



HITACHI
Inspire the Next

Environmental Efficiency of Hitachi Products Based on Factor X

Toward the Creation of a Recycle-oriented Society

We help customers improve lifestyle value through our eco-friendly products. The key to our success is the Factor X.

Hitachi Group

Dec. 2005

Today, we need about 80% of natural resources to maintain the comfortable, rich lifestyle in only 20% of countries in the world. On the other hand, the remaining 80% of people also want to consume the scarce natural resources for comfortable lifestyle. Furthermore, population in the world is continuously increasing. What happens in our lifestyle if natural resources are consumed in the current consumption style?



Remember that natural resources are not inexhaustible.

They are exhausted earlier than we think so long as the existing consumer-driven culture continues. How should we cope with this? Everybody may think that we should save resources and energy, while we produce and use the eco-friendly products. Is this easy?

How should we produce and select eco-friendly products?

The key is that everybody has an easy-to-understand criterion for eco-friendly products.



Factor X is the new criterion to measure the affluence of life.

To enable people to enjoy the new affluence of life, Hitachi group produces the products that not only improve the lifestyle value but also eliminate the impact to the environment.



We believe that saving scarce resources on the earth leads to the affluence of life. This is the reason we have introduced the Factor X to develop products.

Factor X

In 1991, Dr. Friedrich Schmidt-Bleek of the Wuppertal Institute in Germany advocated that the idea that "In order to realize a sustainable economic society, over the next 50 years it will be necessary to increase the resource productivity rate (material input per unit service) of developed countries by a factor of 10," otherwise known as "Factor 10."¹⁾ In the future, this idea needs to be introduced under the argument for "future directionality towards industrial activity that will build a sustainable economic society" as indicated in Japan's 1999 Environmental White Paper²⁾, and must be proactively adopted by corporations. Furthermore, at the Conference on the

Creation of "Wa-no-kuni" "An Eco-society Through Partnership" in the 21st Century convened by the Prime Minister Office, the opinion was put forward that "rapid improvement of environmental efficiency is necessary, and should be improved by at least a factor of ten, that is to say, we should aim for the achievement of Factor 10."³⁾

Source: 1) Factor 10 (for realizing a revolution in eco-efficiency); written by F. Schmidt-Bleek
 2) Environmental White Paper (an outline); published by the Ministry for the Environment (1999)
 3) Report on the Conference on the Creation of "Wa-no-kuni" "An Eco-society Through Partnership" in the 21st Century (July 2001)



What is Factor X ?

$$\frac{\text{Lifestyle value}}{\text{Environmental impact}} = \text{Factor X}$$

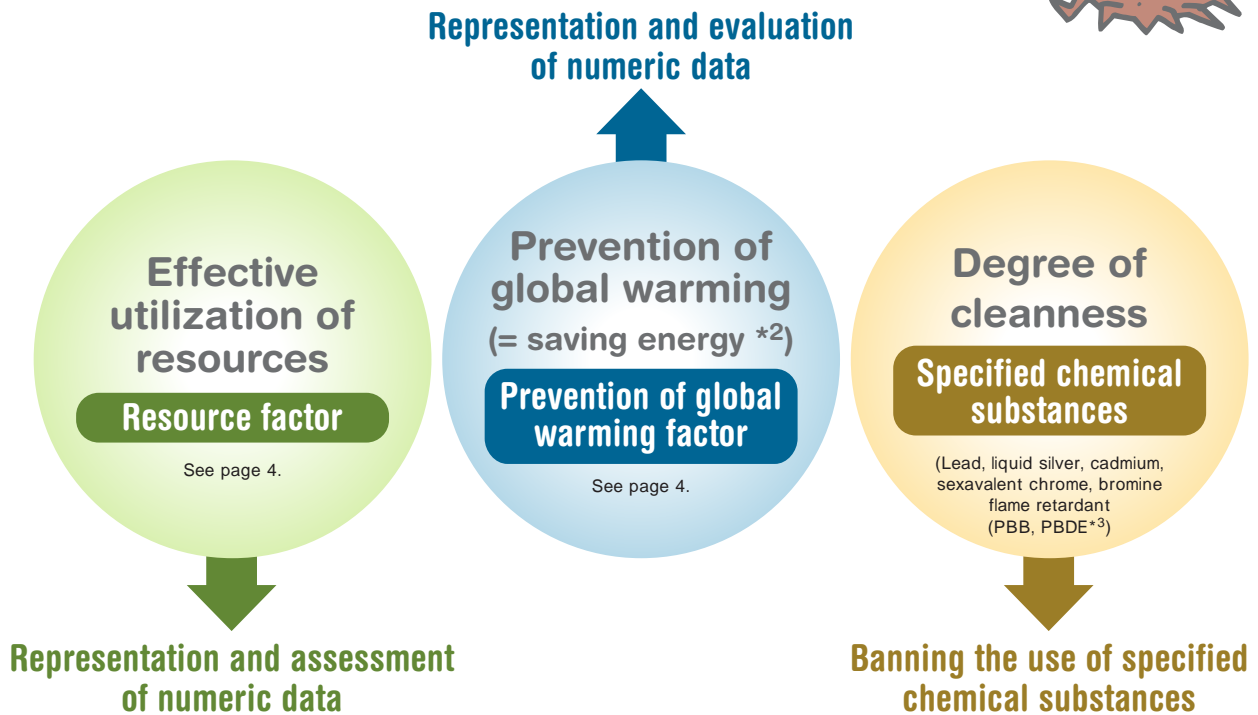
Quality improvement
 Minimization

We always produce eco-friendly products considering this Factor X. The greater the numerical value of Factor X, the greater the benefit towards realizing a new affluence. The product is assessed from a viewpoint of product life cycle *1

*1 Life cycle: Each product process (material procurement, product manufacture and product usage and disposition) is likened to the period of a human life. It also covers reusing the parts or recycling the materials.



Impact to the environment is assessed from three points.



*2 Prevention of global warming = saving energy

CO₂, steam, dinitrous monoxide (N₂O), ozone and chlorofluorocarbon fully pass solar insolation energy but they prevent ground heat from being discharged in the cosmic space, so that the global temperature increases. The gas heated in this way is called greenhouse gas.

Most greenhouse gas is CO₂. CO₂ is discharged in the air when coal or oil is burnt. When electricity is consumed in house, coal or oil is burnt for power generation, resulting in a large volume of CO₂. In addition, oil fuel is consumed in the production and distribution stages of the product life

cycle, resulting in a large volume of CO₂. Namely, if energy (electricity) consumption is reduced in each stage of product life cycle, the amount of CO₂ generation will also be reduced, so that global warming can be prevented.

*3 Bromine flame retardant (PBB, PBDE)

PBB stands for polybrominated biphenyls and PBDE stands for polybromierte diphenylether. Both are additives for making the polymeric materials (plastics, elastic gums, fibers, paper and wood) fire-resistant.

How is Factor X calculated?



Prevention of global warming factor

First, calculate the prevention of global warming efficiency in the following formula.

Prevention of global warming efficiency =

$$\frac{\text{Product life span} \times \text{Product function}}{\text{Volume of greenhouse gas emission through the life cycle of product}}$$

Product life span

- Design for longer operating life and ease of maintenance and upgrade
- Technology development for function or performance improvement

Product function

- Design saving energy during operation
- Design reducing manufacturing process and saving energy
- Design enabling mass delivery (product compaction)
- Selecting parts and materials that generate less global warming gas in the entire life cycle

Next, compare this with the existing base product.

Prevention of global warming factor =

$$\frac{\text{Prevention of global warming efficiency for product being evaluated}}{\text{Prevention of global warming efficiency for reference product}}$$

The greater the numerical value of the prevention of global warming factor the greater the benefit towards realizing a new affluence.

Resource factor

First, calculate the resource efficiency of the new product.

Resource efficiency =

$$\frac{\text{Product life span} \times \text{Product function}}{\text{Each resource value coefficient}^{*4} \times \text{Volume of resources used throughout the product's life cycle}^{*5}}$$

Product life span

- Design for longer operating life and ease of maintenance and upgrade
- Technology development for function or performance improvement.

Product function

- Design saving energy during operation
- Design reducing manufacturing process and saving energy
- Design enabling mass delivery (product compaction)
- Selecting parts and materials that generate less global warming gas in the entire life cycle

Each resource value coefficient *4

*4 Resource value coefficient: Weighted coefficient determined considering the scarcity and value of utilization. Initially, this value is set to 1.

Volume of resources used throughout the product's life cycle *5

Next, compare this value with the existing base products.

Resource factor =

$$\frac{\text{Resource efficiency for product being evaluated}}{\text{Resource efficiency for reference product}}$$

The greater the numeric value of the resource factor the greater the benefit toward realizing a new affluence.

***5 Amount of resources in life cycle of product = Amount of new resources to be used + Amount of resource to be disposed**

(1) Input resource (product mass)

$$\text{Amount of input resources} = \text{amount of new resources to be used} + \text{amount of resources to be reused and recycled}$$

$$\text{Amount of new resources to be used} = \text{amount of input resources} - \text{amount of resources to be reused and recycled}$$

- Compact and lightweight
- Reduction of materials for production
- Use of reused and recycled parts and materials

(2) Output resource (product mass)

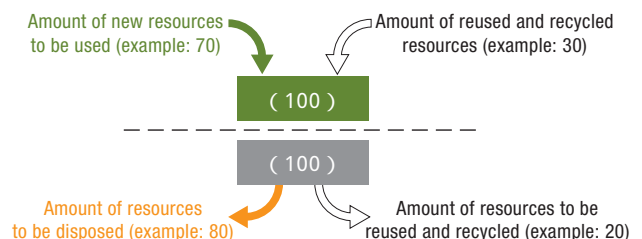
$$\text{Amount of input resources} = \text{amount of resources to be disposed} + \text{amount of resources to be reused and recycled}$$

$$\text{Amount of resources to be disposed} = \text{amount of input resources} - \text{amount of resources to be reused and recycled}$$

- Compact and lightweight
- Reduction of materials for production
- Design for easy disassembly
- Design for parts classification
- Use of parts and materials that can be reused or recycled
- Reduction of material types

(3) Amount of resources in life cycle =

$$\begin{matrix} \text{Amount of new resources to be used (example: 70)} \\ + \\ \text{Amount of resources to be disposed (example: 80)} \end{matrix} = \text{(example: 150)}$$



Description of Products

This resolver has a capability of resolving 99% or more of greenhouse gas (PFC gas) from semiconductor factories through the proprietary catalyst technology.

PFC (Perfluoro Compound): Compound whose warming factor is several thousands times larger than carbon oxide (CO₂).

Development Concept

Recalcitrant greenhouse gas (PFC gas) is resolved efficiently at low temperature to prevent global warming.

Base/Evaluation



Model name : CD-200

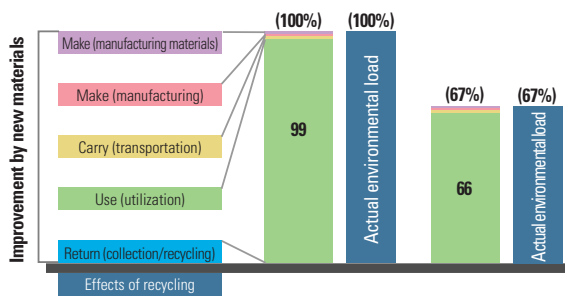
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2002
Model name		CD-200	CD-200
Product life span* ¹ (specified usage period (year))		10	
Product function	Amount of gas resolved (l/min)	200	200
	Gas resolution rate (%)	>99	>99
Product mass (kg)		650	650
Power consumption* ² (kWh)		12	8
Standard volume for water consumption* ³ (l/min)		4.5	3.5

- *1 The product life span is determined based on conventional data and parts consumption.
- *2 The power consumption is determined based on annual consumption average during continuous operation.
- *3 The standard volume for water consumption is determined based on annual consumption average during continuous operation.

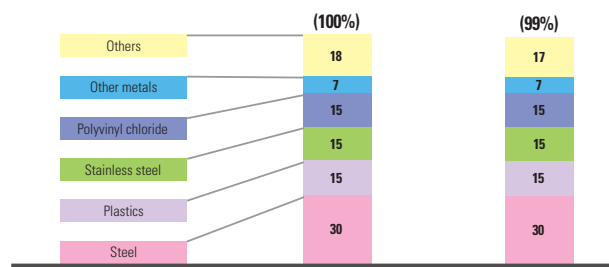
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
 Reason for reduction:
 The utility volume is reduced. (Coolant recycling etc.)



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
 Reason for reduction:
 The utility volume is reduced. (Coolant recycling etc.)



	Base	Evaluation
Calculation Results	442,898.4	296,314.4
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)		

	Base	Evaluation
Prevention of Global Warming Efficiency	4.56E-5	6.82E-5

Prevention of Global Warming Factor	1.5
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	Base	Evaluation
Calculation Results	929.0	803.2
Volume of resources per unit function in product life span (kg/unit function)		

	Base	Evaluation
Resource Efficiency	0.0217	0.0252

Resource Factor	1.2
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Description of Products

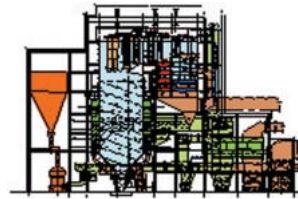
The power boiler is specifically designed for use in thermal power plants. It is a supercritical, once through, sliding pressure unit, fueled by pulverized coal.



