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9. Energy Manager System in Japan

エネルギー管理士制度

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http://www.eccj.or.jp/index_e.html

Structure of the Energy Conservation Law

（1979 enforced, 2002 amended and 2003 reenforced）

[Basic objective]

- Enhancing energy efficiency in order to achieve 3E's harmonization.

- Regulations regarding factories and places of business
- Regulations regarding buildings
- Energy efficiency standards for appliances and automobiles (Top Runner Program)

Three Pillars of Energy Efficiency & Conservation Measures

Regulation measures (Energy Conservation Law)

《Measures for factories and business offices》

Measures for factories, etc. that consume a large amount of energy
* Each factory is obligated to submit its report regularly on the use of energy.
* It is obligated to submit its future energy conservation plan.
* It is obligated to hire an energy manager.

(Number of target factories: Approximately ten thousand factories)

《Measures for equipment》

Each manufacturer is under an obligation to improve efficiency based upon the standards by the top-runner method* concerning the energy consumption of electric home appliances and OA equipment, and fuel consumption of automobiles
(Eleven equipment including air-conditioner, refrigerator, TV and VCR)
* Tighten the regulation to follow the standard so that the performance will be better than that of the most efficient of the current products

《Measures for buildings》

To check whether energy conservation measures are taken at the stage of construction of a building

Promotion measures (Subsidy, tax and financial investment)

《To promote the installation of energy conservation equipment in business offices and local governments》

① Subsidy and model project for the installation of energy conservation equipment
* Promotion and diffusion of an energy management system for households and buildings
* Support for the ESCO project
* To enhance the introduction of highly efficient hot-water supply equipment

② Special repayment and tax deduction for the installation of energy conservation equipment

③ Low-interest loan for the installation of energy conservation equipment

《Development of energy conservation technology》

Development of energy conservation technology
* Technology development of by the state government
* Support for technology development by private companies

Trinity of Energy efficiency & conservation promotion

To provide information (Public relations, labeling and education)

《Public relations and advisory activity》

① To provide advises concerning energy conservation by dispatching experts
② To distribute catalogues of energy conservation products

《Labeling》

To indicate the achievement rate of energy conservation of equipment by labeling system

《Education》

To encourage energy conservation education to primary and secondary schools

Major Amendments of the Law concerning the Rational Use of Energy (1)

Year	Amendment	Items amended
1979	Legislation	●Designated energy management factories : 3,500 business enterprises. ●Designated factories accounted for 60 percent of energy consumption in the industrial sector. ●Appointment of the energy manager was mandatory. ●The system of examination for the energy manager was established.
1983	1st amendment	●Simplification of administrative procedures (entrust qualification system to the private sector) . ●The Energy Conservation Center, Japan (ECCJ) was nominated as the designated agent. • Examination of Qualified Person for Energy Management • Qualification Course of Qualified Person for Energy Management
1993	2nd amendment	●Strengthening of implementation of effective energy conservation measures. • Enforcement of mandatory periodical reporting obligation.

Major Amendments of the Law concerning the Rational Use of Energy (2)

Year	Amendment	Items amended
1998	3rd amendment	●Enforcement of additional energy conservation measures on all industries (Strengthening in the residential and commercial sector in particular). ●Extension of the scope of designated energy management factories (2nd class designated energy management factory). ●Imposition of obligation on the 1st class designated energy management factories for submission of future plans. ●Major amendment of the examination system (facilitating examinations). • Examination day (2days → 1day) • 6 subjects → 4 subjects • Examination exemption system with passed subjects
2002	4th amendment	●Abolition of specifying 5 business types for the 1st class designated energy management factories. ●Imposition of obligation on 2nd class designated energy management factories for submission of periodical report.

