for single and multi-split type air conditioners and heat pumps, based on the criteria outlined above. Daikin believes the transition to R-32 will help to meet both the HFC phase down schedule and the HCFC phase out schedule. Further studies are on-going to identify suitable refrigerants for other applications.

Early implementation is key to the further reduction of future environmental impact. Daikin will commercialise and disseminate the most balanced and feasible solutions, as soon as they are found, contributing to all efforts to reduce global climate change.

As a refrigerant manufacturer Daikin will continue to seek the "optimal refrigerant" for every type of application.

*More details on Daikin's position on the Kigali Agreement and our direction of refrigerant choice can be found on the following link: [www.daikin.com/csr/information/influence/daikin\\_policy-en.pdf](http://www.daikin.com/csr/information/influence/daikin_policy-en.pdf)*

### Daikin's Refrigerant Direction



Note: Other refrigerants not listed above are also applied in products outside of Daikin's portfolio, some examples include hydrocarbons (R-600a, R-290) for refrigerators and window air conditioners or HFO refrigerants for mobile air conditioners.



# Manufacturing

Daikin Europe N.V. was first awarded the Daikin industries Ltd "Green Heart Factory" certificate in 2012 and in 2014 was the first production plant outside Japan to receive the "Super Green Heart Factory" certificate. Factories are assessed against a number of key performance indicators (KPIs).

The graphs below show the scoring of the Daikin Europe factory in Belgium.

Every five years KPIs are redefined. The targets for the period 2016–2020 are based on the average result of 2013–2015 and aim to improve by 1% each year. For HFC emissions, the aim is to remain below 0.2%.

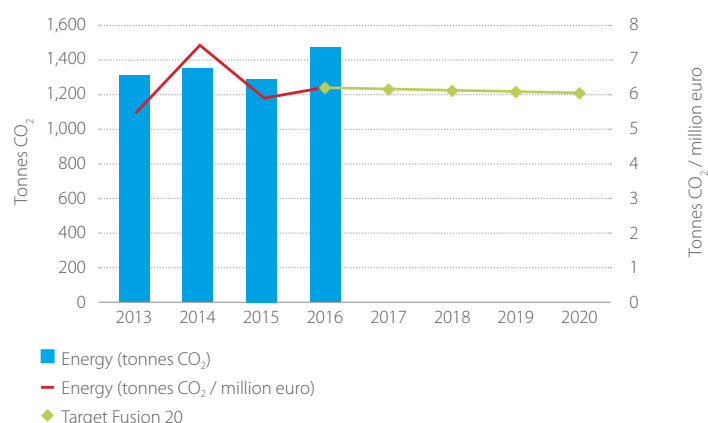


## Energy-related CO<sub>2</sub> emissions

In 2016, Daikin Europe set a number of energy consumption reduction objectives including the optimised operation of HVAC equipment, implementation of new technologies of test room conditioning in the European Development Center and the reduction of running hours of equipment by smart control. Additionally, since 2016 Daikin Europe has participated in the Flemish Energy Policy Agreement, which is a voluntary agreement to ensure that Flemish energy intensive companies stay or become leading companies in energy efficiency. The graph shows a slight increase in CO<sub>2</sub> emissions, which is related to slightly harsher winter conditions, an increase in production in test rooms and an operational error in the boiler room.

Footnote: Result based on the following sub-KPIs: process heat, heating factory buildings, test rooms, ovens, others.

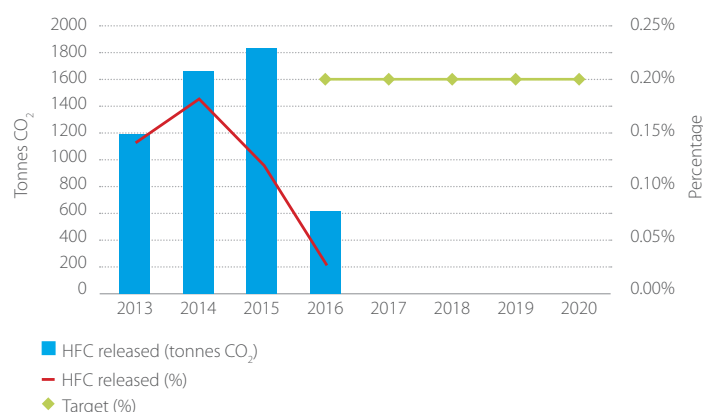
Energy related CO<sub>2</sub> emissions  
Production and offices



## Hydrofluorocarbon (HFC) emissions

Daikin continues to operate below its HFC emission reduction target.

