

# For Measures to reduce air conditioning cost 「Power-Saving Green Coat System」

## 30% Reduction plan of air conditioning cost with energy saving collaboration strategy

World No.1 Product ,Sold to 20 countries or more

Heat insulating coat for  
window glass  
「IRUV Cut Coat 80」



Energy saving coating of air conditioning outdoor unit

Energy saving painting of outdoor unit & surrounding area  
「Energy saving cover coat」 Japanese Patent Publication No.2015-117924  
For outdoor unit Japanese Patented No.60382450  
「Energy saving cover device」

### ◆Energy-saving Basic strategy ①

①Energy-Saving 20~30%  
by IRUV Cut Coat 80 (IR Cut 80~85%)

### ◆Collaboration Strategy②, ③

②15% reduction of air conditioning cost by Energy-Saving Cover Coat (thermal insulation paint around the outdoor unit)  
③15% reduction by Energy-Saving Cover device (installing outdoor unit cover)



# Power-Saving Green Coat System for 30% Reduction



Power-saving measures of the rooftop outdoor unit by Heat Shield & Heat Insulation painting with Anti-Static&Super Hydrophilic Self Cleaning Coat =Energy-Saving Cover Coat⇒It can reduce 15% of air-conditioning cost  
Application area in one roof is 5~10pcs of unit, 40 to 100 m<sup>2</sup> equivalent  
This Heat reflection & thermal insulation paint is It is the only item registered in NETIS ※ accredited by the Ministry of Land, Infrastructure and Transport of Japan. In addition, it is hard to stick dust by anti-static function, the rain or water enters the bottom of the dirt and it washes away the dirt by Super Hydrophilic performance, It prevents the thermal insulation paint from reducing reflectance by dust..



**Power-Saving of Window glass = IRUV Cut Coat 80**  
Heat shielding measures · Condensation measures · UV protection  
⇒Reduction of direct sunlight heat of 5°C to 10°C or more, reduction of air conditioning cost, reduction of CO2 emissions  
⇒Condensation suppression 50% or more, Eliminate the coldness around the window, Reduction of heating cost, reduction of CO2 emissions  
⇒Harmful UV 99% cut entering through the window

**Power-Saving from Roof**  
=Energy-Saving Cover Coat  
Heat Reflection & Thermal insulation paint  
with antifouling coat around outdoor unit



The best combination of air conditioning cost reduction  
Cost reduction of air conditioning cost around 15% due to outdoor unit surrounding temperature control  
= **Japanese Patent**

**Challenge to air conditioning costs**  
**30% reduction**

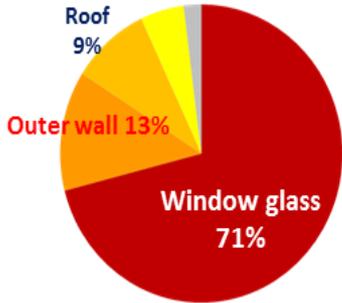
Cost reduction of around 20% air conditioning cost due to control of heat entering through window according to Ministry of the Environment **ETV empirical data**



**Power-Saving from window glass**  
= **IRUV Cut Coat 80**

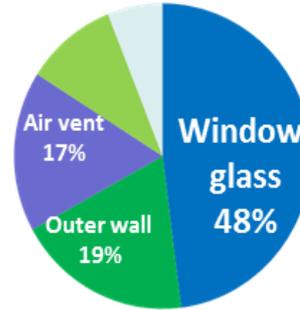
## Summer

Where does heat come from when the whole building is 100%?



## Winter

Where does heat escape from when the whole building is 100%?

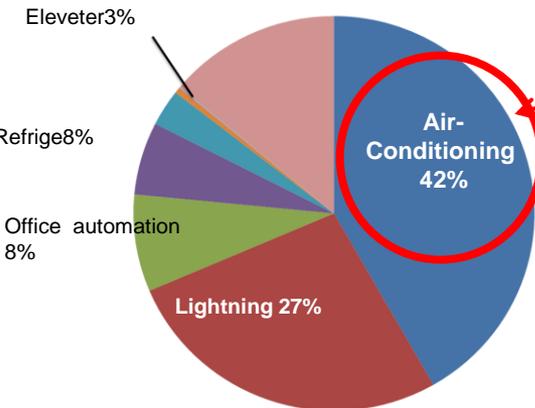


In the summer, 71% of heat comes in through the window.

In the winter, 48% of the heat comes out from the window.