Key Word

- 1st class designated Energy Management factory
- 2nd class designated Energy Management factory
- Energy Manager
- Energy Management Officer
- License of Qualified Person for Energy Management
- Examination of Qualified Person for Energy Management
- Qualification Course of Qualified Person for Energy Management
- Training Course of Energy Management Officers (Obtainment the qualification/ Improvement in knowledge and skill)

1. Designated Energy Management Factories

Originally Designated Energy Management Factory

Energy consumption in a year		Type of business	
Heat (Fuel)	**Electricity**	**- Manufacturing - Mining - Electric supply - Gas supply - Heat supply**	**Every type of business except those in left column Ex. Office building, stores, hotels, schools, etc.**
3,000 kL	**12 Million kWh**	**Designatd Factory**	
0 kWh	**0 kWh**		

Revised1999／6 Designated Energy Management Factory

Energy consumption in a year		Type of business	
Heat (Fuel)	Electricity	- Manufacturing - Mining - Electric supply - Gas supply - Heat supply	Every type of business except those in left column Ex. Office building, stores, hotels, schools, etc.
3,000 kL	12 Million kWh	1st class	2nd class
1,500 kL	6 Million kWh		
0 kWh	0 kWh		

Revised 2003/4
Designated Factory of Energy Management

Energy consumption per year		Type of business	
Fuel	Electricity	- Manufacturing - Mining - Electric supply - Gas supply - Heat supply	Every type of business except those in left column Ex. Office building, store, hotel, school, etc.
3,000kL	12 Million kWh	1st category	2nd → 1st
1,500kL	6 Million kWh	2nd category	
0kL	0kWh		

Current obligations

- To appoint energy managers (qualified)
- To make plan of energy conservation (for next 3-5 year)
- To submit periodical report of energy utilization

Current obligations

- To appoint energy management officer
- To record amount of energy utilization

Additional obligations by the revised law

- To submit periodical report of energy utilization (instead of recording)

Current obligations

- To appoint energy management officer
- To record amount of energy utilization

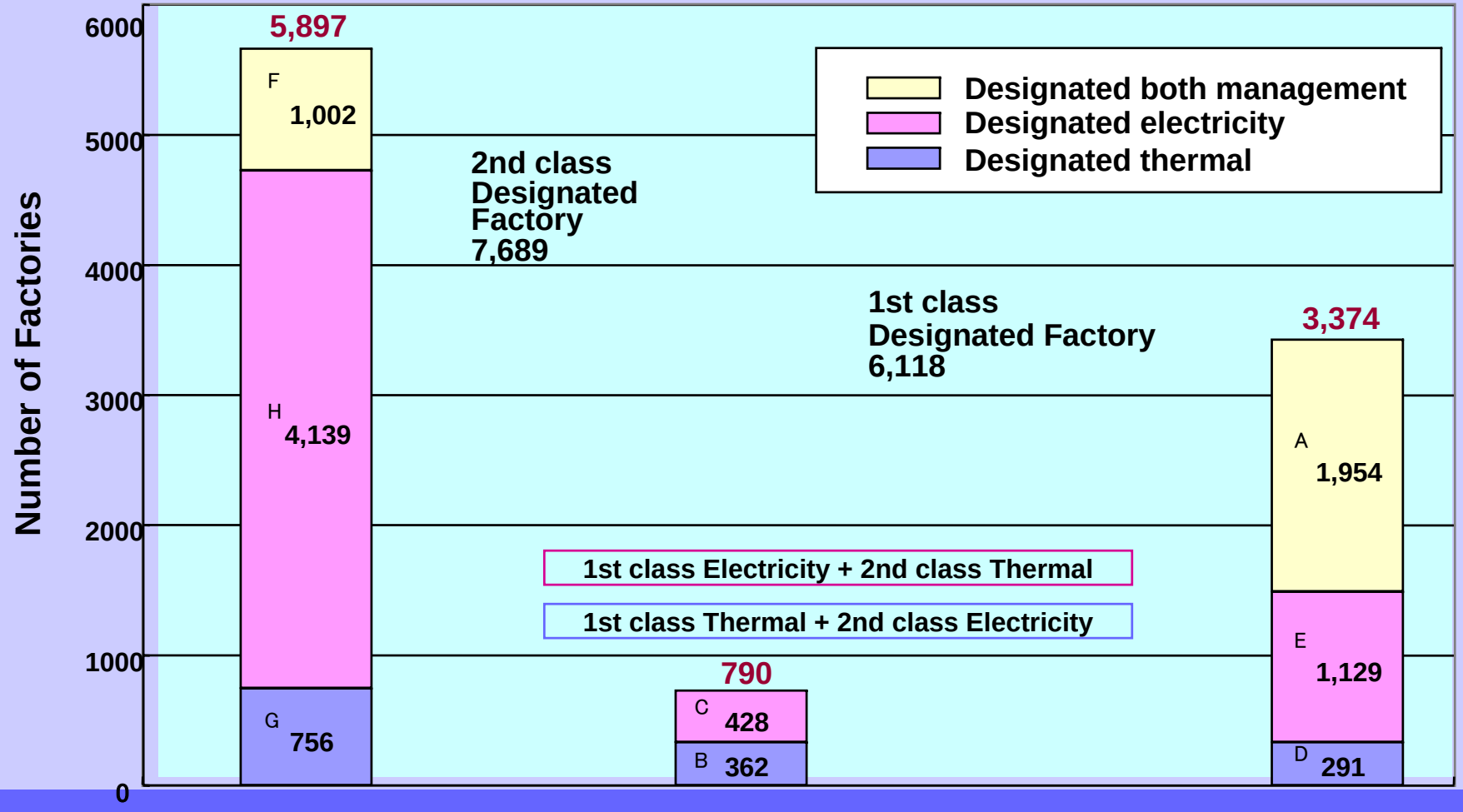
Additional obligations by the revised law

