

# Third-Party Verification

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## Sustainability Report

# Third-Party Verification



To ensure reliability of the content of this report, the Daikin Group had a third-party verification conducted for data on greenhouse gas emissions, water use, and wastewater.

### ■ Data Covered by Verification

#### Environmental Impact Data on Business Operations in FY2015

- Scope 1 and Scope 2 greenhouse gas (GHG) emissions from business operations of four production bases in Japan of Daikin Industries, Ltd., eight production subsidiaries in Japan, and 42 production subsidiaries overseas.
- Category 1 (purchased goods and services), 4 (upstream transportation and distribution), 6 (business travel), and 11 (use of sold products) emissions of Scope 3 GHG emissions calculated in line with the GHG Protocol's 'Corporate Value Chain (Scope3) Accounting and Reporting Standard.'

### ■ Scope of Review

#### Contribution to CO<sub>2</sub> Emission Reduction through the Use of Products

- Contribution to CO<sub>2</sub> emission reduction through the use of inverter air conditioners sold in emerging countries in FY2015.
- Contribution to CO<sub>2</sub> emission reductions through the use of air conditioners sold in Japan in fiscal 2015.
- Contribution to greenhouse gas emission reductions through fiscal 2015 worldwide sales of air conditioners that use HFC-32 low-global-warming potential refrigerant.

# Daikin Group Sustainability Report 2016 Independent Verification Report

To: Daikin Industries, Ltd.



Bureau Veritas Japan Co., Ltd.  
System Certification Services Headquarters

Bureau Veritas Japan Co., Ltd. (Bureau Veritas) has been engaged by Daikin Industries, Ltd. (Daikin) to conduct an independent verification and review of its environmental data selected by Daikin for inclusion in the Daikin Group Sustainability Report 2016 (the Report), issued under the responsibility of Daikin. The aim of the verification is to consider the reliability and accuracy of environmental data within the Report and to provide a verification opinion based on objective evidence. The aim of the review is to make an independent statement concerning the reliability and accuracy of the environmental data.

## 1. Verification and Review Outline

### 1) Environmental impact data generated through business operations in FY2015

Bureau Veritas conducted a verification of the following data.

Data verified	Sites Visited	Verification or Review Methodology
Scope 1 and Scope 2 GHG emissions through business operations of four production bases of Daikin, eight production subsidiaries within Japan and 42 production subsidiaries overseas	- Daikin Head Office - NIPPON MUKI CO., LTD. Yuki Plant - Daikin Malaysia Sdn.Bhd. - Daikin Europe N.V. - TOHO KASEI Co., Ltd. Nara Plant - Daikin Air-conditioning (Shanghai) Co., Ltd. Huizhou factory - AAF (Suzhou) Co., Ltd - AAF (Shenzhen) Co., Ltd - AAF (Wuhan) Co., Ltd - Daikin Electronic Devices Malaysia Sdn.Bhd. - Daikin Applied Europe Cecchina factory	- Review of documentary evidence produced by Daikin Head Office and the sites visited - Interviews with relevant personnel of Daikin Head Office and the sites visited - Site inspection assessing data monitoring procedure - Comparison between the reported data and the supporting documentary evidence
Water used and Waste water through business operations of four production bases of Daikin, eight production subsidiaries within Japan and 42 production subsidiaries overseas	- Daikin Head Office - NIPPON MUKI CO., LTD. Yuki Plant - Daikin Malaysia Sdn.Bhd. - Daikin Europe N.V. - Daikin Industries, Ltd. Kashima Plant - TOHO KASEI Co., Ltd. Nara Plant	
Categories 1, 4, 6 and 11 of Scope 3 GHG emissions accounted in line with the GHG Protocol's 'Corporate Value Chain (Scope 3) Accounting and Reporting Standard'	- Daikin Head Office	

The verification was conducted using Bureau Veritas' standard procedures and guidelines for external verification of non-financial reporting, based on current best practice. Bureau Veritas refers to the International Standard on Assurance Engagements (ISAE) 3000 in providing a limited assurance for the scope of work stated herein.

### 2) Amount of contribution to GHG emission reduction by sold products

Bureau Veritas conducted a review of the following data.

