

● Energy Saving Case Study

KENS.CO, JAPAN

【Outline】

Warehouse of garment manufacture

• Date : May 2005

• Painted part : Folded plate roof 1300m²

• Area : Saitama, Japan

• Color : Light Blue (69-70L)

【External view】



Outside of warehouse

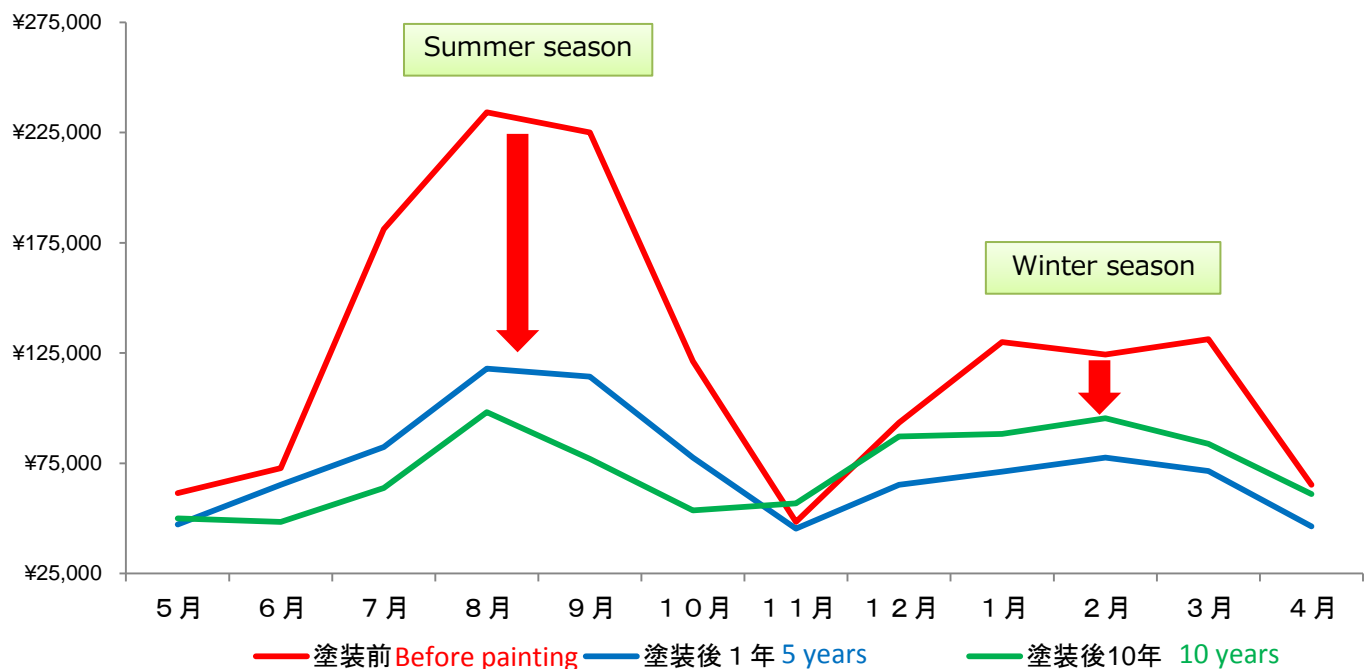


Painted part on the roof

【Effect】

- 8.2 million YEN reduction in 10 years
- 15°C reduction in 2nd floor, 4 to 1 air conditioner.
- no water sprinkling in summer
- Energy efficiency in winter was enhanced
- Lengthening of painting cycle

● Power consumption data (comparison of painted and no-painted period)



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【Outline】

Painted cold storage in an industry zone of inland Shimane, Japan.

- Date : May 2005
- Painted part : Folded plate roof(3800m²)
- Area : Shimane
- Color : White (GAINA N-95)

