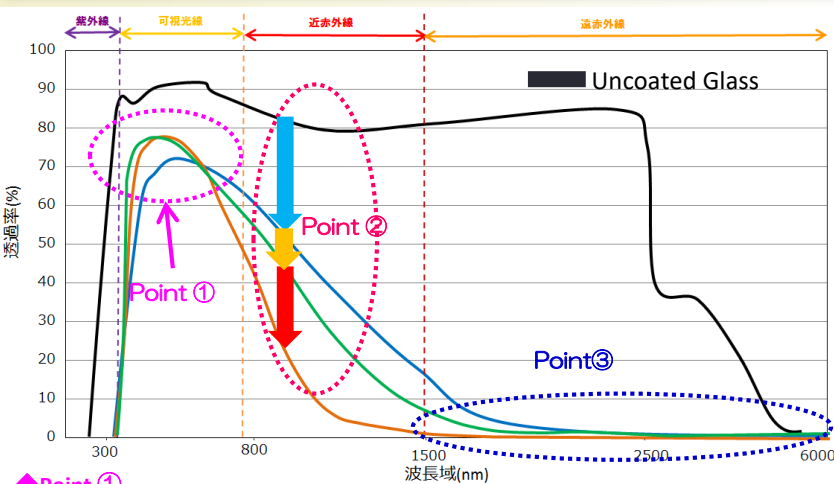


Optical measurement comparison data for the difference of the thermal barrier Nano materials



- | Thermal barrier Nano material | Products  |
|-------------------------------|---|
| ATO                           | IRUV CUT COAT Standard and winter type                                      |
| ITO                           | IRUV CUT COAT SP High transpance Winter Type                                |
| CTO                           | IRUV CUT COAT H-SP Transparency and high heat shield Summer and winter type |

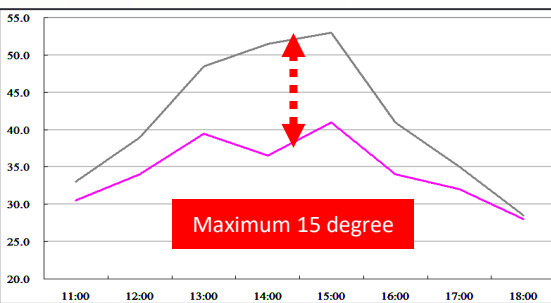
◆Point ① Visible light transmittance is the value to evaluate the transparency after the glass coating. CTO= Hyper-SP and ITO=IRUV SP have high transparency. It's ideal for the large window glass such as showrooms, observation deck and restaurants without unevenness and coating spots.

◆Point ② The wavelength range of near infrared, represents the transmittance of solar direct heat, this is the reference value to evaluate the thermal barrier performance. The lower the infrared transmittance that will be a thermal barrier performance is high, CTO= Hyper-SP has higher thermal barrier performance than ATO and ITO. Window glass surface of the building that does not work air conditioning at summer because of sun heat, MTO is the best product to save the air condition load.

◆Point ③ The wavelength range of far infrared rays indicates indoor heating heat. If the room is cold when the heat escapes from the window in the winter, the high far-infrared cut rate prevent to escape the heat from the window. If only cold area, each ATO, ITO, and CTO is ideal for the cold of winter measures.

Temperature measurement data

Result of the temperature measurement, maximum 15 degrees cut the direct heat of the window. In particular, the hottest time of day is significantly cut, down the air-conditioning load.