Hydrofluorocarbon emissions  
Production



## Waste discharge

Additional efforts in waste reduction made by Daikin Europe include further automatization of heat exchanger production, which has led to a decrease in scrap and the introduction of recycling corners in offices to increase awareness among employees.

This year, there is a slight increase in waste discharge, which is due to the purchase of foreign components in non-returnable packages. Additionally, Daikin Europe NV has introduced a 'one-touch' factory, which means there is a shift in packaging waste from the logistics supplier to our factory.

Footnote: Result based on the following sub-KPIs: metals, wood, others.

## Water consumption

Daikin Europe's main focus this year was to increase the use of rain water instead of tap water for sanitary purposes. This has not yet resulted in a total water consumption reduction. The reason for the stagnation seen on the graph is a slight increase in water consumption for sanitary facilities, but a small decrease in test room water consumption.

Footnote: Result based on the following sub-KPIs: sanitary facilities, test rooms, production.

## Volatile organic compounds (VOC) emissions

The VOC emissions were mainly linked to the use of evaporating oil in the production process of indoor heat exchangers. However, these heat exchangers are no longer produced in the Ostend factory. Therefore, we are well below the target line.

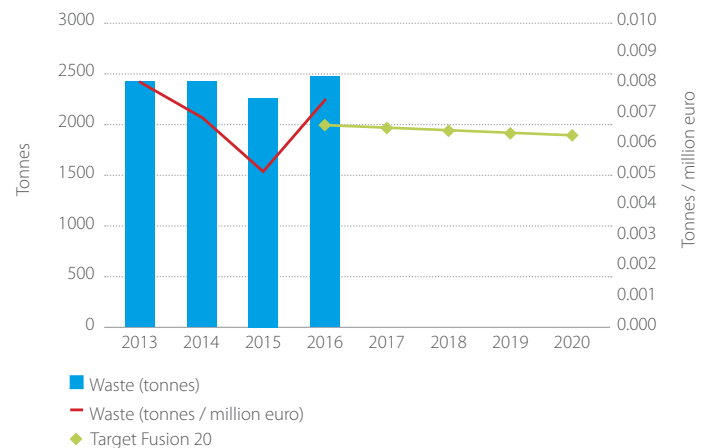
## Risk Management

As an element of the requirements under the Green Heart Factory certification, risk management is addressed. Almost daily sub contractors working with Daikin Europe and executing a variety of tasks can be exposed to risks. To help them detect those risks and work more safely, new training courses have been introduced to increase the practical knowledge of emergency response teams through the use of simulated incident exercises. A last minute risk assessment tool (LMRA), introduced in 2015 and factory tours arranged to demonstrate how to use the tool, are an on-going commitment.