【External view】



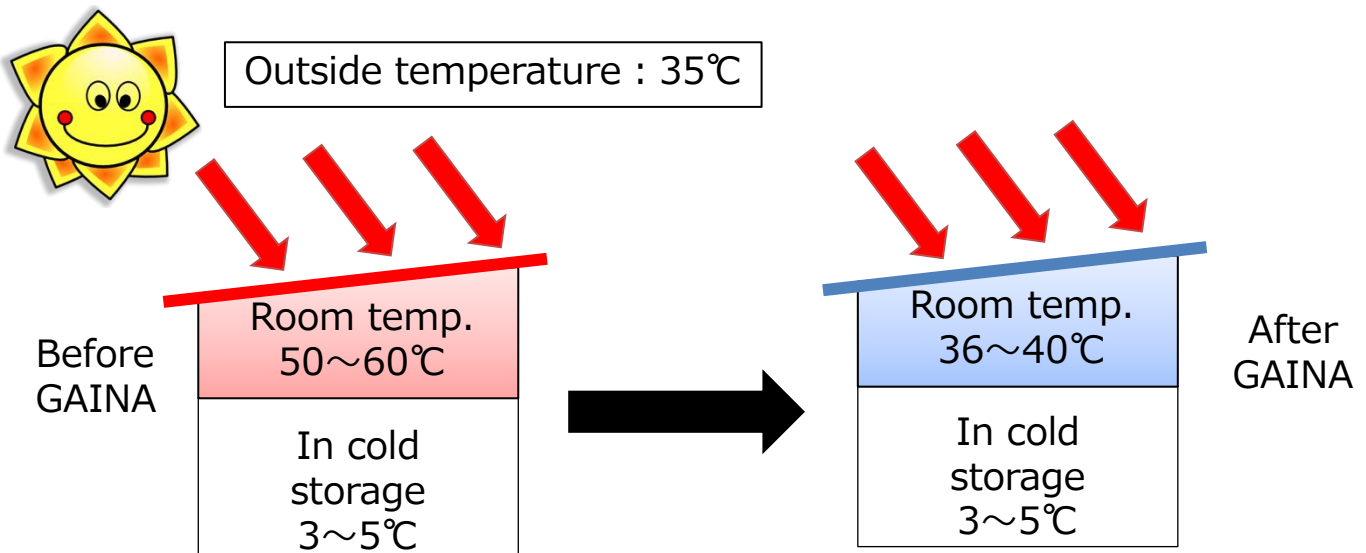
Painted part on the roof

【Effect】

- Temperature of outside of cold storage room went down 49 to 36°C
- Power consumption of air conditioner was significantly reduced.
- Annual peak of electricity usage was cut from 1815kw to 1600kw.

● Effects after peak cut

- 7.4 million Yen cost cut in two years
- Awarded by the Director of Resource Energy Agency of Japanese government in 2005.



● Energy Saving Case Study

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【Outline】

Painted GAINA to reduce power consumption

- Date : June 2007
- Area : Nagano, Japan
- Painted part : Folded plate roof(2940m²)
- Color: White (GAINA N—95)