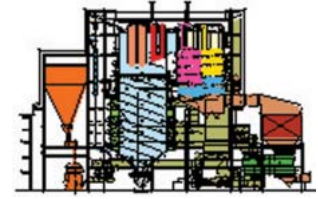
Development Concept

The original 1997 concept has been improved in the current design by enhancing the steam conditions to increase thermal efficiency, producing a reduction in exhaust gas and improving fuel consumption. Materials used in the construction of the unit have also been rationalised to significantly reduce mass and allow optimization of the physical characteristics of many components.

Base
Manufactured in 1997



Evaluation
Manufactured in 2002



Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		1997	2002
Model name		Base product	Evaluation product
Product life span*1 (specified usage period (year))		30	
Product function (physical mass) (t)*2		29,219.0	26,659.0
Fuel consumption rate (coal) (kg/h)*2		357,530	330,480

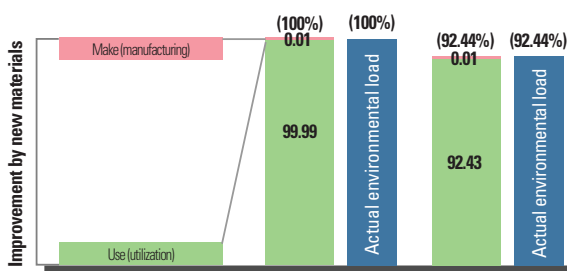
*1 The product life span varies depending on the customer specification.

*2 The following compares the Hitachi boilers for 1000MV thermal power plants.

	Steam temperature (°C)	Pressure (MPa)
	Main steam/reheat steam	Main steam
Base	598/596	25
Evaluation	604/602	25.4

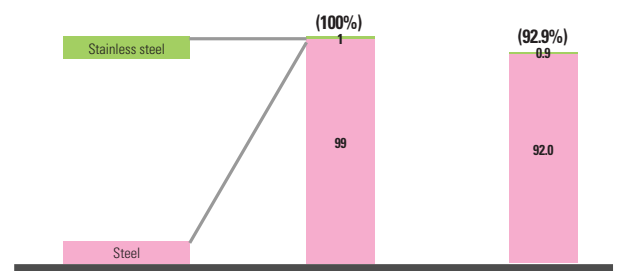
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
The volume of discharged gas is reduced through thermal efficiency improvement in plants.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
The product mass is reduced through position improvement and system simplification.



	Base	Evaluation
Calculation Results	3.9E+10	3.6E+10
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)		

	Base	Evaluation
Prevention of Global Warming Efficiency	2.66E-14	3.15E-14

Prevention of Global Warming Factor	1.2
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	Base	Evaluation
Calculation Results	2.7E+4	2.3E+4
Volume of resources per unit function in product life span (kg/unit function)		

	Base	Evaluation
Resource Efficiency	3.83E-08	4.88E-08

Resource Factor	1.3
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Description of Products

This authentication unit reads finger vein patterns for personal authentication and improves the security of various units.

Development Concept

The product is made compact and lightweight, so that the volume of greenhouse gas discharged or the volume of resources required can be reduced.

■ Base

■ Evaluation



Manufactured in 2004
Model name : OFV101PC-U

Manufactured in 2005
Model name : OFV30-U

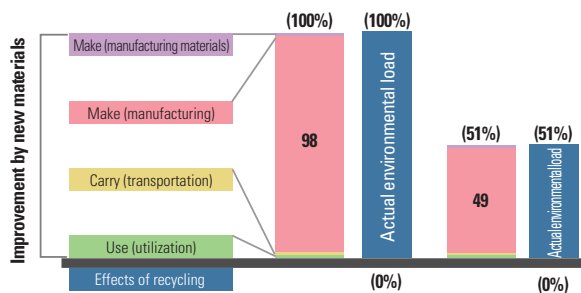
Outline of Products for Comparison

Item	Product	■ Base	■ Evaluation
Year of manufacture		2004	2005
Model name		OFV101PC-U	OFV30-U
Product life span*1 (specified usage period (year))		5	
Product function collation time (1:1 authentication)		1	1
Acceptance ratio of others*2		0.0001	0.0001
Rejection ratio of person in question*2		0.01	0.01
Product mass (kg)		0.16	0.12
Annual power consumption*3(kWh/year)		7.24	8.48

- *1 The product life span (design value) is determined, considering the trusted life, use environment and condition of the parts to be used.
- *2 The evaluation of finger vein collation precision is based on Hitachi proprietary method.
- *3 $E = (P_o \times t_1 + P_s \times t_2) / 1000$ (kWh/year)
 P_o : Operating power consumption (W)
 P_s : Standby power consumption (W)
 t_1 : Annual standard operation time (h)
 182.5 (365 days x 0.5 hours)
 t_2 : Annual standard standby time (h)
 8,577.5 (365 days x 23.5 hours)

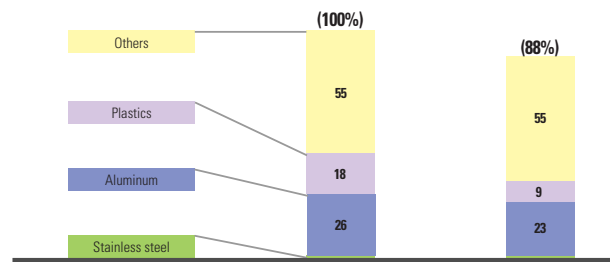
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
The product is made compact and lightweight.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
The product is made compact and lightweight.



	■ Base	■ Evaluation
Calculation Results	1,130.6	576.9
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)		

	■ Base	■ Evaluation
Prevention of Global Warming Efficiency	0.442	0.867

Prevention of Global Warming Factor	2.0
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	■ Base	■ Evaluation
Calculation Results	0.4	0.2
Volume of resources per unit function in product life span (kg/unit function)		

	■ Base	■ Evaluation
Resource Efficiency	0.00130	0.00202

Resource Factor	1.6
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Description of Products

This ie-PDP system is an interactive display system that enables display and input operations through the touch panel added to the PDP (plasma display).

Development Concept

Not only the display screen size is extended but also the stand weight is decreased. In addition, the structure is designed from a viewpoint of maintainability.

Base



Manufactured in 2001
Model name : IEP-SST001

Evaluation



Manufactured in 2004
Model name : IEP-SST004

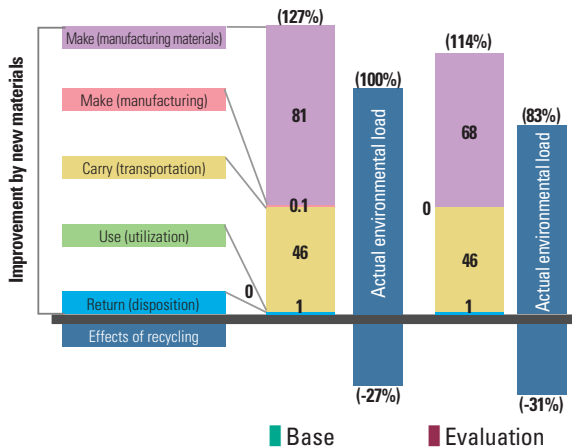
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2001	2004
Model name		IEP-SST001	IEP-SST004
Product function	(Screen size (inch))	50	55
	(No. of pixels (dot))	1280x768	1366x768
	(Viewing angle (degree))	160	160
Size (w x h x d) (mm)		794 x 1142 x 720	703 x 1760 x 703
Product mass (kg)		60	50
Product life span*1 (specified usage period (year))		5	

*1 The product life span is basically 5 years. This span varies depending on the life span of PDP.

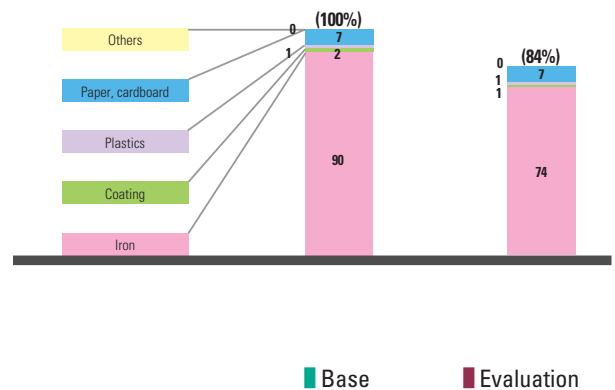
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
The material weight is reduced to prevent global warming.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
The cabinet is slimmed.



Calculation Results 201 167
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

Prevention of Global Warming Efficiency 1.99 2.47

Prevention of Global Warming Factor 1.2

Calculation Results 43 28
Volume of resources per unit function in product life span (kg/unit function)

Resource Efficiency 9.39 14.8

Resource Factor 1.6



Description of Products

This elevator employs universal design to enable everybody to use it without stress.

Development Concept

The machine room is removed from the elevator to save space and reduce the environmental load.

Base/Evaluation



Manufactured in 2005
Standard elevator "Urban Ace"

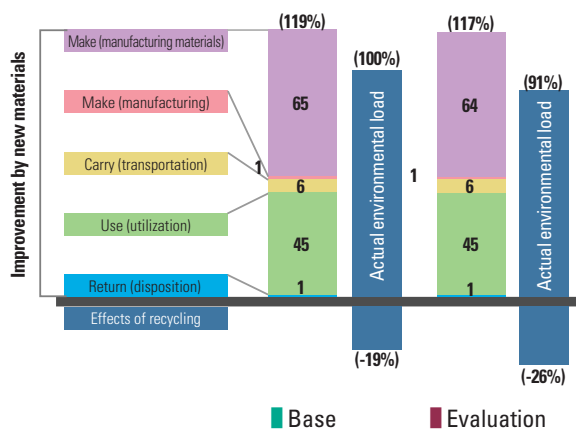
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2005
Model name		UAR-9-2S60 (with trunk, 5 stops)	
Product life span* ¹ (specified usage period (year))		17	
Product function	(Effective volume ratio x Output per weight)	7.7	11.4
	Effective volume ratio* ²	0.73	0.74
	Output per weight* ³ (kW/t)	10.6	15.4
Product mass (t)		4.33	4.21
Power consumption* ⁴ (kWh/year)		1,170	1,170

- *1 Based on attached table 1 for ministerial ordinance concerning the longevity of depreciation assets (in Japan).
- *2 Effective volume ratio: Ratio of stroke volume to the total volume
Stroke volume = hoistway area (1.55 x 2.35) x stroke (12.75)
Total volume = hoistway area x (stroke + overhead + pit) + machine room area x machine room height = (1.55 x 2.35) x (3.20 + 12.75 + A) + 0
A: Pit depth: 1.55 for product manufactured in 2000 and 1.25 for product manufactured in 2005
- *3 Output per weight: Ratio of traction machine weight to the rated output
Output per weight = 3.7 (kW)/B(t)
B: Traction machine weight: 0.35 for product manufactured in 2000 and 0.24 for product manufactured in 2005
- *4 Based on the method for calculating the power consumption of the elevator
 $E = [0.18 \times P_1 \times T_1 \times N_1 / 2000 + P_2 \times T_2] \times 365$ (kWh/year)
P₁: Rated power consumption 3.7 (kW)
T₁: Operation time 8 (hours/day)
N₁: Startup count 900 (times/day)
P₂: Standby power consumption 0.05 (kW)
T₂: Standby time 16 (hours/day)

Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
The environmental load is reduced at material manufacturing through weight reduction.



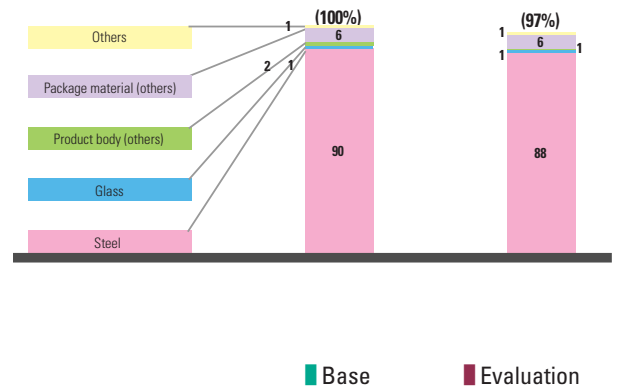
■ Calculation Results 18,200 16,500
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

■ Prevention of Global Warming Efficiency 0.72 1.18

Prevention of Global Warming Factor 1.6

Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
The traction machine weight is reduced.



■ Calculation Results 3,530 2,840
Volume of resources per unit function in product life span (kg/unit function)

■ Resource Efficiency 3.71 6.83

Resource Factor 1.8

Description of Products

Max. capacity (120GB) of 2.5 HDD provides 4,200 RPM.

Base

Evaluation



Manufactured in 2000
 Model name : DK23BA-20

Manufactured in 2005
 Model name : Travelstar4K120

Development Concept

The large-capacity of 2.5 HDD is available with various applications.

Outline of Products for Comparison

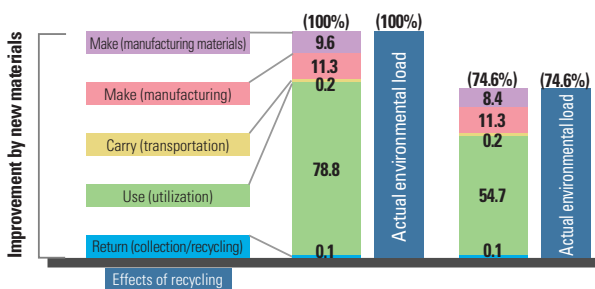
Item	Product	Base	Evaluation
Year of manufacture		2000	2005
Model name		DK23BA-20	Travelstar4K120
Product life span*1 (specified usage period (year))		5	
Product function	Storage capacity (GB)	20	120
	Media transfer rate (Mbits/sec, max)	198	380
Product mass (kg)		0.095	0.095
Annual power consumption*2 (kWh/year)		2.856	1.992

*1 Power on time must be 333 hours or less a month. The number of seek, read and write operations is 20% or less in comparison with that at HDD operation.