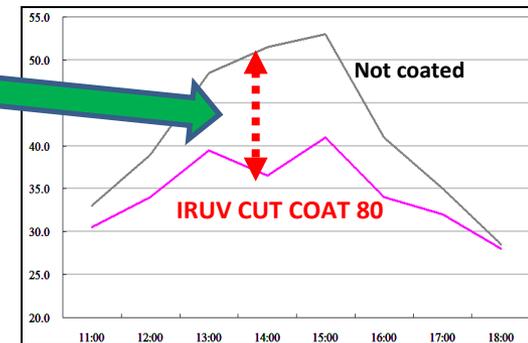
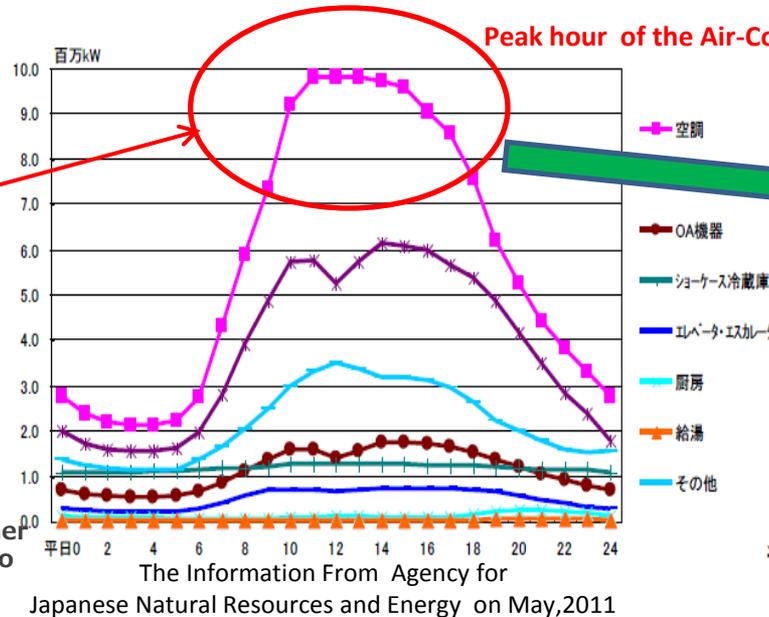
## Office Building

In the office building, Power consumption ratio



Power Peak Period / Time Zone in Summer (Around 14:00 on weekdays from July to September)

## Demand for electric power at hourly intervals



Peak cut from 10 o'clock to 16 o'clock in the daytime is the highest priority for energy saving measures of 'air conditioning'

# Power-Saving 20% · IRUV Cut Coat 80 1m<sup>2</sup>8800JPY

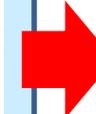
Heat shield & Heat Insulation Renovation for window glass

(1) Low-E double glazing glass  
¥ 40,000/m<sup>2</sup>~

(2) Inner window sash  
¥ 30,000/m<sup>2</sup>~

(3) Heat cut Film  
¥ 16,000/m<sup>2</sup>~

(4) Other Glass Coating  
¥ 15,000/m<sup>2</sup>~



5. IRUV Cut Coat 80  
**¥ 8,800/m<sup>2</sup>**



Air conditioner operation time 1day 8hours 9 : 00~17 : 00 : Peak time 11am~4pm 5hours

Application Price		100m <sup>2</sup>	JPY/kwh	Electricity Bill/year	20% Reduction	Amortization	25% Reduction	Amortization
IRUV Cut Coat 80	<b>8,800 JPY/m<sup>2</sup></b>	880,000 JPY	13 JPY	683,280 JPY	136,656 円	<b>6.4</b> Year	<b>177,653 JPY</b>	<b>5.0</b> Year
Other Glass coating	15,000 JPY/m <sup>2</sup>	1,500,000 JPY	13 JPY	683,280 JPY	136,656 円	11.0 Year	170,820 JPY	8.8 Year
High performance of Heat cut film	16,000 JPY/m <sup>2</sup>	1,600,000 JPY	13 JPY	683,280 JPY	136,656 円	11.7 Year	170,820 JPY	9.4 Year
Inner window sash	30,000 JPY/m <sup>2</sup>	3,000,000 JPY	13 JPY	683,280 JPY	136,656 円	22.0 Year	170,820 JPY	17.6 Year
Low-E double glazing Glass	40,000 JPY/m <sup>2</sup>	4,000,000 JPY	13 JPY	683,280 JPY	136,656 円	29.3 Year	177,653 JPY	22.5 Year

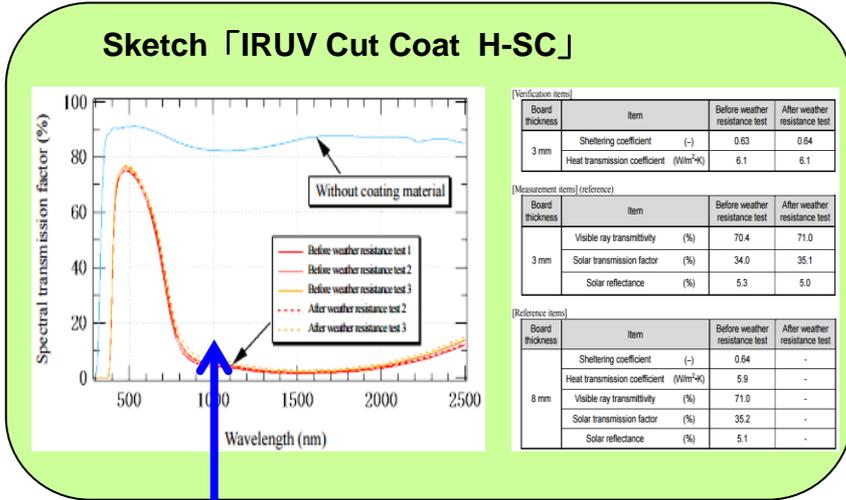
**IRUV Cut Coat 80** Amortized over a period of about **5 years** by **1m<sup>2</sup>8800JPY**  
More than **20%** energy saving over the next **10years**