【External view】



Before

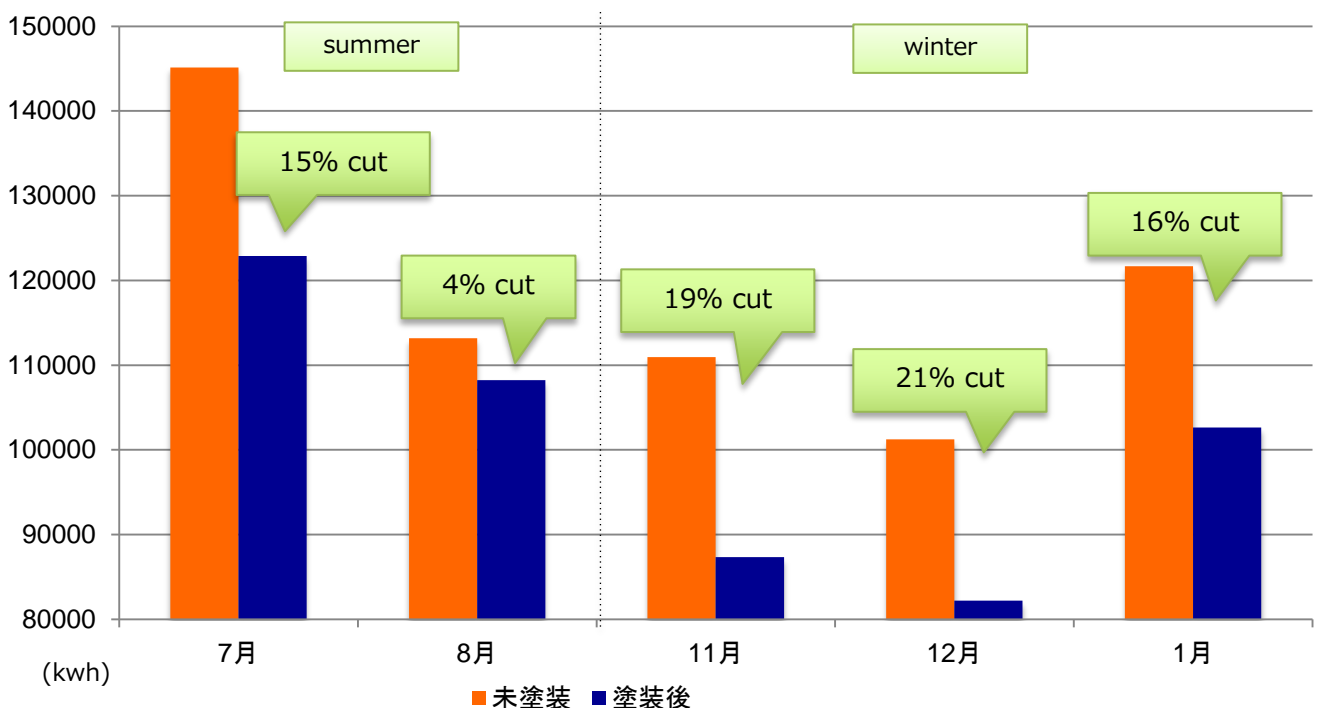


After

【Effects】

- Temperature of the back of ceiling was reduced 20℃ in summer.
- Efficiency of air conditioner was increased in summer and winter.
- 1.4 million Yen was cut in a year.

● Power consumption graph in summer and winter



● Energy Saving Case Study

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【Outline】

Painted to reduce heat in summer season.

- Date : June 2008
- Painted part : roof of amusement spot(2800m²)
- Area : Saitama, Japan
- Color : White
GAINA N—95)

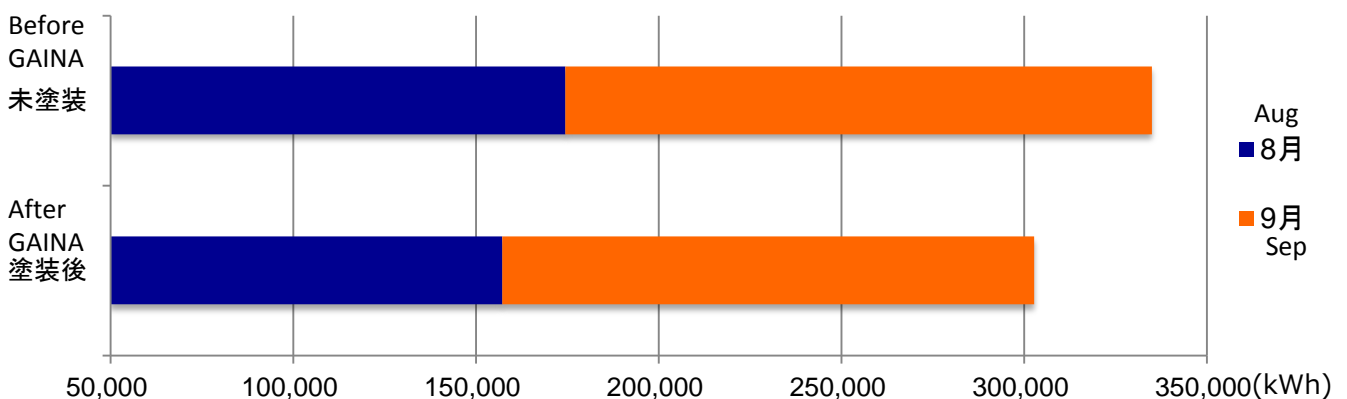
【External view】



【Effects】

- 10% power consumption reduction in August and September
- 1.08 million yen cut in summer four months. (1kWh=17Yen)

● Comparison of power consumption



● Energy Saving Case Study

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【Outline】

Painted for renovation of 3 stories of building

*Some air conditioning devices were also replaced.