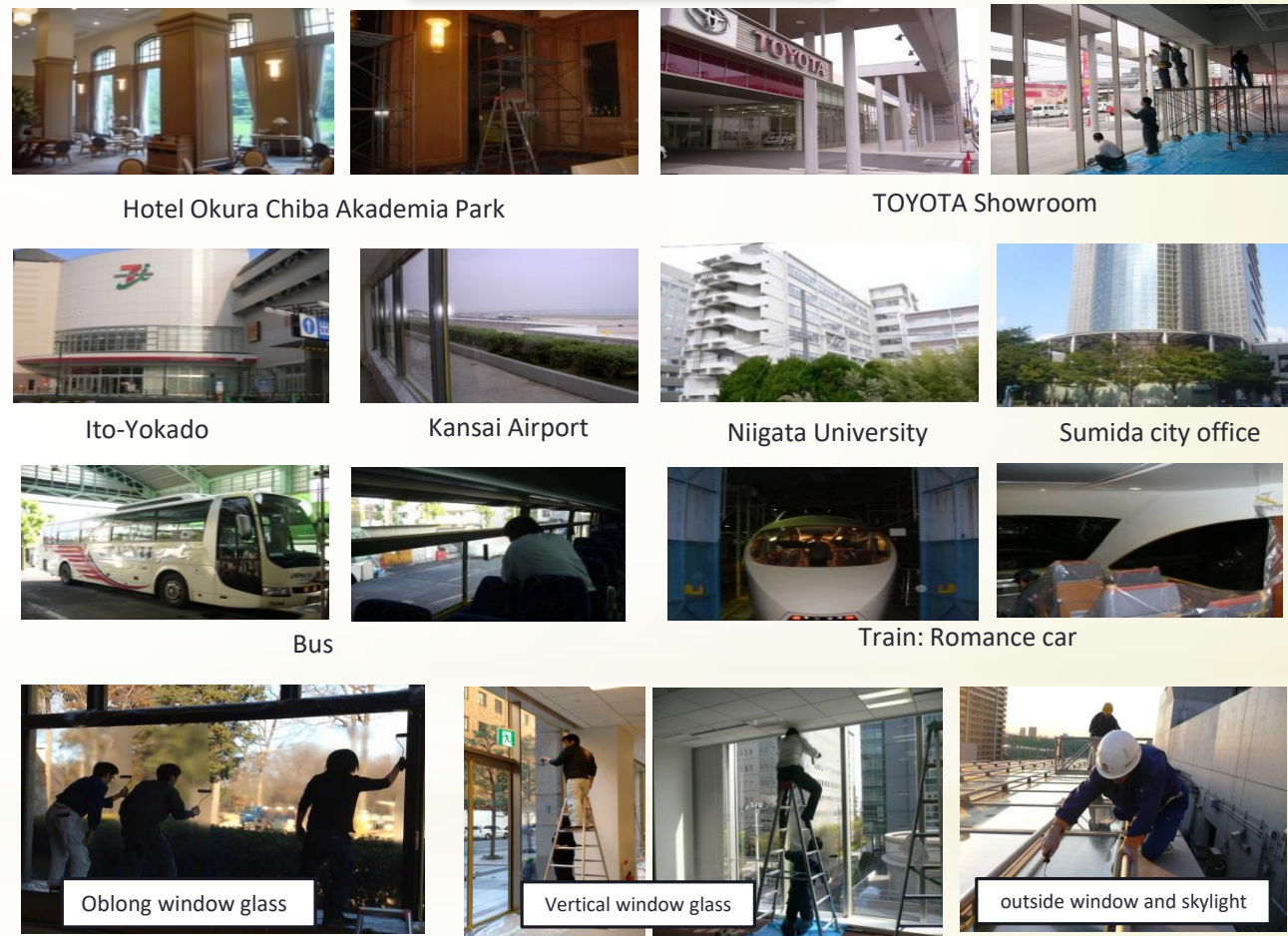


Example of energy saving calculation

Result of the temperature measurement, the temperature difference of the direct heat at the window was 8 °C (maximum) in comparison with the uncoated glass (Low-E glass) Reduction rate of the air conditioning costs was 20 percent, so recovery of the initial investment simulated in 2.03 years. Because there was high electricity prices and low applicator cost. For 10 years coating guarantees, we can expect significant cost savings of 20% to 30% more than eight years is.

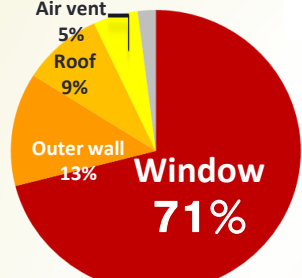
This block contains several documents: a floor plan of a building, technical specifications for the coating, and a summary of energy saving calculations. The summary includes data on air-conditioning load reduction and payback period.