KPIs refer to Daikin Ostend only

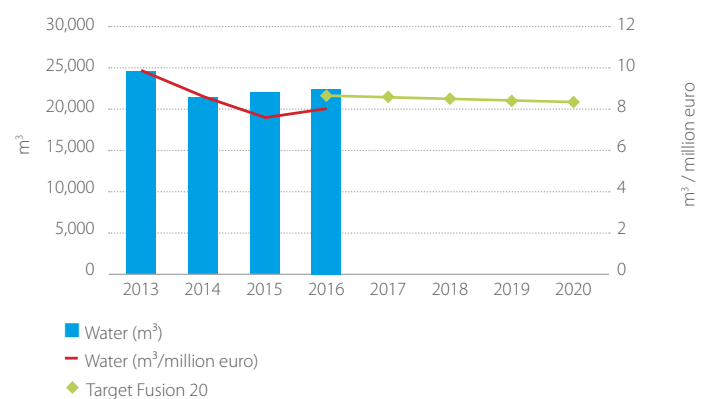
### Waste discharge

#### Waste delivered out of site from production & offices



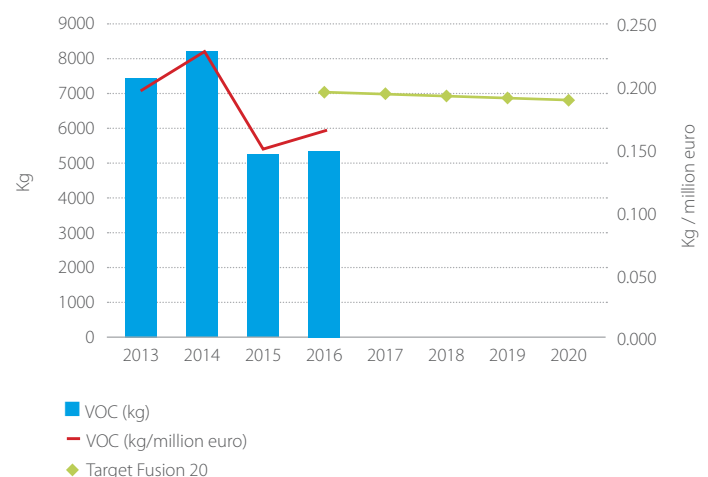
### Water use production (m³)

#### Waste water discharge from production (m³)



### VOC emissions

#### Production



## Earth Hour

On March 19th 2016 Daikin Europe N.V. took part in Earth Hour, an international event, supported by the WWF (World Wide Fund for Nature), at which people around the world simultaneously turned out their lights. It was an opportunity for employees to think about climate change on a global scale.



## Protecting birds of prey

During the spring of 2016, a pair of falcon kestrels (*Falco tinnunculus*) were seen on the Daikin Europe N.V. Ostend site. Because the site has large areas of grass and shrubs, small rodents are present and the falcons were attracted to the rodents.

To encourage their breeding Daikin Europe installed 2 nesting boxes, specially made for falcons and provided by a local environmental association.



## Days without meat

Daikin Europe is taking part in a campaign to go meatless for 40 days. The aim is to make people aware of the possibility to reduce their meat consumption as well as the potential impact the meat industry has on the environment.

Also in March 2017 we established a meatless days campaign in our company restaurant.





## Briefing for suppliers

In April 2016 we arranged a new supplier event. This time we have focused on the environmental aspects linked to working with suppliers. Content of the supplier briefing was:

- Environmental policy of DENV
- Responsibility of suppliers
- Expectations of DENV for suppliers
- Safety and environment quiz



## Environmental Dojo

At the Environmental Dojo (Japanese word for a training school), employees learn about various ways to reduce environmental impacts, such as reducing the power consumption of light bulbs, sorting waste or making use of pneumatic screwdrivers. Finally, some facts & figures are displayed to show that all the efforts pay off.

For ease of understanding, examples given are based on family/household situations.



## Beach cleaning activity

On Sunday 20th of March 2016 Daikin Europe again participated in the international Beach Cleaning day supported by local life guards and surf clubs. A local radio station was broadcasting live from Ostend beach. In total 43 employees (including family members) helped to clean the beach. This was twice the number of Daikin employees that had previously participated!



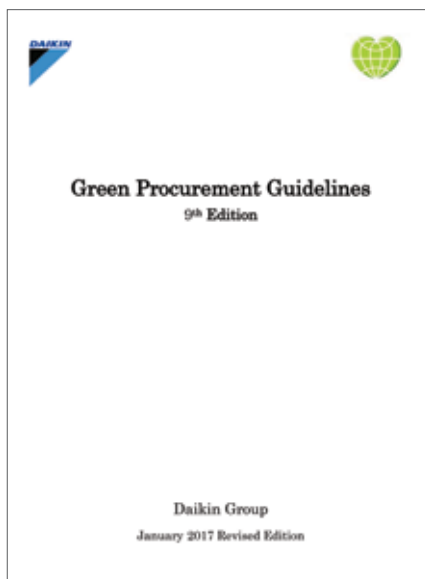
# Procurement

Sustainable procurement is key to Daikin's purchasing strategy. Daikin actively encourages suppliers to share the responsibility of practising and promoting environmental sustainability at every stage.