- Date : March 2009
- Painted part : roof and external wall of concrete, some for interior (total: 460m²)
- Area : Okinawa, Japan
- Color : White (GAINA N—95)

【External view】



Before

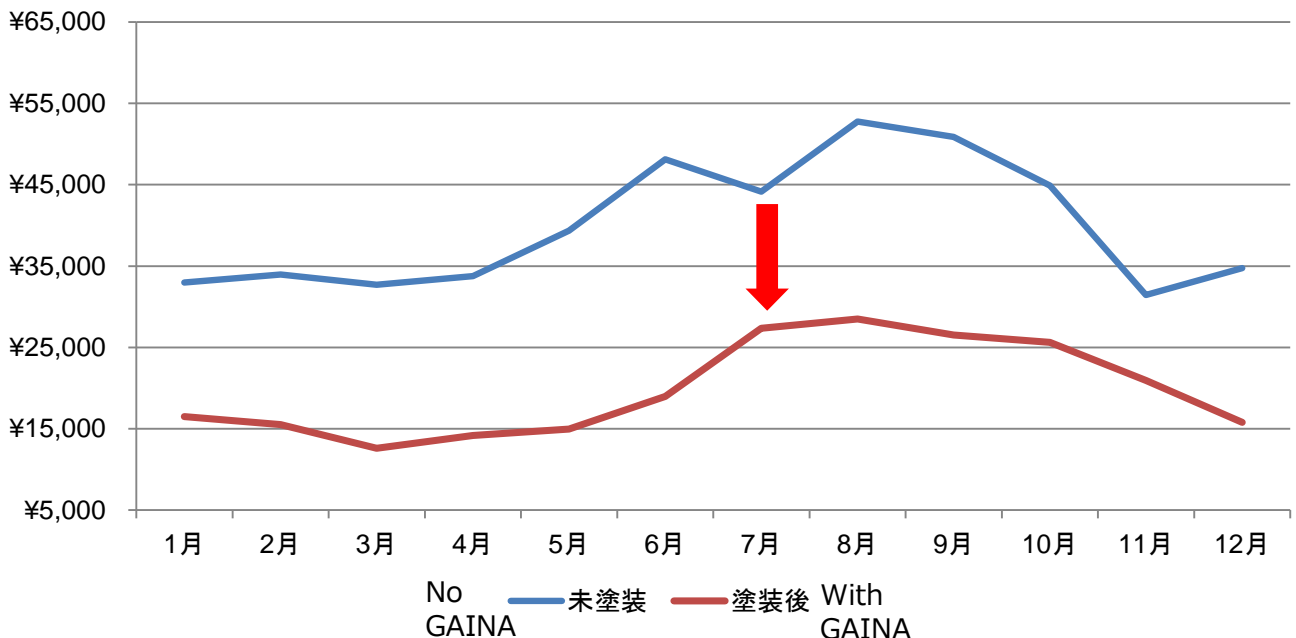


After

【Effects】

- before painting 0.47 million Yen, After painting 0.24 million Yen (50% cut)
- stop using heater in winter season

● power consumption graph



● Energy Saving Case Study

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【Outline】

Painted for exterior renovation

- Date : July 2011
- Painted area : Roof/external wall
(Total: 200m²)

【External view】



Before



After

【Effects】

Reduction of power consumption

- Summer **apprx 28.4%**、 Winter **Apprx 26.3%**

July to September
Comparison of power consumption

Before GAINA		After GAINA	
month	power (Yen)	month	power (Yen)
22' 7	14,240	23' 7	10,176
8	14,169	8	9,805
9	11,084	9	8,289
total	39,493	total	28,270

November to February
Comparison of power consumption

Before GAINA		After GAINA	
month	Power (Yen)	month	Power (Yen)
22' 12	24,505	23' 12	19,958
23' 1	20,562	24' 1	13,423
2	14,912	2	10,800
Total	59,979	Total	44,181

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【Outline】

Painted Yonahara town office, under the public project of thermal insulation of government buildings in Okinawa prefecture

※some wind film and air conditioner were replaced too.

- Date : March 2011
- Area : Yonahara, Okinawa
- Painted part : concrete roof (1030m²)
- Color : White (N-95) Roof
- Concrete external wall (1500m²)
- Grey (N-70) Wall

