

Industrial case studie

## Actual proof of power saving effect

Example works and power saving effect

### Model 1

Automobile parts factory (Saitama factory)

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### Model 2

Packing distribution warehouse (Kawasaki factory)

**Latest info:** Supermarket pref. 2012. Electricity usage redused after using Adgreencoat.

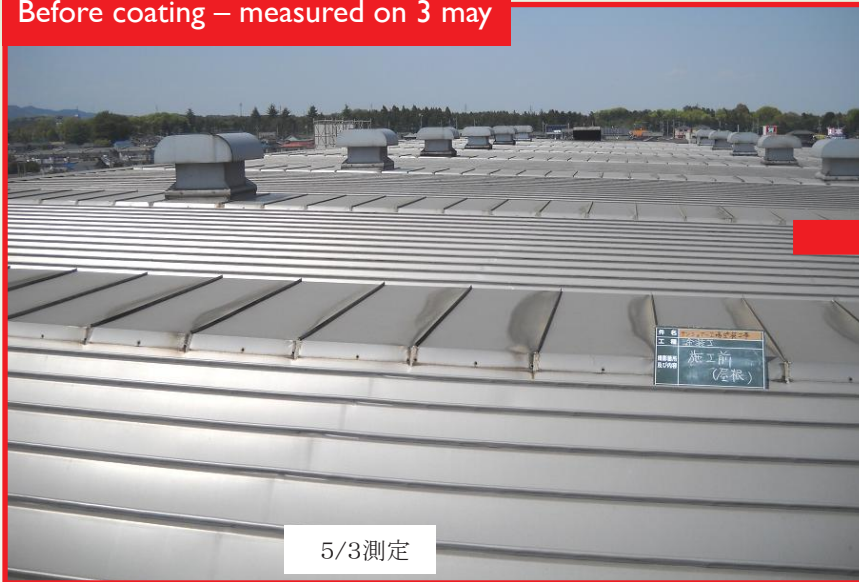
2010 before using AGC	7 July 161,815Kwh (Max demand 317Kwh)
	8 Aug 169,328Kwh (Max demand 329Kwh)
2011 after using AGC	7 July 133,195Kwh (Max demand 257Kwh) <b>19% reduced</b>
	8 Aug 130,763Kwh (Max demand 254Kwh) <b>23% reduced</b>

\* 11 more stores will use Adgreencoat because of the good reputation of power saving effects by heat shield coating.

## ➤ Case I Auto parts factory (Saitama factory)

Industry

Before coating – measured on 3 may



5/3測定

Before coating **45°C**

After coating – measured on 2 June



6/2測定

After coating **32°C**



### Before coating/affect of radiant heat

There were no heat insulators under the roof.  
The galvalume steel sheets were exposed.  
As the ceiling materials were directly installed to the roof, the radiant heat of the roof was greatly affecting the indoor temperature.

### Load on air conditioner

The height to the roof inside the factory was 7,2m on the ground floor, 5,6m on the 1st floor. By the effect of the outside temperature and the radiant heat, the heavy load for the air conditioner was a big problem.

### Improvement after coating

Indoor temperature reduced, contributing to cost-cut of electricity charges.



After coating

## ➤ Case I Auto parts factory (Saitama factory)

### Heat penetration rate =

Coefficient of overall heat transmission x area x temp. difference ( temp. on roof – indoor temp.)

	No coating	With coating
Area m <sup>2</sup>	6,000	
Indoor temp.	28	
K value	3.57	3.51
Roof temp. (°C)	45	32
Heat penetration rate ( no coat)	364,140 kcal/h	
Heat penetration rate (with coat)	84,240 kcal/h	
Reduced heat = heat loss (no coat)- heat loss (with coat)		
Reduced heat	279,900 kcal/h	

### Electricity Calculation

Reduced heat / 860 kcal x summer days x air conditioner operating hour (daily) x rate of summer days.

