

Text No.14

**ENERGY AUDIT
- SCHEME AND RESULT -**

工場省エネ診断

June 2, 2003

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診断指導部長

Energy Audit

----- Scheme and Results

June 2, 2003

Audit Department, ECC

Contents

- ☐ Audit for Factories
- ☐ Audit for Buildings
- ☐ Guidelines by the Law
- ☐ Energy Management
- ☐ ECC's Activities for Factories
- ☐ Q/A Service through e-mail
- ☐ ECC's Web-site (through LAN)

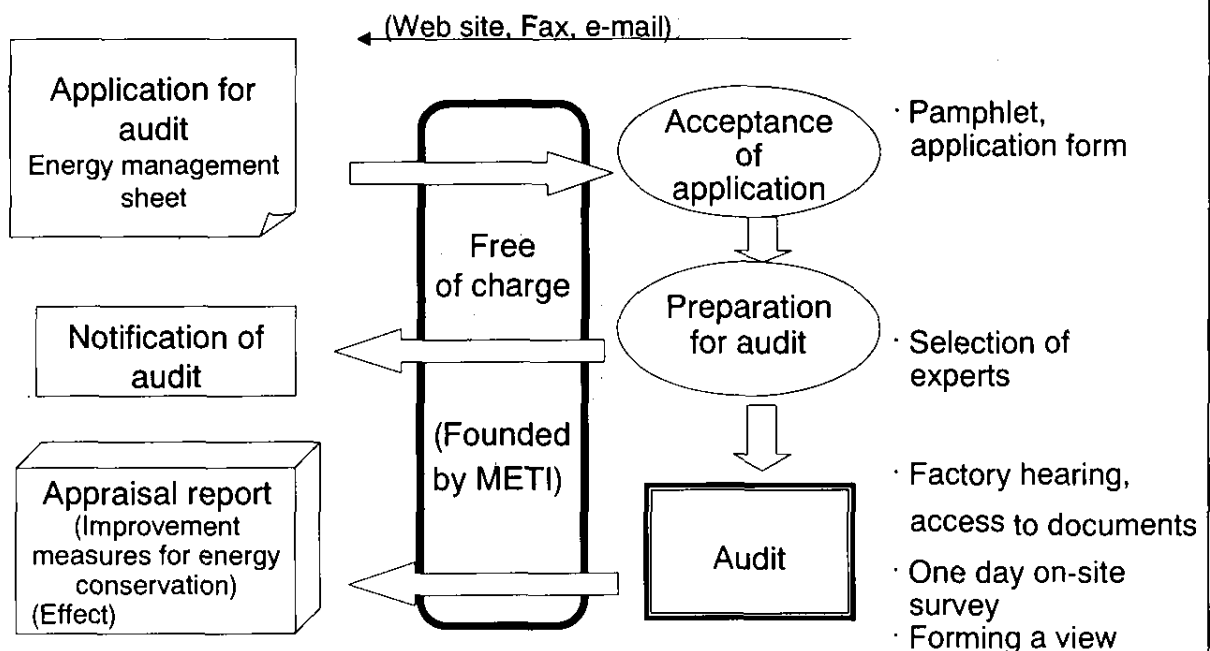
Energy Audit by ECC

λ	Scheme of Factory Audit	<u>2</u>
λ	Contents of Audit	<u>3</u>
λ	Audited Factories by Industry	<u>4</u>
λ	Audit Results - Energy Saving Rate	<u>5</u>
λ	Energy Cost Ratio	<u>6</u>
λ	Proposals by the Auditor - 1	<u>7</u>
λ	Proposals by the Auditor - 2	<u>8</u>
λ	No. of Factories audited	<u>9</u>
λ	Basic Scheme of Audit	<u>10</u>

1

Scheme of Factory Audit

for medium sized factories



2

Contents of Audit

- λ Basic data survey
- Energy management
 - Energy consumption

Electric facilities

- Lighting
- Water / waste
- Loading facilities
- Power receiving stations
- Air compressors

Utilities

- Heat pump system
- Co-generation system
- Air conditioning
- Process facilities improvement / development

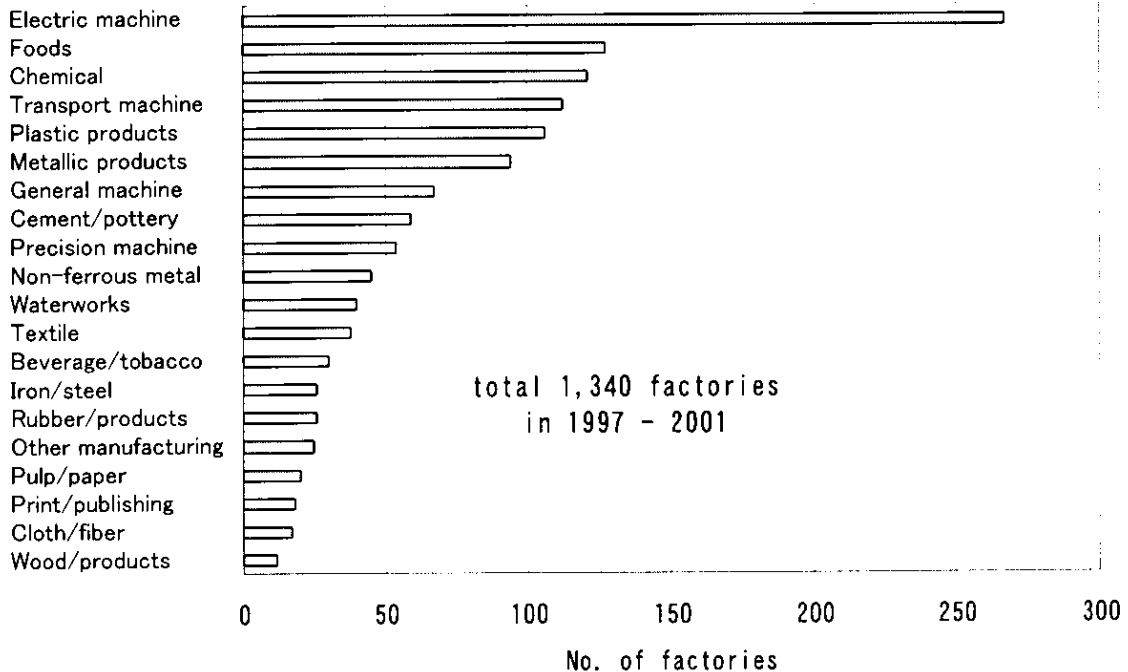
Heat facilities

- Heat insulation
- Heat emission reduction
- Steam system
- Fuel combustion / waste gas
- Exhaust heat recovery