【External view】



Before

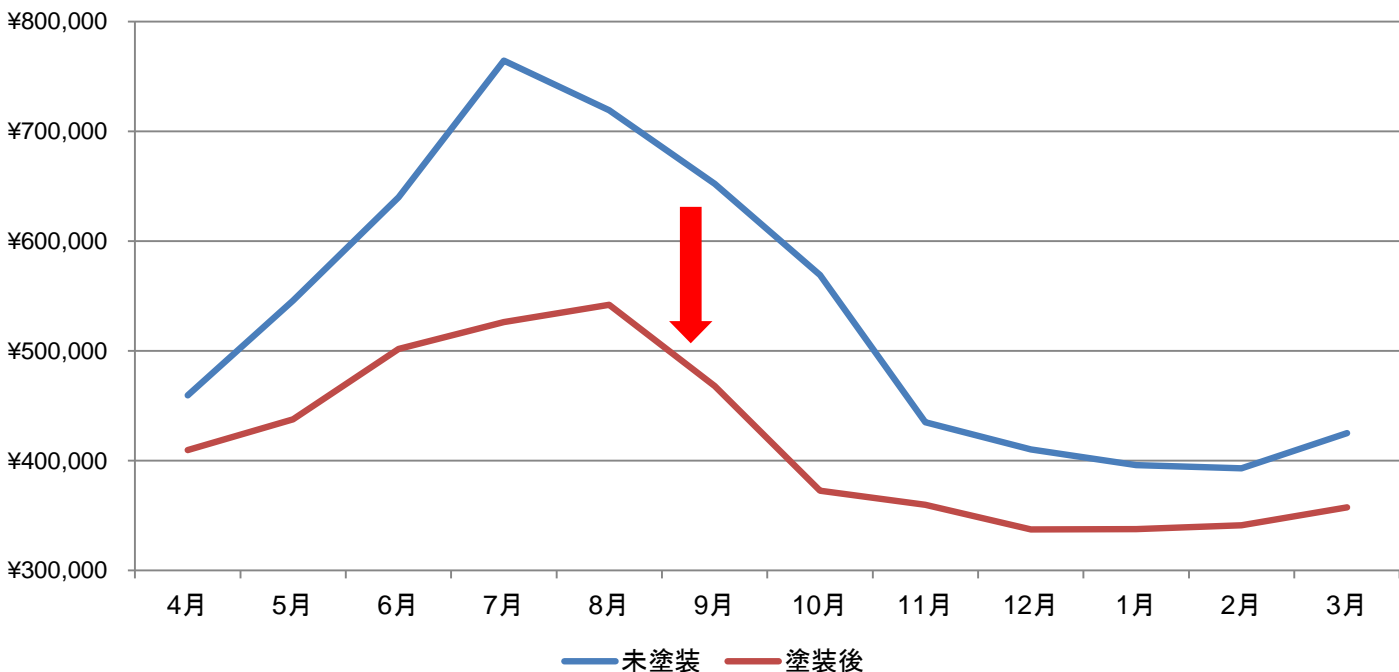


After

【Effects】

- 1.41 million Yen cut in a year
- Penetrating cold in winter was reduced.

● power consumption graph



【Outline】

Painted logistic center

•Date : March 2009

•Painted part : Galvalume plate roof (2200m²)

• Area : Okinawa, Japan

• Color : White (N—95)

【External view】

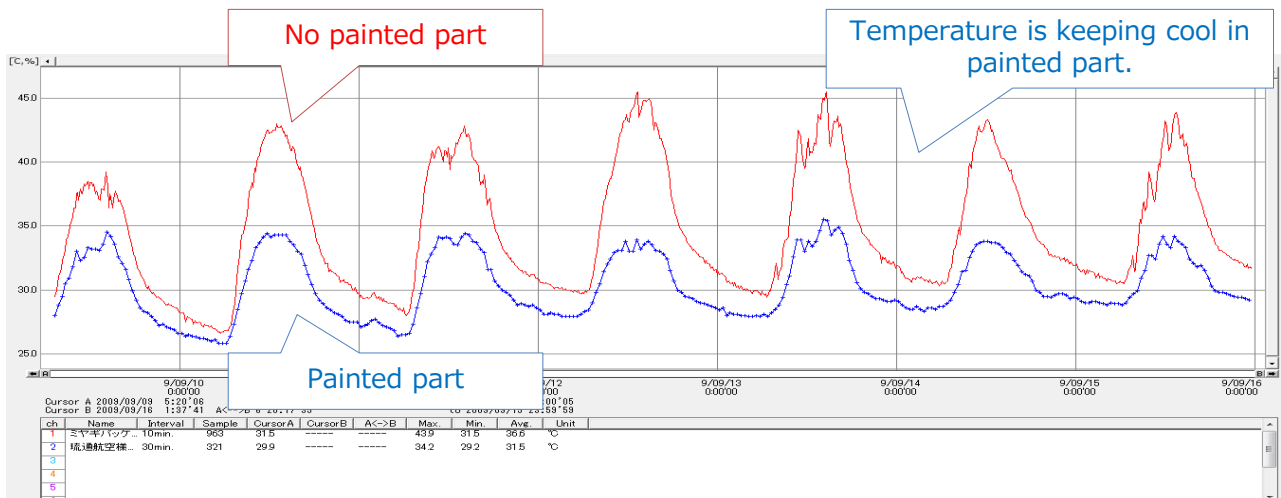


【Effects】

Tested inside temperature of two buildings (photo above) under the same condition. Temperature of the backside of roof was reduced at maximum 8.9℃, average 5.3℃.