*2 Product operation time in PC : 4 hours
 Product-mounted PC power-on time : 10 hours/day
 Annual operation day of product-mounted PC: 240 days

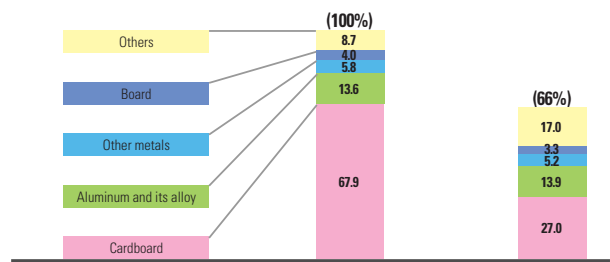
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
 Reason for reduction:
 Enhancement of power efficiency and suppression of heat generation, consumption power is approx. 30% lower than basic year (2000).



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
 Reason for reduction:
 Downsized a package for resource saving (the amount of used cardboards are reduced).



Base **Evaluation**

Calculation Results 9.9 7.8
 Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

Prevention of Global Warming Efficiency 2,010 29,200

Prevention of Global Warming Factor **15**

Base **Evaluation**

Calculation Results 0.139 0.134
 Volume of resources per unit function in product life span (kg/unit function)

Resource Efficiency 143,000 1,700,000

Resource Factor **12**



Description of Products

This PC is an all-in-one, cost-effective note PC that can mount a security chip.

Development Concept

Environmentally Conscious Product Design that meets the Product Examination for 2005 defined by the PC Green Label System of the PC 3R Promotion Center.

■ Base



Manufactured in 2001
 Model name : FLORA270GXNW3

■ Evaluation



Manufactured in 2005
 Model name : FLORA270WNB8

Outline of Products for Comparison

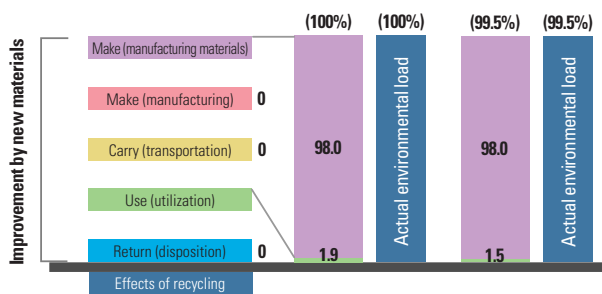
Item	Product	■ Base	■ Evaluation
Year of manufacture		2001	2005
Model name		270GXNW3	270WNB8
Product life span (design value)*1 (year)		5	
Product function	(CPU frequency x HDD capacity)	8.5	103.8
	(CPU frequency)[GHz]	0.85	1.73
	HDD capacity [Gbyte]	10	60
Product mass (kg)		2.9	2.9
Energy consumption efficiency*2		Class S 0.00044	Class S 0.00026

*1 Refers to the standard for industrial computer system maintenance established in 1982 by old-JEIDA (Japanese Electronic Industry Development Association).

*2 The value of the energy consumption efficiency is calculated by dividing the measured power consumption that is provided for in the Law concerning the Rational Use of Energy (Energy Conservation Law) by the composite theoretical performance.

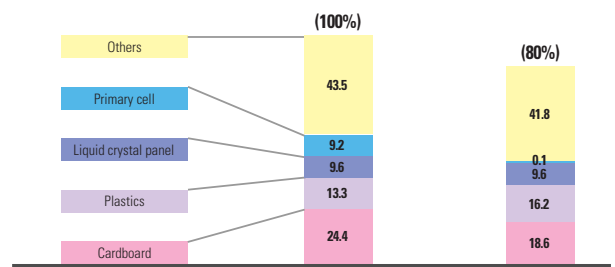
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
 Reason for reduction:
 Improving the efficiency of AC adaptor has decreased the standby power requirement.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
 Reason for reduction:
 We have reduced the number of parts by high density mounting about the mother board and reduced the mass of the buffer material by devising shape.



■ Base ■ Evaluation

■ Calculation Results **5,852** **5,823**
 Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)
 (Not measured in terms of manufacturing, transportation and disposition).

■ Prevention of Global Warming Efficiency **0.73** **8.91**

Prevention of Global Warming Factor 12

■ Base ■ Evaluation

■ Calculation Results **6.1** **3.8**
 Volume of resources per unit function in product life span (kg/unit function)
 (Not measured in terms of manufacturing, transportation and disposition).

■ Resource Efficiency **6.95** **138**

Resource Factor 20



Description of Products

UPS protects important equipment such as facilities of data centers against instantaneous power failure. Depending on the scale of equipment, a maximum of 6 UPS's can be connected in parallel to provide the power supply capacity.

Development Concept

- Reduction of environmental load and economy through high efficiency, compact and lightweight.
- High expandability based on unit parallel design.

Base



Manufactured in 1992
Model name : HIVERTER-U200

Evaluation



Manufactured in 2005
Model name : HIVERTER-UP201i (UNIPARA)

Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		1992	2005
Model name		HIVERTER-U200	HIVERTER-UP201i (UNIPARA)
Product life span* ¹ (specified usage period (year))		15	
Product function	Footprint reduction ratio	1	5
	Battery capacity ratio (1/cc)	1	1.1
	Running cost reduction ratio	1	4
Product mass (kg)		4,000	1,850
Annual power consumption* ² (kWh/year)		411,339	248,968

*1 Refers to the life span of the UPS main unit. Battery and fuse are consumables to be replaced periodically for maintenance.

*2 Value obtained under the following conditions.

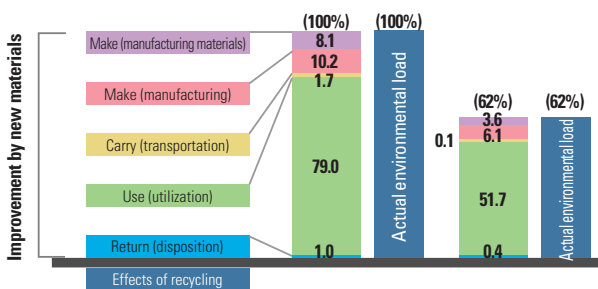
Annual power consumption [kWh] = (1/ -1) × Pf × P × 24 [h/day] × 365 [days/year] × (1+1/C)

	U200	UP201i
Annual power consumption [kWh]	411,339	248,968
Target capacity P [kVA]	400	
Total efficiency [%]	92	95
Rated load power factor Pf	0.9	
Air conditioner performance coefficient C	2	

Note: Operation under a load capacity of 400kVA.

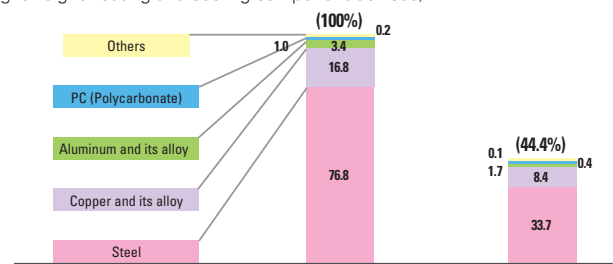
Evaluation Results for the Prevention of Global Warming Factor

- Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
The ratio of power consumption to the base product has been reduced by 35%.



Evaluation Results for the Resource Factor

- Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
Reduction of resources to be used through compaction (use of compact, lightweight heating and cooling component devices).



■ Base ■ Evaluation

Calculation Results ■ 122,405 ■ 75,906
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function).

Prevention of Global Warming Efficiency ■ 6.54 ■ 117

Prevention of Global Warming Factor 18

■ Base ■ Evaluation

Calculation Results ■ 4,977 ■ 2,219
Volume of resources per unit function in product life span (kg/unit function).

Resource Efficiency ■ 1.61 ■ 40.1

Resource Factor 25



Description of Products

High quality plasma TV of the highest peak brightness in the world (as of July 2005).

Development Concept

Soldering and power cord coating are lead-free, and no hexavalent chrome is used for steel plates and screws.

Base



Manufactured in 2000
 Model name : W42-PD2000

Evaluation



Manufactured in 2005
 Model name : W42P-H8000

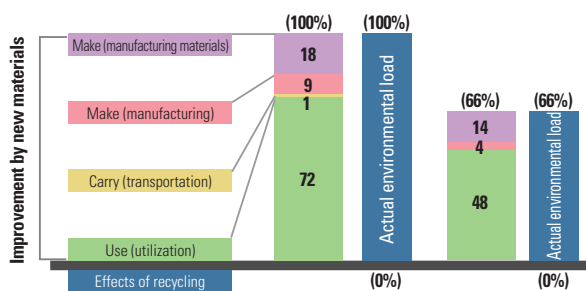
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2005
Model name		W42-PD2000	W42P-H8000
Product life span* ⁶ (specified usage period (year))		8	
Product function	(Brightness x contrast* ⁷)	759	12727
	Brightness(cd/m ²)	600	1400
	Contrast	700	3000
Product mass (kg)		44.5	42.3
Annual power consumption* ⁸ (kWh/year)		503	330

*⁶ The product life span conforms to the spare parts storage term stipulated in article 5-1-5 of "The Fair Competition Rules for Labeling in the Industry of Home Electric Appliances".
 *⁷ Brightness: White peak brightness [cd/m²] in panel
 Contrast: Value represented by contrast ratio (brightness x contrast)/annual power consumption of white (display ratio: 1%) and black.
 *⁸ Guideline on annual power consumption of LCD TV and plasma TV (Japan Electronics and Information Technology Industries Association).
 $E = \{(P_O - P_A)/4\} \times t_1 + P_S \times t_2 / 1000$ (kWh/year)
 P_O: Operating power consumption (W)
 P_A: Reduced power consumption (W) in power saving function
 P_S: Standby power consumption (W)
 t₁: Annual standard operation time (h)
 1,642.5 (365 days x 4.5 hours)
 t₂: Annual standard standby time (h)
 7,117.5 (365 days x 19.5 hours)

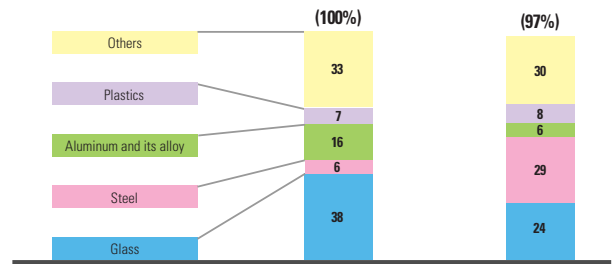
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
 Reason for reduction:
 Reduction of product power consumption (operating and standby).



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
 Reason for reduction:
 Use of thin, lightweight front filter glass.



	Base	Evaluation
Calculation Results	2,159	1,470
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)		

	Base	Evaluation
Prevention of Global Warming Efficiency	3.1	69.3

Prevention of Global Warming Factor	22
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	Base	Evaluation
Calculation Results	65.0	60.9
Volume of resources per unit function in product life span (kg/unit function)		

	Base	Evaluation
Resource Efficiency	103	1,670

Resource Factor	16
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Description of Products

High-reliability electronic control unit like an automobile engine controller.

Development Concept

Compact, advanced, lightweight controller based on high-density packaging.

Base



Manufactured in 2000
 Model name : MEC15-010

Evaluation



Manufactured in 2003
 Model name : MEC31-010

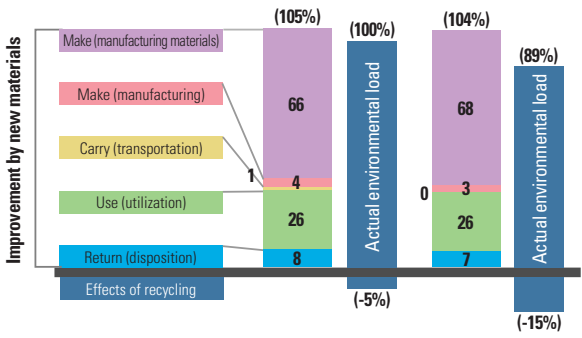
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2003
Model name		MEC15-010	MEC31-010
Product life span*1 (specified usage period (year))		10	
Size (w x h x d) (mm)		160 x 169 x 36	160 x 173 x 35
Product mass (kg)		0.78	0.62
Solder		Lead included	Lead-free

*1 The product life span varies depending on the customer requirements.

Evaluation Results for the Prevention of Global Warming Factor

Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
 Reason for reduction:
 Compaction and advanced functionality.



Calculation Results

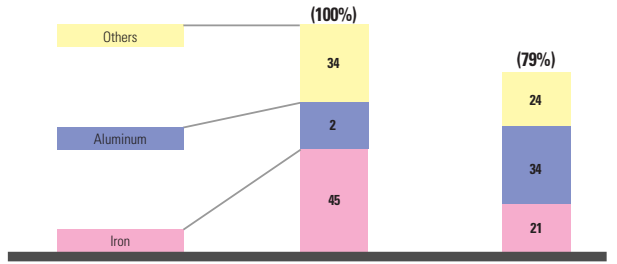
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)
 Base: 14.8, Evaluation: 13.3

Prevention of Global Warming Efficiency: Base 7.08E-4, Evaluation 1.06E-3

Prevention of Global Warming Factor **1.5**

Evaluation Results for the Resource Factor

Calculation results for the volume of resources to be used (ratio to the base product)
 Reason for reduction:
 Replacing an iron base with an aluminum base and reducing the number of components.