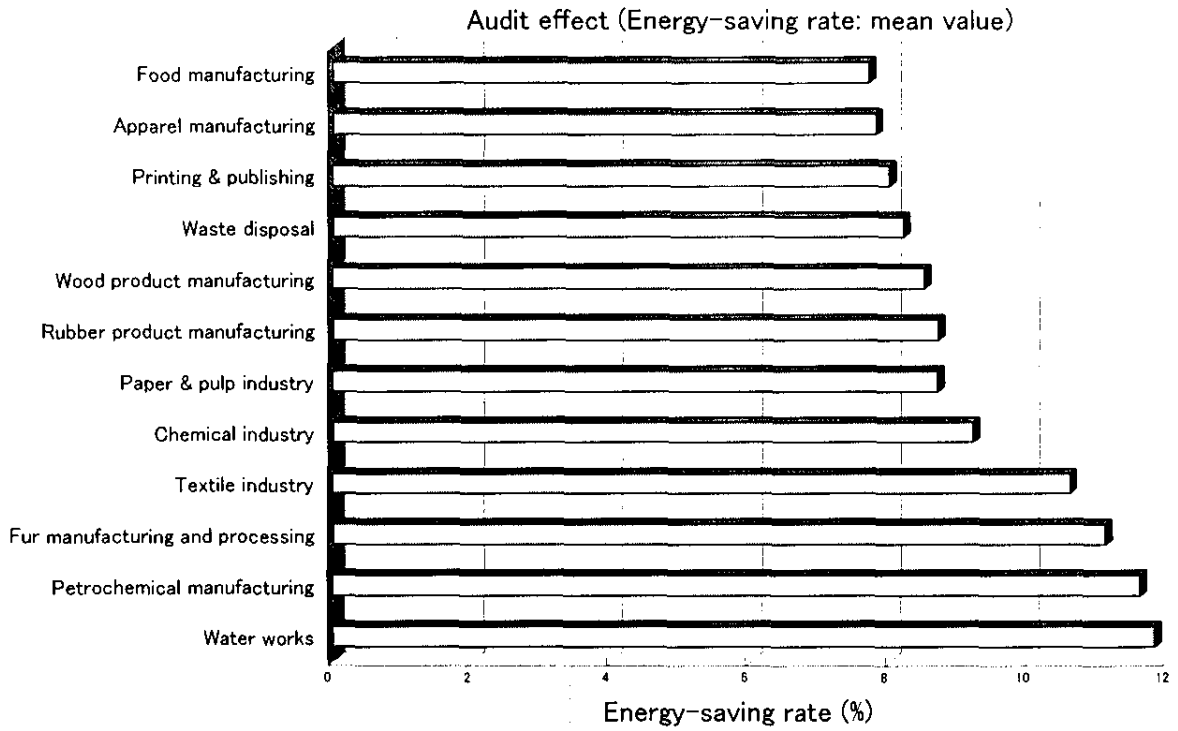


Audit Factories by Industry

Industries Audited

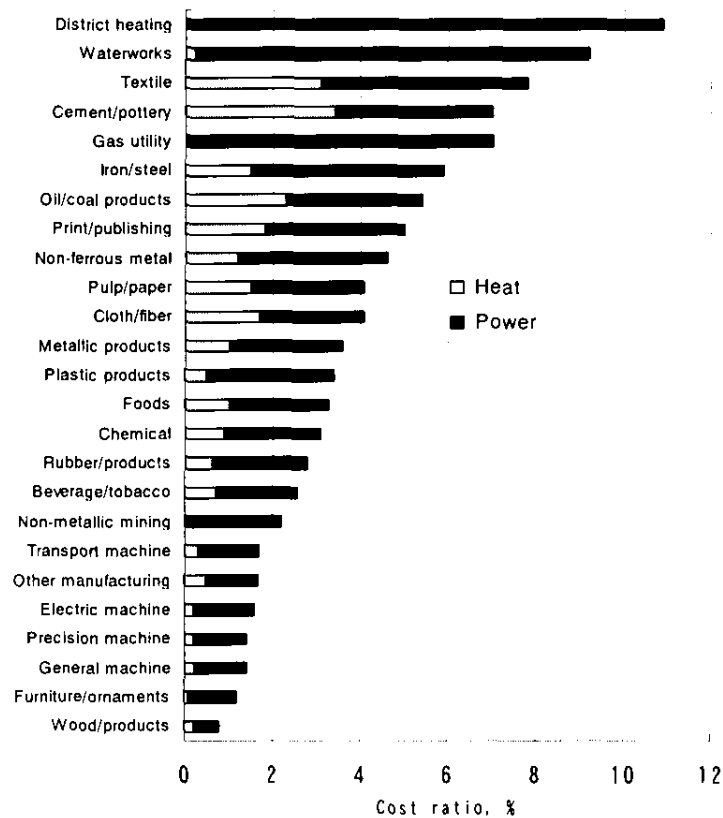


Average energy-saving rate by industry



5

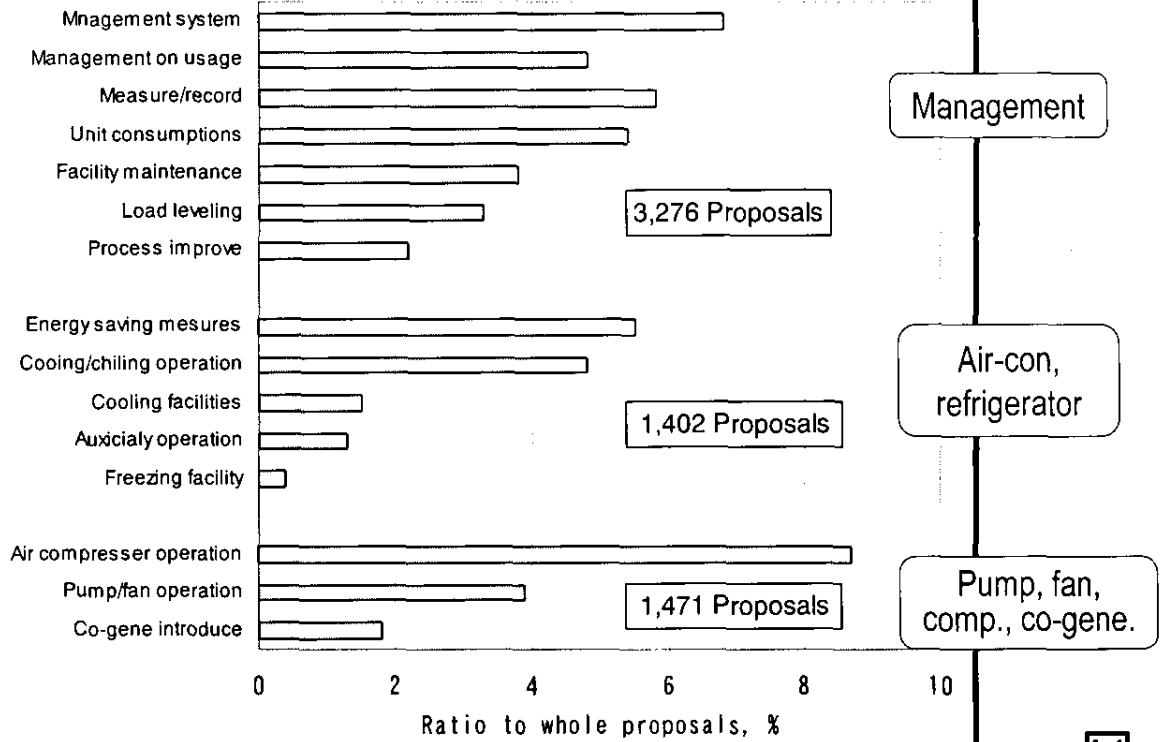
Energy Cost Ratio, audited factories



6

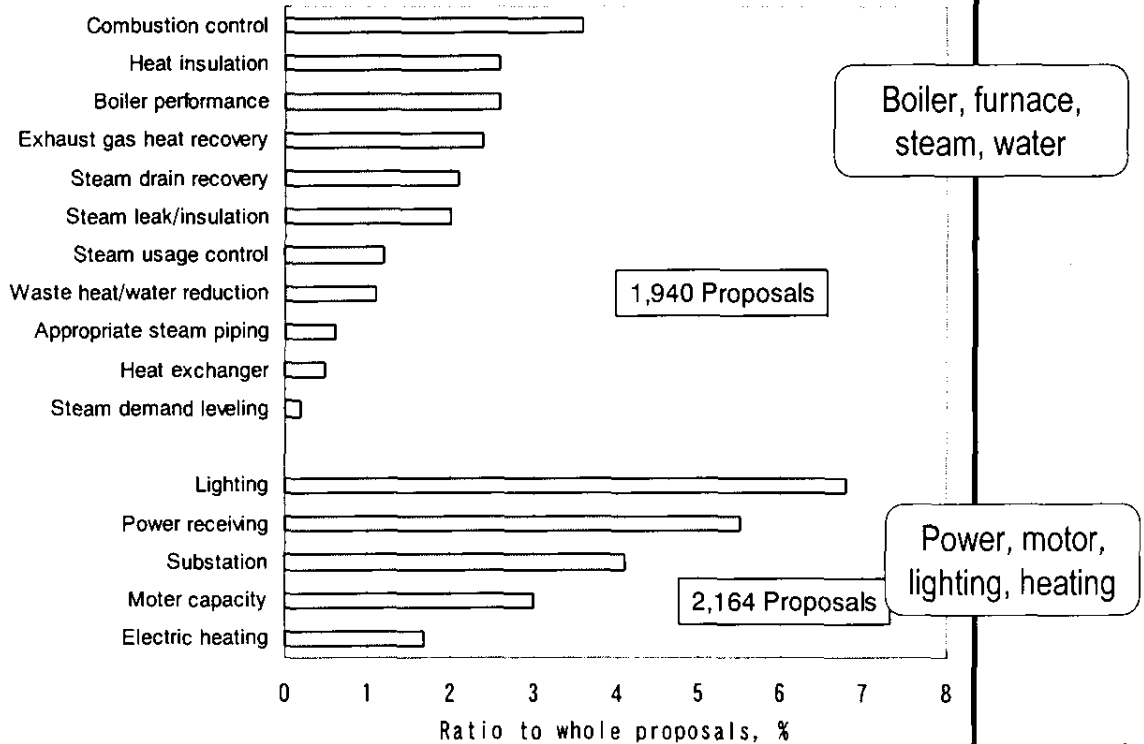
Energy Audit, Proposals - 1

Proposals by the Auditor



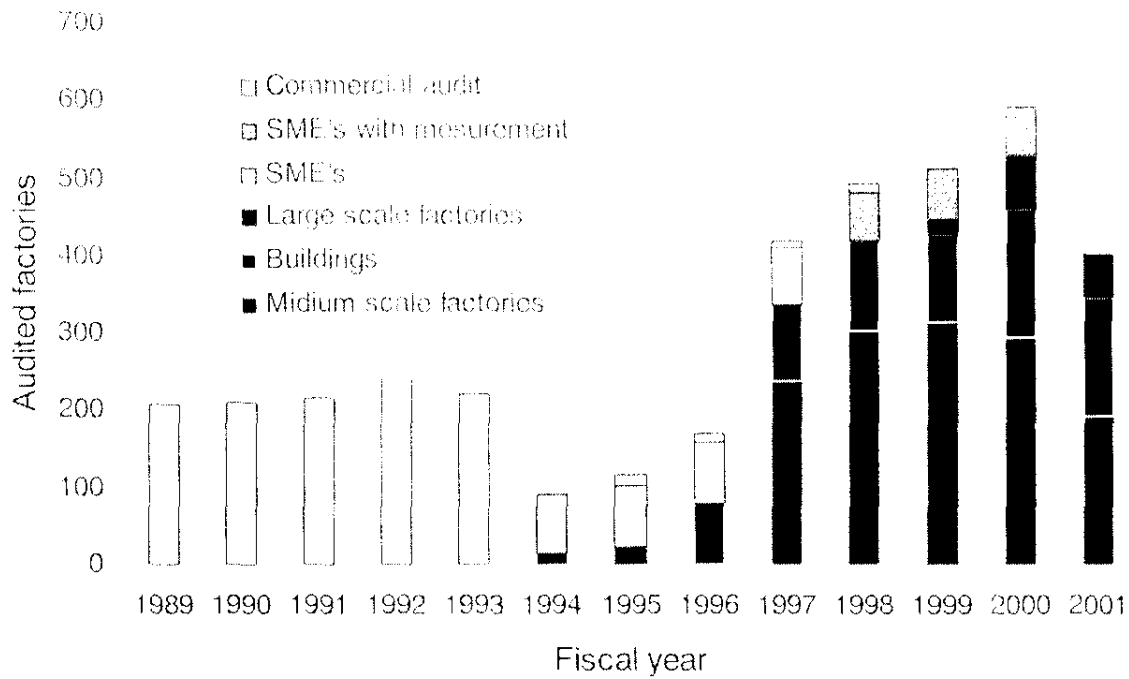
Energy Audit, Proposals - 2

Proposals by the Auditor

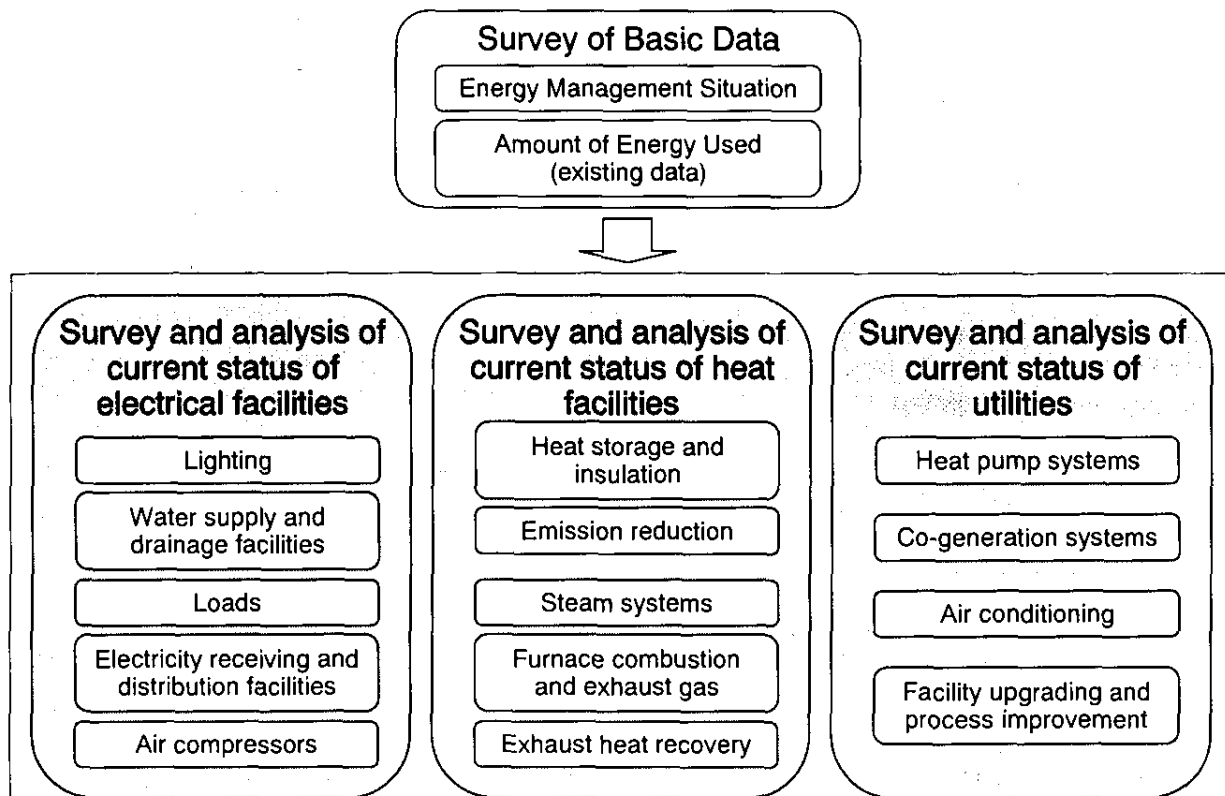


Audit Figures

Energy Audit by ECC



Basic Composition of Audit

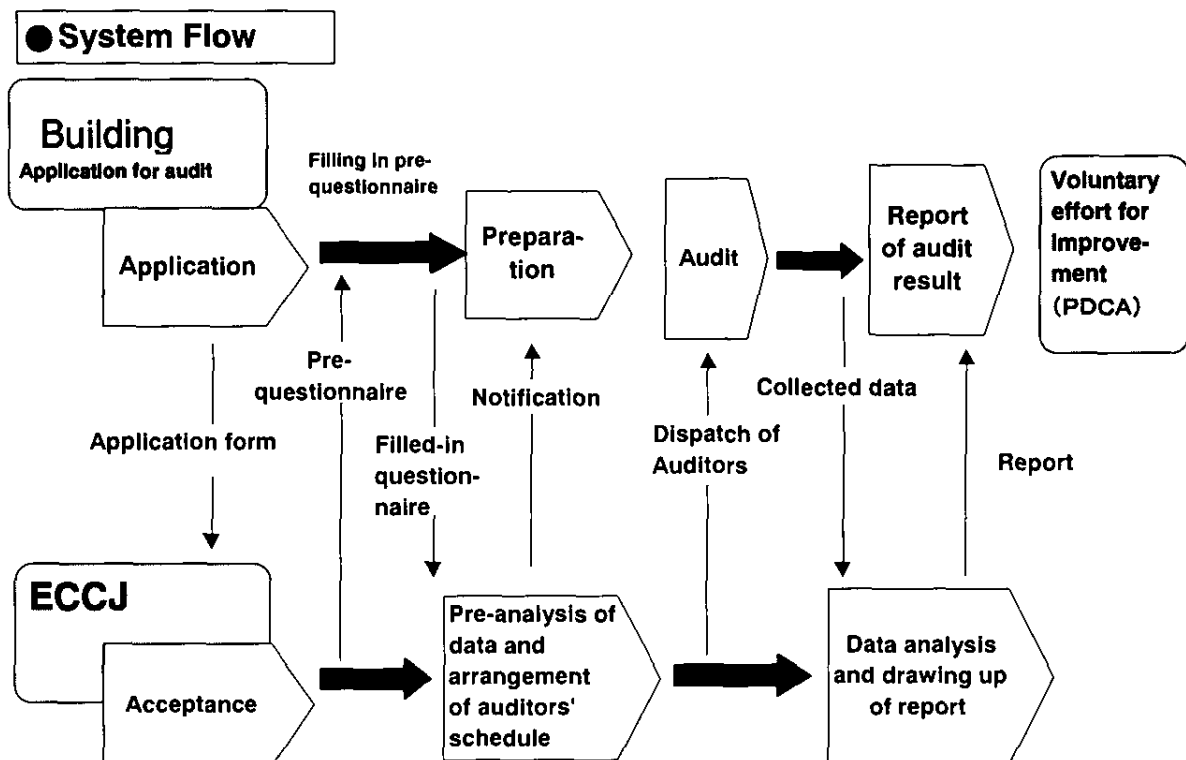


Building Audit

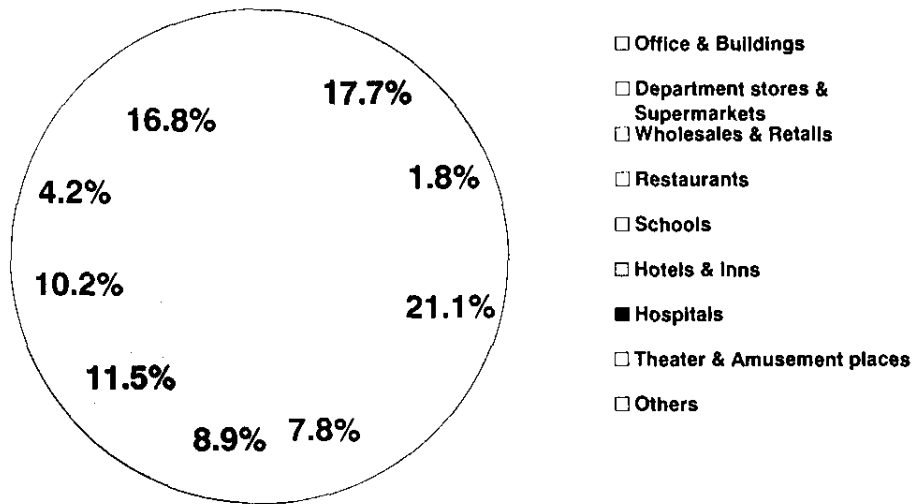
λ Building Audit Scheme	<u>2</u>
λ Energy Consumption in Commercial Sector	<u>3</u>
λ Energy Indicators of Public Buildings	<u>4</u>
λ Energy Consumption in Commercial Buildings	<u>5</u>
λ Energy Intensity by Building Use	<u>6</u>
λ Consumption Share by Building Use	<u>7</u>
λ Proposals to Improve Energy Efficiency	<u>8</u>
λ Proposals to Heating, Ventilation, Air-conditioning	<u>9</u>
λ Proposals to Lighting, Electricity, Elevator	<u>10</u>
λ Example 1 - Air Conditioning 1	<u>11</u>