figure	Temperature of the backside of roof	
	Average	Maximum
Not painted	36.7℃	43.3℃
painted	31.4℃	34.4℃
reduction	−5.3℃	−8.9℃

※Max temp : 33.0℃,
Average temp : 29.6℃



【Outline】

Compared temperature on the roof of warehouse

• Date : September 2008

• Painted part : Concrete roof (1420㎡)

• Area : Tokyo

• Color : GAINA N-70

【External view】



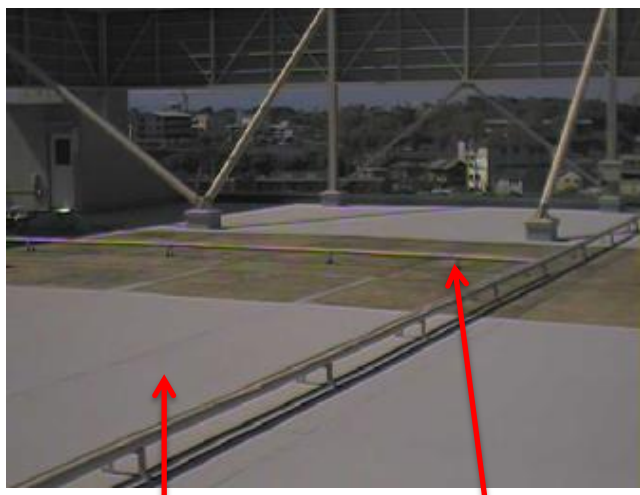
【Effects】

- Surface temperature was significantly reduced

	No painted side	Painted side
Concrete	44 ~ 48℃	35 ~ 40℃

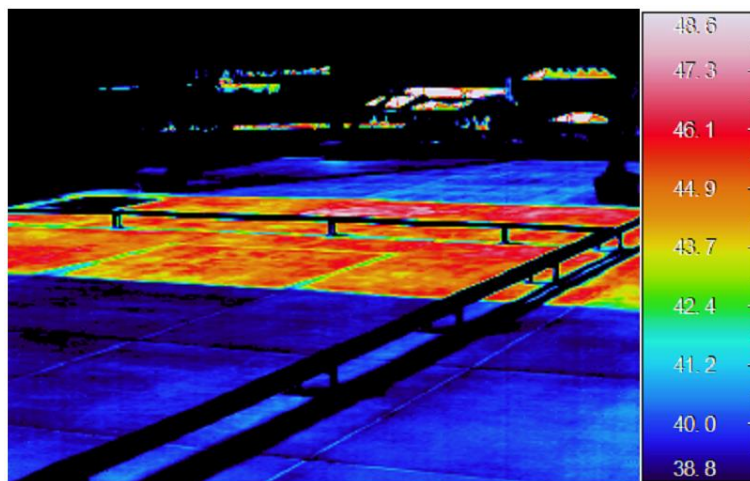
Painted part

Thermography



painted

Not painted



※Date : Sep 2008 13:00pm
Temperature : 33℃

【Outline】

Painted roof to compare the temperature

- Date : August 2009
- Painted part : Folded plate roof (307m²)

- Area : Chiba, Japan
- Color : White (GAINA N—95)