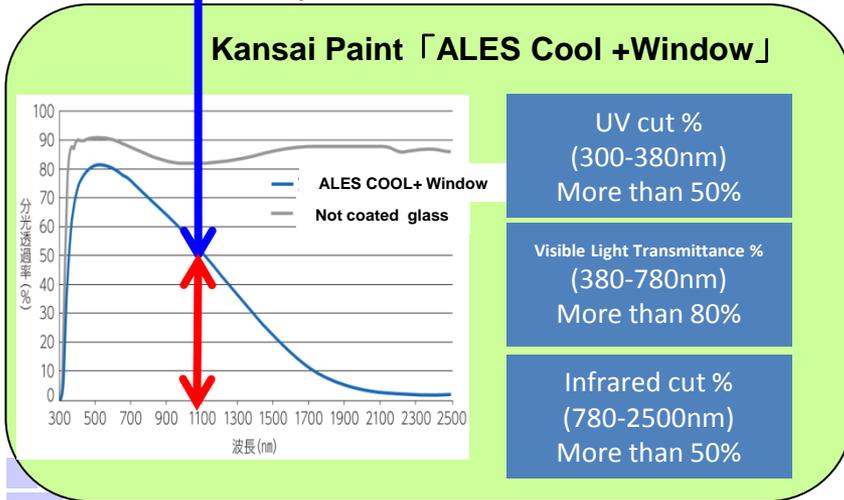
ヒートアイランド対策技術分野  
実証番号 051 - 1313  
第三者機関が実証した  
性能を公開しています (実証年度 H 25)  
[www.env.go.jp/policy/etv](http://www.env.go.jp/policy/etv)  
本ロゴマークは一定の基準に適合していることを  
認定したものではありません

<https://www.env.go.jp/policy/etv/en/field/f05/p3.html>

2) Calculation results in view of the effects of cooling and heating throughout the year  
[Calculable region: Living/dining (LD) space (housing), southern part of the clerical office (office)]  
Control: before applying coating material



Difference in heat shielding performance in the red part, 2 times performance difference



		Tokyo	
		Housing (detached wooden construction)	Office
Effect to reduce air conditioning load <sup>1)</sup> (yearly air-conditioning)	Calorific value	610 kWh/year (1,933 kWh/year → 1,323 kWh/year)	1,699 kWh/year (6,616 kWh/year → 4,917 kWh/year)
		Reduction of 31.6%	Reduction of 25.7%
	Power rate	Reduction of 3,290 yen	Reduction of 7,686 yen

Sketch in the ETV test conducted by the Ministry of the Environment have been proved Energy-saving from 25.7% to 31.6%.

Comparative item	Sketch IRUV Cut Coat 80	Kansai Paint ALES COOL+Window
IR Cut /UV Cut /VLT%	80%/99%/75%	50%/50%/80%
Heat cut Nanomaterial	CTO	ATO
Application cost / m <sup>2</sup>	8,800JPY	About 10,000JPY~12,000JPY
Air conditioning cost reduction rate (estimated)	20~30%	10~15%
Application difficulty level	Easy Only 1day training	Difficult 1week training

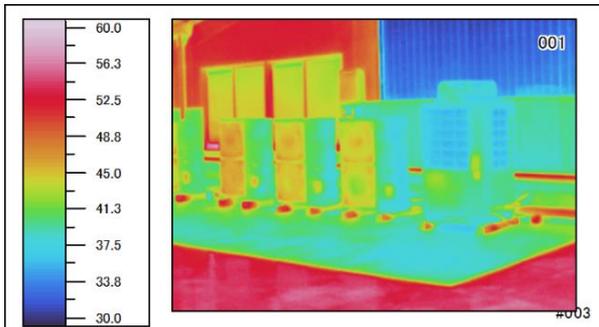
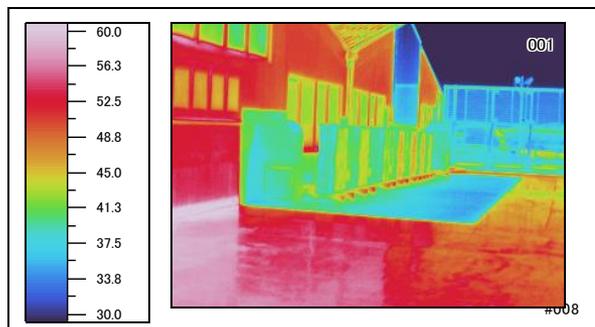
# ※ Certain Amusement hall Heat reflection & Thermal insulation painting infrared photography to the rooftop outdoor unit

Patented No-6038245



Energy saving cover for outdoor unit

Patent Publication 2015-117924  
Energy saving painting of outdoor unit and surrounding area



## Before and after application of Outdoor unit

10% to 30% energy saving, It will greatly contribute to CO2 reduction.

※Due to the painting effect, it shows energy saving effect with stable operation all year round without being affected by outside air temperature.

### The great thing of this patent

General insulation paint will construct all the roof and the outer wall, but the application cost is very expensive and it is not adopted easily.

On the other hand, In the case of buildings on the left, about 15% of Energy saving throughout the year can be realized by applying Heat reflection & Thermal insulation paint only around the outdoor unit and the outdoor unit with 7 units · 350,000 yen instead of the entire roof.. It is cost-effective, enables amortization within one year.