λ Example 2 - Air Conditioning 2	<u>12</u>
λ Example 3 - Ventilation	<u>13</u>
λ Example 4 - Lighting	<u>14</u>

Building Audit Scheme

(Free Charge Audit by ECCJ)



Energy Consumption in the Commercial Sector by Business Type (1999)



Source: Estimated
by EDMC



3

SURVEY RESULTS

ENERGY INDICATORS OF BUILDINGS

SURVEYED FOR FOUR YEARS SINCE 1997

- **Energy Indicators for Various Buildings**
Government Offices, Offices, Commercial Buildings, Hotels, Hospitals, Halls, Schools, Laboratories, and others.
- **Surveyed throughout the Country**

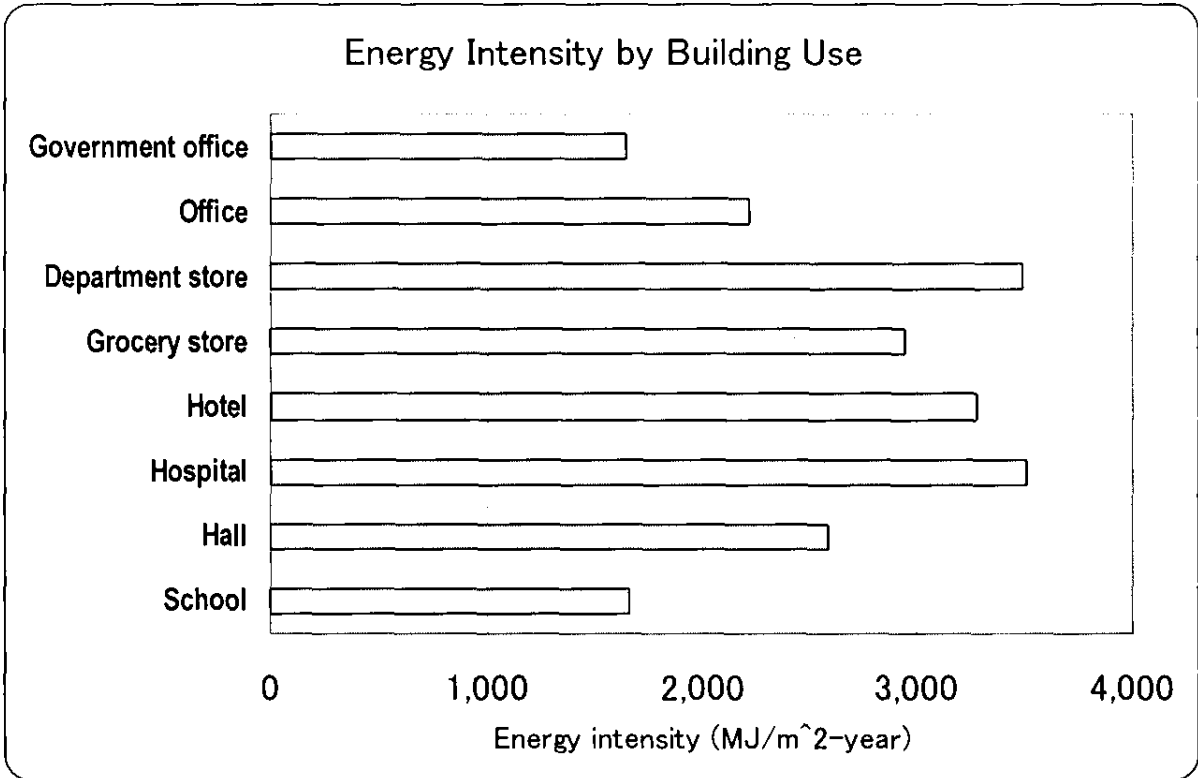
80	buildings in 1996
99	buildings in 1997
116	buildings in 1998
112	buildings in 1999
162	buildings in 2000
152	buildings in 2001

Total 721 Buildings
- **Surveyed by 200 Inspectors, team (Elec. × 1, Heat × 1)**



4

SURVEY RESULTS

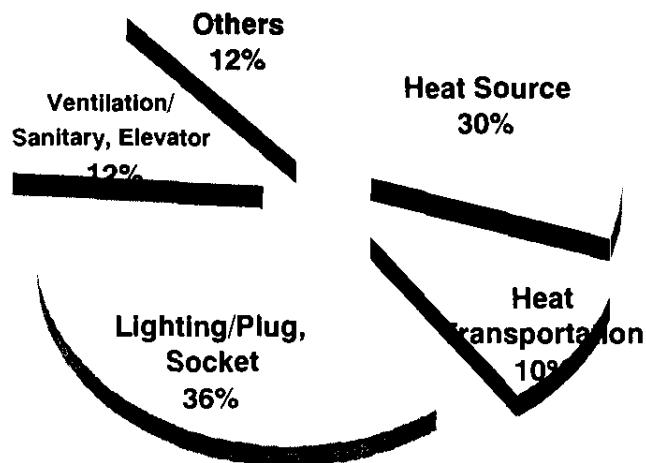


Energy saving guide-book , ECC 2001

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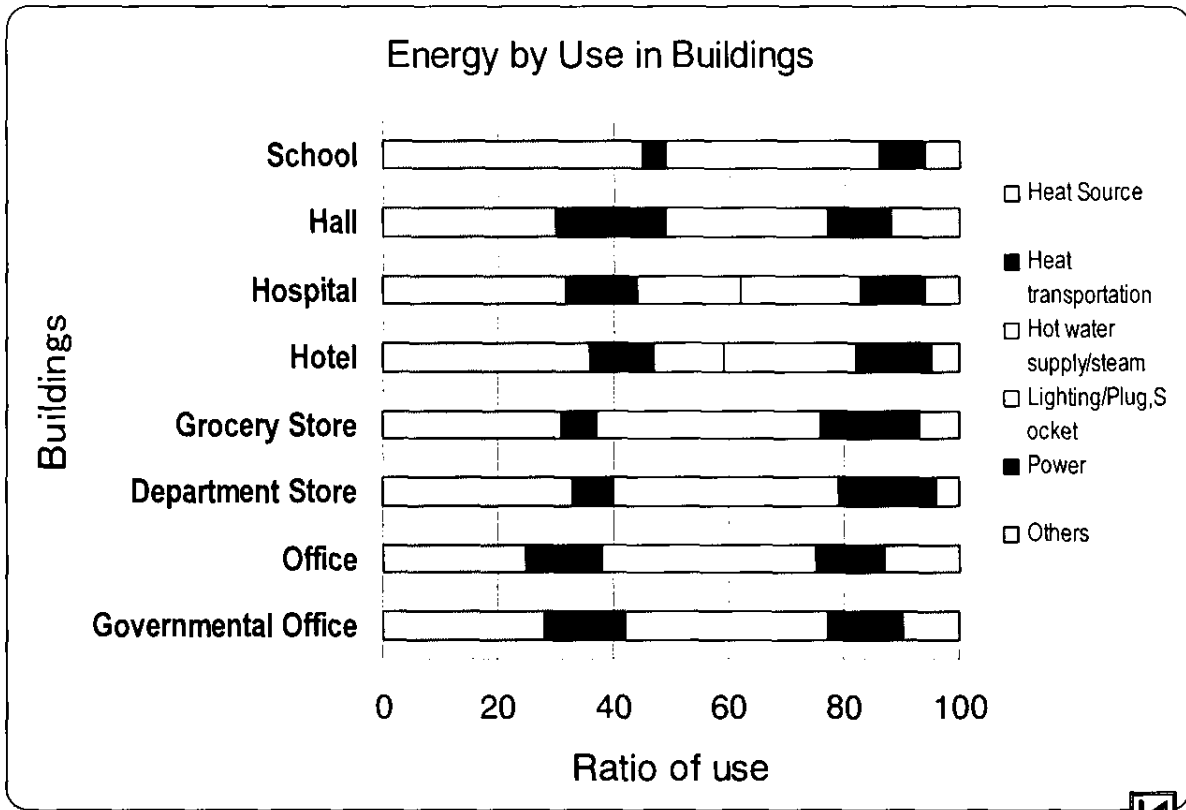
SURVEY RESULTS

Share of end-use energy consumption in office
(Average of 51 cases of energy audit conducted
during 1997-1999)