【External view】



Before painting



After painting

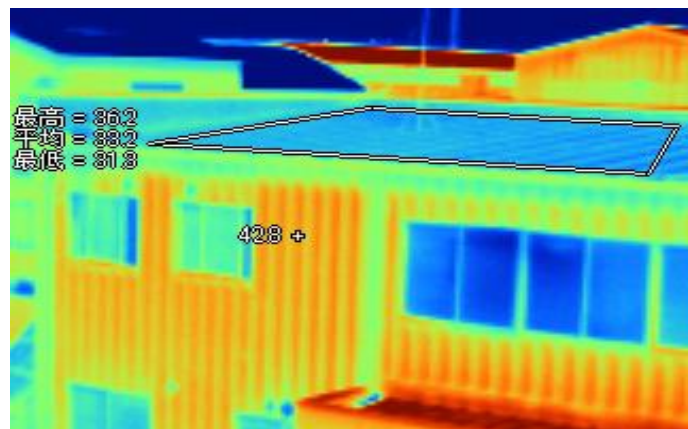
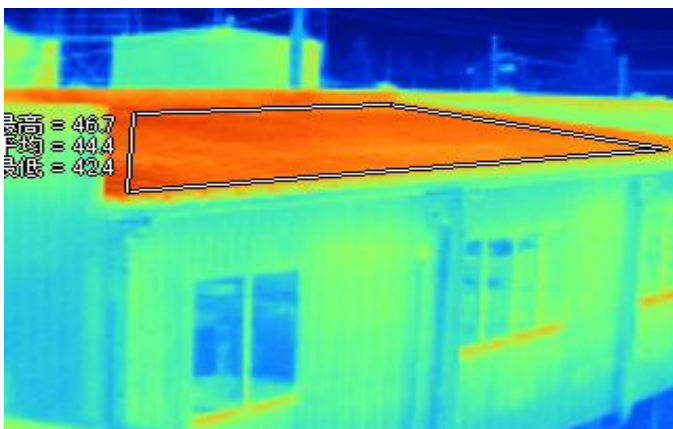
【Effects】

- Temperature of surface and back of roof was significantly reduced.

	No painted side	Painted side
Surface	44°C	33°C
Back of roof	41.5°C	33.5°C

Before painting

After painting



※Date : Sep 2009 13:00pm
Temperature : 33°C

【Outline】

Painted roof of warehouse and office

- Date : June 2010
- Painted part : Color steel plate roof(1200m²)
- Area : Okinawa, Japan
- Color : White GAINA N—95)

【External view】



External view



Painted part

【Effect】

- Temperature of back of roof was reduced at maximum 19.5°C, on the average 5.9°C.
- Property of heat was changed, air conditioner could work faster.

Figure	Date	Temp. of backside of roof		Weather
		Average	Maximum	
Before GAINA	27 th June	37.0°C	55.5°C	Partly cloud
After GAINA	17 th July	31.1°C	36.0°C	Partly cloud
GAINA	—	—5.9°C	—19.5°C	—

※before (27 Jun) Max : 32.0°C, Average : 29.0°C
 ※after (17 Jul) Max : 32.2°C, Average : 29.3°C

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【Outline】

Painted roof of factory to compare the temp.

• Date : September 2010

• Painted part : Folded plate roof (2838m²)

• Area : Yamanashi, Japan

• Color : White

GAINA N-95)

【Exterior】



【Effects】

- Temperature of surface of roof was significantly reduced.

	No painted side	Painted side
Folded plate roof	57 ~ 62℃	35 ~ 40℃

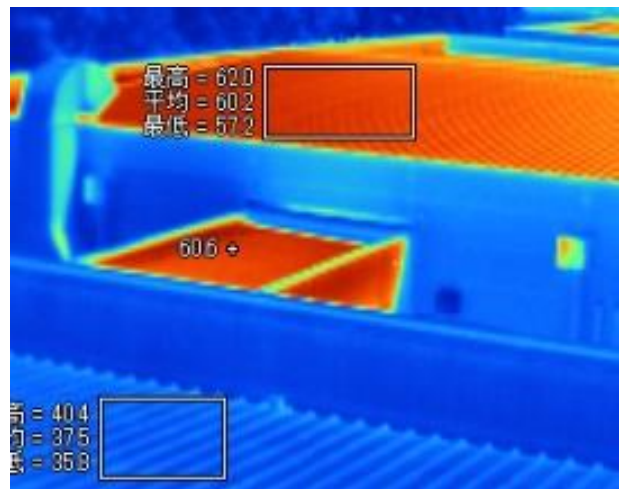
Painted part

thermography



painted

Not painted



※date : Sep 2010 13:00pm
Temperature : 33℃

【Outline】

Painted roof of hypermarket

- Date : July-August 2011
- Area : Fukushima, Japan
- Painted part : Galvalume plate roof (10600m²)

【External view】



Structure of roof :

- Galvalume plate roof
- Air layer 1000mm
- Glass wool 100mm
- Gyptone 9.5mm

【Effect】

- 20% of energy saving in a year
- 7.1 million Yen was cut in a year (※13Yen/kWh conversion)

• Power consumption graph