Calculation Results

Volume of resources per unit function in product life span (kg/unit function)
 Base: 0.78, Evaluation: 0.56

Resource Efficiency: Base 18.0, Evaluation 35.1

Resource Factor **2.0**



Description of Products

VTC designed for continuously controlling the phase of the intake valve timing in the automobile engine depending on the load conditions, improving the torque/fuel efficiency and reducing the volume of discharged gas.

Development Concept

Lightweight, compact VTC that reduces the impact to the environment by restricting the use of harmful substances.

■ Base

■ Evaluation



QR type



HR type

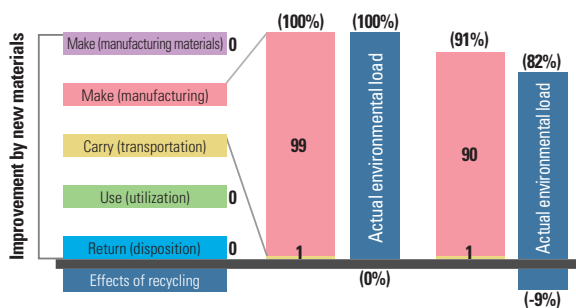
Outline of Products for Comparison

Item	Product	■ Base	■ Evaluation
Year of manufacture		2000	2004
Model name		QR type	HR type
Product life span*1 (specified usage period (year))		10	
Product mass (kg)		1.12	0.85
Conversion method		Hydraulic vane	
Conversion angle (CA)		42°	40°
Number of components		29	23
Oiling method		Front oiling	Cam oiling

*1 The product life span varies depending on the customer requirements.

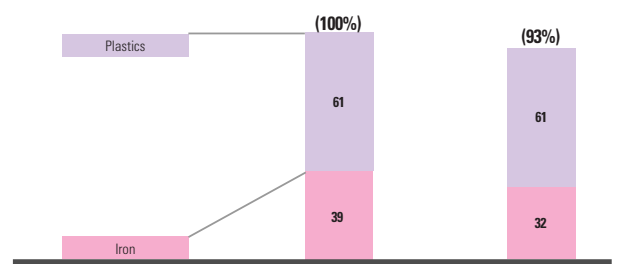
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
Design to achieve a lightweight, compact product by reducing the number of components.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
Design to achieve a lightweight, compact product by reducing the number of components.



■ Base ■ Evaluation

■ Base ■ Evaluation

Calculation Results ■ 10.8 ■ 9.1
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

Calculation Results ■ 4.0 ■ 3.5
Volume of resources per unit function in product life span (kg/unit function)

Prevention of Global Warming Efficiency ■ 0.926 ■ 1.10

Resource Efficiency ■ 2.48 ■ 2.84

Prevention of Global Warming Factor 1.2

Resource Factor 1.1

Description of Products

Equipment that intakes air and supplies oil-free dry compressed air.

Development Concept

1. Increases air capacity through optimal design.
2. Reduces noise through partial rigidity.
3. Achieves the refrigerant whose modulus of rupture is 0 in the cool dryer.

Base



Manufactured in 2000
 Model name : POD-7.5EF

Evaluation



Manufactured in 2005
 Model name : POD-7.5MA

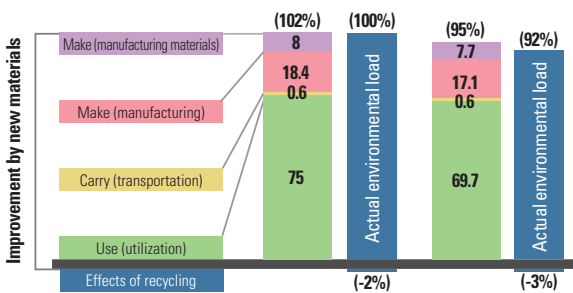
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2005
Model name		POD-7.5EF	POD-7.5MA
Maximum pressure (MPa)		0.69	0.85
Air capacity* ¹ (under pressure of 0.69MPa) (l/min)		850	925
Type of dryer refrigerant		HCFC-22	R407C
Noise* ² (front 1.5m)(dB[A])		63	59
Product mass (kg)		357	358
Maintenance cycle* ³ (h)		6,000	10,000

- *1 The volume of air capacity refers to the value obtained by converting the volume of air capacity under the maximum pressure to the volume of intake air (atmospheric pressure).
- *2 The level of noise is measured in a fully loaded anechoic chamber 1.5 meter apart from the front of the equipment.
- *3 Value measured under the conditions described in the instructions manual.

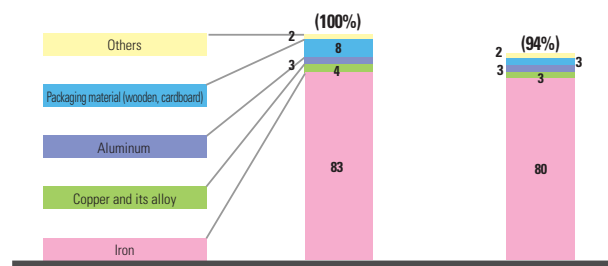
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
 Reason for reduction:
 Saving electricity without increasing the volume of air capacity (performance improvement)



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
 Reason for reduction:
 Lightening the compressor main unit by employing the cardboard rather than the wooden package



■ Base ■ Evaluation

Calculation Results ■ 13,936 ■ 12,826
 Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

Prevention of Global Warming Efficiency ■ 21.0 ■ 30.6

Prevention of Global Warming Factor 1.5

■ Base ■ Evaluation

Calculation Results ■ 327 ■ 236
 Volume of resources per unit function in product life span (kg/unit function)

Resource Efficiency ■ 897 ■ 1,670

Resource Factor 1.9



Description of Products

Gas meter for gas stations.

Development Concept

- Lightening
- Energy saving

Base



Manufactured in 2000
Model name : SB26LA-T

Evaluation



Manufactured in 2005
Model name : AB26LA-T

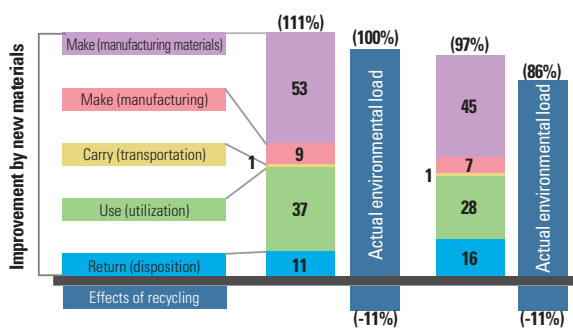
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2005
Model name		SB26LA-T	AB26LA-T
Product life span (specified usage period (year))		7	
Output discharge (l/min)		40	40
Operating power consumption (kWh)		0.75	0.4
Product mass (kg)		450	390
Annual power consumption*1 (kWh/year)		1,150	767

*1 $E = P_o \times t_1 + P_s \times t_2$ (kWh/year)
 P_o : Operating power consumption (kW)
 P_s : Standby power consumption (kW)
 t_1 : Annual standard operation time (h)
 1,095 (365 days x 3 hours)
 t_2 : Annual standard standby time (h)
 3,285 (365 days x 9 hours)

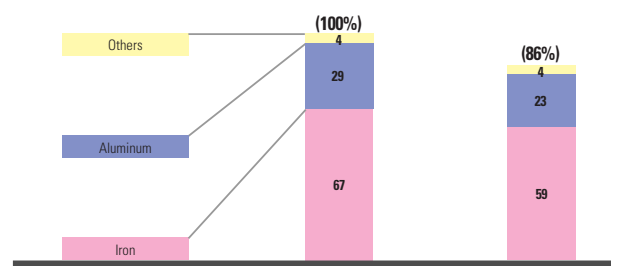
Evaluation Results for the Prevention of Global Warming Factor

- Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
Reduction of assembly time required.



Evaluation Results for the Resource Factor

- Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
Reduction of aluminum cast and/or cabinet plate.



	Base	Evaluation
Calculation Results	4,841	3,293
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)		

	Base	Evaluation
Prevention of Global Warming Efficiency	1.31E-04	3.89E-04

Prevention of Global Warming Factor	3.0
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	Base	Evaluation
Calculation Results	385	263
Volume of resources per unit function in product life span (kg/unit function)		

	Base	Evaluation
Resource Efficiency	1.60E-03	4.94E-03

Resource Factor	3.1
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Description of Products

This adhesive consists of scattered conductive particles that can connect many fine electrodes, maintaining the conductivity and nonconductivity.

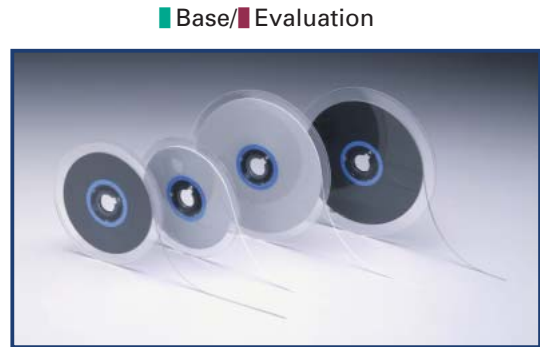
Development Concept

The amount of CO₂ to be discharged during operation is reduced to enable low-temperature adhesion and improve productivity, so that the efficiency of energy consumption per unit time can be greatly improved.

Outline of Products for Comparison

Item	Product	■ Base	■ Evaluation
Year of manufacture		2000	2002
Model name		AC-2000	AC-9000
Product life span* ⁶ (year)		10	
Product function	Production efficiency (%) ^{*7}	100	200
Bonding temperature (°C) ^{*8}		170	150
Fine pitch capability (electrodes/mm) ^{*9}		5	5
Product mass (kg)		0.01	0.01

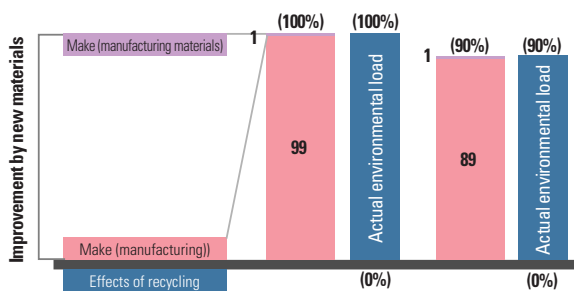
- *6 This life span is a value calculated based on the strength of adhesion in the high-temperature, high-humidity acceleration test for durability of this product. The life span of each product using this product as a material differs from this life span.
- *7 The production efficiency of an evaluation product is calculated on assumption that the production efficiency of conventional products under the recommended adhesion time (20 seconds) is 100.
- *8 The adhesion temperature is a temperature where the product is pasted to the base material.
- *9 Pitch means the maximum number of electrodes (definition) that can be connected in batch.



**Anisotropic Conductive Film
 "ANISOLM[®]"**

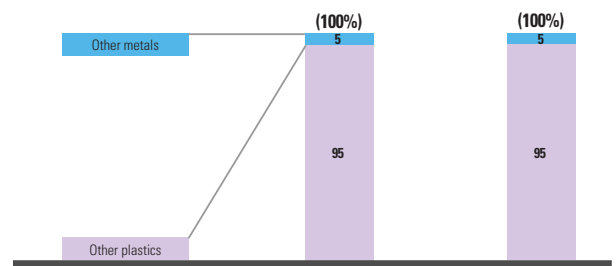
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
 Reason for reduction:
 Production cost reduction due to improved productivity.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
 Reason for reduction:
 The amount of materials is not reduced because the same materials are used.



	■ Base	■ Evaluation
Calculation Results	277.9	250.1
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)		

	■ Base	■ Evaluation
Prevention of Global Warming Efficiency	0.106	0.267

Prevention of Global Warming Factor	2.5
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	■ Base	■ Evaluation
Calculation Results	0.0445	0.0404
Volume of resources per unit function in product life span (kg/unit function)		

	■ Base	■ Evaluation
Resource Efficiency	660	1,650

Resource Factor	2.5
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Description of Products

CD-SEM (semiconductor limit dimension measuring unit, electron microscope for measurement)

Development Concept

- Improved resolution
- Reduced measuring time per workpiece

Base



Manufactured in 2000
 Model name : S-9300

Evaluation



Manufactured in 2003
 Model name : S-9380

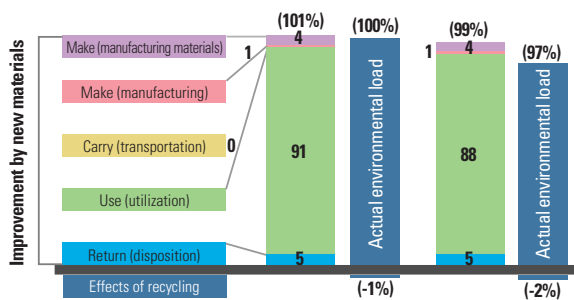
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2003
Model name		S-9300	S-9380
Product life span (specified usage period (year))		10	
Product function	(Throughput/(resolution) ²)	4.0	14.3
	Throughput* ¹ (wafer/time)	36	57
	Resolution (nm)	3.0	2.0
Product mass (kg)		2,580	2,290
Annual power consumption (kWh/year)		35,040	34,164

*1 Value obtained through measurement at five points of each wafer

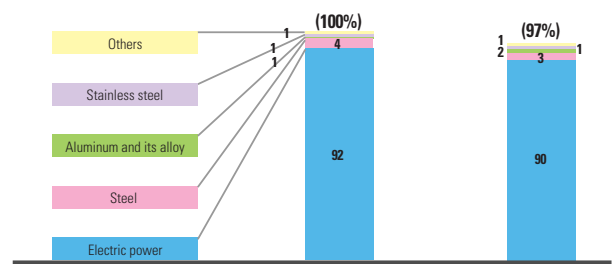
Evaluation Results for the Prevention of Global Warming Factor

- Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
- Reason for reduction:
 Reduction of power consumption per unit by throughput improvement



Evaluation Results for the Resource Factor

- Calculation results for the volume of resources to be used (ratio to the base product)
- Reason for reduction:
 Reduction of resources to be used per unit by throughput improvement



■ Base ■ Evaluation

Calculation Results 82,773 25,105
 Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

Prevention of Global Warming Efficiency 1.21 3.98

Prevention of Global Warming Factor 3.3

■ Base ■ Evaluation

Calculation Results 18,653 5,627
 Volume of resources per unit function in product life span (kg/unit function)

Resource Efficiency 5.36E-5 17.8E-5

Resource Factor 3.3



Description of Products

Equipment for observing the brain activities by measuring the brain blood flow volume through the near infrared light safe to human body.