5

Consumption share by building use



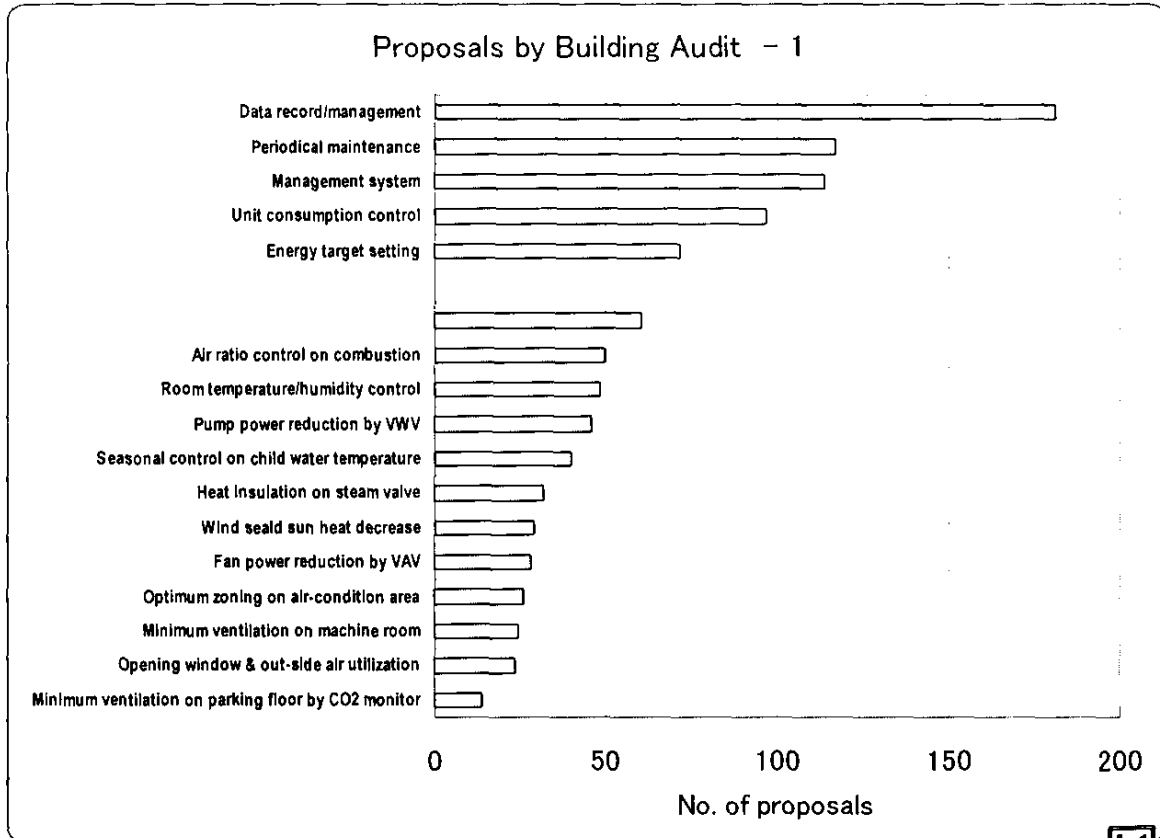
SURVEY RESULTS

PROPOSALS TO IMPROVE ENERGY EFFICIENCY

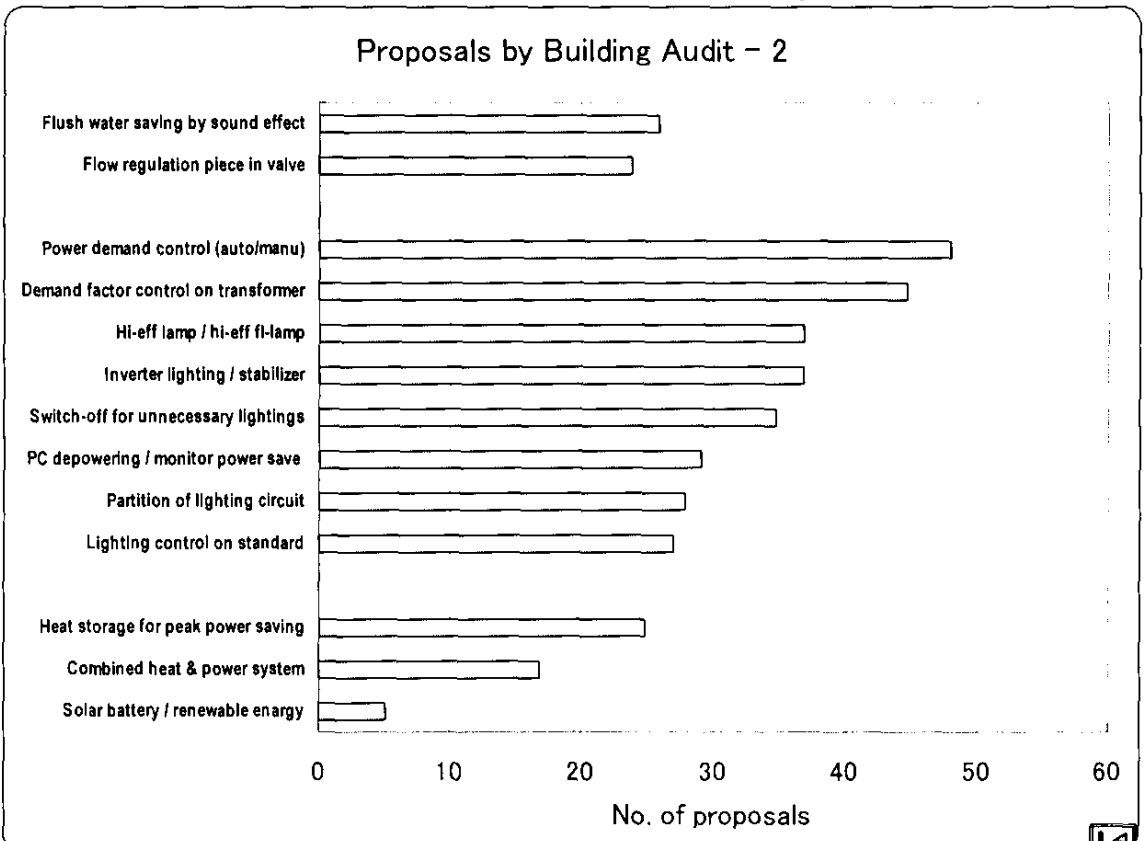
	No. of proposals
● General management;	
Energy management system, energy intensity evaluation	481
● Air conditioning units & heat sources;	
Optimum operation, periodical measures for efficiency analysis	421
● Water supply & drainage;	
Exhaust fan control, water supply, pump control, drainage pump control	50
● Electrical facilities ;	
Optimum lighting, power receiving panel control, transformer control	285
● Electrical load peak shaving;	
Peak shaving, introduction of co-generation	47



SURVEY RESULTS --- Proposals - 1

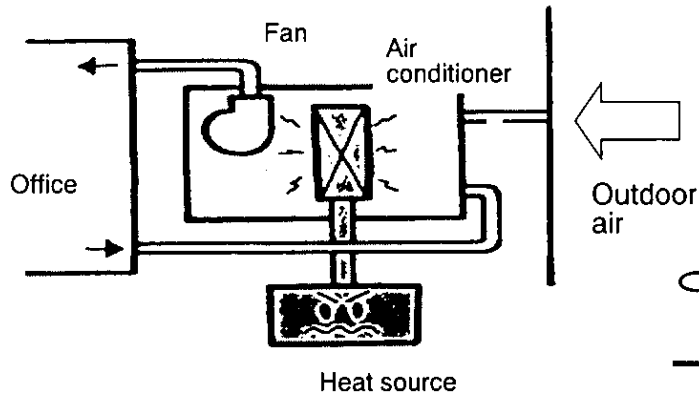


SURVEY RESULTS --- Proposals - 2



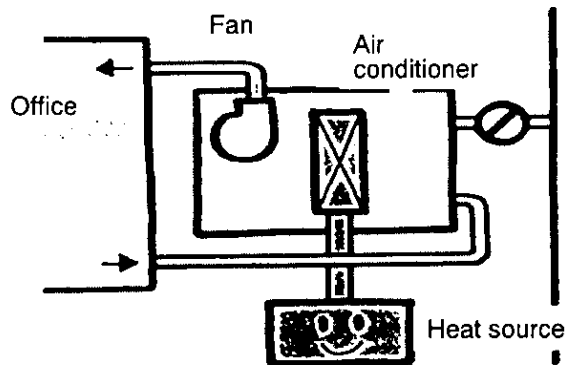
Example - 1: Air Conditioning-1

Preventing outdoor air intake at air conditioner startup



Systems that regularly take in outdoor air increase the load placed on the heat source.

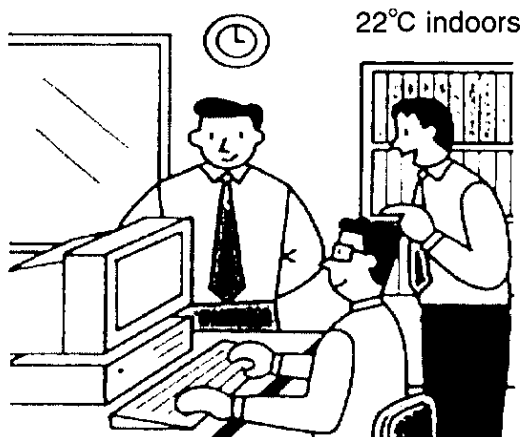
At startup, stopping outdoor air intake reduces the load placed on the heat source.



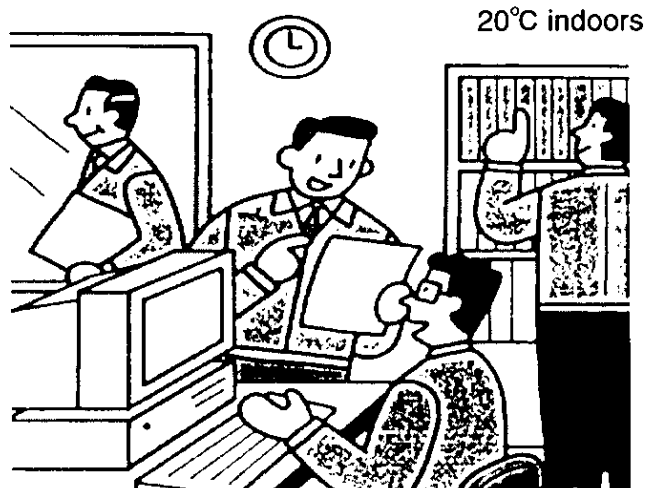
11

Example - 2: Air Conditioning-2

Changing Indoor temperature setting



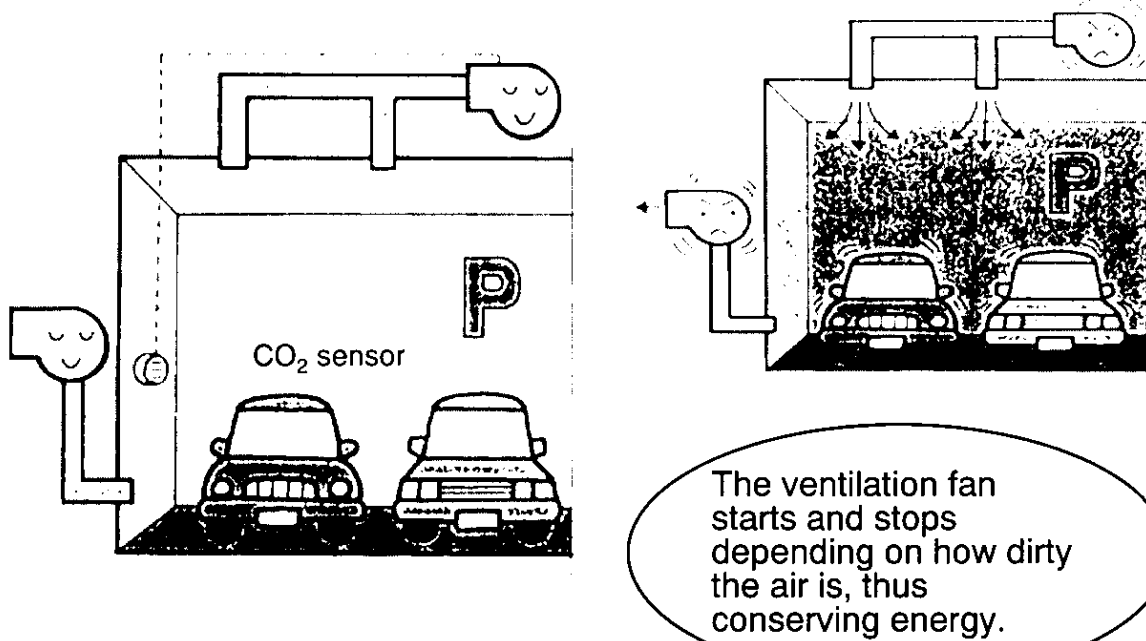
Lowering indoor heating temperature setting from 22 to 20°C can cut heating energy by 20%.