### If there is no Heat insulation function the effect is halved

If it paints the Heat reflection paint around the outdoor unit on the rooftop, it has a Heat shield effect during summer daytime, but there is no effect unless there is thermal insulation function against radiant heat after the sunset. Also, in the winter, the temperature of the rooftop part painted with Heat Shield paint is cold whereas the Heat insulation paint has a temperature around the outdoor unit higher than the outside air temperature, and the air conditioning load decreases, so the energy saving effect is more than 15% even in winter. Especially, to increase the air temperature from 0°C to nearly 25°C, if it raises it from 10°C to 25°C, there will be a big difference in air conditioning load.

### Antifouling and maintaining reflectance are important

In this patent, we use heat insulating paint using hollow beads that demonstrate insulation performance and materials that reflect infrared light. However, as time elapses, it becomes gradually dirty and the reflectance decreases. In order to prevent the Heat reflection performance becomes poor, They can be solved by applying antistatic, super hydrophilic Self Cleaning coat

	Before	After
Power-Saving in Summer Reduction of cooling cost by Heat Shield function (Expansion of refrigerant)	<ul style="list-style-type: none"> <li>The ambient temperature of the outdoor unit, which is installed on the roof will be <b>about 70 °C</b>.</li> <li>After taking in hot air from the suction port, cool it and then send it indoors and carry out the heat inside the room to the outside.</li> </ul>	<ul style="list-style-type: none"> <li>By painting thermal barrier paint on the outdoor unit and its surroundings, the solar heat is reflected and the ambient temperature drops to <b>about 40 °C</b>.</li> <li>Furthermore, radiant heat stronger than direct sunlight can be suppressed and air conditioning efficiency improves.</li> </ul>
Power-Saving in Winterr Reduction of Heater cost by Heat insulating function (Compress refrigerant)	The outdoor unit of the air conditioner warms the cold air, sends it to the room, and carries the indoor cold air to the outside.	By painting insulation paint on the outdoor unit and the surrounding area, it is possible to suppress the cold air in the winter and to absorb the warmer air than before application, so the heating efficiency improves.(Expansion of refrigerant)

## Heat reflection & Heat insulation paint for outdoor units and surroundings, Energy-saving cover installation, Standard price - Energy-saving simulation

	Fast food restaurant	Convenience Store	Restaurant for family	Drug Store
Total floor area/m <sup>2</sup>	140	120	230	350
Electricity rate / year・yen	5,170,000	5,230,000	6,430,000	8,100,000
Annual electricity charge / yen	430,000	435,800	535,800	675,000
Number of outdoor units	Slim typex5pcs	Slim typex5pcs	Slim typex7pcs	Large typex10pcs
Installation Area	40m <sup>2</sup>	40m <sup>2</sup>	56m <sup>2</sup>	80m <sup>2</sup>
<b>Installation costs (approximately)</b>	<b>400,000</b>	<b>400,000</b>	<b>560,000</b>	<b>800,000</b>
Energy saving effect 15%/year	775,500	784,500	964,500	1,215,000
Energy saving effect 15%/month	64,625	65,375	80,375	101,250
<b>Cost effective / month</b>	<b>7~10months</b>	<b>7~10months</b>	<b>7~10months</b>	<b>7~10months</b>

※ Energy-Saving effect

- ・The effect varies depending on the installation environment of the outdoor unit.
- ・The effect varies depending on the amount of solar radiation, time and the outside air temperature etc to the outdoor unit
- ・Energy-saving effect will stabilize after 2 ~ 3 months. (Application period・Complete curing of coating film)

※Installation Cost・It varies depending on the area, installation location, size of outdoor unit, etc. (Please order quotation.)

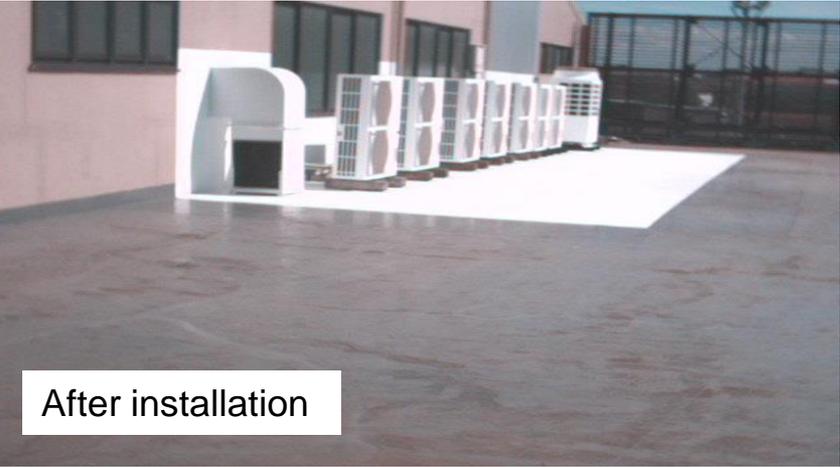


**Problem 1 )**

In the outdoor unit of the air conditioner, the outdoor unit becomes hot due to the temperature rise in the summer. In winter, on the contrary, the outdoor unit becomes cold. As a result, the air conditioning load increases and the air conditioning cost increases.