Development Concept

The number of workpieces is increased, maintaining the product quality and power consumption equivalent to those of conventional products.

Base



Manufactured in 2000
Model name : ETG-100

Evaluation



Manufactured in 2003
Model name : ETG-4000

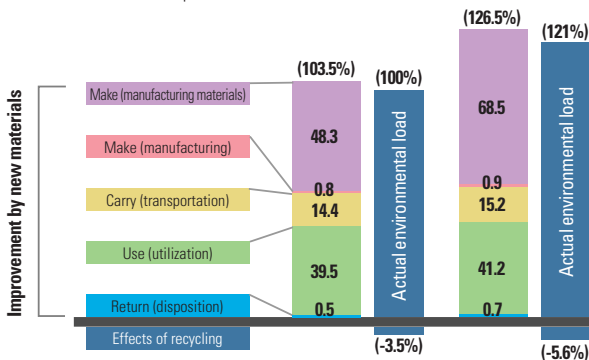
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2003
Model name		ETG-100	ETG-4000
Product life span* ¹ (specified usage period (year))		6	
Product function* ² Number of workpieces to be measured simultaneously		24	48
Product mass (kg)		130	156
Annual power consumption* ³ (kWh/year)		461	480
(Power consumption per workpiece for measurement)		19.2	10

*1 Based on Hitachi standard.
 *2 Number of workpieces that can be measured simultaneously (excluding the options).
 *3 Calculated on assumption that the number of annual working days is 240 (20 days/month) and the number of daily working hours is 4. (Note: The power is off in standby mode.)
 $E = ((P_O - P_A) \times t_1 + P_S \times t_2) / 1000$ (kWh/year)
 P_O : Operating power consumption (W)
 P_A : Reduced power consumption (W) in power saving function = 0
 P_S : Standby power consumption (W) = 0
 t_1 : Annual standard operation time (h)
 960 (240 days x 4 hours)
 t_2 : Annual standard standby time (h)
 4,800 (240 days x 20 hours)

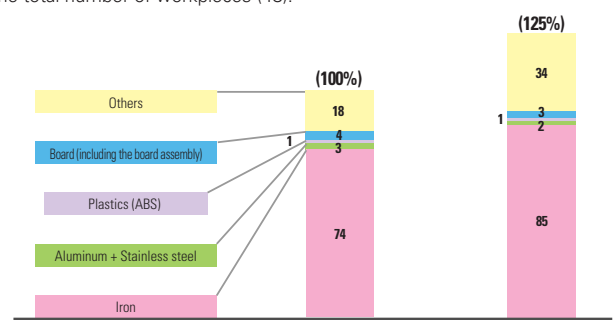
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
 Reason for reduction:
 The volume increases per unit by 22% but it decreases by 39% in terms of the total number of workpieces (48).



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
 Reason for reduction:
 The volume increases per unit by 25% but it decreases by 38% in terms of the total number of workpieces (48).



■ Base ■ Evaluation

Calculation Results ■ 127.8 ■ 78.0
 Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

Prevention of Global Warming Efficiency ■ 1.13 ■ 3.69

Prevention of Global Warming Factor 3.3

■ Base ■ Evaluation

Calculation Results ■ 9.4 ■ 5.8
 Volume of resources per unit function in product life span (kg/unit function)

Resource Efficiency ■ 15.4 ■ 49.8

Resource Factor 3.2



Description of Products

B5-size product optimal to high-luminance TFT display for industrial or entertainment purpose.

Development Concept

Energy and resources per intensity are saved through the improved intensity performance.

Base

Evaluation



Manufactured in 2001
Model name : TX36D70VC0CAF

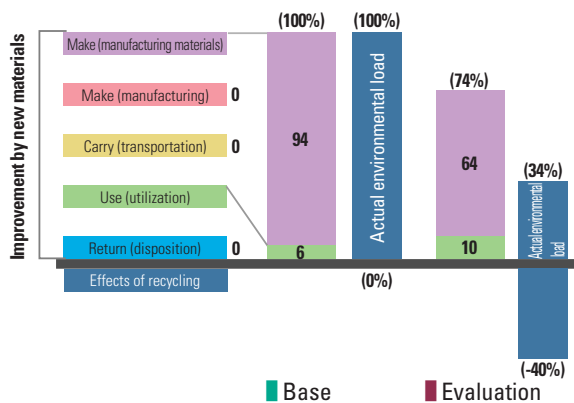
Manufactured in 2004
Model name : TX26D01VM1***

Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2001	2004
Model name		TX36D70VC0CAF	TX26D01VM1***
Product life span (specified usage period (year))		6	
Product function	Screen brightness (cd/m ²)	150.0	380.0
	Definition (pixels/screen size)	12.8	9.2
	Power consumption (W)	4.3	7.4
	Response time (ms)	80.0	50.0
Product mass (kg)		0.435	0.430

Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
Reducing the volume of greenhouse gas to be discharged per product volume in manufacturing materials.



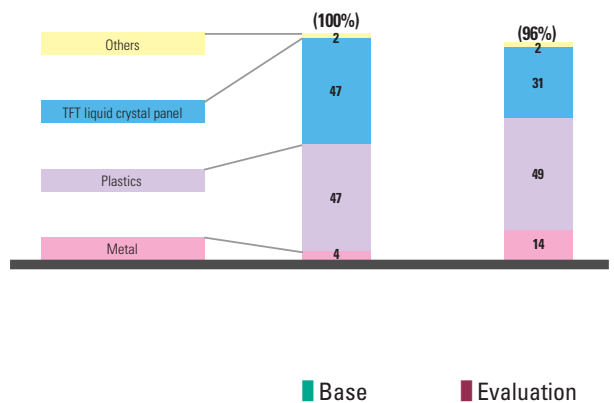
■ Calculation Results 2.29E-03 5.76E-04
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

■ Prevention of Global Warming Efficiency 1.46E+04 9.88E+04

Prevention of Global Warming Factor 6.8

Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
Reduction of liquid crystal panel resources per product volume through the thin glass.



■ Calculation Results 2.44E-06 1.45E-06
Volume of resources per unit function in product life span (kg/unit function)

■ Resource Efficiency 1.38E+07 3.93E+07

Resource Factor 2.8

Description of Products

A kind of input device capable of converting analog information on the dedicated paper to digital information and storing it in the personal computer

Development Concept

Lead in the circuit is avoided to support the RoHS command and plastics are reduced through compaction and lightening.

■ Base

■ Evaluation



Manufactured in 2003
Model name : DP-101B

Manufactured in 2005
Model name : DP-201

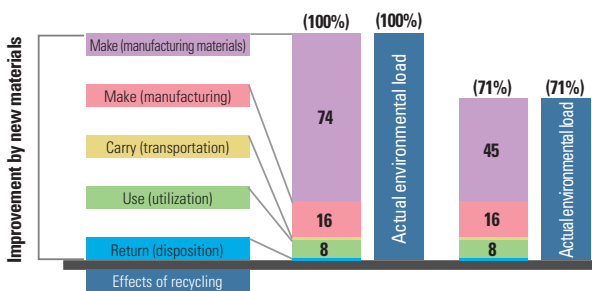
Outline of Products for Comparison

Item	Product	■ Base	■ Evaluation
Year of manufacture		2003	2005
Model name		DP-101B	DP-201
Product life span* ¹ (year)		3	
Recording capacity* ² (MB)		1.0	1.0
Volume* ³ (cc)		31.1	26.1
Product mass (g)		38	32

*1 Refers to the charge/discharge life span of the lithium ion secondary battery.
*2 Medium capable of storing handwriting information.
*3 Volume of pen body.

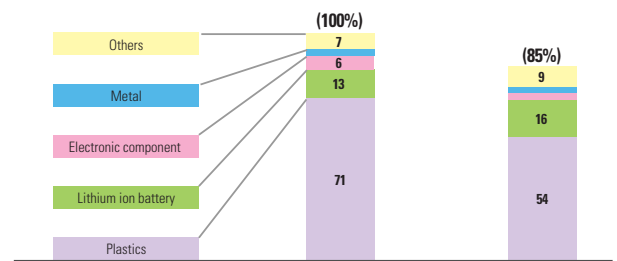
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
Plastics reduction through compaction and lightening.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
Plastics reduction through compaction and lightening.



■ Base ■ Evaluation

Calculation Results ■ 2,545 ■ 1,803
Volume of greenhouse gas discharged per unit function in product life span (kg/MB)

Prevention of Global Warming Efficiency ■ 3.79E-5 ■ 6.39E-5

Prevention of Global Warming Factor 1.7

■ Base ■ Evaluation

Calculation Results ■ 0.0695 ■ 0.0572
Volume of resources per unit function in product life span (kg/MB)

Resource Efficiency ■ 1.39E-3 ■ 2.01E-3

Resource Factor 1.4



Description of Products

This refrigerator employs R600a (isobutane) for refrigerant and cyclopentane for heat insulation forming agent to minimize influence to global warming.

Development Concept

To minimize the impact of materials to the environment, lead-free solders have been used in the electronic control board and refrigeration cycle and electroplating steel plates and screws without hexavalent chrome have also been used. This refrigerator complies with the EU RoHS ^{*1}.

Base



Manufactured in 2000
Model name : R-K40EPAM

Evaluation



Manufactured in 2006
Model name : R-SF42VM

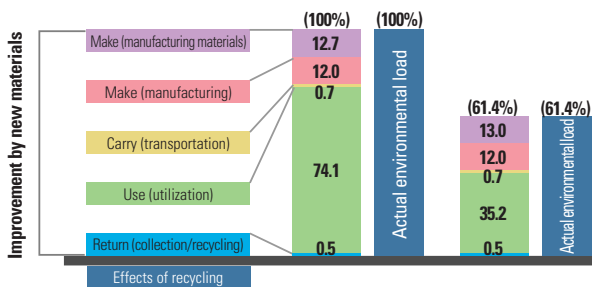
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2006
Model name		R-K40EPAM	R-SF42VM
Product life span ^{*2} (specified usage period (year))		10	
Product function	Content volume efficiency : CER (%) ^{*3}	54.1	56.2
	Adjusted content volume (L) ^{*4}	512.6	558.8
Product mass (kg)		85	84
Rated content volume (L)		401	415
Annual power consumption ^{*5} (kWh/year)		380	180

- *1 Refers to toxic substance regulations on electric and electronic equipment in EU. Since July 2006, the use of six substances (lead, liquid silver, hexavalent chrome, PBB and PBDE) has been restricted.
- *2 The product life span is 10 years including the manufacture year to meet the refrigerator spare parts storage term (9 years after end of life) stipulated in article 5-1-5 of "The Fair Competition Rules for Labeling in the Industry of Home Electric Appliances".
- *3 (Rated content volume/product external volume) x 100
- *4 2.15 x freezing compartment inner product + freezing compartment
- *5 Complies with JIS C9801 "Properties and Test Methods for Home Electric Refrigerators and Electric Freezers." The daily power consumption is measured in a way that the specified load is imposed at ambient temperature 25°C, the door of the refrigerator is opened and closed 25 times a day, the door of freezer is opened and closed 8 times a day.

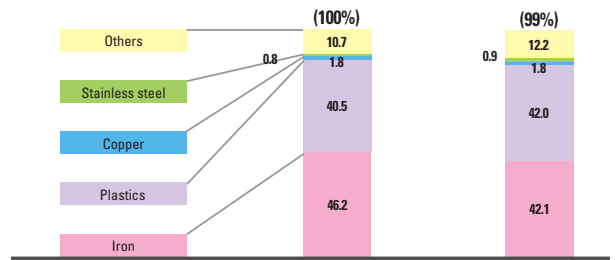
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
Annual power consumption is 180kWh/year, so the amount of CO₂ is suppressed.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
Iron usage is reduced and iron and plastics are recycled.



■ Base ■ Evaluation

■ Base ■ Evaluation

■ Calculation Results ■ 2,135 ■ 1,310
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

■ Calculation Results ■ 99.7 ■ 83.3
Volume of resources per unit function in product life span (kg/unit function)

■ Prevention of Global Warming Efficiency ■ 130 ■ 240

■ Resource Efficiency ■ 2,780 ■ 3,770

Prevention of Global Warming Factor 1.8

Resource Factor 1.4

Description of Products

Nano-order stream microwave oven using five kinds of heating, which has been designed for healthy, tasty and quick cooking.

Development Concept

The PAM control method has been employed for power supply, improving heating efficiency and reducing standby power consumption.