12

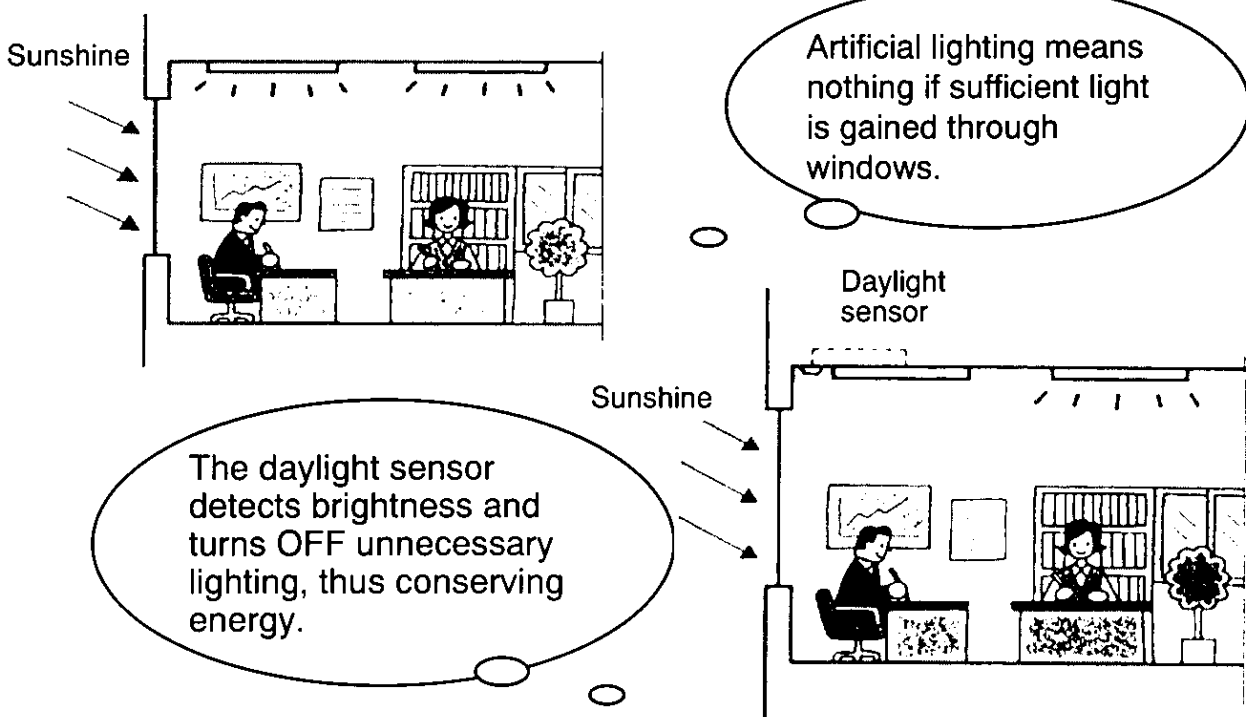
Example - 3 : Ventilation

CO₂ Reduction in underground parking garage ventilation system



Example - 4 : Lighting

Flicker Control for Lighting Using Daylight Sensor



Guidelines by The Law

Ψ Items & Numerical Expression	<u>2</u>
Ψ Air Ratio for Boiler	<u>3</u>
Ψ Air Ratio for Furnace	<u>4</u>
Ψ Heat Recovery for Furnace	<u>5</u>
Ψ Waste gas temp. / Boiler, Wall temp. / Furnace	<u>6</u>
Ψ Power Factor	<u>7</u>
Ψ Motor Efficiency	<u>8</u>

1

Guideline Items

Items of Standard

1. Rationalization of combustion of fuels
2. Rationalization of heating, cooling, heat transfer
3. Elimination of heat loss by emission, conduction
4. Waste heat recovery
5. Rationalization of heat-to-power conversion
6. Elimination of electricity loss by resistance
7. Rationalization of electricity-to-power/heat conversion
8. Utilization of surplus steam

Numerically Expressed Items among Standard

1. Air ratio of boilers
2. Air ratio of furnaces
3. Wall surface temperature of furnaces
4. Exhaust gas temperature of boilers
5. Waste heat recovery ratio of furnaces
6. Electric power factor at receiving point : 95% or more



2

Guideline --- Combustion / Boiler

Air Ratio Standard for Boilers by the Law

Purpose of use	Load ratio %	Solid fuel		Liquid fuel	Gas fuel	Blast furnace gas & others
		Fixed bed	Fluid'd bed			
Power utl'y	75-100	-	-	1.05-1.2	1.05-1.1	1.2
Others						
(Capacity t/h)						
30-	50-100	1.3-1.45	1.2-1.45	1.1-1.25	1.1-1.2	1.2-1.3
10-30	50-100	1.3-1.45	1.2-1.45	1.15-1.3	1.15-1.3	-
5-10	50-100	-	-	1.2-1.3	1.2-1.3	-
-5	50-100	-	-	1.2-1.3	1.2-1.3	-

Air Ratio Target for Boilers by the Law

Purpose of use	Load ratio %	Solid fuel		Liquid fuel	Gas fuel	Blast furnace gas & others
		Fixed bed	Fluid'd bed			
Power utl'y	75-100	-	-	1.05-1.1	1.05-1.1	1.15-1.2
Others						
(Capacity t/h)						
30-	50-100	1.2-1.3	1.2-1.25	1.05-1.15	1.05-1.15	1.2-1.3
10-30	50-100	1.2-1.3	1.2-1.25	1.15-1.25	1.15-1.25	-
5-10	50-100	-	-	1.15-1.3	1.15-1.25	-
-5	50-100	-	-	1.15-1.3	1.15-1.25	-



3

Guideline --- Combustion / Furnace

Air Ratio Standard / Target for Furnaces by the Law

Categories	Type of furnace				Remarks
	Gaseous fuel firing		Liquid fuel firing		
	Continuous	Batch	Continuous	Batch	
Melting furnace for metal casting	1.25 / 1.05-1.20	1.35 / 1.05-1.25	1.30 / 1.05-1.25	1.40 / 1.05-1.30	
Continuous reheating furnace for steel	1.20 / 1.05-1.15		1.25 / 1.05-1.20		
Metal heating furnace except continuous steel reheating	1.25 / 1.05-1.20	1.35 / 1.05-1.30	1.25 / 1.05-1.20	1.35 / 1.05-1.30	
Metal heat treatment furnace	1.20 / 1.05-1.15	1.25 / 1.05-1.25	1.25 / 1.05-1.20	1.30 / 1.05-1.30	
Petroleum heating furnace	1.20 / 1.05-1.20		1.25 / 1.05-1.25		
Heat cracker, reformer	1.20 / 1.05-1.20		1.25 / 1.05-1.25		
Cement kiln	1.30 / 1.05-1.25		1.30 / 1.05-1.25		Liquidal for pulverized coal
Lime kiln	1.30 / 1.05-1.25	1.35 / 1.05-1.35	1.30 / 1.05-1.25	1.35 / 1.05-1.35	Liquidal for pulverized coal
Dryer	1.25 / 1.05-1.25	1.45 / 1.05-1.45	1.30 / 1.05-1.30	1.50 / 1.05-1.50	Only for burner



4

Guideline --- Heat Recovery

Waste Heat Recovery Ratio Standard & Target for Furnaces

Exhaust gas temperature (deg.C)	Capacity class	Exhaust heat recovery ratio		(Reference for target)	
		Standard (%)	Target (%)	Waste gas temperature(C)	Preheat air temperature(C)
500 & under	A & B	25	35	275	190
500 & over, under 600	A & B	25	35	235	230
600 & over, under 700	A	35	40	365	305
	B	30	35	400	270
	C	25	30	435	230
700 & over, under 800	A	35	40	420	350
	B	30	35	460	310
	C	25	30	505	265
800 & over, under 900	A	40	45	435	440
	B	30	40	480	395
	C	25	35	525	345
900 & over, under 1,000	A	45	55	385	595
	B	35	45	485	490
	C	30	40	535	440
1,000 & over	A	45	55		
	B	35	45		
	C	30	40		

Notes: A: Rating capacity of over 20 Gcal/h (84 GJ/h)
 B: Rating capacity of 5 to 20 Gcal/h (21 to 84 GJ/h)
 C: Rating capacity of 1 to 5 Gcal/h (4 to 21 GJ/h)



5

Guideline --- Waste & Wall Temperature

Standard & Target for Exhaust Gas Temperature of Boilers

Purpose of use	Solid fuel		Liquid fuel	Gas fuel	Blast furnace gas & others
	Fixed bed	Fluid'd bed			
Power utility	-	-	145 / 135	110 / 110	200 / 190
Others (Capacity t/h)					
30-	200 / 180	200 / 170	200 / 160	170 / 140	200 / 190
10-30	250 / 180	200 / 170	200 / 160	170 / 140	-
5-10	-	- / 300	220 / 180	200 / 160	-
-5	-	- / 320	250 / 200	220 / 180	-

Standard / Target for Wall Surface Temperature of Furnace

Furnace temperature	Standard / target wall temperature		
	Roof	Side wall	Bottom facing air
Over 1.300	140/120	120/110	180/160
1.100 over & under 1,300	125/110	110/100	145/135
900 over & under 1,100	110/100	95/90	120/110
Under 900	90/80	80/70	100/90



6

Guideline --- Power Factor

Equipment for which power factor should be improved

Equipment	Capacity (Unit: kW)
Cage-type induction motor	75
Coil-type induction motor	100
Induction furnace	50
Vacuum melting furnace	50
Induction heater	50
Arc furnace	—
Flash butt welder (excluding portable type)	10
Arc welder (excluding portable type)	10
Rectifier	10,000

Note: Exclude equipment for which application is difficult in terms of safety considerations, such as explosion-proof types



Guideline --- Motor Efficiency

Target efficiency for high-efficiency totally enclosed generators (0.2~37 kW)

Output (Unit: kW)	Standard value for total load efficiency (Unit: %)					
	2 poles		4 poles		6 poles	
	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz
0.2	73.8	75.3	72.6	75.4	—	—
0.4	78.0	79.4	77.5	80.0	74.6	78.0
0.75	81.8	82.4	81.4	83.2	80.0	82.0
1.5	84.4	84.8	84.4	85.8	83.5	85.0
2.2	86.5	86.3	86.6	87.6	85.8	86.8
3.7	88.0	87.8	88.4	89.2	87.4	88.0
5.5	89.3	89.0	89.8	90.3	88.8	89.3
7.5	90.4	80.0	90.8	91.0	89.8	90.3
11	91.2	90.8	91.6	91.8	90.8	91.2
15	91.8	91.5	92.2	92.2	91.6	91.8
18.5	92.4	92.0	92.6	92.6	92.2	92.4
22	92.9	92.3	93.0	92.8	92.7	92.8
30	93.3	92.6	93.3	93.0	93.0	93.0
37	93.5	92.8	93.5	93.2	—	—

Note: Standard values for total load efficiency are those specified in "2. Characteristics calculation using circle diagram method" of JIS C4207 (Characteristics calculation methods for three-phase induction generators).