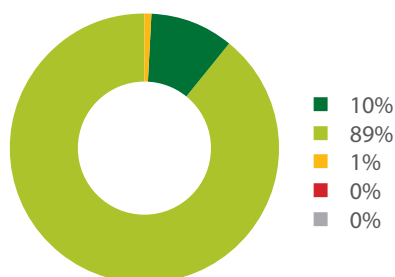
Green procurement guidelines require suppliers to:

- Actively work towards achieving ISO 14001 certification
- Comply with all current EU environmental legislation and regulations
- Have no record of violations of environmental law within the past two years
- Practice environmentally sound chemical substance management
- Avoid using certain chemical substances (including cadmium, lead, asbestos, etc.)
- Follow ecological packaging and design guidelines

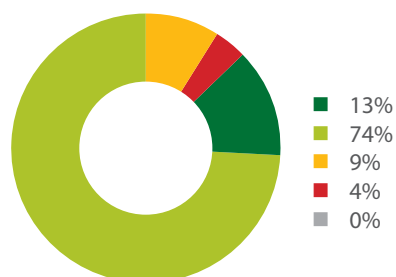
Annual assessment of green procurement at Daikin Europe N.V. shows that more than 90% of core suppliers to the factory now achieve an excellent or good.



Daikin Europe N.V. 2016



Rotex GE 2016



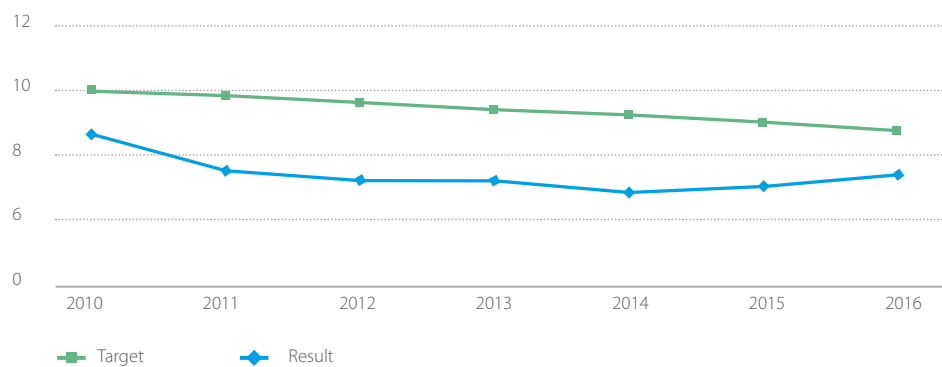
- Excellent
- Current status good but under continuous review
- Collaboration will continue, but improvements are needed
- No new projects awarded
- Further collaboration not possible



# Supply & Logistics

Daikin is working hard to minimise environmental impact at the logistics stage. Because transportation accounts for the bulk of logistics impact on our environment – with CO<sub>2</sub> emissions as a direct consequence – one of Daikin Europe N.V.'s main challenges is to reduce its transport related emissions, and thus achieve considerable CO<sub>2</sub> savings.

CO<sub>2</sub> emissions (kg) per sales volume (m<sup>3</sup>)



Although we are still below target, we have seen an increase in CO<sub>2</sub> emissions of 8.5% compared to 2015.

This is mainly related to the following:

Increased double transfers: Daikin aims to have only one warehouse between the factory and the customer. Any deviations from this principle is measured by a double transfer KPI (error ratio, showing the extra transfers between warehouses). In 2016, this figure increased from 6.3% to 7.6% (+ 21%). The background is that due to a drop in sales volume, stock-levels were very high and extra transfers between the different stock locations were needed to keep stock-levels manageable.

During 2016 we challenged logistics partners performing outbound deliveries to end-customers to measure their CO<sub>2</sub> and NOx impact. A number of providers already supply this information on a regular basis and other partners will now follow this template.

KPI = Key Performance Indicator.



## Daikin Romania

# Supports national reforestation campaign

Comfortable indoor climate and fresh air for nature. That's what Daikin Romania promised its customers last summer, by launching their "Plant a tree" campaign. The mechanism of the campaign consisted of planting a tree for the sale of each residential air-conditioning unit.

Following an internal initiative, organised in 2016, through which both employees and dealers planted over 1,400 trees in an area affected by landslides, Daikin Romania decided to involve end users in the story of a greener future.

By joining the national reforestation initiative launched by the "Planting good deeds in Romania" organisation, we wanted to contribute to a greener future for generations to come and moreover, encourage our customers to be more eco-friendly. Therefore, we created a dedicated platform – [www.plantamaer.ro](http://www.plantamaer.ro) – where customers could find more information regarding the campaign, obtain eco-friendly advice and register as volunteers at the national tree planting and reforestation day.



The "Plant a tree" campaign originally aimed to plant 10,000 trees, but we exceeded our goal ending up with 13,000 trees planted. Employees, dealers, end user customers and other volunteers planted trees in 9 counties of the country most affected by deforestation. As a result, 4 hectares of affected land will become new forests in a few years.