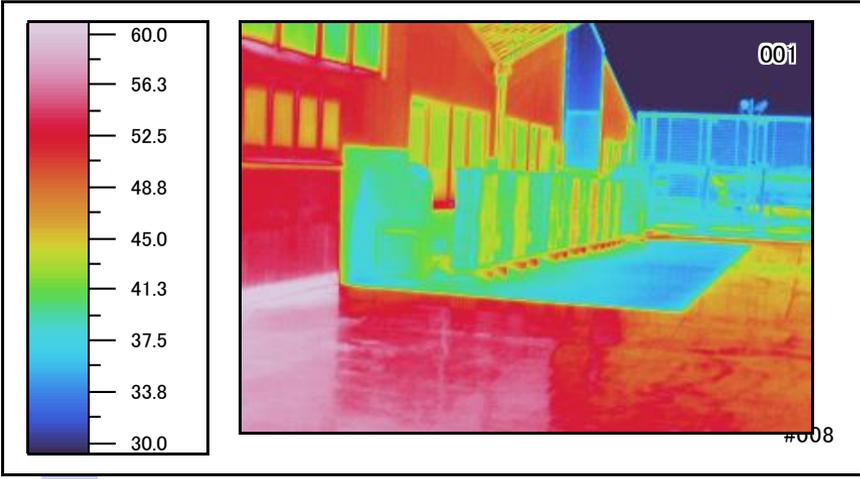


**Solution 1 ) "Energy-Saving Cover Coat" Heat reflection & insulation coat applied. Furthermore, As the final coating , Antistatic, Super hydrophilic Self Cleaning coat is applied to prevent lowering reflectance by sticking dust. 15% energy-saving effect is demonstrated by Heat reflection effect in summer and thermal insulation effect in winter**



※Certain Amusement hall Comparison of power reduction before and after energy-saving cover coating

	Before	After	Reduced power kwh	Reduction amount 21.8JPY /kwh	Reduction rate	0.375 kwh/co2
	Power consumption kwh					CO2 reduction amount
	2013	2014				Kg-CO2/month
Jan	50,466	<b>43,596</b>	6,870	<b>149,766</b>	13.6%	2,576.3
Feb	47,844	<b>41,238</b>	6,606	<b>144,011</b>	13.8%	2,477.3
March	43,608	<b>37,098</b>	6,510	<b>141,918</b>	14.9%	2,441.3
April	43,800	<b>37,865</b>	5,935	<b>129,383</b>	13.6%	2,225.6
May	42,576	<b>36,592</b>	5,984	<b>130,451</b>	14.1%	2,244.0
June	42,510	<b>34,228</b>	8,282	<b>180,548</b>	19.5%	3,105.8
July	44,298	<b>37,590</b>	6,708	<b>146,234</b>	15.1%	2,515.5
Aug	49,350	<b>41,238</b>	8,112	<b>176,842</b>	16.4%	3,042.0
Sep	48,468	<b>40,168</b>	8,300	<b>180,940</b>	17.1%	3,112.5
Oct	40,344	<b>33,491</b>	6,853	<b>149,395</b>	17.0%	2,569.9
Nov	38,736	<b>30,227</b>	8,509	<b>185,496</b>	22.0%	3,190.9
Dec	41,046	<b>32,547</b>	8,499	<b>185,278</b>	20.7%	3,187.1
Total	533,046	<b>445,878</b>	87,168	<b>1,900,262</b>	16.4%	<b>32,688</b>
Amount	11,620,403	<b>9,720,140</b>		<b>158,355</b>		<b>2,724</b>
Average	968,367	<b>810,012</b>				

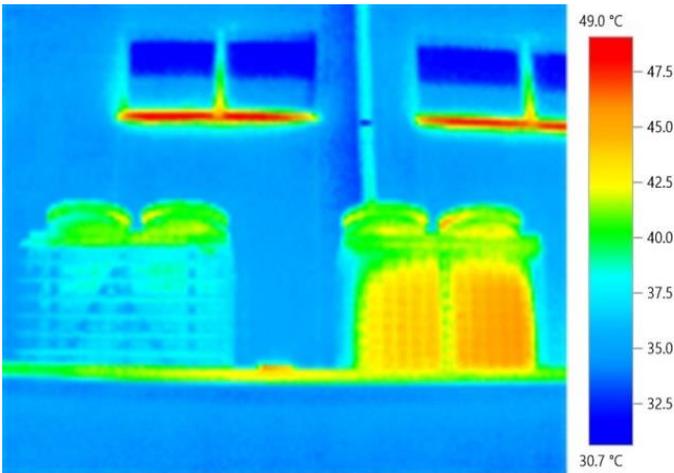
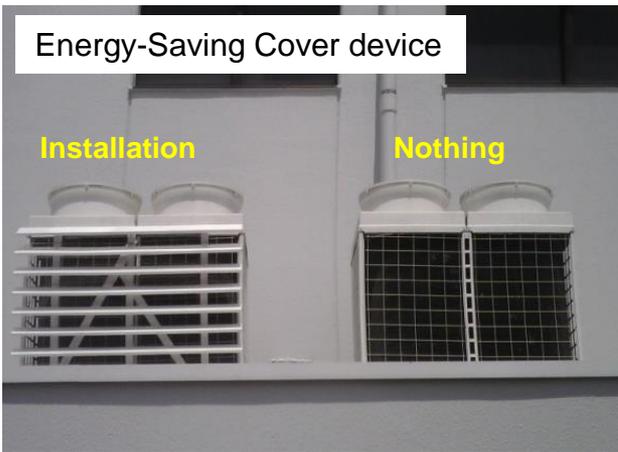


### Problem 1 )

In the outdoor unit of the air conditioner, the outdoor unit becomes hot due to the temperature rise in the summer. In winter, on the contrary, the outdoor unit becomes cold. As a result, the air conditioning load increases and the air conditioning cost increases.