- To make plan of energy conservation (for next 3-5 year)
- To have qualified energy managers participate when making plan of energy conservation
- To submit periodical report of energy utilization (instead of recording)

The combination pattern of designated energy management factory

	Heat Management	Electricity Management
A	1st class designated factory	1st class designated factory
B	1st class designated factory	2nd class designated factory
C	2nd class designated factory	1st class designated factory
D	1st class designated factory	—
E	—	1st class designated factory
F	2nd class designated factory	2nd class designated factory
G	2nd class designated factory	—
H	—	2nd class designated factory

Number of Designated Energy Management Factories (Mar.2001)



Obligations of 1st Class Designated Factories

(6,118 factories/2001)

1. To make energy conservation according to the judgmental standards
2. To select energy managers
3. To submit periodical report (every year)
4. To make plan of energy conservation (for next 3～5 year)

1st Class Designated Energy Management Factories

Number of Energy Manager Required

Required numbers of Energy Manager are as follows.	annual energy consumption	
cokes producing, electric power producing, gas supplying and district heat supplying	3,000～ 100,000 kL	1
	100,000 kL～	2
other Designated Thermal Energy Management Factory than above	3,000～20,000 kL	1
	20,000～50,000 kL	2
	50,000～100,000 kL	3
	100,000 kL～	4
Designated Electricity Management Factory	12～200 Million kWh	1
	200～500 Millon kWh	2
	500 Million kWh～	3

Obligations of 2nd Class Designated Factories

(7,689 factories/2001)

1. To make efforts to conduct rationalization according to the judgment standards

2. To select energy management officer

3. To make officer take designated training course on energy conservation

4. To record the conditions of energy use→ **To submit periodical report (every year)**

Obligations of 1st Class Designated Factories (Office,Building,etc.)

1. To select energy management officer
2. To submit periodical report (every year)
3. To make plan of energy conservation (for next 3～5 year)
4. Participation of qualified energy management person when making the plan