Case Studies / IRUV CUT COAT

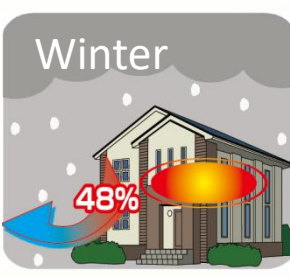
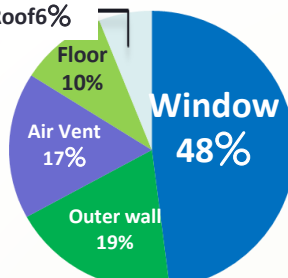


Issues 1) In Summer, 71% of the heat enters through the window.  
In Winter, 48% of Radiant Heat exits through the window

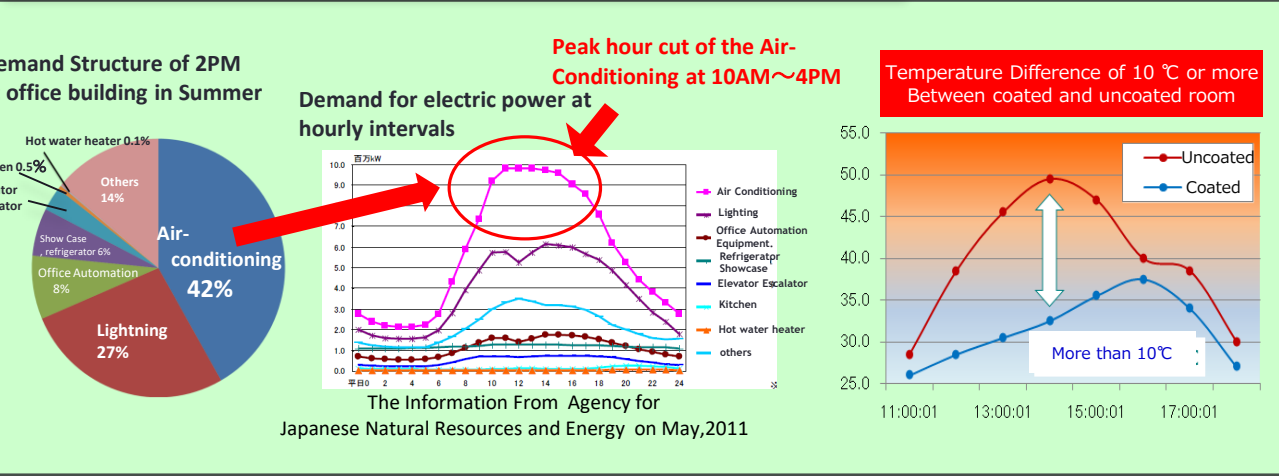
● Summer-Solar Heat Gain



● Winter-Heat Loss



Issues 2) Electricity fee of air conditioning fee in summer



**IRUV Cut Coat H-SP 1m<sup>2</sup>8,800 JPY(application price in Japan )**  
**25% or more of energy savings and 5 year amortization**

Window insulation renovation Energy saving measures products

(1)Low-E Double Glazing Glass ¥40,000/m<sup>2</sup>~  
 (2)Inner Sash ¥30,000/m<sup>2</sup>~  
 (3)Window Film ¥16,000/m<sup>2</sup>~  
 (4)Other Insulated Glass Coating ¥15,000/m<sup>2</sup>~

**IRUV Cut Coat 8,800/m<sup>2</sup>**

Simulation of 200sq meter application Set the Air conditioning from 8 AM to 6 PM. ( 10 hours)

