Save Energy by Paint
Proposed Measures on Thermal Barrier
A power-and-energy-saving thermal barrier coating with immediate effect
Advantages <Differences in material>

Using the world’s finest non-porous spherical ultrafine ceramic particles with a diameter of 0.5μ, A thermal barrier coating with high heat-reflective functions and heat exhaust functions.

<Research & Development>
Adgreencoat® is a thermal barrier coating that was developed to sustain heat from the outer walls. NCK (Nihon Chuo Kenkyujo) and Admatechs (a joint-venture company founded by Toyota Motor Corporation) developed the world first fine inorganic spherical ceramic with high insulation value together. (applied for the International Joint Venture Patent)

- Effective with only a thin coating
- Good workability
- Eliminates heat accumulation by heat-exhaust function
- Ineffective unless a thick coating is applied
- Difficult construction
- Thermal storage type
Adgreencoat® has received numerous certificates and patents as an environment-friendly heat-shield coating.
① Value (Design and Construction: Price Comparison)
※ excerpts from integrated documents

<table>
<thead>
<tr>
<th>Product (Sold by:)</th>
<th>Adgreencoat</th>
<th>GAINA NISSIN SANGYO</th>
<th>ASTEC Paint</th>
<th>MIRA COOL S100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accumulated document installation value (material/labor included/m²)</td>
<td>¥3,500/m²</td>
<td>¥5,000/m²</td>
<td>¥4,300/m²</td>
<td>¥4,600/m²</td>
</tr>
</tbody>
</table>

② Work process & thickness

<table>
<thead>
<tr>
<th>Adgreencoat®</th>
<th>GAINA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coats</td>
<td>Thickness</td>
</tr>
<tr>
<td>Basecoat</td>
<td>0.17</td>
</tr>
<tr>
<td>Middle coat</td>
<td>0.2</td>
</tr>
<tr>
<td>Topcoat</td>
<td>0.2</td>
</tr>
<tr>
<td>Total coats</td>
<td>3</td>
</tr>
<tr>
<td>Total (at drying time)</td>
<td>150 ~ 180μ</td>
</tr>
</tbody>
</table>

(Note)
- Adgreencoat®‘s excellence in value is based on its workability and less than half of material usage thanks to the thin-film material.
- It’s durability is about 7 to 10 years if it is a silicon acrylic resin paint.
Saving Energy (Cooling Load Reduction Effect)
※Extracted from a report by a house manufacturer

①Objective
Verify the cooling load reduction effect on a unit-house that has been painted with thermal barrier coatings

②Unit House (Komatsu House FLEX) Summary
Area: 12.95 ㎡; Height: 2.7m Roof insulation material: glass wool T=50（10kg）

③Paint
Compared NCK’s Adgreencoat and hollow-balloon type thermal barrier coating

④Verification Method
Used grey functional paints. Applied a highly reflective white paint as a general paint to the unit house and compared the amount of power used and the temperature when the air conditioner was in operation. Together with the non-painted samples, there were a total of 4 different paints used to compare the amount of energy used and the amount of humidity when an air conditioner was on.

Even with just one grey coating of the Adgreencoat, we were able to confirm that it was more effective than a general insulation paint (white gloss). It was also verified that there was approximately a 20% reduction in the energy bill compared to a house where there was no paint.
Third Party Energy Savings Performance (Supermarket) : 2,000 m²

(After construction)
Outside temperature 35.8°C
Roof surface temperature 37°C

(Inside temperature)
■ Average outside temperature before painting (12 to 2pm ~ 14:00) 31.1°C
→ Average ceiling temperature (same time) 38.8°C +7.7°C
■ Average outside temperature (12 to 2pm) 33.7°C
→ Average ceiling temperature (same time) 36.2°C +2.5°C

【2010】Electricity Consumption before Installation
July/161,815Kwh （Max. demand 317Kwh）
Aug/169,328Kwh （Max. demand 329Kwh）

【2011】Electricity Consumption after Installation
July/133,195Kwh （Max. demand 257Kwh）
Aug/130,763Kwh （Max. demand 254Kwh）

Verified a -5.2°C effect

(Note)
It was proven that Adgreencoat® has immediate effect on saving energy, so other 10 stores owned by the same group were painted additionally. (about 2,000 m² ~ 3,000 m² per store), totaling 26,000 m² of area painted in 2011.
②. Third Party Energy Savings Performance
(Printing Factory) : 1,750 m²

※Rust erosion due to water

Temperature measurements by Adgreencoat®

1・Objective
Painted Adgreencoat® onto the roof of Satte Plant B Bldg. (cafeteria roof)
Compared the temperature and humidity at 4 different places on the roof,
before and after using the paint, confirming its effectiveness.

2・Contents
◆ Measurement point
A temperature sensor was placed in openings in the ceiling and checked the temperature of all 4 locations.

- Results -
After verifying the temperature difference on the roof and outside:

- Before paint (May 21, 11am) Outside temp.: 27.3°C.
The roof was 53.8°C meaning that there was a +26.5°C difference.

- After painting (June 6, 11am) Outside temp.: 26°C.
The roof was 35.2°C meaning that there was a curb of +9.2°C.
③. Effectiveness in Winter: Reducing the electric bill case (financial branch building): 400㎡

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td><strong>Elec. Bill (JPY)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before using Adgreencoat</td>
<td></td>
<td>56,493</td>
<td>54,270</td>
<td>34,028</td>
<td>21,254</td>
<td>28,374</td>
<td>46,805</td>
</tr>
<tr>
<td>After using Adgreencoat</td>
<td></td>
<td>48,695</td>
<td>44,378</td>
<td>22,438</td>
<td>19,618</td>
<td>23,705</td>
<td>32,887</td>
</tr>
<tr>
<td><strong>Usage (kW)</strong></td>
<td></td>
<td>3,017</td>
<td>2,830</td>
<td>1,425</td>
<td>393</td>
<td>988</td>
<td>2,543</td>
</tr>
<tr>
<td>Before using Adgreencoat</td>
<td></td>
<td>2,330</td>
<td>2,000</td>
<td>455</td>
<td>240</td>
<td>555</td>
<td>1,268</td>
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<td>240</td>
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<td>1,268</td>
</tr>
<tr>
<td><strong>Difference (JPY)</strong></td>
<td></td>
<td>-7,798</td>
<td>-9,892</td>
<td>-11,590</td>
<td>-1,636</td>
<td>-4,669</td>
<td>-13,918</td>
</tr>
</tbody>
</table>

Achieved 20% energy cost reductions
Overall Evaluation: No. 1

Functionality & Environmental Measures

Developed using the world’s best special nano-ceramics, Adgreencoat has demonstrated high-functionality even in the public sector and has been proven and certified as an environmental paint by various institutions.

Aesthetics & Durability

Break away from thick coating. The beautiful finish is aesthetically beautiful, has antifouling properties and is durable.

Price Advantage

Compared to other companies, the material used is less than half, realizing a high-cost performance with excellent workability.