2nd Class Designated Energy Management Factory

At least one Energy Management Officer

Type of Energy Management Officer

- Qualified Person for Energy Management

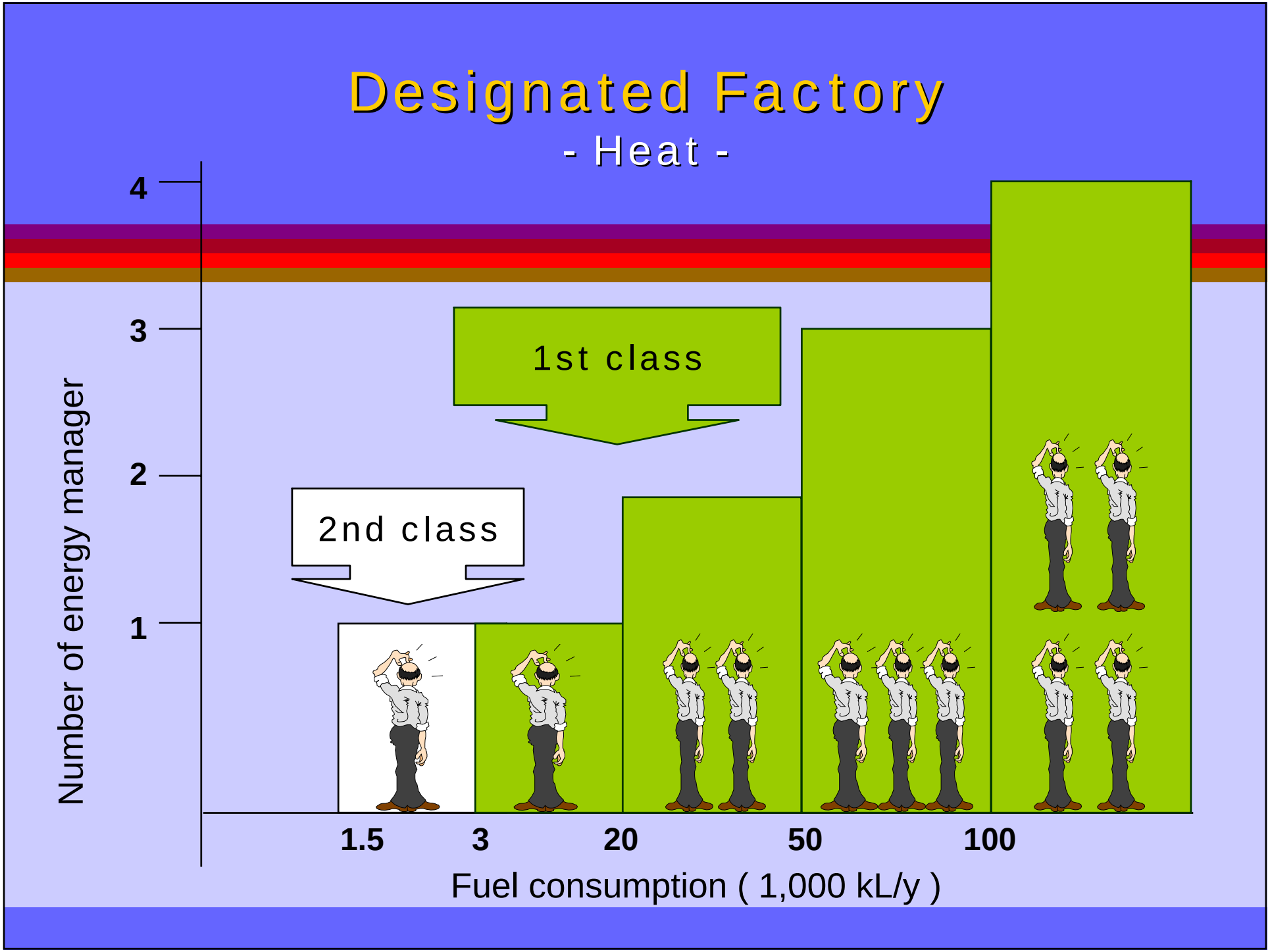
  (Heat / Electricity)

- Energy Management Officer

  (Heat / Electricity)

