

## Electricity expense of the installed air conditioner at NICHYAKU Corporation office

Report created on July 26, 2006

Capacity of the air conditioner currently used Cooling capacity: 7.1KW Power consumption: 2.84KW  
\*1 \*2

Assuming that it operates 10 hours for 30 days...

(Display condition of the cooling capacity: the cooling capacity of the air-cooling type air conditioner indicates the capacity to maintain 27°C indoor temperature at 35°C outdoor temperature, assuming that it is used in mid summer. This is determined by JIS pursuant to the international standard.)

Power consumption per day

2.84KW × 10 hours × 1 unit = 28.4KW

Electricity expense per day

28.4KW × 22 yen × 1 unit = 624 yen

Power consumption per month

28.4KW × 30 days × 1 unit = 852KWH

Electricity expense per month

852KWH × 22 yen × 1 unit = 18744 yen

Average unit price of 10 domestic electric power companies

(Monthly consumption 295KW/month, 1KWH=22 yen, including tax)

\*3

\* The actual unit price varies depending on the monthly power consumption.

## Thermal calculation by heat shield effect

Comparison of the average indoor temperature from July 1 to September 30 in 2005

Measuring method

Measured 4 times (10:00, 12:00, 14:00, 16:00) per day

Note that rainy days and the days with outdoor temperature not more than 30°C are not included.

Days measured July: 14 days August: 13 days September: 14 days

Month	July	August	September
Average outdoor temperature	33.0°C	34.9°C	31.6°C
General coating material	37.2°C	39.5°C	37.2°C
Av. room temperature Adgreen coating TG-09	32.6°C	33.9°C	31.7°C
Av. room temperature			
Temperature difference	4.6°C	5.6°C *4	5.5°C



Saving of monthly consumption when the room temperature of August is lowered by 5.6°C in average by applying Adgreencoat (per unit)

Total volume of NICHYAKU Corporation office space: 215.01m<sup>3</sup> (Air-cooling type air conditioning, Freon gas used)  
\*5

Assuming that it operates 10 hours for 30 days

Calorie Kcal=Volume (V)×air density (1.12)×specific heat (0.241)×temperature difference

Volume(m <sup>3</sup> )	×Air density	×Specific heat	×Tmp. dif. (°C)	Kcal
215.0	1.12000	0.24100	5.6	324.98368000
*5			*4	

Power(KW)=Calorie(Kcal)×4.186÷3600

324.98368000	×	÷	KW
4.19		3600	0.37788380

Monthly saving

Energy consumption

KW	×operating time	×operating days	KWH
0.37788380	10	30	113.37

Reduction of operating time

KWH	÷cooling capacity KW	Op. time reduced H
113.37	7.1	15.97
	*1	

Energy reduction value

Consumption KW	×Op. time reduced H	KWH
2.84	15.96692118	45.35
*2		

Saved amount

KWH	×	22 yen	Yen
45.35		22	997.61
		*3	

**Environmental effect**

Calculation of CO<sub>2</sub> volume emitted by the power used to reduce the room temperature

KWH	×conversion constant of CO <sub>2</sub> Kg/KWH	Kg
113.37	0.38	43.1
	*6	

If calculated as gasoline

CO <sub>2</sub> emission Kg ÷	conversion constant for 1L gasoline	liter
43.1	2.32	18.6
	*7	

\*Reference for calculation: Ministry of the Environment "Enforcement ordinance Article 3 of Law Concerning the Promotion of Measures to Cope with Global Warming"

Conversion factor Power: 0.38KgCO<sub>2</sub>/KWH  
\*6  
Gasoline: 2.32KgCO<sub>2</sub>/L  
\*7

Note 1) Other effect is not taken into consideration for the value obtained from this calculation formula.

Note 2) There is a difference in the effect due to geographical conditions of the building, environment and cooling method (absorption, refrigerant gas, etc.) of the air conditioner.

# **Adgreencoat**

**Thermal calculation by heat shield effect**

**June 27, 2006**

**NIHON CHUO KENKYUJO Co., Ltd.**

**NICHIYAKU Corporation**