Data Reviewed	Site Visited	Review Methodology
The amount of contribution to CO <sub>2</sub> emission reduction through the use of inverter air conditioners sold for emerging countries in FY2015	Daikin Head Office	- Review of documentary evidence produced by Daikin Head Office and the departments of the relevant products and services - Interviews with relevant personnel of Daikin Head Office and the departments of the relevant products and services - Comparison between the data used in the calculation of emissions reductions and the supporting documentary evidence
The amount of contribution to CO <sub>2</sub> emission reduction through the use of air conditioners sold for Japan in FY2015 (Base year FY2005)		
The amount of contribution to GHG emission reduction through the change to low global warming potential refrigerant (R32) charged into air conditioners sold in FY2015		

## 2. Findings

On the bases of our methodology and the activities described above:

- Nothing has come to our attention to indicate that the reviewed information within the scope of our verification and review is inaccurate and does not provide a fair representation of the performance for the defined period.
- It is our opinion that Daikin has established appropriate systems for the collection, aggregation and analysis of quantitative data within the scope of our verification and review.

Bureau Veritas has implemented a code of ethics across its business which is intended to ensure that all our staff maintain high standards in their day to day business activities. We are particularly vigilant in the prevention of conflicts of interest. Bureau Veritas activities for Daikin are for sustainability reporting verification only and we believe our verification assignment did not raise any conflicts of interest.

# GREENHOUSE GAS EMISSIONS VERIFICATION STATEMENT

To: Daikin Industries, Ltd.



**BUREAU  
VERITAS**



Bureau Veritas Japan Co., Ltd.  
System Certification Services Headquarters

Bureau Veritas Japan Co., Ltd. (Bureau Veritas) was engaged by Daikin Industries, Ltd. (Daikin) to conduct verification of the greenhouse gas (GHG) emissions reported in the Daikin Group CSR Report 2016 for the period of April 1, 2015 through March 31, 2016.

## 1. Scope of Verification

Daikin requested Bureau Veritas to verify, to a limited level of assurance, the accuracy of the following GHG information:

- 1) Scope 1 and Scope 2 GHG emissions:
  - CO<sub>2</sub> from energy use, HFCs, PFCs: GHG emissions through business operations of four production bases of Daikin, eight production subsidiaries within Japan and 42 overseas production subsidiaries
  - CO<sub>2</sub> from non-energy use, CH<sub>4</sub>, N<sub>2</sub>O, SF<sub>6</sub>: GHG emissions through business operations of four production bases of Daikin
- 2) Categories 1, 4, 6 and 11 of Scope 3 GHG emissions accounted and reported in line with the GHG Protocol's 'Corporate Value Chain (Scope 3) Accounting and Reporting Standard' within the boundaries defined by Daikin for each category.

## 2. Methodology

Bureau Veritas conducted the verification in accordance with the requirements of the international standard 'ISO 14064-3(2006): Greenhouse gases - Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions'.

As part of Bureau Veritas' assurance, the following activities were undertaken:

- Interviews with relevant personnel of Daikin responsible for the identification and calculation of GHG emissions;
- Review of Daikin's information systems and methodology for collection, aggregation, analysis and review of information used to determine GHG emissions; and
- Audit of a sample of source data to check accuracy of quantified GHG emissions.

## 3. Conclusion

Based on the verification work and processes followed, there is no evidence to suggest that the GHG emissions assertions shown below:

- are not materially correct and are not a fair representation of the GHG emissions, as per the scope of work;
- are not prepared in accordance with the methodology for calculating GHG emissions established and implemented by Daikin.

Verified greenhouse gas emissions		
Scope 1	Scope 2 (market-based)	Scope 3
742,927 t-CO <sub>2</sub> e	517,508 t-CO <sub>2</sub> e	103,056,946 t-CO <sub>2</sub> e

The breakdown of Scope 3 emissions are as follows.