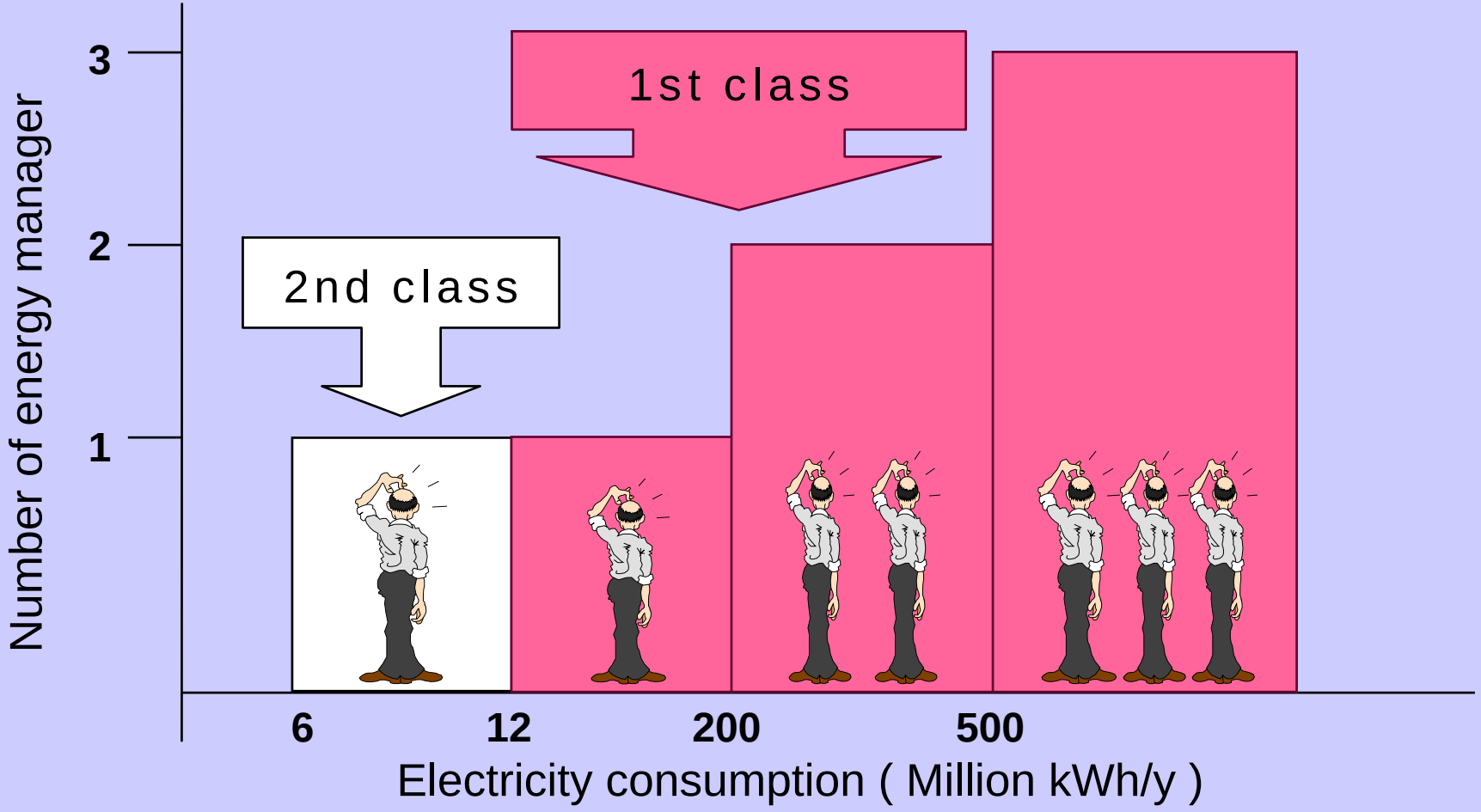
Designated Factory

- Heat -



Designated Factory

- Electricity -

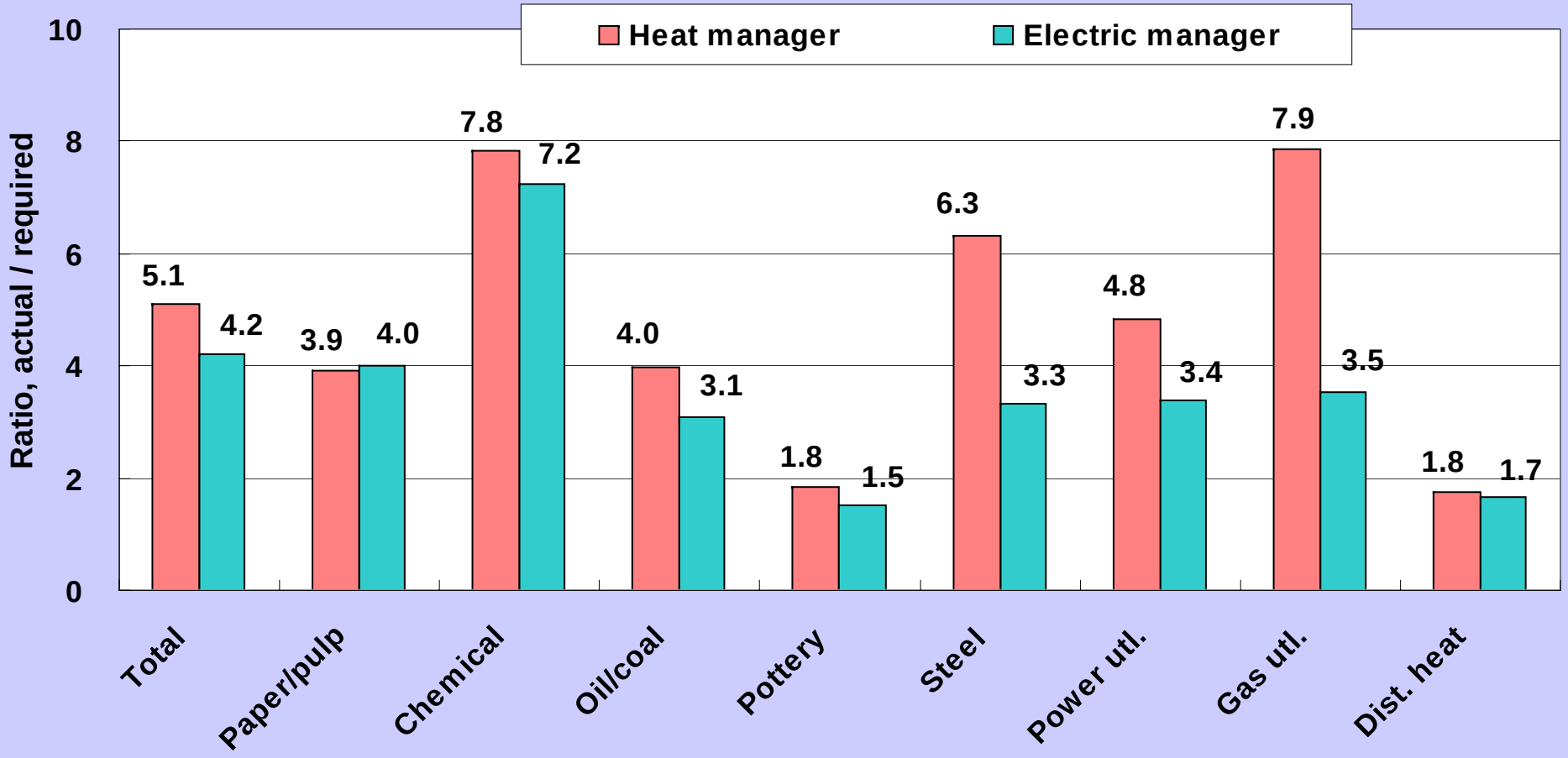


Roles of Energy Manager & Energy Management Officer

1. Responsible for
   - **maintaining facilities for energy consumption**
   - **improving & supervising energy usage**
   - **conducting all works for energy conservation**
2. Enterprise shall respect his/her opinions
3. Employee shall follow instruction by him/her

Actual Employment Situation of Energy Managers

（ECCJ 1992）



2. Qualification System of Energy Manager etc.

Examination Body

	Examination	Qualification course	Training course
1979	METI	METI	
1984	ECCJ	ECCJ	
1999			ECCJ

Designated Examination Body

The following items are regulated in the Law.