**Solution2) Installing 'Energy-Saving Cover Device' ⇒ Because Energy saving cover coat & anti-mold clean coat is applied to Cover device, energy saving is averaged 10% by Heat reflection & thermal insulation effect in the summer and the winter, furthermore It will send clean air into the room by anti-fouling coat = we called Super Glass Barrier**



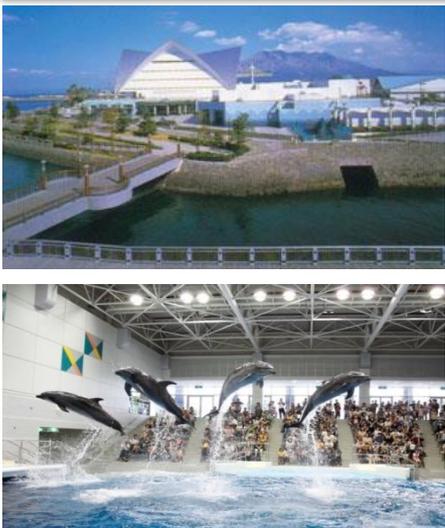
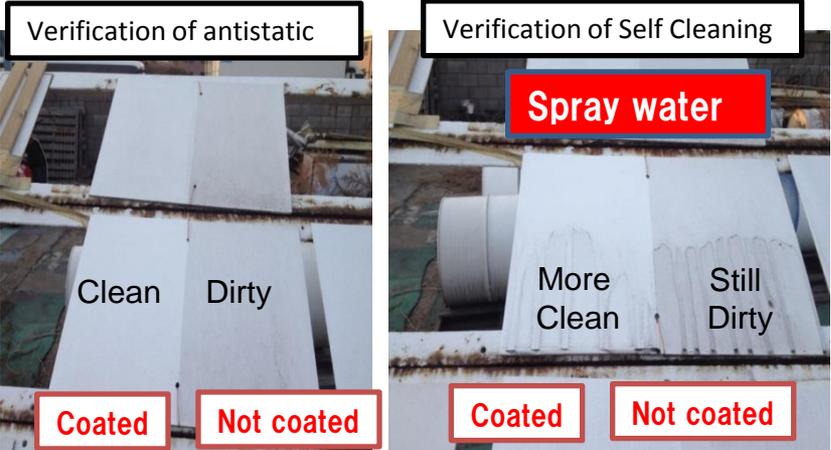
2015	time	Energy-Saving Cover		Temperature difference	※Temperature difference from the outside temperature		
		Nothing °C	Install °C		Outside temperature °C	Nothing °C	Install °C
Sep,28th	13:20	40.0	33.7	-6.3	29.6	10.4	4.1
Sep,29th	9:00	48.5	32.3	-16.2	26.8	21.7	5.5
Sep,30th	10:30	47.3	32.3	-15.0	25.2	22.1	7.1
Oct 1st	8:20	37.8	26.0	-11.8	23.2	14.6	2.8
Oct 2nd	11:40	50.8	34.3	-16.5	27.5	23.3	6.8
Oct3rd	11:00	49.3	33.0	-16.3	27.2	22.1	5.8
Oct 4th	10:30	47.7	33.0	-14.7	27.5	20.2	5.5
Oct 5th	10:40	32.8	23.8	-9.0	20.0	12.8	3.8
Oct 5th	9:30	44.5	28.2	-16.3	22.5	22.0	5.7
Oct 6th	10:00	44.2	28.5	-15.7	22.0	22.2	6.5
Oct 7th	9:00	46.2	28.8	-17.3	24.3	21.9	4.5
Oct 8th	10:20	49.2	33.5	-16.2	26.3	22.9	7.2
Oct 9th	9:10	32.7	24.0	-8.7	20.4	12.3	3.6
Oct 10th	12:20	25.8	20.0	-5.8	19.2	6.6	0.8
Oct 11th	10:40	46.2	29.0	-17.2	23.9	22.3	5.1
Total		643.0	440.4	-203.0	365.6	277.4	74.8
Average		42.87	29.36	-13.53	24.4	18.5	5.0

# Anti-Static, Super Hydrophilic Self Cleaning Coat always keep clean Rooftop to prevent sticking dust and to keep high reflectance performance of painting.

- Function :
- ① Dirt like carbon, sand dust etc. is hard to stick = Antistatic function
  - ② It is hard to get moldy in shadow area for long period by Nano Silver of coating agency
  - ③ Even if there is no light, Super-hydrophilic self-cleaning effect is demonstrated by rain and dirt is washed away.
  - ④ Performance keeps long time by only 1 time application without any maintenance work..