Category 1: 1,525,597 t-CO<sub>2</sub>e | Category 4: 21,775 t-CO<sub>2</sub>e | Category 6: 12,726 t-CO<sub>2</sub>e

Category 11: 101,496,848 t-CO<sub>2</sub>e

### [Statement of independence, impartiality and competence]

Bureau Veritas is an independent professional services company that specializes in Quality, Health, Safety, Social and Environmental management with over 180 years history in providing independent assurance services. No member of the verification team has a business relationship with Daikin, its Directors or Managers beyond that required of this assignment. We conducted this verification independently and to our knowledge there has been no conflict of interest. Bureau Veritas has implemented a Code of Ethics across the business to maintain high ethical standards among staff in their day-to-day business activities. The verification team has extensive experience in conducting assurance over environmental, social, ethical and health and safety information, systems and processes.



## Third-Party Verification

# Method of Calculating Greenhouse Gas Emissions Data

Greenhouse gas emissions data are calculated as follows.

### (1) Use of fuel at sites (Energy-induced CO<sub>2</sub>) Scope 1

- The scope of calculation covers four manufacturing bases of Daikin Industries, eight manufacturing subsidiaries in Japan, and 43 manufacturing subsidiaries overseas.
- However, the following may not be included in calculation: newly consolidated bases, sites that are newly established and that don't yet have a data collection system in place, and sites whose emissions are negligible. As well, for sites where data procurement is difficult, calculation is based on estimates of past data, for example.
- Heat generation per unit, CO<sub>2</sub> emissions coefficient: Based on Environmental Activity Evaluation Program (Eco-Action 21) (1998, Ministry of the Environment); for natural gas in Japan, the coefficient used is based on the Act on the Promotion of Global Warming Countermeasures.

### (2) Emissions of HFC and PFC in production processes at sites Scope 1

- The scope of calculation covers four manufacturing bases of Daikin Industries, eight manufacturing subsidiaries in Japan, and 43 manufacturing subsidiaries overseas.
- For estimates of HFC and PFC emissions, material balances and emissions coefficients are set and calculated based on methods stipulated in the Act on the Promotion of Global Warming Countermeasures.
- Global warming coefficients of HFC and PFC: Coefficients provided in the IPCC Second Assessment Report.

### (3) Non-energy-induced CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, SF<sub>6</sub> emissions in production processes at sites Scope 1

- The scope of calculation is as follows.  
Four manufacturing bases of Daikin Industries (Non-energy-induced CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, SF<sub>6</sub>).
- Calculations are based on emissions coefficients stipulated in the Act on the Promotion of Global Warming Countermeasures.
- Global warming coefficients: Coefficients provided in the IPCC Second Assessment Report.

#### (4) Use of electricity and heat at sites (Energy-induced CO<sub>2</sub>) Scope 2

- The scope of calculation covers four manufacturing bases of Daikin Industries, eight manufacturing subsidiaries in Japan, and 43 manufacturing subsidiaries overseas.
- CO<sub>2</sub> emissions coefficients are as follows.
  - Purchased electricity: In Japan: 0.384 kg-CO<sub>2</sub>/kWh  
Based on Environmental Activity Evaluation Program (Eco-Action 21) (1998, Ministry of the Environment)
  - Overseas: Based on Report on Survey of Estimates of CO<sub>2</sub> Unit Emissions in Power Generation Fields in Countries of the World (Japan Electrical Manufacturers' Association), or on coefficients confirmed by power companies servicing each site.
- Purchased heat: 0.068kg-CO<sub>2</sub>/MJ  
Based on Environmental Activity Evaluation Program (Eco-Action 21) (1998, Ministry of the Environment)  
For Kashima Plant, 0.05 kg-CO<sub>2</sub>/MJ (surveyed value by site)

#### (5) Purchased products and services (Energy-induced CO<sub>2</sub>) Scope 3

- Period: April 1, 2014 to March 31, 2015
- Scope of calculation covers components and materials purchased for air conditioners, water heaters, oil hydraulic products, and fluorochemical products produced in Japan, China, Thailand, Malaysia, Belgium, and the Czech Republic.
- For each, purchased amount is multiplied by CO<sub>2</sub> emission coefficient.
- CO<sub>2</sub> emission coefficient is based on CFP Program Basic Database Ver. 1.01 (data in Japan), by the Japan Environmental Management Association for Industry, and the Inventory Database for Environment Analysis, by the National Institute of Advanced Industrial Science and Technology, and the Japan Environmental Management Association for Industry
- For chemicals, approximately 80% of the highest volume ones were selected, and a 100% value estimate calculation was done.