1 kw = 860kcal	860
Summer days	82
Airco hour/day	7h
Sunny day rate	0,75
<b>Reduced electricity</b>	<b>140,113 kwh</b>

### Reduced electricity charge =

reduced electricity x electricity charge x consumption tax

Electricity charge per 1 kwh	13
<b>Reduced elec. Charge</b>	<b>1,912,539 ¥</b>

### Reduced Co2 emission

Reduced elec. x emission factor

Emission factor	0.418
<b>Reduced Co2</b>	<b>58,567 kg</b>

## Power saving effect by heat shield coating



Coating area	Roof 4.200m <sup>2</sup> • Wall 1.800m <sup>2</sup> • Total 6.000m <sup>2</sup>
Product name	Adgreencoat
Process	<b>Base coating x1 ➤ Top Coating x2 ➤ Total 3 Coatings</b>
Material	(base) <b>Adplacoat / 60 cans</b> (main) <b>Adgreencoat / 172 cans</b>

Reduced rate can vary depending on the condition.

<b>Reduced heat</b> <b>279,900 kcal/h</b>	<b>Reduced elec.</b> <b>140,113 kwh</b>
<b>Summer 4 months Reduction effect</b>	
<b>Reduced elec. charge</b> <b>1,900,000 yen</b>	<b>Reduced Co2</b> <b>58.5 ton</b>





### Before coating/affect of radiant heat

There were no heat insulators under the roof. The galvalume steel sheets were exposed. As the ceiling materials were directly installed to the roof, the radiant heat of the roof was greatly affecting the indoor temperature.

Date	July 4 - 11:00 AM
Temp	32.5°C
Humidity	65%
Roof temp.	52°C

### Improvement after coating

'Heat pool' has been solved by reflecting about 90% of the heat-source from the sun and showing the function of heat-exhaustion / radiation .



Date	July 21 - 13:00 AM
Temp	39.7°C
Humidity	54%
Roof temp.	40.8°C

## ➤ Case 2 Packing Distribution Centre (Kawasaki)

### Heat penetration rate =

Coefficient of overall heat transmission x area x temp. difference ( temp. on roof – indoor temp.)

	No coating	With coating
Area m <sup>2</sup>	3,000	
Indoor temp.	28	
K value	3.57	3.51
Roof temp. (°C)	52	41
Heat penetration rate ( no coat)	257,040 kcal/h	
Heat penetration rate (with coat)	136,890 kcal/h	
Reduced heat = heat loss (no coat)- heat loss (with coat)		
Reduced heat	120,150 kcal/h	

### Electricity Calculation

Reduced heat / 860 kcal x summer days x air conditioner operating hour (daily) x rate of summer days.

1 kw = 860kcal	860
Summer days	82
Airco hour/day	7h
Sunny day rate	0,75
<b>Reduced electricity</b>	<b>60,145 kwh</b>

### Reduced electricity charge =

reduced electricity x electricity charge x consumption tax

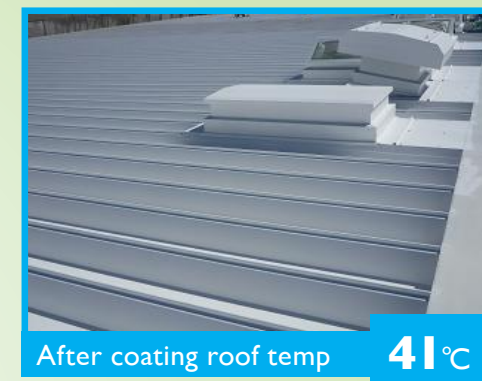
Electricity charge per 1 kwh	13
<b>Reduced elec. Charge</b>	<b>820,977 ¥</b>

### Reduced Co2 emission

Reduced elec. x emission factor

Emission factor	0.418
<b>Reduced Co2</b>	<b>25,141 kg</b>

## Power saving effect by heat shield coating



Coating area	Roof 3.000m <sup>2</sup>
Product name	Adgreencoat
Process	<b>Base coating x1 ➤ Top Coating x2 ➤ Total 3 Coatings</b>
Material	(base) <b>Adplacoat / 30 cans</b> (main) <b>Adgreencoat / 86 cans</b>

Reduced rate can vary depending on the condition.

<b>Reduced heat</b> <b>120,150 kcal/h</b>	<b>Reduced elec.</b> <b>60,145 kwh</b>
<b>Summer 4 months Reduction effect</b>	
<b>Reduced elec. charge</b> <b>820,000 yen</b>	<b>Reduced Co2</b> <b>25 ton</b>