Daikin France

# Eau Thermale Avène l'Hôtel

Building concept by  
M. Roger Taillibert (architect)  
and Pierre Fabre laboratories



The new 4\* hotel complex "Eau Thermale Avène l'Hôtel", awarded HQE® and BREEAM® certificates, is fitted with Rotex (Daikin brand) solutions for its domestic hot water system.

To equip the hotel of the renowned pharmaceutical and cosmetic brand "AVENE" with domestic hot water solutions capable of meeting the requirements of the certifications targeted, the technical management of Laboratoires Pierre Fabre selected the Daikin proposal.

## An HQE® and BREEAM® certified hotel

The 4-star, four-storey hotel offers 56 rooms and 4 suites. After three years of work led by the famous architect Roger Taillibert, this new hotel complex has been added to the existing thermal site. This achievement has undeniable environmental benefits which is demonstrated by the two certifications for the hotel: BREEAM® Very Good and HQE® Exceptional.



## The reasons for choosing the Rotex (DAIKIN group) heat accumulator combined with drain back solar panels

The domestic hot water needs for the guest rooms, common areas and the kitchens were estimated to be 10m³/day. The use of solar energy is optimised to boost the water temperature in the heat accumulator tanks and to avoid the use of energy consuming electric heating elements.



## TECHNICAL DATA:

- DRAIN BACK SOLAR PANELS INSTALLED (Ref. V26P)  
The solar panels are concealed on the roof so they cannot be seen from ground level. 32 drain back solar panels, each 2.35 m², results in a 75.20 m² collection area. Each 2.00m x 1.30m solar panel is set on a chassis on the roof with a 45% slope.
- HYBRIDCUBE HEAT ACCUMULATORS (Ref. HYC 544//32//00)  
Ten 500-litre Rotex heat accumulators have been installed at the hotel, in a machine room in the basement. They supply hot water semi-instantaneously, with no stagnating water thus avoiding any risk of Legionnaire's disease.
- RPS3 25M REGULATION MODULE  
The intelligent solar regulation automatically adapts the flow of the heat transfer fluid (water for the drain back version) to the solar collector field(s) based on the weather conditions.

Daikin UK

# Maintains accreditation from Carbon Trust

Daikin UK has maintained its Carbon Trust Accredited Supplier status for the second year running – and remains the only VRV / VRF manufacturer listed on the Green Business Directory.

Recognising high quality energy efficient equipment and renewable technology suppliers, the market-leading scheme offers independent validation and recognition of a supplier's skills and services.

The accreditation is testament to Daikin UK's excellent track record of concern for environmental issues and continued commitment to pursuing sustainable solutions in all areas of its business.

"Upholding the trusted and high standard of a Carbon Trust Accredited Supplier is very important to Daikin UK. It not only sets us apart in a competitive marketplace but sends a clear signal to contractors and specifiers that our HVAC systems are at the cutting edge of low carbon technological innovation and are proven to be energy efficient," says Legislation Specialist, Graham Wright.



## The Green Business Fund from the Carbon Trust

Thanks to this accreditation, Daikin customers can access funding from The Green Business Fund; an energy support service for small and medium sized companies in England, Wales and Scotland.

The Green Business Fund provides energy assessments, training, equipment purchasing support and up to £10,000 capital contribution towards the purchase of energy saving equipment.

The Capital Contribution is a non-repayable contribution of up to £10,000 – or 30% of the total project cost – from the Green Business Fund to end customers.

Therefore this gives Daikin UK a unique offer to small and medium sized business clients, namely, the potential of a reduction in their capital costs of up to £10,000.

In order to qualify for the capital contribution, the applicant must be replacing older less efficient equipment with a new system of higher efficiency and they must use equipment supplied by a company listed on the Green Business Fund.



Graham Wright of Daikin UK



Iain Bevan of the Green Housing Forum



### Daikin UK leads the way with R-32 refrigerant training

Daikin UK has successfully trained more than 1,000 installers on the use of R-32 refrigerant since the launch of the 'R-32 System Installations – Are you ready?' training course in November 2016.

Providing installers and engineers with a complete overview of how to install and commission R-32 systems, Daikin UK is leading the way offering both a theoretical and a hands-on approach when using the environmentally friendly refrigerant.