Base



Manufactured in 2000
Model name : MRO-A1

Evaluation



Manufactured in 2005
Model name : MRO-AX10

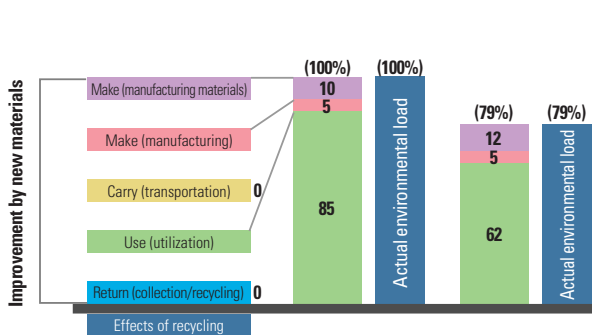
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2005
Model name		MRO-A1	MRO-AX10
Product life span*1 (specified usage period (year))		8	
Product function	Volume efficiency*2	32.6	37.8
	Heating efficiency*2	62	69
	No. of auto menus*3	22	40
Product mass (kg)		16.5	19.5
Annual power consumption*4 (kWh/year)		290.9	213.2

- *1 The product life span conforms to the spare parts storage term stipulated in article 5-1-5 of "The Fair Competition Rules for Labeling in the Industry of Home Electric Appliances".
- *2 Volume efficiency :Refers to the ratio of oven inner content volume to external dimensions[%].
Heating efficiency: Refers to the ratio of rated high-frequency output to rated power consumption[%].
- *3 Includes the menus for heating and defrosting plus heating.
- *4 Depends on the annual power consumption of the microwave oven
 $E = (P_r + P_o + P_w) / 1000$ (kWh/Year)
 P_r : Assumed annual range operating power consumption (W)
 P_o : Assumed annual oven operating power consumption (W)
 P_w : Assumed annual standby power consumption (W)

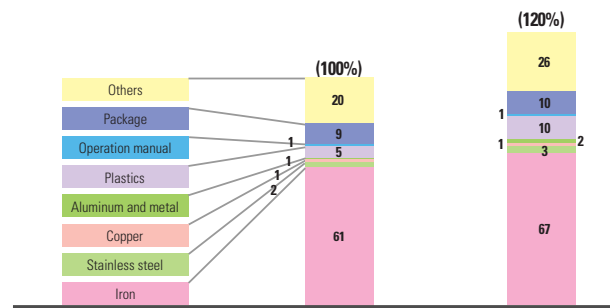
Evaluation Results for the Prevention of Global Warming Factor

- Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
Design considering cooking time and manufacturing time.



Evaluation Results for the Resource Factor

- Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
The inner volume of the microwave oven has been increased from 25 liter to 33 liter and the need for turntable has been eliminated.



Base **Evaluation**

Calculation Results 1,142 906
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

Prevention of Global Warming Efficiency 312 921

Prevention of Global Warming Factor 3.0

Base **Evaluation**

Calculation Results 18.3 21.0
Volume of resources per unit function in product life span (kg/unit function)

Resource Efficiency 19,500 39,800

Resource Factor 2.0

Description of Products

Hitachi all-metal cooking heater designed for any kind of metal pan and for large firepower

Development Concept

Improvement of environmental efficiency focusing on the maximum firepower, thermal efficiency and operating noise

■ Base

■ Evaluation



Manufactured in 1999
Model name : HTW-4DA

Manufactured in 2005
Model name : HTB-A9S

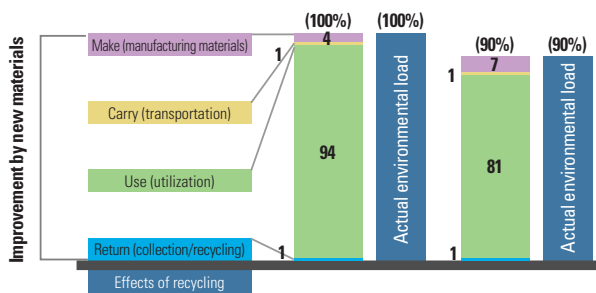
Outline of Products for Comparison

Item	Product	■ Base	■ Evaluation
Year of manufacture		1999	2005
Model name		HTW-4DA	HTB-A9S
Product life span*1 (specified usage period (year))		10	
IH maximum firepower (W)		2000	3000
Thermal efficiency (%)		83	90
Operating sound (iron heating) (dB)		46	35
Product mass (kg)		19.0	27.5

*1 The product life span conforms to the spare parts storage term stipulated in article 5-1-5 of "The Fair Competition Rules for Labeling in the Industry of Home Electric Appliances".

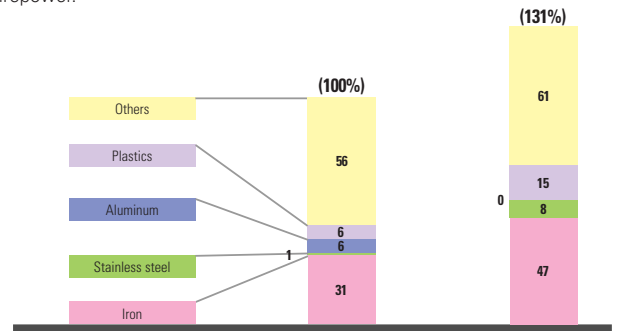
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
Reduction of power consumption through thermal efficiency.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
The volume of materials to be used has increased to raise the IH maximum firepower.



■ Base ■ Evaluation

■ Base ■ Evaluation

Calculation Results ■ 3,284 ■ 2,943
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

Calculation Results ■ 34.9 ■ 47.4
Volume of resources per unit function in product life span (kg/unit function)

Prevention of Global Warming Efficiency ■ 11 ■ 26.6

Resource Efficiency ■ 1,030 ■ 1,630

Prevention of Global Warming Factor 2.4

Resource Factor 1.6

Description of Products

Compact indoor garbage disposal equipment available in the kitchen.

Development Concept

Odor during garbage disposal is completely removed so that the equipment can be used inhouse. This compact equipment employs the high temperature bio-technology, eliminating the need for replacements (sawdusts).

Base



Manufactured in 2000
Model name : BGD-150

Evaluation



Manufactured in 2005
Model name : BGD-V18

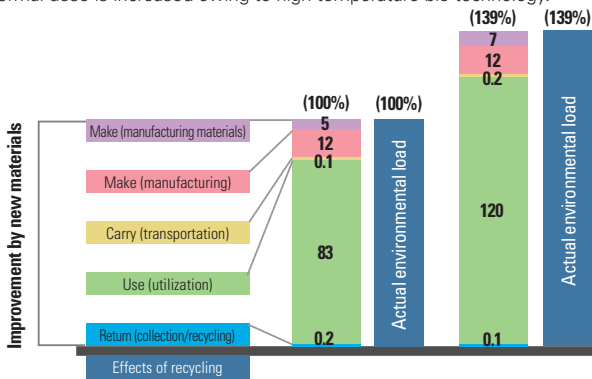
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2005
Model name		BGD-150	BGD-V18
Product life span* ¹ (specified usage period (year))		6	
Product function	Max. amount of continuous disposal (kg/day)* ²	1.5	1.3
	Function processing bath efficiency (l/kg)* ³	4.7	6.8
	No. of place for installation * ⁴	1	2
Product mass (kg)		10	13
Annual power consumption* ⁵ (kWh/year)		302	464

- *1 The product life span conforms to the spare parts storage term stipulated in article 5-1-5 of "The Fair Competition Rules for Labeling in the Industry of Home Electric Appliances".
- *2 Maximum amount of continuous disposal: Assuming that garbage is loaded once a day in batch, all daily garbage can be load continuously. The maximum amount of garbage is represented in kg.
- *3 Refers to the standard processing path volume per 1kg garbage defined in The Japan Electrical Manufacturer's Association (JEMA).
- *4 Number of places where the garbage disposal equipment can be installed (2 pieces of equipment can be installed outdoor and one piece of equipment can be installed indoor).
- *5 Refers to annual power consumption calculated from daily power consumption of weekly power consumption measured when daily garbage (amount defined by JEMA) is loaded in the standard state and processing becomes stable.

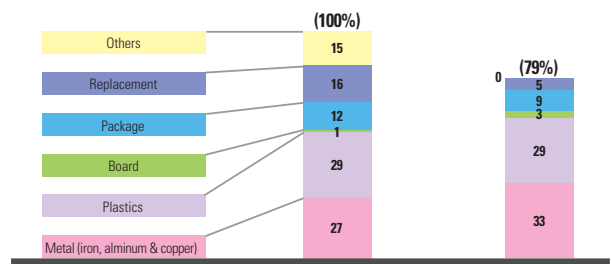
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
Thermal dose is increased owing to high-temperature bio-technology.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
Replacements are not required owing to high-temperature bio-technology.



Base Evaluation

■ Calculation Results **919 1,281**
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

■ Prevention of Global Warming Efficiency **0.0463 0.0825**

Prevention of Global Warming Factor 1.8

Base Evaluation

■ Calculation Results **18.1 9.6**
Volume of resources per unit function in product life span (kg/unit function)

■ Resource Efficiency **2.36 11**

Resource Factor 4.7



Description of Products

This dish washer has employed a nano-steam infiltration & washing system employed first in the industry. Ultra-fine steams are generated at water supply to infiltrate and float the dirt, and then wash it away by high-pressure injection of water, resulting in high detergency.

Development Concept

The nano-steam system has been employed to reduce the volume of water to about 9.8L (minimum level in the industry), achieving the great water saving effect even though the capacity of the dry washer provides for dishes of 7 people (maximum capacity in the industry).

Base



Manufactured in 2001
Model name : KF-S50Z

Evaluation



Manufactured in 2005
Model name : KF-W70EV

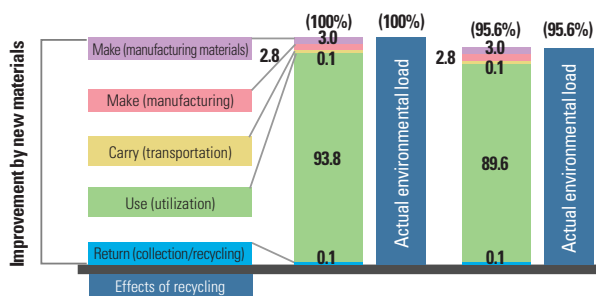
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2001	2005
Model name		KF-S50Z	KF-W70EV
Product life span*1 (specified usage period (year))		6	
Product function*2	Content volume efficiency (%)	59.9	49.7
	Wash volume (number)	35 (for 5 people)	60 (for 7 people)
Product mass (kg)		16.5	19.0
Annual power consumption*3 (kWh/year)		658.5	627.8

- *1 The product life span conforms to the spare parts storage term stipulated in article 5-1-5 of "The Fair Competition Rules for Labeling in the Industry of Home Electric Appliances".
- *2 The new function (content volume efficiency x dish volume) has been indexed.
- *3 Conforms to the annual power consumption measurement method (twice/day x 365 days) defined by The Japan Electrical Manufacturer's Association.

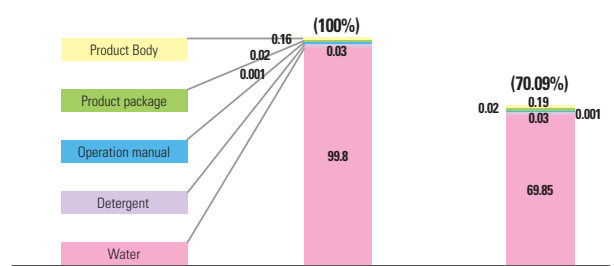
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
The volume of water per washing has greatly been reduced to 9.8 liter.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
The volume of water per washing has greatly been reduced to 9.8 liter.



■ Base ■ Evaluation

■ Calculation Results ■ 1,780 ■ 1,701
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

■ Prevention of Global Warming Efficiency ■ 7.06 ■ 10.5

Prevention of Global Warming Factor 1.5

■ Base ■ Evaluation

■ Calculation Results ■ 22.5 ■ 21.8
Volume of resources per unit function in product life span (kg/unit function)

■ Resource Efficiency ■ 560 ■ 821

Resource Factor 1.5

Description of Products

Rice cooker for cooking polished rice and keeping it warm or making healthy menu like brown rice gruel. This rice cooker can also be used to make cake.

Development Concept

- Power consumption is achieved by IH heating efficiency improvement, fire control and standby power reduction circuit.
- Lead-free materials are employed considering impact to the environment.

Base



Manufactured in 2001
Model name : RZ-XG18

Evaluation



Manufactured in 2005
Model name : RZ-EX18J

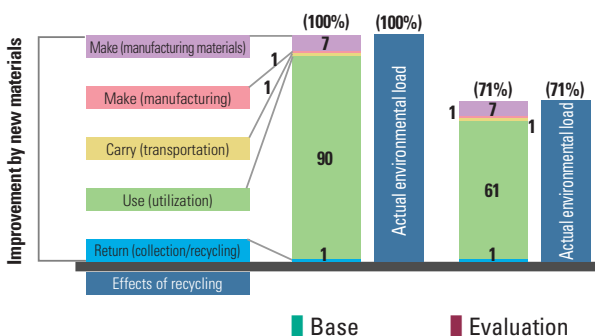
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2001	2005
Model name		RZ-XG18	RZ-EX18J
Product life span* ¹ (specified usage period (year))		6	
Product function (rated rice cooking amount)		1.8L	1.8L
No. of IH coils * ²		3	5
No. of rice cooking methods/menus		15	21
Product mass (kg)		5.4	7.6
Annual power consumption* ³ (kWh/year)		252	178

*1 The product life span conforms to the spare parts storage term stipulated in article 5-1-5 of "The Fair Competition Rules for Labeling in the Industry of Home Electric Appliances".
 *2 Number of IH coils: Number of heating coils to heat the inner boiler of rice cooker. This index represents the evenness of cooked rice.
 *3 Calculation standard for annual power consumption
 $E = (P_1 \times 350) + (P_2 \times 2420) + (P_3 \times 1000) + (P_4 \times 2150) / 1000 (\text{kWh}/\text{Year})$
 P_1 : Power consumption for cooking four cups of rice (W)
 P_2 : Average power consumption for keeping four cups of cooked rice warm (W)
 P_3 : Average power consumption for one-hour timer reservation (W)
 P_4 : Average power consumption for standby one hour (W)
 Each value is multiplied by the average number of times for rice cooking and the coefficient for the time.