1. Standard for designation
2. Examination affairs regulation
3. Business plans
4. Election and dismissal of officers
5. Examination commissioners
6. Secrecy obligation
7. Cancellation of designation
8. Others

Licensing of Qualified Person for Energy Management

National Examination

- 4 subjects
- 1 day
- passing all subjects in successive 3 years

More than 1-year experiences (before or after passing)

More than 3-year experience

Qualification Course

- 4 subject
- 6-day lectures & 1-day examination
- passing all subjects in successive 2 years

License of Qualified Person for Energy Management

Licensing of Energy Management Officer

(for 2nd class)

Energy Management Training Course

1-day course

License of Energy Management Officer

(Requested to take the training courses for knowledge and Technical Improvement once per 3 years)

Subjects of Examination

Qualified Person for Energy Management

Examination of Qualified Person for Heat Management

- Introduction to thermal energy management & regulations
- Basics of the flow of heat & fluid
- Fuel & combustion
- Thermal facilities & their management

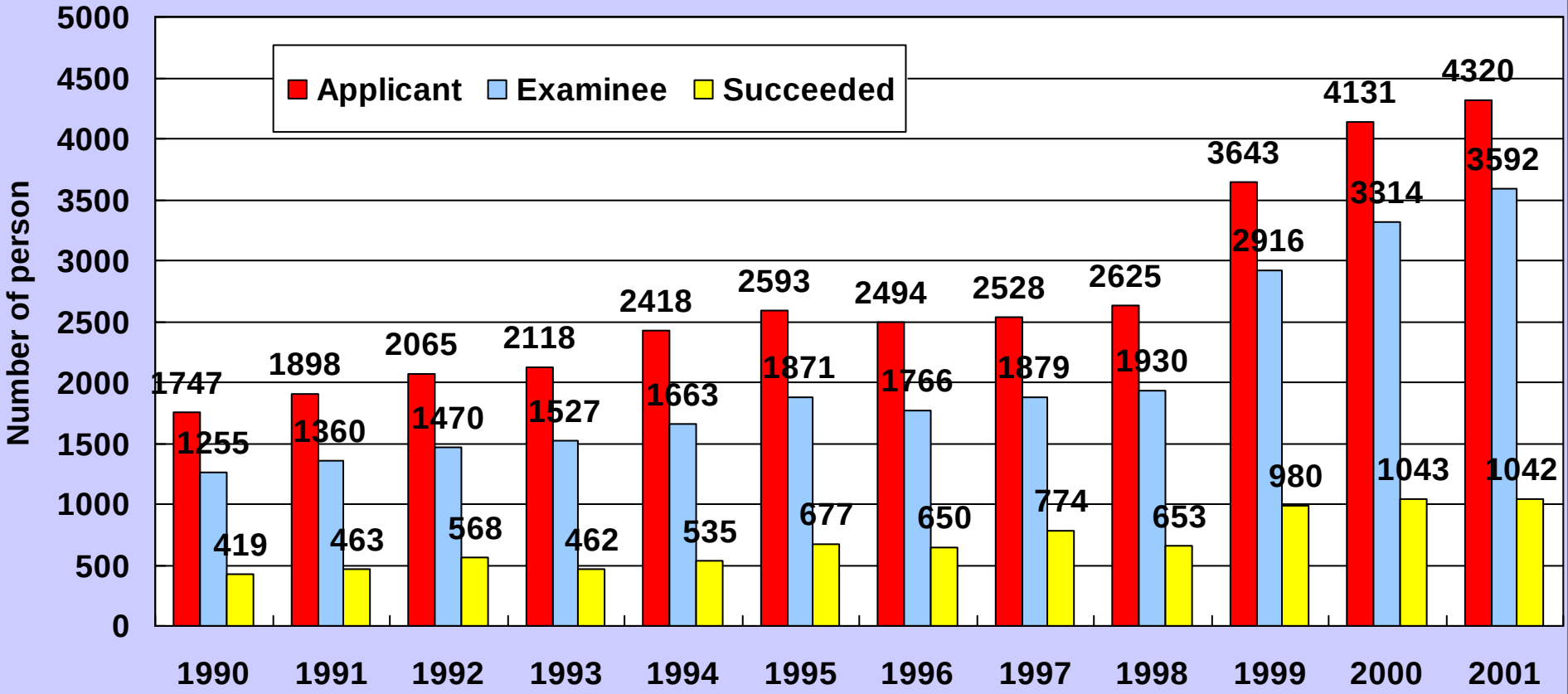
Examination of Qualified Person for Electricity Management