Designed and launched by Daikin UK, the course provides a comprehensive understanding of installing, commissioning and servicing R-32 systems, in response to the introduction of the 2015 F-gas regulation.

To date, the training has been conducted in Daikin UK's training facilities in Birmingham, Bristol, Manchester, Leeds, Glasgow, Woking and Nottingham.

Course attendees have gained confidence in the installation and maintenance of R-32 systems as well as better understanding of the handling and storage of the new refrigerant.

Martin Passingham, Product Manager for DX at Daikin UK said, "Providing installers with the knowledge and confidence to adopt the use of environmentally friendly, energy efficient refrigerants is essential to the F-Gas journey."

The number of course attendees and the rate of course registrations is a clear demonstration of the demand for R-32 training. With continuously developing regulations surrounding the environmental impact and carbon emissions of refrigerants, it is crucial that specialist manufacturer training is available so that installers and engineers can navigate regulation changes with peace of mind."

### Green Housing Forum launches whitepaper to tackle sustainable housing and fuel poverty in the social housing sector

A whitepaper was published summarising the key outcomes of the latest Green Housing Forum event, which took place in November 2016 at London Olympia.

Sponsored by Daikin UK, the Green Housing Forum aims to tackle fuel poverty and increase sustainable housing stock for social housing providers.

The forum allows for collaborative discussion across the supply chain, including local authorities, heads of housing associations and energy technology companies surrounding the complex challenges that lie ahead in tackling fuel poverty and carbon emissions.

The whitepaper from the Green Housing Forum at Homes 2016 is available to download at <http://greenhousingforum.co.uk/>

Martin Passingham presenting the training.



## Daikin Germany

# Energy efficiency for 1,000 outlets of dm-drogerie markt

In the middle of Erfurt's busy city centre the 1,000th outlet of dm was established, showcasing an innovative concept in building services. On 2nd May 2017 Daikin Airconditioning Germany GmbH, Biddle GmbH and Hörburger AG celebrated their success in developing this energy-efficient concept together with dm-drogerie markt. Guests from businesses, associations and the media were guided through the dm outlet and received insights into the planning process as well as the integral parts of the conception.

The 590 square-metre milestone store is located in the former main post office of Erfurt and was reopened for customers in March 2017 after a 7 week renovation programme. Particularly impressive is the five metre high ceiling in parts of the building with natural light and the structural integration of the existing brick building into the interior design. The demand for sustainable construction is further reflected in the choice of flooring, lighting and the advertising system.

### Components of the building services concept

In 2008 dm started the project "Energy Management in the outlets" to review its building services concept in a fundamental and integral way.

The main focus was initially on the reduction of energy consumption and abandonment of fossil fuels. It was therefore determined how energy could be saved and employees' workload could be reduced by using intelligent technologies. The final concept incorporates the lighting, heating, ventilation, cooling and controls. The Daikin VRV air conditioning system installed enables simultaneous heating and cooling. The integrated air-to-air heat pump requires 33% less power than two separate systems for heating and cooling. Only green power is used to run the heat pumps.

Another advantage of the dm building systems is that heating and cooling are provided only where they are needed. Room sensors detect temperatures in different zones. Further components of this building system are an automated air curtain, a touch panel for manual adjustment and an online management system, which makes the technical status of the system transparent and simplifies remote maintenance. Through sophisticated and perfectly coordinated technology all upgraded dm outlets are recording average energy savings of 25%.

The dm-drogerie markt is a chain of retail stores in Germany that sells amongst other things, cosmetics, healthcare items and household products.



The sales area of the dm outlet is air-conditioned with six Daikin roundflow cassettes.

On May 2, 2017 Daikin Airconditioning Germany GmbH, Biddle GmbH and Hörburger AG celebrated their success in developing this energy-efficient concept together with the company dm-drogerie markt.

Pictured left to right: Bernhard Schöner (Head of Marketing Daikin Germany), Rolf Multhaus (Managing Director Biddle), Martin Auer (Head of Construction dm-Vermögensverwaltungsgesellschaft mbH) and Martin Wenzel (CEO Hörburger)



### Presentations provide insights into the planning and concept elements

Due to the high level of standardisation, this concept of ecologically and economically sustainable building services is transferable to all dm outlets. "The core components, such as heat pumps, air curtains and online management systems are preselected elements for each newly equipped outlet. However, we are continually developing the concept and adapting the building services in each shop according to prevailing circumstances. As a direct result of this individual approach we are able to maximise our energy efficiency" explained Martin Auer, Head of the dm-Vermögensverwaltungsgesellschaft mbH, during the guided tour through the dm outlet in Erfurt.