Methods for Promoting Energy Conservation

To institutionally promote energy conservation in factories and buildings:

- Create an energy conservation organization 2
- Implement daily energy management 3
- Specify energy base unit 4
- Perform base unit analysis 5
- Identify proposals for improving energy consumption 6
- Base Unit Plan for Following Quarter 7
- Energy management promotion method - 1 8
- Energy management promotion method - 2 9

1

Create an Energy Conservation Organization

- Create an energy conservation committee
- Committee Chairman is head of relevant company subdivision (plant manager, division manager, etc.)
- Nominate persons in charge of each subdivision within the company as committee members
 - Also ensure participation by indirectly related subdivisions (such as development, clerical, and purchasing departments)
- Appoint energy specialist as General Secretary (reports directly to Chairman)
- Specify authority of committee
 - Responsibilities of each subdivision, system for implementing energy conservation, medium-term energy conservation targets, annual plans, summary and evaluation of energy conservation performance



2

Implement Daily Energy Management

- Energy usage plan
 - Include targets in base units for each quarter and each process
- Ascertain actual energy usage figures
 - Do this for each main process
 - Install measuring instruments such as flowmeters
- Analyze discrepancy between plan and actual figures (base unit analysis)
 - Make this the responsibility of direct users
 - Identify and analyze problems and improvement measures
 - Don't consider only technical problems
 - Reflect results when drawing up usage plan for next quarter



3

Specify Energy Base Unit

- Base unit is (amount of energy used) / (amount of production)
- Mesh for base unit calculation is set in accordance with target for entire plant / individual process / person responsible for usage / etc.
- Amount of energy used (numerator) is:
 - Heat and electricity converted to a crude oil basis (expressed in units of heat from amount of crude oil)
 - Classified into fuel, steam, water, pressurized air, electric power, etc. (in appropriate units for each)
- Amount of production (denominator) is amount of manufacture, amount of processing, value of items handled, etc.
 - Use an index directly related to amount of energy used
 - Tons / items / m² / lots / number of users / operation time / floor area



4

Perform Base Unit Analysis

- Comparison with other cases
 - Same quarter of previous year / Other similar plants / Values in plan / etc.
- Relationship with amount of production (Use a graph to view)
 - Track down and eliminate fixed energy uses unrelated to production
 - Do not exclude changes in amount of production and quality composition as external causes
- Correlation with non-technical causes such as product composition and number of operational days
 - Is energy used even on non-operational days?
 - Need to develop energy conservation measures that can also cope with non-technical causes
- Comparison with theoretical necessary amount
 - Is improvement possible through changes in equipment, processes, etc.?
 - Investigate the requirements leading to the theoretical necessary amount (What are the purposes? Have requirements been minimized in terms of temporal and spatial extent, temperature, etc.?)



5

Identify Proposals for Improving Energy Consumption

- Energy conservation starts from end usage
 - First, rationalize end consumption of energy
 - Optimize transmission and supply systems
 - Conserve energy in systems where demand and purchase occur
- Technical staff and contractors should take part in consideration
- Enable response to future changes in load (changes in amount of production, days of operation, and quality)
- Also consider relationship with preceding and following processes
- Also consider application (extension) to similar processes



6

Base Unit Plan for Following Quarter

- Incorporate results of energy conservation improvement when drawing up base unit plan for next quarter
- Also include changes in production (due to market trends) and changes in equipment (stoppages due to repair, etc.) in base unit plan
- Targets in base unit plan should be agreed between management and operational sides



7

Energy Management Promotion Method - 1

1. Leader is President or Plant Manager
2. Appointment of subdivision or person in charge of energy conservation and delegation of authority
3. Employee education
4. Improvement activities through participation by all employees
5. Requesting advice from external specialists

Creation of energy management organization

1. Clarification of energy conservation policy by plant operator (targets, attainment schedule, amount of investment)
2. Creation and implementation of specific targets and plans by related subdivisions

Setting of energy conservation targets

1. Installation of necessary measuring instruments (flowmeters, thermometers, pressure gauges, meters for O₂ content of exhaust gas, ammeters, voltmeters, wattmeters, etc.)
2. Quantitative determination of energy flow (origin, transport, consumption)
3. Analysis of relationship between operation conditions and amount of energy used
4. Recording, organization, and graphing of measured values

Ascertainment of energy usage situation



8

Energy Management Promotion Method - 2

Energy base units, energy comparison (energy consumption rate), etc.

Amount of energy used, amount of goods produced

**Energy base
unit
management**

1. Identification of problems and improvement measures through participation by all employees in each subdivision
2. Planning of specific improvements (elimination of unsuitable proposals)

**Planning of
improvements**

1. Run improvements through PDCA (Plan, Do, Check, Act) management circle
2. Ensure that improvement proposals are known to all persons concerned
3. Comprehensively manage state of progress
4. After targets are attained, standardize the work involved

**Specific
planning and
implementation of
improvements**



Energy Conservation Center

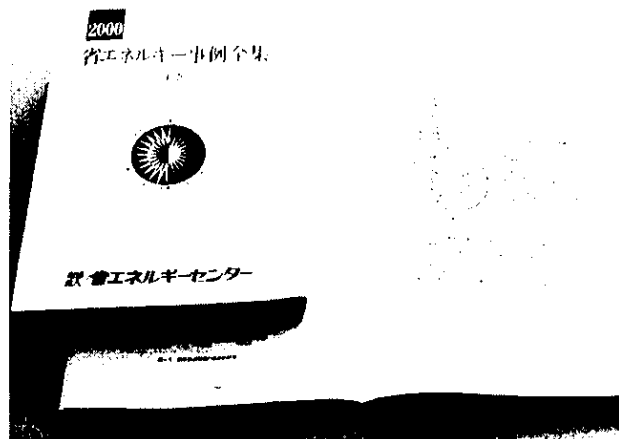
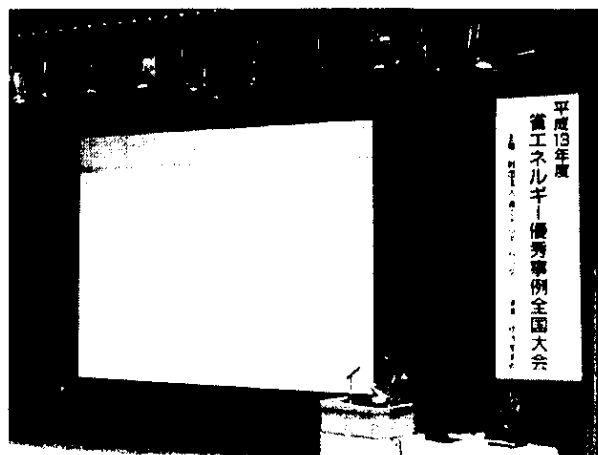
• Case Presentation Activity of ECCJ	2
• Small Group Improvement Approaches	3
• Case Presentation Meetings	4
• Participation on Case Presentation Activity	5
• Rationalization of Air System	6
• Heat Insulation Improvement	7
• Hybrid Co-generation on Public Bath	8
• Energy Saving Pickup Strategy	9
• Practical Education Course	10
• Electricity Course	11
• Q/A Consulting Service of ECC	12
• Frequently Asked Questions	13
• Wide Variety of Questions	14
• Number of Questions is Increasing	15
• The Energy Conservation Center --- ECCJ	16
• Activities of Energy Conservation Center	17
• Overseas Activities of Energy Conservation Center	18

1

Case Presentation Activity of ECCJ

Energy Conservation Improvements by Groups of Plant Operators

- ✓ ECCJ invites actual energy conservation cases through activities by small groups of plant operators and holds presentation meetings.
 - ECCJ has held presentation meetings each year since 1975. Participation in or attendance at the meeting and materials are free of charge.
 - Cases with great success are given prizes (66 cases in 2000)



2

Small Group Improvement Approaches

- √ Identifying and analyzing the current situation
 - The same operators form a group.
 - Identify the actual energy consumption by group operations.
 - Perform measurement by operation condition and draw a graph of the tendency.
 - Operation conditions: Products, processes, etc.
 - Fuel, electric power, steam, compressed air, water, nitrogen
- √ Detecting problems and reviewing improvements
 - Discussion by group members
 - Improvement planning: Using engineering staff and external information (from manufacturers, etc.)
 - Evaluating improvement proposals: Reliability and operation- and quality-related performance of technology, cost, and effects
- √ Implementing improvements
 - The internal energy committee adopts and implements (carries out) improvements.
- √ Confirming effects, standardizing operations, development of improvements to other departments

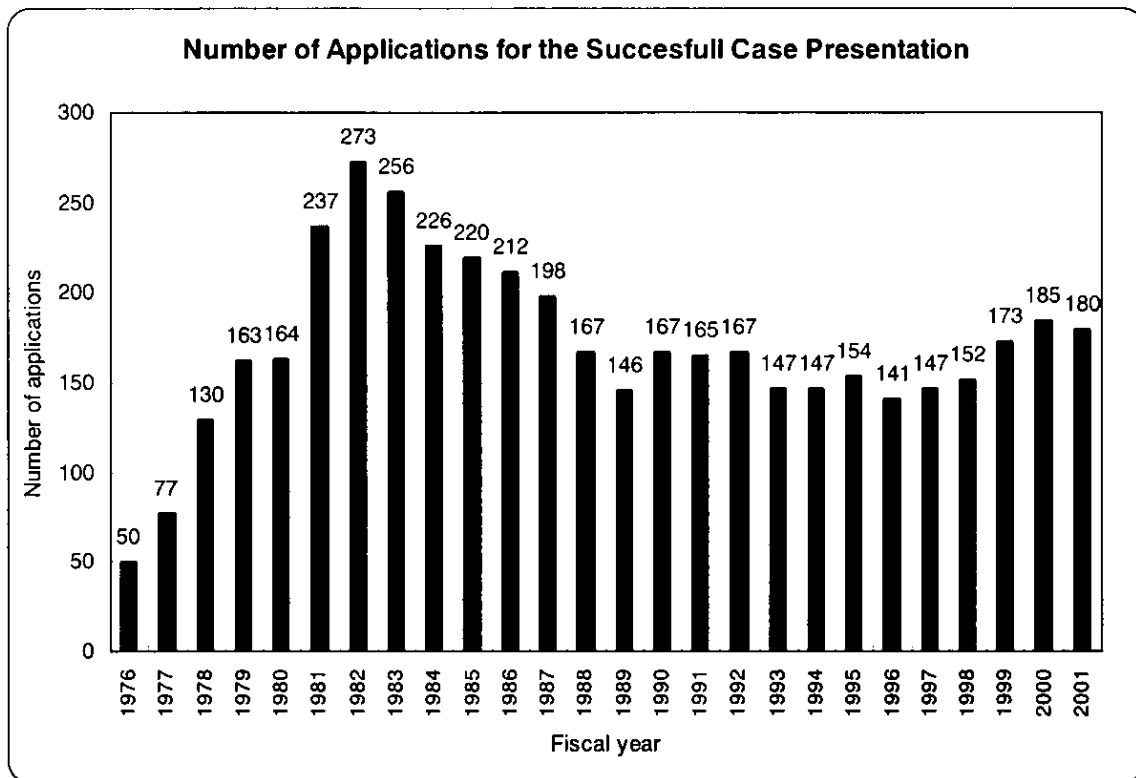
3

Case Presentation Meetings

- √ Branch presentation meeting
 - A branch presentation meeting is held at eight branches of the Energy Conservation Center in Japan.
 - All entrant groups present their activities, and judges and public audiences sit in on here meetings.
- √ Central presentation meeting
 - The central presentation meeting is held in each February, the energy conservation month.
 - Each presentation meeting is held for two days at the same location as ENEX (an exhibition) in Tokyo and Osaka.
 - Prize-winning cases (47 cases in 2002) were presented (the Minister of Economy, Trade and Industry Prize and the Chief of the Agency of Natural Resources and Energy Prize are given in both locations, and others are given in only one location).
 - The total number of audience was 1,615 (973 in Tokyo, 642 in Osaka).
 - Attendance at the meeting and a question-and-answer session is free of charge.
 - Besides details of technology, approaches to and ideas for how to push forward with improvements can be obtained.