#### (6) Transport and transmission (Upstream) (Energy-induced CO<sub>2</sub>) Scope 3

- Period: April 1, 2014 to March 31, 2015
- Scope of calculation covers transport, including imports, of products and parts (compressors) sold in Japan by Daikin Industries.
- For calculation method, transport in ton-kilometers (transport amount X transport distance) is multiplied by CO<sub>2</sub> conversion coefficient.
- CO<sub>2</sub> conversion coefficient:
  - Within Japan: Based on Act on the Promotion of Global Warming Countermeasures.
  - From overseas to Japan: Based on simple calculation tool for logistics CO<sub>2</sub> emissions, by Policy Research Institute for Land, Infrastructure, Transport and Tourism.

#### (7) Business trips (Energy-induced CO<sub>2</sub>) Scope 3

- Period: April 1, 2014 to March 31, 2015
- Scope of calculation covers business trips in Japan and overseas by employees of Daikin Industries and its consolidated subsidiaries in Japan.

- Transportation cost is multiplied by CO2 emission coefficient. Transportation cost is cost of travel minus lodging, daily allowance, and other expenses that can be excluded.  
In Japan: Transportation cost X emission coefficient per amount paid (Air flight: Domestic).  
Overseas: Transportation cost X emission coefficient per amount paid (Air flight: International).
- CO2 emission coefficient is based on the database of emission unit values (Ver. 2.0) of the Report on Emissions Unit Values for Calculation of Greenhouse Gas Emissions, etc., by Organizations Throughout the Supply Chain, by the Ministry of the Environment and the Ministry of Economy, Trade and Industry. Emission coefficient uses the most expensive air flights.

## **(8) CO2 emissions in use of products sold in Japan (Energy-induced CO2)** Scope 3

- Scope of calculation covers CO2 emissions from the use of residential air purifiers, central air conditioners, residential water heaters, residential air conditioners, factory air conditioners, and air conditioners for buildings, stores, and offices sold in Japan, ASEAN, China, Hong Kong, Taiwan, Australia, and the EU in fiscal 2014.
- Calculation method: Annual electricity consumption X product lifecycle X electricity CO2 emission coefficient X products sold in fiscal 2014.
- Annual electricity consumption and others are as follows.
 

Annual electricity consumption:	Catalog values for room air conditioners, assumed conditions of actual use for other products.
Product lifecycle:	10 years for room air conditioners, water heaters, and air purifiers, 13 years for other products.
Electricity CO2 emission coefficient:	In Japan: 0.348 kg-CO2/kWh; based on Environmental Activity Evaluation Program (Eco-Action 21) (199 Ministry of the Environment). Overseas: Based on Report on Survey of Estimates of CO2 Unit Emissions in Power Generation Fields in Countries of the World (The Japan Electrical Manufacturers' Association), or on "Methodology for Ecodesign of Energy related Products (COWI, VHK)."
- Up to 80% of the total sales volume, in order of highest selling products, was calculated, and a 100% value estimate calculation was done.

## **(9) Refrigerant leakage in use of products sold in Japan** Scope 3

- Scope of calculation covers refrigerant leakage during use of refrigeration and air conditioning equipment sold in Japan, ASEAN, China, Hong Kong, Taiwan, Australia, and the EU in fiscal 2014.
- Calculation method: Annual leakage rate X product lifecycle X global warming coefficient of refrigerant X products sold in fiscal 2014.
- Annual leakage rate and others are as follows.
 

Annual leakage rate:	Revisions of Emission Coefficient, Etc. During Use of Refrigeration and Air Conditioning Equipment, by Manufacturing Industries Bureau, Ministry of Economy, Trade and Industry, March 17, 2009.
Product lifecycle:	10 years for residential products, 13 years for commercial refrigeration and air conditioning equipment.
Global warming coefficient of refrigerant:	Coefficients provided in the IPCC Second Assessment Report.
- Up to 80% of the total sales volume, in order of highest selling products, was calculated, and a 100% value estimate calculation was done.