Mr. Auer gave a presentation for the opening of the 1,000th modernised dm outlet, in which attendees were given information about this particular project, starting with the project planning process in 2008, the inauguration of the first "efficient outlet" in 2011 at Swabian Mössingen up to the present day.

Dr. Cornelia Haase-Lerch, Deputy Chief Executive of IHK Erfurt congratulated all companies involved for their long-term cooperation and thanked them for the important contribution made to the local economy. In their presentations, representatives of Daikin, Frans Hoorelbeke, Chairman, and Christian Zitzelsberger, Key Account Manager, highlighted the long-lasting, trusting supplier/customer co-operation and gave insights into the successful life-cycle-cost-management in dm outlets.

Christian Kottmann, Sales Manager at Biddle, demonstrated possibilities of modernisation in existing buildings, and Martin Wenzel, Member of the Board at Hörburger, presented the technology development currently being used. In the final presentation Mr. Christian Noll, Managing Director DENEFF e.V., again took up the global topic of energy efficiency, pointing out that energy transition could only be accomplished by tremendous savings of energy and promoting energy efficiency.

### Awards

For its sustainable building services concept dm drogerie markt won the German Cold Prize (Deutscher Kältepreis) of Ministry for the Environment in 2012. At the trade fair Chillventa in October 2016, the same concept received an award for its heat pump solutions.





## Daikin Turkey

# Creates Daikin's First Clean Air Agents

Daikin Solution Plaza fuha Istanbul, the world's largest and Europe's first Climatisation Experience Centre, hosted a joyful event with its youngest ever visitors. Daikin Turkey celebrated National Sovereignty and Children's Day on April 23rd 2016, with the children of employees. The children shared the celebration with great enthusiasm and became Daikin's first Clean Air Agents.

Pioneering the climatisation industry with innovative products and solutions, Daikin welcomed children of the Daikin Family in Europe's first experimentation centre in fuha Istanbul.

Since the day of its launch, fuha Istanbul has welcomed hundreds of visitors from individual users to commercial investors, students to academics. On National Sovereignty and Children's Day employees and their children enjoyed the day with animators, illusion shows and games. The children also had the chance to experiment with weather and energy in the special experimentation section specifically designed for kids.



On this special day, the children were informed about correct climatisation, energy saving, efficiency, climate change and the environment through 3D movies and fun activities, and were rewarded with 'Daikin Clean Air Agent' medals.

Marketing Manager, Murat Kurt expressed Daikin Turkey's pleasure in celebrating the special day in the company of children, and said: "The Daikin Family always strives to bring comfort and happiness to people's lives. We are constantly developing eco- and consumer-friendly products and services in order to provide a better future for our children. Expanding our family with little 'Daikin Clean Air Agents' on this special day has a significant meaning for us."

Daikin Corporate Communication Executive Hülya Dinçer added: "Daikin has always delivered attention raising projects. Cooperating with our children for their future is an issue of importance for us. We will keep working for a better future with the help of Daikin Clean Air Agents, which will soon be increasing in number."







### F Gas Regulation and R-32 Activities

- To raise awareness about R-32, Daikin Turkey made a presentation called Reducing the Environmental Impacts of Refrigerants and The Latest Developments In The Alternative Refrigerant R-32 for the SBE16 ISTANBUL, International Conference on Sustainable Built Environment in Istanbul, Turkey (13–15 October 2016).
- Almost every month Daikin Turkey organises Expert Days in their Solution Plaza (Daikin product showroom) in fuha Istanbul. For these events a subject is determined and industry experts are invited to make presentations and share their experiences with stakeholders. On the 22nd October 2016 the subject of our Expert Day was Environmental Impacts of Refrigerants and the Latest Developments of Alternative Refrigerants. Almost 70 people from the HVACR sector attended the event. One invited expert Baris Ucaner, representing SOSIAD (Association of Refrigeration Industry and Businessmen) made a presentation called Environmental impacts of refrigerants and their future.
- The Document called Daikin's position on the Kigali Agreement for HFC phase down was translated to Turkish and published in local magazines in November 2016.
- Daikin Turkey delivered a presentation about EU's Greenhouse Gases Emission Reduction Targets, F Gas Regulation and R-32 in the Smart City Expo Istanbul Congress which is organised by The Istanbul Metropolitan Municipality, 1–3 June 2016.
- On the 4th February 2017 a presentation about R-32 was made to the Chamber of Mechanical Engineers in the Solution Plaza fuha Istanbul.
- The Daikin Europe Environmental Report 2016 was translated to Turkish and published on our website on the 5th of June World Environment Day. The document was also printed and is distributed to the visitors of Solution Plaza fuha Istanbul.