## Anti-fouling test by leading Korean paint maker Verification of white painted Panel after 4months

It applied Heat reflection & thermal insulation paint with antistatic & Super Hydrophilic antifouling coat on the rooftop of a certain aquarium rooftop in Japan



When dirt is really tough like China, Infrared reflectance falls by 5% or more due to dirt., it becomes clean when water is sprayed because the coating surface hard to stick dirt

## Verification of white painted wall after 2years in Japan



It applied coating agency except for some places on the rooftop, verified dirt condition. The difference started to see 6months later.

Power-Saving in Summer① Differentiation strategy to further enhance power saving effect  
30% reduction system of air conditioning cost

Energy-Saving Cover Coat



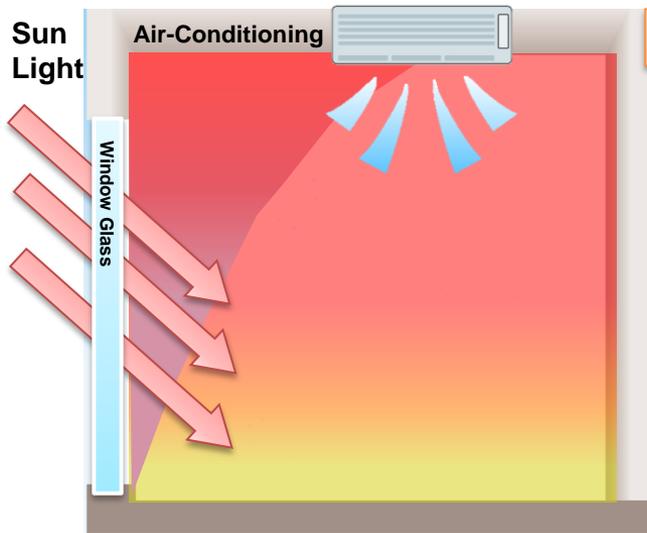
IRUV Cut Coat 80

Feature of differentiation function

- ① IRUV Cut Coat 80 of IR (Infrared rays) Cut 80~85% is applied to the window glass, the air-conditioning load reduction in the thermal insulated effect of direct sunlight heat. Energy saving 20% is demonstrated.
- ② High performance thermal barrier film, V-KOOL and 3 M counter product, Durability is twice as Film and It keeps performance for 15 years. Application price is also cheap.
- ③ By applying an energy-saving cover coat, plus air conditioning cost reduction effect of 15%, Total 30% reduction.

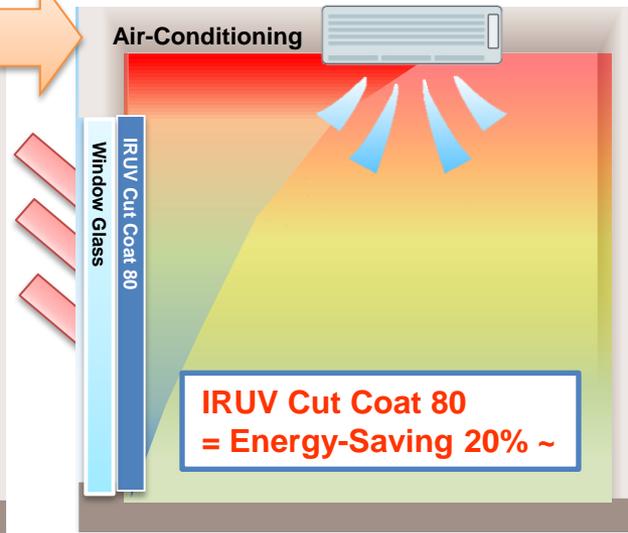
Image in summer

〈Uncoated room〉



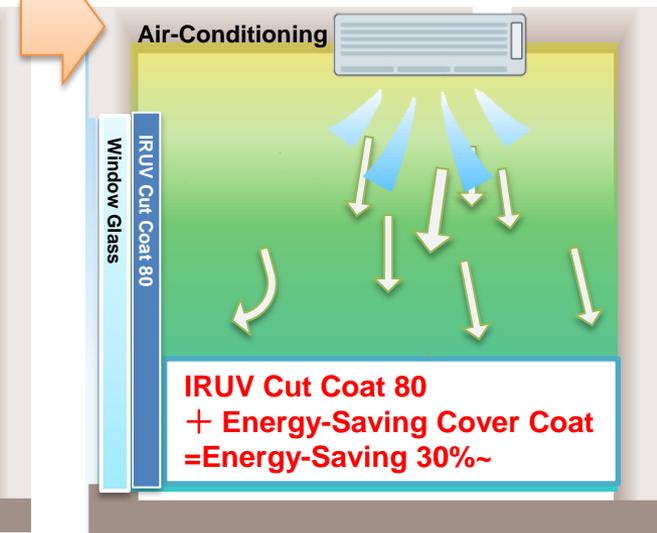
Since the direct heat enters through the window, the room temperature rises and the air conditioner does not work well.

〈Applied IRUV Cut Coat80〉



· Room temperature rise is suppressed by heat shielding effect, and air conditioning starts to be effective.