4

Participation on Case Presentation Activity



5

Example 1: Rationalization of Air System

Compressed air savings

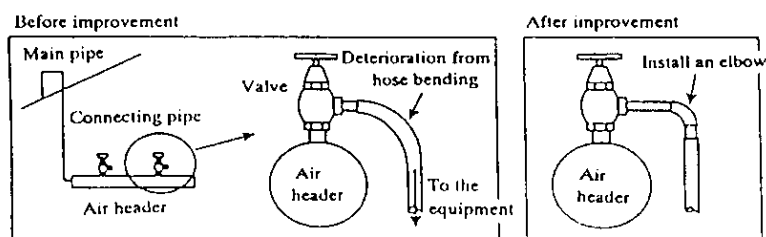
Car assemble plant, Employee of 6,900

Annual energy consumption Power:436GWh, H.Oil:37,000kL, Buthane gas: 13,000ton

Items and effect of measures

Power saving

Items	Counter measures	Power saving (mill.yen/year)
(1) Air reduction during operation	Leakage reduction	40.0
	Pressure optimization	20.0
(2) Reduction in non operation period	Improvement in air feed start on Monday morning	4.0
(3) Compressor efficiency improvement	Generating pressure reduction	2.0
	Controlling running units	2.0
(4) Others	Air reduction in production process	0.6



Measures to deal with the air leak

6

Example 2: Heat Insulation Improvement

Steam pipe insulation improvement in power plant

Annual energy & capacity LNG:731,000t, LPG: 190,000t 220MW*3unit+560MW*1unit

Items and effect of measures (Heat emission, No.2 unit)

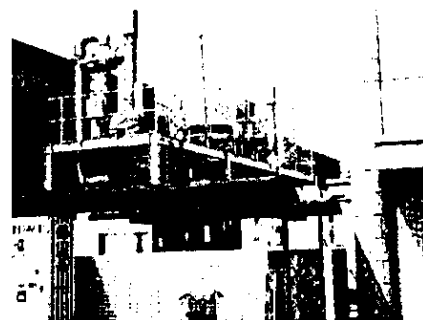
Pipeline D-mm*L-meter	No. of layer Thickness	Heat emission (on ambient 20°C, kcal/(m*hr))		
		Designed	Before renewal	After renewal
(1) Main steam 480 dia*60 mL	Double layer 150mm	375	1403	367
(2) High temp. reheat 682 dia*60 mL	Double layer 150mm	494	1607	491
(3) Low temp. reheat 616 dia*60 mL	Single layer 90mm	318	1015	285
(4) Cir.pume downcom 360 dia*60 mL	Single layer 90mm	214	902	205
Fuel saving, annual 1,590,000 yen	Investment 14,800,000 yen	P.B.P 9.3 year		

7

Example 3: Hybrid Co-generation on Public Bath

- v Improvement: Co-generation is introduced into a composite facility of large-scale public bath and supermarket
- v Annual energy consumption: heavy oil 264 kl, LPG 45 t, power consumption 247 MWH
- v Before improvement: Bath facility and supermarket received power separately. Hot water boiler was installed in the bath facility.
- v Improvements:
 - Common power reception for supermarket and bath facility
 - Diesel engine 170 kW x 2 units, micro gas turbine (MGT) 30 kW x 1 unit, heat from warm water retrieved for all
 - Operation: MGT is operated 24 hours (warm water stored at night), and the diesel is stopped at night (inexpensive power purchased)
- v Effects:
 - Energy cost reduction (power, fuel, consignment to qualified person) 17,541,000 yen (32.9% reduction)
 - Reduction in energy consumption (power + fuel converted to crude oil) 131 kl (13.4 %), overall efficiency 66%

MGT
1-30kW



Diesel
2-170kW

8

Example 4: Energy-saving Pick-up Strategy

- v Manufactured product: Construction vehicle / industrial diesel / hydraulic systems
 - v Annual energy consumption: Power 81,917 MWh, fuel (converted to crude oil): 9,743 kl
 - v Improvements:
 - Enhanced supply of natural lighting for factory work (incorporated into structure retrieval plan)
 - Improvement in efficiency of in-house co-generation: Heat is retrieved during no heating time for heat storage, recycling of smokestack heat
 - Improvement in air-conditioning efficiency: Factory's waste water is sprayed over factory roof to reduce air-conditioning cost.
 - Output from engine durability test is retrieved as power through a regenerative wattmeter.
 - v Effects: 29 % reduction in air-conditioning energy, 14 % reduction in power consumed for lighting, 30 % reduction in fuel for heating / air-conditioning.
- Effect in figure: 31,708, 000 yen annually (107,200,000 yen in investment)

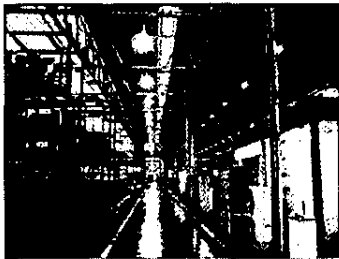


Fig-11 Factory before improvement



Fig-12 Factory after improvement

96 t/h water (equivalent to 2 mm/h precipitation)



Fig-7 Water being sprayed over roof

9

Practice Education Course

This small-group course provides lectures and practice in measurement and analysis.

- This is a 2-day course (overnight).
- Four classes - introductory, heat, electricity, and idea development ? are held.
- Each class is provided four times (two days each) a year.
- Lectures and practice are included.
- In 2001, a total of 15 courses were held with 191 participants.

A total of seven courses were held in local areas (Nagoya, Osaka).

10

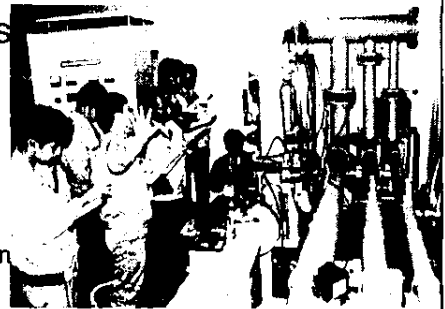
Practice Education Course - Electricity Course

Course 1: Power saving and measurement (2 days)

- Power conservation for receiving/distribution systems,
- pumps, fans, and compressors
- Meter connection, practice in measurement
- Loss measurement of distribution lines

Course 2: Power saving for compressors (2 days)

- Types and characteristics of compressors, energy conservation technology
- Practice in compressor operation and air leakage



Course 3: Power conservation for pumps and fans (2 days)

- Characteristics of pumps and fans, electric power conservation technology
- Measurement and data analysis, development of improvement ideas

Course 4: Power conservation for lighting and transformers (2 days)

- Characteristics, electric power conservation technology, practice in measurement
- Characteristics of air conditioning systems, energy conservation cases, demand management
- Unit requirement management, the Energy Conservation Law, tax privileges

11

Q/A Consulting Section on Buildings & Factories

The Energy Conservation Center opens a consultation section to answer questions.

Designated experts answer questions.

The Energy Conservation Center answers questions through experts based on its accumulated know-how.

Answers are replied in writing within two days in principle.

Anybody can ask questions (not limited to Energy Conservation Center members).

We accept questions relating to the following (both industry and private sector):

- 1. Energy conservation technology
- 2. How to promote energy conservation
- 3. About the modified Energy Conservation Law

E-mail us your questions at the following address. Our consultation service is free.

E-mail address: soudan@eccj.or.jp

(If you do not have any E-mail address, send your questions by facsimile at 03-5543-3021.)

<http://www.eccj.or.jp/factory/ask/index.html>

12

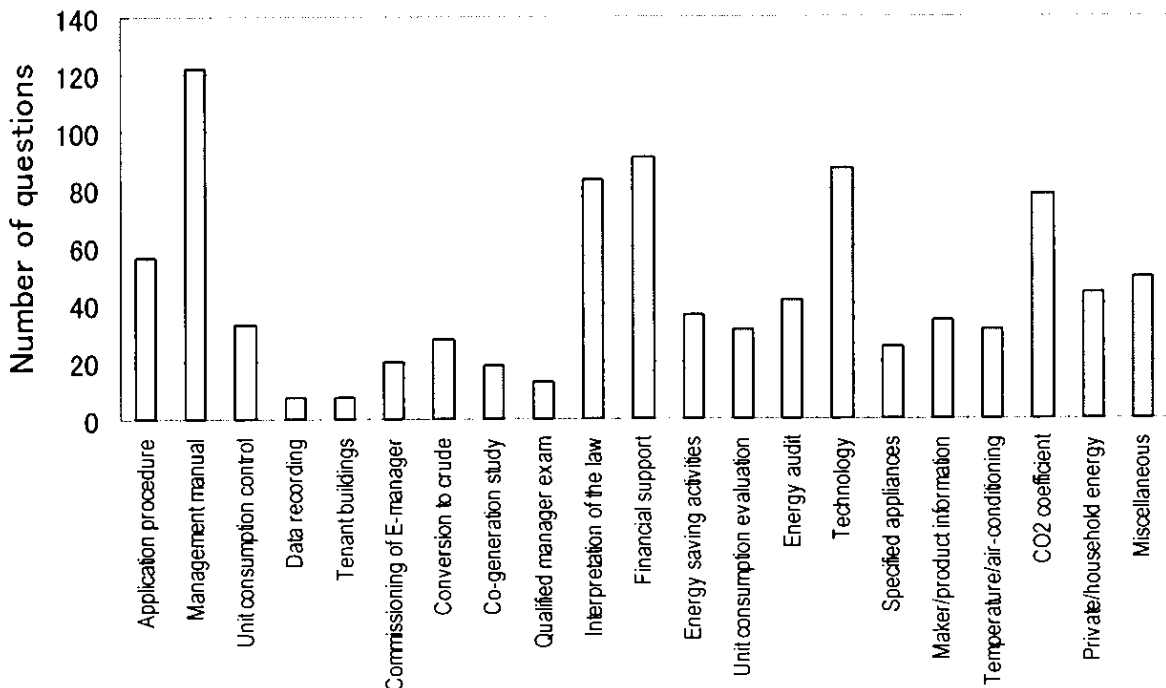
Frequently Asked Questions

- A. Application procedure
- B. Preparation of management standards
With launch of investigation of designated plant
- C. Reduction in unit requirement
- D. Recording method
Class 2 designated plants are required to take records.
- E. Tenant buildings
- F. Commission to outside managers (management personnel)
Designated plants may not have any qualified managers or management personnel.
- G. Values in crude oil
Notifications must state values in crude oil.
- H. Review of cogeneration
- I. Energy saving manager tests and lectures
Interest in qualifications for energy saving managers is growing with the reinforcement of laws.
- J. Interpretation of other laws

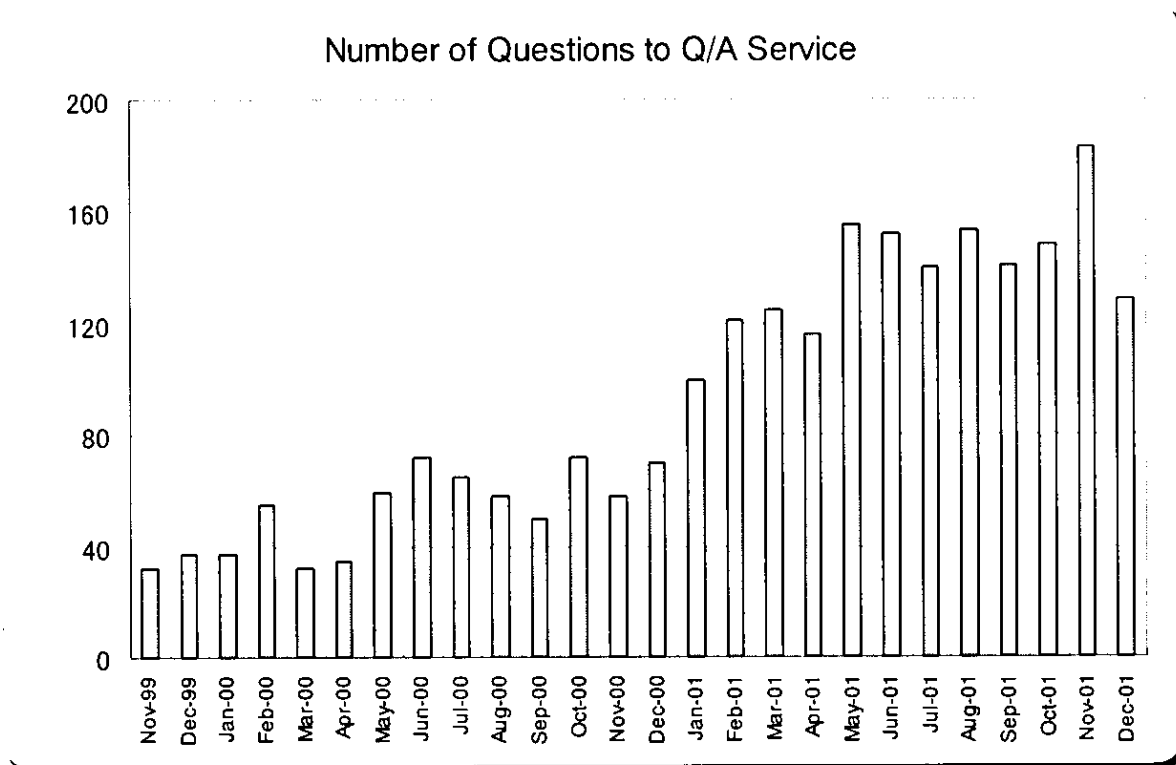
- K. Energy conservation aid L. Energy conservation activities
The Energy Conservation Law requires a 1% reduction in unit requirement.
- M. Comparison of unit requirement values
- N. Diagnosis and diagnosis results
The Energy Conservation Center conducts a variety of energy conservation diagnoses.
- O. Energy conservation technology
- P. Specified appliances, etc.
- Q. Manufacturer information, product evaluation
The energy conservation performance of products for private use is compared and evaluated.
- R. Air conditioning temperature setting
- S. Carbon dioxide emission coefficient
Enterprises may manage the emissions of carbon dioxide.
- T. Energy conservation in private sector and at households

Wide Variety of Questions

Questions to Q/A Service (F.Y. 2000)



Number of Questions is Increasing



15

The Energy Conservation Center

Annual budget : 9,200 mill yen/2002, Employee : 230, Branch : 8

History of ECC

- v 1947 Government rule for heat energy control established
--- designated factory, heat manager ,examination
- v 1947 Local Heat-management Associations were established,
independently, throughout Japan.
- v 1951 The government rule was developed into
"Heat Management Law".
- v 1972 Local associations were united into
"Heat Energy Technology Association of Japan".
- v 1973 First oil crisis
- v 1978 The association was reorganized into
"Energy Conservation Center".
- v 1979 Second oil crisis
- v 1979 Law was developed into "Energy Conservation Law"
- v 1999 The Law was reinforced,
2nd category of designated factory

16

Activities of Energy Conservation Center

Support from ECC to Factories

Energy audit to factories:

- Audit with measurement SMEs, one-day hearing+3days measurement+oneday report, 65 factories in 2000
- One-day audit to medium factory For designated factory of 2nd category (150 factories, 2000).
- Building audit One-day, heat and electricity for 150 buildings (2000).