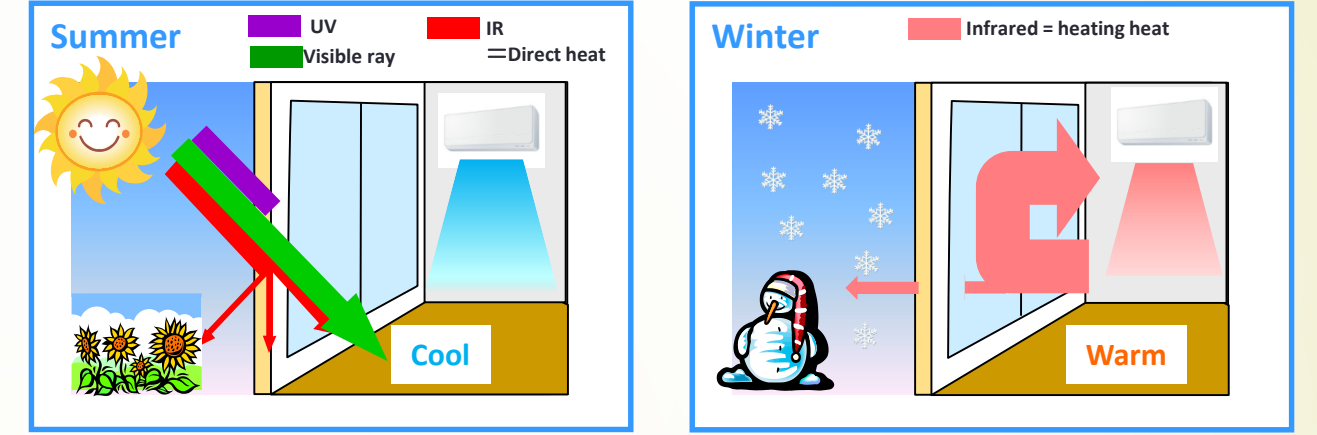
Application Price	200sqm application	Electricity fee /kwh	Electricity fee /a year	Reduction of 20%	Initial investment recovery	Reduction of 30%	Initial investment recovery
China Southeast Asia	2,500 JPY/sqm	500,000 JPY	15 JPY 756,000 JPY	151,200 JPY	3.3 Year	226,800 JPY	2.2 Year
	3,000 JPY/sqm	600,000 JPY	10 JPY 504,000 JPY	100,800 JPY	6.0 Year	151,200 JPY	4.0 Year
	4,000 JPY/sqm	800,000 JPY	12 JPY 604,800 JPY	120,960 JPY	6.6 Year	181,440 JPY	4.4 Year
	5,000 JPY/sqm	1,000,000 JPY	15 JPY 756,000 JPY	151,200 JPY	6.6 Year	226,800 JPY	4.4 Year
Japan	<b>8,800 JPY/sqm</b>	1,760,000 JPY	<b>22 JPY</b> 1,108,800 JPY	221,760 JPY	<b>7.9</b> Year	332,640 JPY	<b>5.3</b> Year

What is IRUV CUT COAT H-SP, No.1 market share in JAPAN?

Cut infrared and ultraviolet coating that can be applied with a roller to the window glass

**IR CUT 80% ※1**  
**UV CUT 99% ※1**  
**Durability 15years**  
 Energy-saving rate At a temperature changed by more than 2 °C **20% to 30%**

※1 In order to change the amount of coating, the value of the performance does not guarantee.



Performance comparison chart of thermal barrier products of window glass

Products	Eco glass	High performance film	Other coating	<b>IRUV CUT COAT</b>
<b>name</b>	Madonna	V-Kool	Company K	<b>H-SP</b>
① IR CUT *	56%	86%	43%	<b>80%</b>
② UV CUT *	65%	99%	99%	<b>99%</b>
③ Visible light transmittance *	72%	69%	85%	<b>75%~</b>
④ Durability	20-25 years	5-7 years	10years	<b>15 years</b>
⑤ Pencil Hardness	9H	H-2H	6H	<b>4H</b>
⑥ Application	instlallation	Film	Sponge	<b>Roller</b>
⑦ Application Difficulty	Glass Company	Difficult	Difficult	Easy
⑧ Per 1 person		50m <sup>2</sup>	20m <sup>2</sup>	<b>40sqm ( without glass cleaner) 20sqm with glass cleaner</b>
⑨ Big window	High cost	Divided lines	Difficult	possible to apply by two person

※Optical measurement L103A

IRUV can solve all the problems that the thermal barrier film cannot be resolved.