〈Applied Energy-Saving Cover Coat〉



· Temperature control from the outdoor unit further saves power

Power-Saving in Winter② Differentiation strategy to further enhance power saving effect  
30% reduction system of air conditioning cost

Energy-Saving Cover Coat



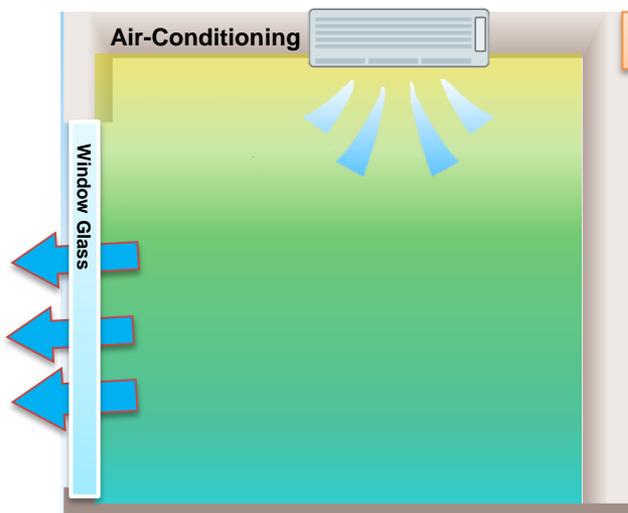
IRUV Cut Coat 80

Feature of differentiation function

- ① IRUV Cut Coat 80 of IR (Infrared rays) Cut 80~85% is applied to the window glass, The warm air in the room suppresses heat escape from the window due to the thermal insulation effect of IRUV Cut Coat 80. Energy saving 20%~
- ② High performance thermal barrier film, V-KOOL and 3 M counter product, Durability is twice as Film and It keeps performance for 15 years . Application price is also cheap.
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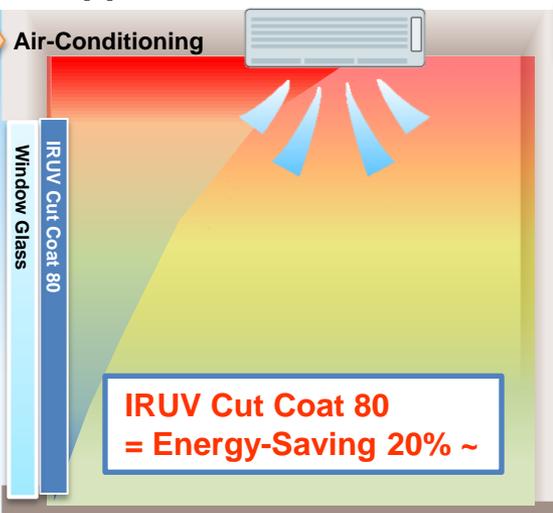
Image in Winter

<Uncoated room>



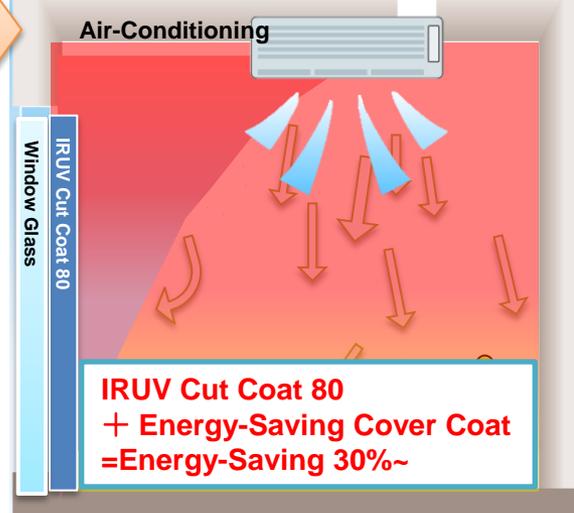
The warm air in the room escapes from the window to the outside and air conditioning efficiency deteriorates.  
The window and around area is getting cold.

<Applied IRUV Cut Coat80>



• Heat insulation effect by IRUV Cut Coat 80, heat escape from the window is suppressed, air conditioning starts to be effective.

<Applied Energy-Saving Cover Coat>



• Temperature control from the outdoor unit further saves power

# The power saving green coat system consists of 3 pillars.



## 1. Heat Shield & Thermal insulation glass coat = IRUV Cut Coat 80

- 45% Discount of Regular price 1m<sup>2</sup>16,000JPY ; **1m<sup>2</sup>8800JPY** - 5-year amortization - 10years warranty
- ⇒ Direct sun heat 5 °C ~ 10 °C cut ,Reduction of cooling cost
- ⇒ Condensation suppression 50% or more, cancellation of window side cold, reduction of reduction
- ⇒ 99% cut harmful ultraviolet entering through the window
- ⇒ By covering the existing inner window glass, air conditioning costs are reduced by 20 to 30%, and amortized within 5 years.



## 2. Heat reflection,thermal insulation,waterproof + antifouling and aesthetic maintenance = Energy-saving cover coat around the rooftop outdoor unit

Amortization within 1 year : outdoor unit ×5~10pcs ; 40m<sup>2</sup>~100m<sup>2</sup>

**Air conditioning cost reduction around 15% by temperature control of outdoor unit. In addition,It constantly supply clean air to the interior with antistatic super hydrophilic self-cleaning coat around the outdoor unit.**

IR reflection painting with waterproof function + Antistatic,Super Hydrophilic self cleaning function is applied to the Outdoor unit and surroundings

Acquisition of 2patents related to out door unit