### Green Building Activities

- We organised an Expert Days event where the subject was "Green Building Concept, Certification, Latest Developments in Green Buildings and The Importance of Indoor Air Quality in Buildings". At this event, Duygu Erten from TURKECO Green Building Consulting Company made a presentation about the Green Buildings Certification Systems. As hosts, Daikin Turkey also made a presentation called "Sustainable Design with Daikin HVAC-R Systems" which explained how Daikin can contribute to Green Buildings.
- On 17th May 2016, the Turkish Green Building Council held their Board Meeting in the Solution Plaza fuha Istanbul. After this meeting Members of the Board received information about Daikin technology, Daikin eco-friendly, energy efficient products and how Daikin can contribute to Green Buildings.

### Relationship with Universities

Continuing with its 2015 initiative, Daikin Turkey has visited the most important universities in Turkey and made presentations to mechanical engineering students about Seasonal efficiency, eco design requirements and new energy label for air conditioners in Turkey, EU's F Gas Regulation and alternative refrigerant R-32. After these visits students are invited to the Solution Plaza fuha Istanbul to see Daikin products and learn about the technology. In 2016 presentations were made to 16 Universities and 677 students from all over Turkey.



## Daikin Middle East

# Daikin Split Inverter using R-32 awarded the MENA Green Building Product of the Year

The Emirates Green Building Council (EmiratesGBC), is a forum aimed at conserving the environment by promoting green building practices. It hosted the 2017 MENA Green Building Awards at Dubai's Roda Al Murooj hotel.

The awards are designed to recognise innovation, creativity, and excellence in the promotion of sustainability.

With submissions from six nations across the Middle East and North Africa (MENA) region, this year's event highlighted the growing focus of industry stakeholders on innovation and best practice within sustainable built environments.

Supported by the World Green Building Council (WorldGBC), the 2017 MENA Green Building Awards were organised by Emirates GBC in partnership with the Jordan GBC and Lebanon GBC.

Saeed Al Abbar, chairman of Emirates GBC, said: "This year, we had a record number of submissions, underlined by their quality, creativity and original thinking. Across all the categories, what is clearly apparent is the focus on pushing boundaries, setting new benchmarks and contributing to the all-round vision of securing a greener future for our coming generations."

Daikin's Inverter wall split FTKM/FTXM series using R-32 Refrigerant was awarded Winner of MENA Green Building Product of Year – Energy Management, at the ceremony. The award was presented to Daikin Middle East DX & VRV SBU Manager, Mr Nabil Shahin, by Mr Faisal Rashid, Director, Demand Side Management, Dubai Supreme Council of Energy.



Left to right: Nabil Shahin – Director DX and VRV SBU, Amer Abedalaziz – Assistant Manager – Project sales UAE, Sana Hamdani – DX Product Marketing Manager, Taleih Al Halaby – Marketing manager at MENA Green Building Awards 2017

### The Product

The Daikin R-32 Inverter system is a newly introduced one to one split type air conditioner for residential and commercial buildings. The system uses inverter technology and R-32 refrigerant and was developed by Daikin to maximise energy efficiency, minimise its global warming impact and offer at least 30% energy savings versus traditional systems. The product range consists of 3 individual models covering loads of 5.27 kW up to 8.19 kW of cooling/heating capacity.

This product is designed to operate in High Ambient conditions up to 52 Deg C. It complies with all the GCC Energy Efficiency, Safety, national and regional requirements i.e ESMA, SASO, MEW, EWA, QSAS and bears the Abu Dhabi Trustmark for Environmental Performance and the G Mark for Electromagnetic Compatibility. Daikin Inverter splits using R-32 have been installed in the first Etihad ESCO project in the Jebel Ali Free zone to retrofit 5000 conventional systems in 150 buildings in which it helped achieve significant energy savings.

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