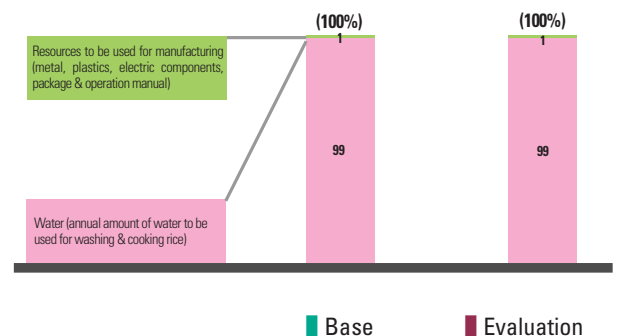
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
 Reason for reduction:
 The pressurized rice cooking time, power consumption for keeping cooked rice and standby power consumption are all reduced.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
 Reason for reduction:
 Almost resources are water.



Calculation Results 684 483
 Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

Prevention of Global Warming Efficiency 0.71 2.35

Prevention of Global Warming Factor 3.3

Calculation Results 6.1 7.2
 Volume of resources per unit function in product life span (kg/unit function)

Resource Efficiency 79.3 157

Resource Factor 2.0



Description of Products

This washing machine warms, presses, taps and massages the clothes by using the water-saving hot beat washing and water-saving recycling system, reducing the amount of water by 70%.

Development Concept

The annual amount of CO2 has been reduced by 61% by reducing specified toxic substances according to the RoHS direction in EU.

Base



Evaluation



Manufactured in 2001
Model name : NW-D8AX

Manufactured in 2005
Model name : BW-DV9F

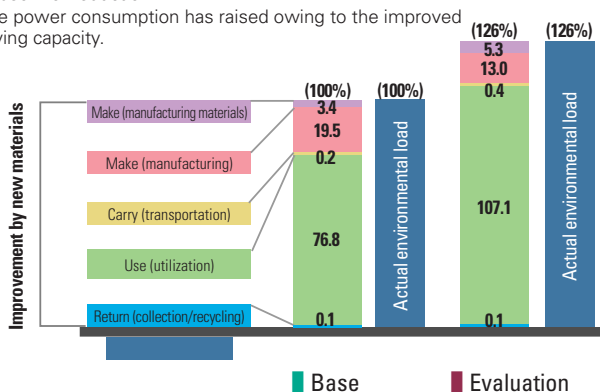
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2001	2005
Model name		NW-D8AX	BW-DV9F
Product life span*1 (specified usage period (year))		6	
Product function	Washing capacity (kg)	8.0	9.0
	Drying capacity (kg)	4.5	7.0
	Detergency*2	1.08	1.2
Washing condition		Standard course*3	
Product mass (kg)		47.0	65.0
Power consumption*4 (W)		310	590
Amount of power consumption*5 (W·h)		64	170
Standard volume of water to be used (l)		130	88

- *1 The product life span conforms to the spare parts storage term stipulated in article 5-1-5 of "The Fair Competition Rules for Labeling in the Industry of Home Electric Appliances".
- *2 Detergency conforms to the test conditions defined in the JIS C9811-1999 "Performance Measurement in Home Electric Washing Machines." When the dirty clothe is washed under the test conditions and the reflectivity is used for detergent of the dirty clothe, the defined detergent (standard washing machine) is compared with the measured detergent of the supplied washing machine to determine the detergent ratio and detergent performance.
- *3 The standard course meets a detergent ratio of 0.8 or more according to the JIS C9606.
- *4,5 Refers to the power consumption and amount of power consumption measured when continuous operations take place at rated voltage with a rated frequency and they become almost stable. (JIS C 9606-1993 Electric Washing Machine)

Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
The power consumption has raised owing to the improved drying capacity.



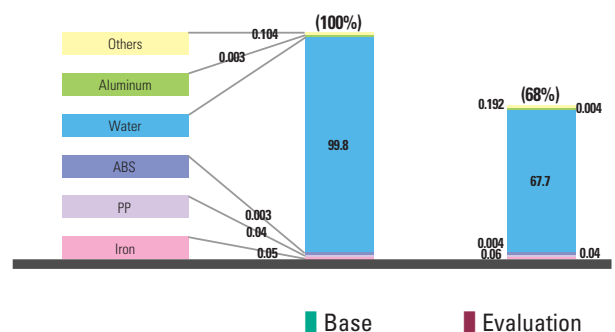
■ Calculation Results 3,519 4,422
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

■ Prevention of Global Warming Efficiency 1.10 3.26

Prevention of Global Warming Factor 3.0

Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
The amount of water consumption has been reduced by the water-saving recycle method.



■ Calculation Results 64.0 82.4
Volume of resources per unit function in product life span (kg/unit function)

■ Resource Efficiency 6.07 17.5

Resource Factor 2.9

Description of Products

This cleaner has a powerful structure of high durability, and provides easy-to-use convenient functions.

Development Concept

Energy is consumed efficiently via a high performance motor and the cleaner body is compact and lightweight to save resources.

■ Base

■ Evaluation



Manufactured in 2000
Model name : CV-WD20

Manufactured in 2005
Model name : CV-PJ10

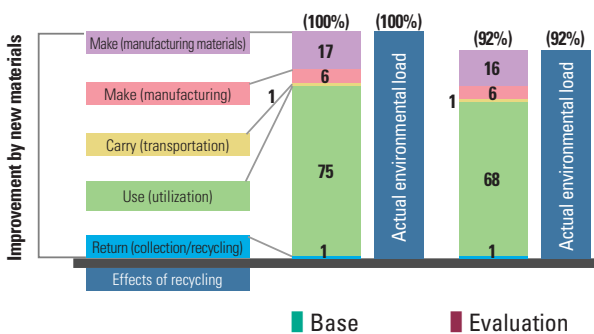
Outline of Products for Comparison

Item	Product	■ Base	■ Evaluation
Year of manufacture		2000	2005
Model name		CV-WD20	CV-PJ10
Product life span*1 (specified usage period (year))		6	
Product function	(Absorption ratio/product weight)	86	123
	Absorption ratio*2 (W)	560	640
Product mass (kg)		6.5	5.2

*1 The product life span conforms to the spare parts storage term stipulated in article 5-1-5 of "The Fair Competition Rules for Labeling in the Industry of Home Electric Appliances".
*2 Refers to absorption ratio measurement based on "Absorption Ratio Measurement" defined in the Annex 1 of the JIS C9108 "Electric Cleaner".

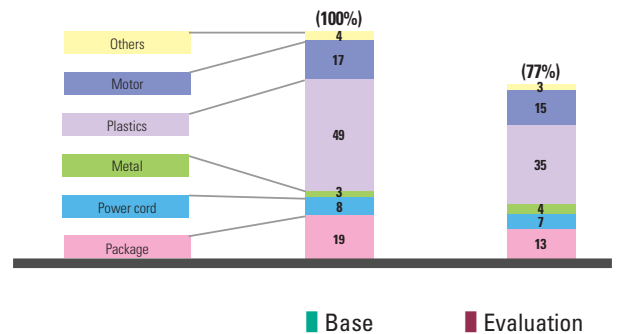
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
The Ni-Cd battery is not used and 100VAC only is used as a power source.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
The Ni-Cd battery is not used and plastics are reduced through compaction.



Calculation Results ■ 132 ■ 121
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

Prevention of Global Warming Efficiency ■ 3.9 ■ 6.1

Prevention of Global Warming Factor 1.6

Calculation Results ■ 8.0 ■ 6.0
Volume of resources per unit function in product life span (kg/unit function)

Resource Efficiency ■ 64 ■ 122

Resource Factor 1.9

Description of Products

This air conditioner (top model of the Hitachi brand "Sirokuma-kun") is equipped with the vector PAM control function (implemented by Hitachi for the first time in the industry) and newly developed double axel system to achieve the largest energy reduction in the industry.

Development Concept

The leading-edge technology of the industry has been implemented to reduce global warming gas and contribute to the prevention of global warming gas discharge. The new refrigerant (R410A) has been employed to avoid ozonosphere destruction and lead-free solders have been used in the electronic control boards to reduce impact to the environment. In addition, the raw materials to be used have been reviewed to contribute to the reduction of RoHS*1 substances in EU.

Base



Manufactured in 2000
Model name : RAS-2810LX

Evaluation



Manufactured in 2005
Model name : RAS-S28T

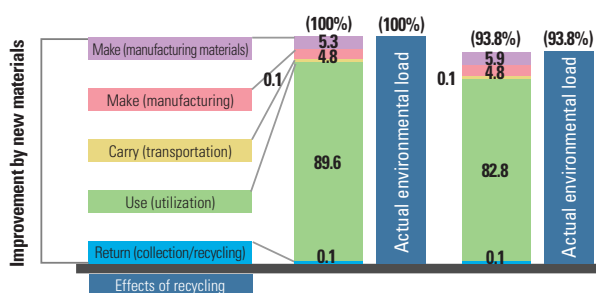
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2005
Model name		RAS-2810LX	RAS-S28T
Product life span*2 (specified usage period (year))		10	
Product function	Cooling/heating average COP*3	5.03	6.50
	Low temperature heating capability (kW)*4	5.0	6.0
Product mass (total weight of indoor and outdoor facilities (kg))		41.0	52.5
Specific term power consumption*5 (kWh)		949	877

- *1 Refers to toxic substance regulations on electric and electronic equipment in EU. Since July 2006, the use of six substances (lead, liquid silver, hexavalent chrome, PBB and PBDE) has been restricted.
- *2 The product life span is 10 years including the manufacture year to meet the air conditioner spare parts storage term (9 years after end of life) stipulated in article 5-1-5 of "The Fair Competition Rules for Labeling in the Industry of Home Electric Appliances".
- *3 Refers to energy consumption efficiency when the air conditioner is operated continuously under JIS rated conditions. The cooling/heating average COP refers to the average of two COPs during cooling and heating.
- *4 Outside air temperature (2°C), JIS-defined low temperature.
- *5 Refers to specific term power consumption based on the terms (JRA4046-2004) of the Japan Refrigeration and Air Conditioning Industry Association. The outside air temperature terms used for calculation assume those in Tokyo.

Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
CO₂ generation has been reduced, assuming that specific term power consumption is 877kWh.



■ Base ■ Evaluation

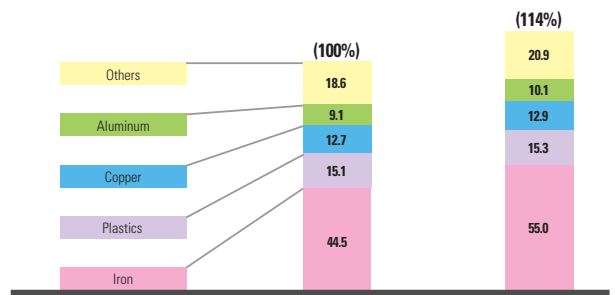
■ Calculation Results ■ 4,413 ■ 4,138
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

■ Prevention of Global Warming Efficiency ■ 0.0570 ■ 0.0943

Prevention of Global Warming Factor 1.7

Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
The product size has increased for performance improvement. The number of components has also increased to provide added value.



■ Base ■ Evaluation

■ Calculation Results ■ 54.0 ■ 57.4
Volume of resources per unit function in product life span (kg/unit function)

■ Resource Efficiency ■ 4.66 ■ 6.80

Resource Factor 1.5

Description of Products

This air cleaner removes odor and pollens quickly and supplies nebulous clean air. In addition, it has a new filter for long product life span.

Development Concept

Compact air cleaner equipped with a humidifier and a new filter for eco-friendliness and long product life span.

Base



Manufactured in 2000
Model name : EP-5500K

Evaluation



Manufactured in 2005
Model name : EP-V32

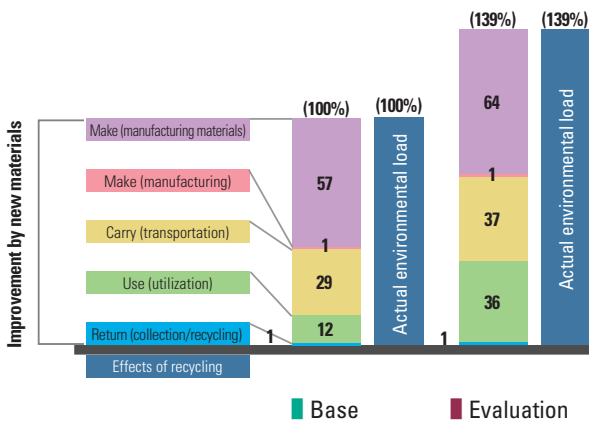
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2005
Model name		EP-5500K	EP-V32
Product life span* ¹ (specified usage period (year))		6	
Product function	Covered floor space * ² (tatami)	22	28
	Filter life span * ³ (year)	5	6
	Scavenged bacteria elimination function* ⁴ (quantity)	3	4
	Released bacteria elimination function* ⁵ (quantity)	0	4
Product mass (kg)		6.2	10
Annual power consumption* ⁶ (kWh/year)		18	53

- *1 The product life span conforms to the spare parts storage term stipulated in article 5-1-5 of "The Fair Competition Rules for Labeling in the Industry of Home Electric Appliances".
- *2 In this floor space, dust of the density defined in the home air cleaner standard of The Japan Electrical Manufacturer's Association (JEMA) can be cleaned in 30 minutes.
- *3 Filter life span is a period until the dust collection function requires double time to clean air in the home air cleaner test defined by JEMA in comparison with the initial air cleaning time. In terms of deodorization, it is a period until the rate of deodorization becomes a half in comparison with the initial value.
- *4 Scavenged bacteria elimination refers to the number of bacteria, molds, viruses and allergy substances that can be prevented.
- *5 Released bacterial elimination refers to the number of bacteria, molds, viruses and allergy substances that affect the outside of the body but can be prevented. However, this value of the evaluation product has been obtained assuming that the value of the base product is theoretically 1 though it is actually 0 and cannot be used for calculation.
- *6 Power consumption based on the continuous operation mode (silent mode) where operation continues for 365 days (24 hours/day).

Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
The volume of discharged greenhouse gas increases for the humidifier in comparison with that of the base product.



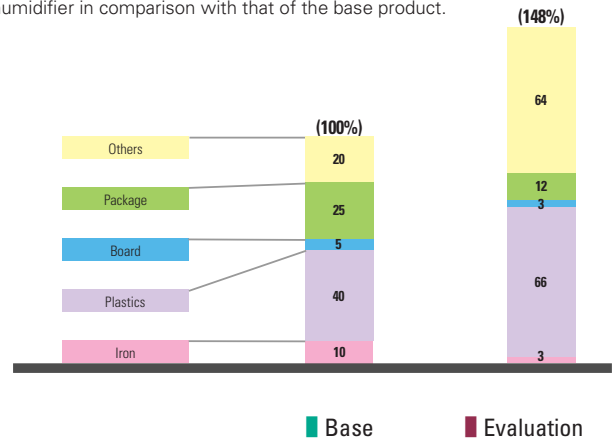
■ Calculation Results ■ 367 ■ 511
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

■ Prevention of Global Warming Efficiency ■ 5.40 ■ 31.5

Prevention of Global Warming Factor 5.8

Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
The volume of resources to be used increases for the humidifier in comparison with that of the base product.



■ Calculation Results ■ 12.5 ■ 17.4
Volume of resources per unit function in product life span (kg/unit function)

■ Resource Efficiency ■ 158 ■ 926

Resource Factor 5.9

Description of Products

This high-performance space-saving heat pump & water heater employs CO₂ which is natural refrigerant with a global warming potential (GWP)*¹ of 1.0.

Development Concept

To greatly reduce the volume of CO₂ that causes global warming, hot water is supplied with industry top class high performance while the annual power consumption is 1,247kWh/year (IBEC-L mode).

Base



Manufactured in 2003
Model name : RHK-23RBAV

Evaluation



Manufactured in 2005
Model name : RHK-23TBA



Outline of Products for Comparison

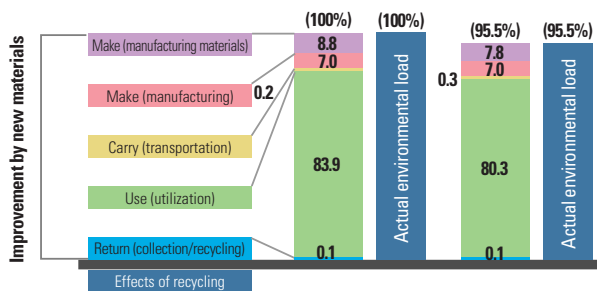
Item	Product	Base	Evaluation
Year of manufacture		2003	2005
Model name		RHK-23RBAV	RHK-23TBA
Product life span (specified usage period (year))		10	
Product function	Rated COP * ²	4.6	4.6
	Rated heating capability/product volume (kW/m ³)	31.6	37.9
	Additional path heating capability (kW) ^{*3}	8.5	9.3
Refrigerant		R410A	R744(CO ₂)
Product mass (kg)		180	180
Annual power consumption ^{*4} (kWh/year)		1,302	1,247

- *1 GWP=Global Warming Potential
- *2 COP at 42°C hot water supply in an interval that has been defined in the JRA4050: 2005 Home Heat Pump & Water Heater. Rated COP = Rated capability (kW)/ Rated power consumption (kW) (Interval (water supply temperature (outside temperature 16°C), hot water temperature 16°C))
- *3 Interval (outside temperature 16°C), hot water temperature (30°C to 40°C).
- *4 IBEC-L mode (4.3Gcal per year) is employed as a hot water supply load. Heat insulation energy is IBEC-defined high-temperature bath hot water. Calculation takes place assuming 1000kcal/day=424.2kWh/year.

*IBEC= Institute for Building Environment and Energy Conservation

Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
Annual power consumption is 1,247kWh/year, so that CO₂ generation can be decreased greatly.



■ Base ■ Evaluation

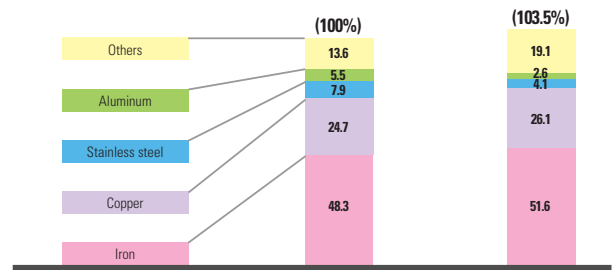
Calculation Results 6,471 (Base) 6,180 (Evaluation)
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

Prevention of Global Warming Efficiency 1.91 (Base) 2.62 (Evaluation)

Prevention of Global Warming Factor 1.4

Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
The product mass is the same, but it increases a little because the evaluation product employs the pulp mold (recycled material) for packaging materials.



■ Base ■ Evaluation

Calculation Results 155.7 (Base) 151.4 (Evaluation)
Volume of resources per unit function in product life span (kg/unit function)

Resource Efficiency 79.5 (Base) 107 (Evaluation)

Resource Factor 1.3

Ceramics Metal Halide Lamp

Description of Products

This high-performance lamp has a ceramics arc tube that can be turned on through the regular mercury-vapor lamp ballast.

Development Concept

The electrical charge is halved, maintaining the same life span and almost the same brightness.

■ Base



Manufactured in 2000
 Model name : HF400X

■ Evaluation



Manufactured in 2004
 Model name : MF200CL/BU/190

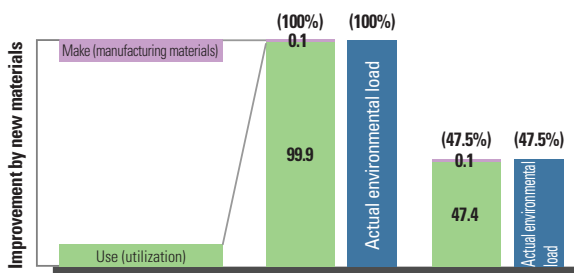
Outline of Products for Comparison

Item	Product	■ Base	■ Evaluation
Year of manufacture		2000	2004
Model name		HF400X	MF200CL/BU/190
Product life span* ¹ (specified usage period (year))		3.3	
Product function (performance* ²)		55	110
Rated lamp power (W)		400	190
Average number of color renditions for evaluation		40	70
Product mass (g)		262	200
Annual power consumption* ³ (kWh/year)		1,515	759

*1 The rated life span (hour) of lamp is calculated, assuming that the daily lighting time is 10 hours and a year is 365 days.
 12000 (hours)/(10(hours/day) x 365 (days/year)) = 3.3 year
 The lighting direction and lighting conditions conform to descriptions given in the JIS C 7604:¹⁹⁹⁹ "High pressure mercury lamp".
 *2 Performance (lm/W)=All luminous fluxes (lm)/rated lamp power (W)
 *3 Lighting takes place through the 200V regular ballast with a high power factor.
 Input voltage of base product: 0.415kW
 Input voltage of evaluation product: 0.208kW
 Annual lighting time: 3,650 hours (10 hours x 365 days)
 Input power measurement takes place in accordance with descriptions given in the JIS C 8110:¹⁹⁸⁷ "Mercury lamp ballast and low pressure Na lamp ballast".

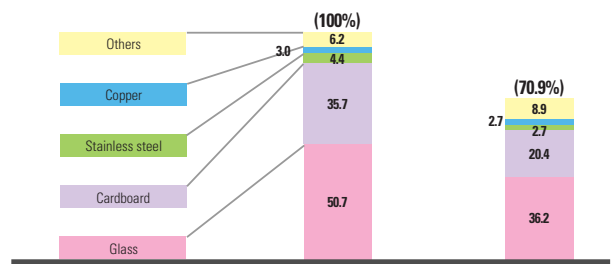
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
 Reason for reduction:
 Power consumption has been halved, maintaining the same brightness.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
 Reason for reduction:
 The product mass decreases by 30% and the product volume by about 50%.



■ Base ■ Evaluation

■ Calculation Results ■ 2,002 ■ 951
 Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)

■ Prevention of Global Warming Efficiency ■ 0.09 ■ 0.38

Prevention of Global Warming Factor 4.2

■ Base ■ Evaluation

■ Calculation Results ■ 0.489 ■ 0.385
 Volume of resources per unit function in product life span (kg/unit function)

■ Resource Efficiency ■ 370 ■ 940

Resource Factor 2.5



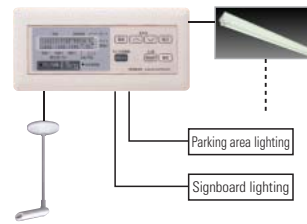
Description of Products

The lighting system totally controls lighting facilities in 24-hour convenience stores to save energy.

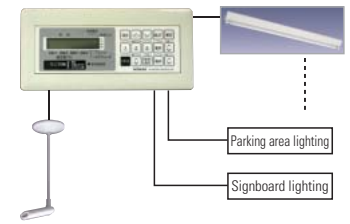
Development Concept

Each energy-saving lighting facility is controlled optimally and automatically to remove undesired lighting and save energy so that global warming can be prevented.

Base



Evaluation



Manufactured in 2000

Model name : DR20832 System
(Combination with other lighting instruments)

Manufactured in 2005

Model name : DR20851 System
(Combination with other lighting instruments)

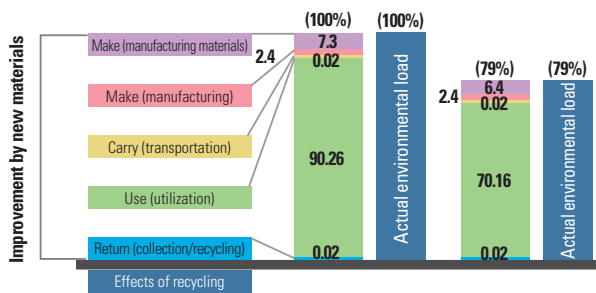
Outline of Products for Comparison

Item	Product	Base	Evaluation
Year of manufacture		2000	2005
Model name		DR20832	DR20851
Product life span* ¹ (specified usage period (year))		7	
Product function	Energy consumption efficiency (lm/W* ²)	138	187
	Mass efficiency (lm/kg* ³)	1,252	1,504
Annual power consumption* ⁴ (kWh/year)		26,577	20,662

- *1 The product life span depends on the lighting instrument replacement timing defined by the Japan Luminaries Association.
- *2 To determine this efficiency, all light fluxes are divided by the power consumption per hour because of the system product.
- *3 To determine mass efficiency, all light fluxes are divided by the total weight of system (all component products).
- *4 Refers to the total power consumption of the system installed in a shop.
All system: 365 working days/24 working hours/day length 5 hours/day (with 2-hour clear sky)/constant illumination intensity based on average dimming rate.
Indoor illumination: 24-hour lighting/daylight/timer-controlled method/dimming pattern.
Parking lighting: 13-hour lighting/stepwise dimming 7 hours/delay 2 hours.
Signboard lighting: Lighting takes place 30 minutes before sunset through the solar timer based method.

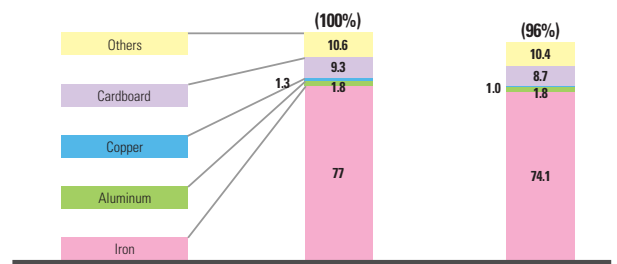
Evaluation Results for the Prevention of Global Warming Factor

■ Calculation results for the volume of greenhouse gas discharged (ratio to the base product)
Reason for reduction:
Control circuits are added to more efficiently control lighting facilities in shops, signboards or parking areas.



Evaluation Results for the Resource Factor

■ Calculation results for the volume of resources to be used (ratio to the base product)
Reason for reduction:
An instrument section has been slimmed in the main lighting equipment designed for shops.



	Base	Evaluation
Calculation Results	85,900	67,800
Volume of greenhouse gas discharged per unit function in product life span (kg/unit function)		

	Base	Evaluation
Prevention of Global Warming Efficiency	14.1	29.1

Prevention of Global Warming Factor	2.1
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	Base	Evaluation
Calculation Results	268	218
Volume of resources per unit function in product life span (kg/unit function)		

	Base	Evaluation
Resource Efficiency	4,520	9,050

Resource Factor	2.0
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This mark is used for Hitachi Group environmental activities and as a way of labeling products on datasheets that score over a certain number of points using the Design for Environment (DfE) assessment system and are registered as eco-products.

HITACHI

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