Survey visit to designated factory:

- Energy management standards, for 4200 factories of 1st category (2001-2003).

Support to national examination:

- Correspondence course for examinee.
- Short term training course for examinee.

Conducting national energy manager examination:

- Examination on every summer, one-day.
- Training course with final examination, every winter, 7 days.

Presentation rally of small groups successful cases.

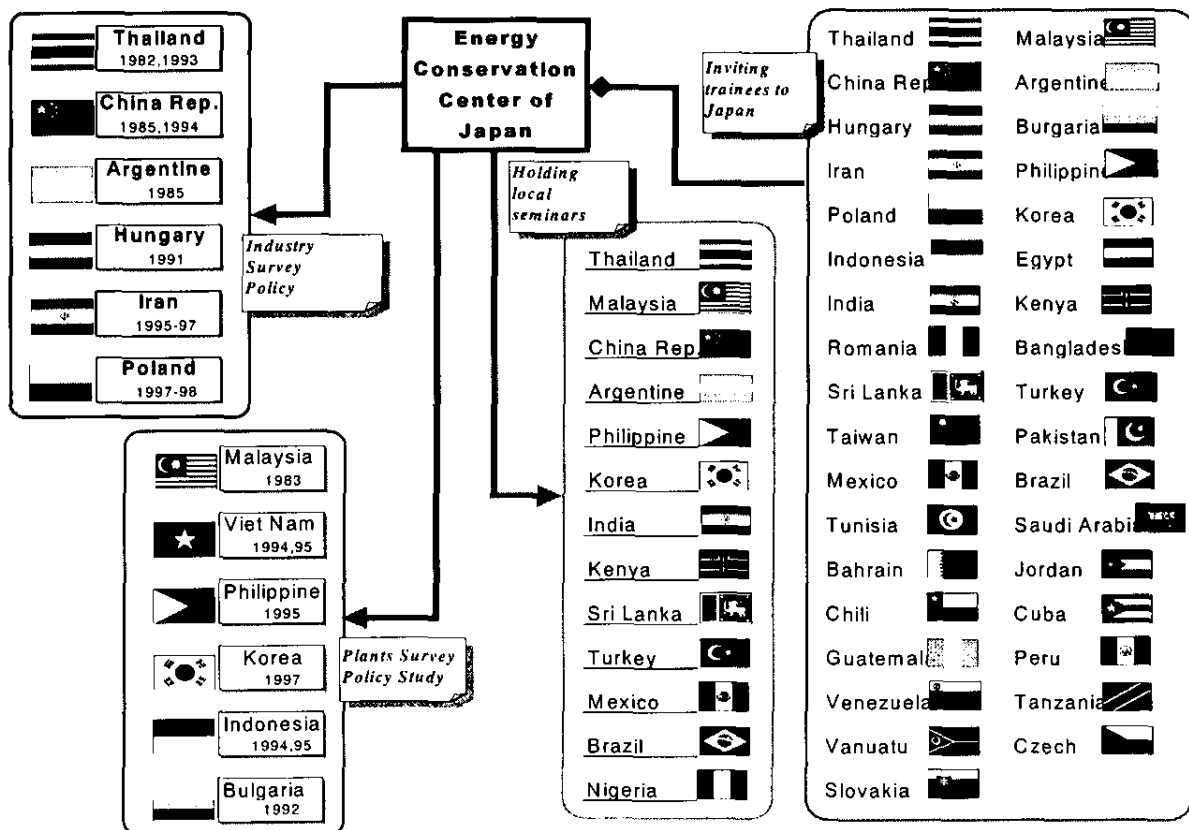
Publishing technical books, monthly magazine, software.

Information service via e-mail to ECC supporting members, 1300 addresses.

Q/A service to membership through e-mail or faximile.

17

Overseas Activities of ECCJ



18

省エネeメール相談コーナー

Q/A Service through e-mail

1.eメール相談へ(soudan@eccj.or.jp)

主な相談内容は次のとおりです。

- 1. 省エネルギー技術
- 2. 省エネルギーの推進方法
- 3. 改正省エネルギー法に関すること等

ご質問をeメール(soudan@eccj.or.jp)でお送り下さい。ご相談は無料です。
(eメールアドレスをお持ちでない方は、FAX:03-5543-3021へ)

Technology on Energy Saving
Promotion technique for Energy Saving
Legal regulation

2.FAQ(よくある質問) ※ただし、内容を見直し中です。

- | | | |
|--------------|----------------|----------------|
| A. 申請手続き | B. 管理標準作成 | C. 原単位低減 |
| D. 記録方法 | E. テナントビル | F. 管理者(員)の外部委託 |
| G. 原油換算係数 | H. コージェネ検討 | I. 管理者試験・講習 |
| J. その他の法解釈 | K. 省エネ助成措置 | L. 省エネ活動 |
| M. 原単位の比較値 | N. 診断と診断結果 | O. 省エネ技術 |
| P. 特定機器等 | Q. メーカー情報・製品評価 | R. 冷暖房温度設定 |
| S. 二酸化炭素排出係数 | T. 民生・家庭 | U. その他 |

Frequently Asked Questions:

Legal application form
Conversion to crude oil volume
Energy intensity (unit consumption)
CO2 emission coefficient
Operation standard for industry
Governmental subsidies
Energy audit
Energy manager examination
Room temperature setting on air-conditioning

※お断り

この相談コーナーでの法令解釈に関する回答は、当方の解釈を示したもので絶対的なものではありません。最寄りの経済産業局エネルギー対策課にご相談なさることを強くお勧めします。

3.工場調査に関するQ&A(その1)

- | | |
|----------------------|---------------|
| A. 工場調査のスキームについて | B. 事前調査票の発送 |
| C. 管理標準の作成 | D. 工程の考え方 |
| E. 総括表の記載 | F. 記入対象エネルギー |
| G. 事前調査票作成のための原油換算係数 | H. 法定7項目の当てはめ |
| I. 個票の記載 | J. 基準値の遵守 |
| K. 計測・記録 | L. 工場の評価点 |
| M. 原単位の悪化 | N. 調査対象期間 |

Plant Survey for designated factories:

Scheme
Document preparation before visit
Energy intensity evaluation
Items on document

平成13年度から第一種エネルギー管理指定工場はじめて、新しいスキームによる工場調査が始まる。
本年2月に各経済産業局と併せて省エネルギーセンターとの共催で「エネルギー管理者シンポジウム」を開催。
本Q&Aは、そのシンポジウムの資料に添付された「質問表」によって寄せられた質問、および当センター「Survey work period」
の「eメール相談コーナー」に寄せられた質問のうち、読者の参考になるとと思われる内容についてとりまとめたものです。

工場調査に関するQ&A(その1)

- | | |
|----------------------|---------------|
| A. 調査のスキームについて | B. 事前調査票の発送 |
| C. 管理標準の作成 | D. 工程の考え方 |
| E. 総括表の記載 | F. 記入対象エネルギー |
| G. 事前調査票作成のための原油換算係数 | H. 法定7項目の当てはめ |
| I. 個票の記載 | J. 基準値の遵守 |
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工場調査に関するQ&A(その2)

- | | |
|----------------------------|---------------|
| A. 調査のスキームについて | B. 管理標準の作成 |
| C. 考え方 | D. 総括表の記載 |
| E. 記入対象エネルギー | F. 法定7項目の当てはめ |
| G. 枚数と個票がカバーすべきエネルギー使用量の割合 | H. 個票の記載 |
| I. 基準値の遵守 | J. 計測・記録 |
| K. 評価点 | L. 原単位の悪化 |
| M. その他(石油化学関連) | |

Energy saving on building

建物の省エネ Q&A

合集

エネルギーの使用の合理化に関する法律等老の一覧と解説です。

law & related regulations

エネルギーに関する各種助成制度(金融上、税制上、その他)の解説です。

Subsidies & insentives

]]

0030388

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(財)省エネルギーセンターの

省エネeメール相談コーナー

ご質問はeメールでお送りください!

soudan@eccj.or.jp

eメールアドレスをお持ちでない方はFaxで!

FAX : 03-5543-3021

(原則として受取ってから翌々日(土休を除く)夜にお答えします。)
電話でのご相談は、ご遠慮しております。

相談内容

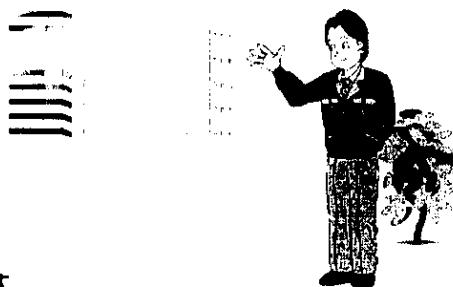
- ◎ 省エネルギー推進方法
- ◎ 省エネルギー技術
- ◎ 改正省エネ法に関する事
- ◎ エネ革税制及び
助成制度に関する事



電話でのご相談は、ご遠慮しております。

相談内容

- ◎ 省エネルギー推進方法
- ◎ 省エネルギー技術
- ◎ 改正省エネ法に関する事
- ◎ エネ革税制及び
助成制度に関する事
- ◎ ビル・家庭の省エネルギー
- ◎ 省エネルギー全般情報



* ご相談は**無料**です。

よくある質問



- | | | |
|------------------------|-------------|------------|
| * 申請手続き | * 管理標準作成 | * 原油換算値 |
| * テナントビル | * コージェネ検討 | * 管理士試験・講習 |
| * 省エネ助成措置 | * 原単位の比較値 | * 診断と診断結果 |
| * 省エネ活動 | * 冷暖房温度設定 | * トップランナー |
| * CO ₂ 排出係数 | * 家庭に於ける省エネ | * その他法解釈 |



ECC The Energy Conservation Center

The Energy Conservation Center contributes to the efficient use of energy, protection of the Global environment and sustainable development.



Result of Energy Conservation and CO2 Exhaust

Energy Conservation Measures in the Future (June 2001)

Energy Star Program

Voluntary program to promote reduction in stand-by power of office equipment

(Overview, Registration procedure, Specifications, and link to [US/EPA](#))

Energy Conservation Performance

[2000 Winter](#), [1999 Winter](#)

Grass-roots Activities of Energy Conservation

[Ene Con Ambassador](#),

Energy Conservation of Factory, Building, Office

[Successful Case](#),

Energy Conservation Handbook

[DataBook 1999/2000](#), [DataBook 1998](#)

Policy and Law

[Fundamental Policies for Rational Use of Energy](#)

[Law concerning the Rational Use of Energy \(Energy Conservation Law\)](#)

[Enforcement Ordinance for the Law](#)

[Enforcement Regulation for the Law](#)

[Evaluation Criteria for Specified Equipment](#)

[Partially Amending for the Law](#)

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[Criteria for clients for houses](#)

[Design and construction guidelines for houses](#)

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Result of Energy Conservation and CO2 Exhaust

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