- Introduction to electricity management & regulations
- Basics of electricity
- Electric facilities & instruments
- Applied electric power

Energy Manager Examination (Heat)

Qualified Person for Energy Management

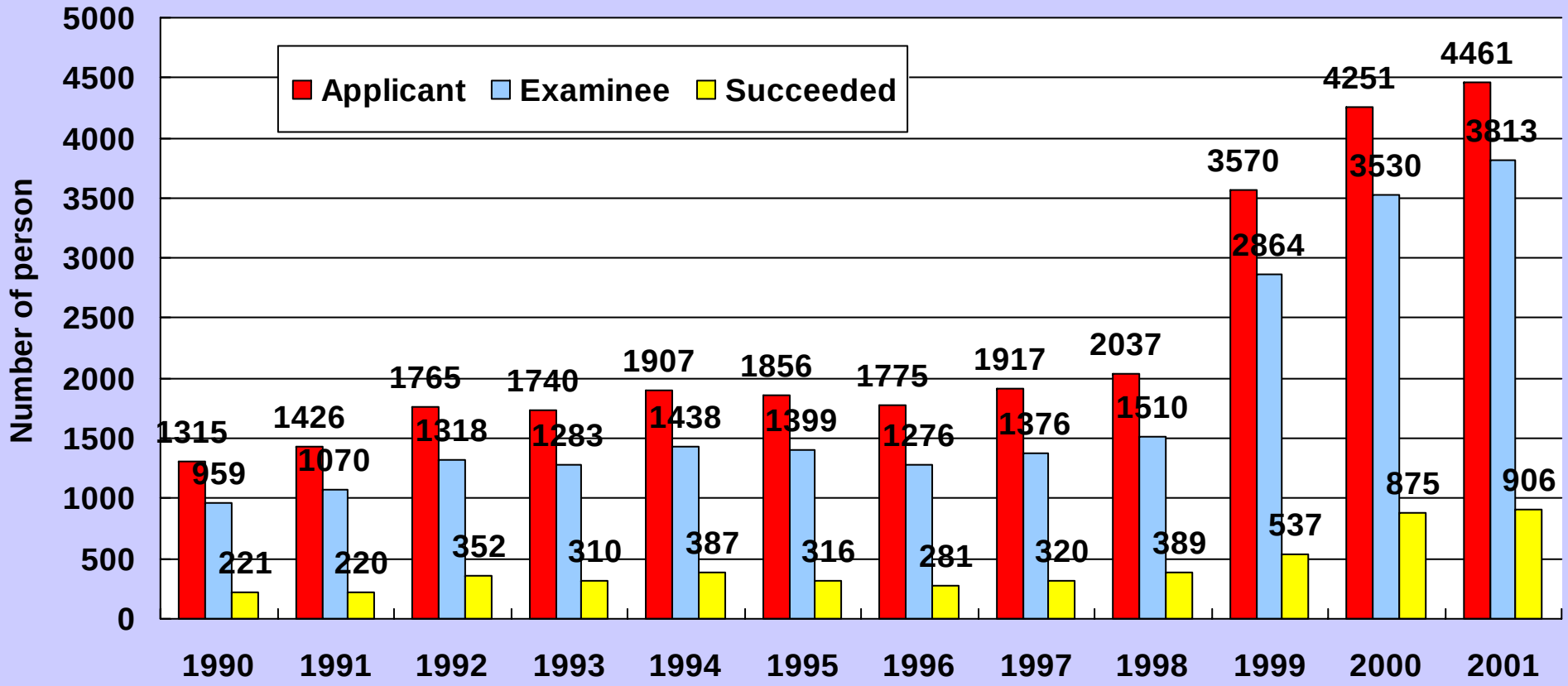
Applicant / Examinee / Succeeded



Energy Manager Examination (Electricity)

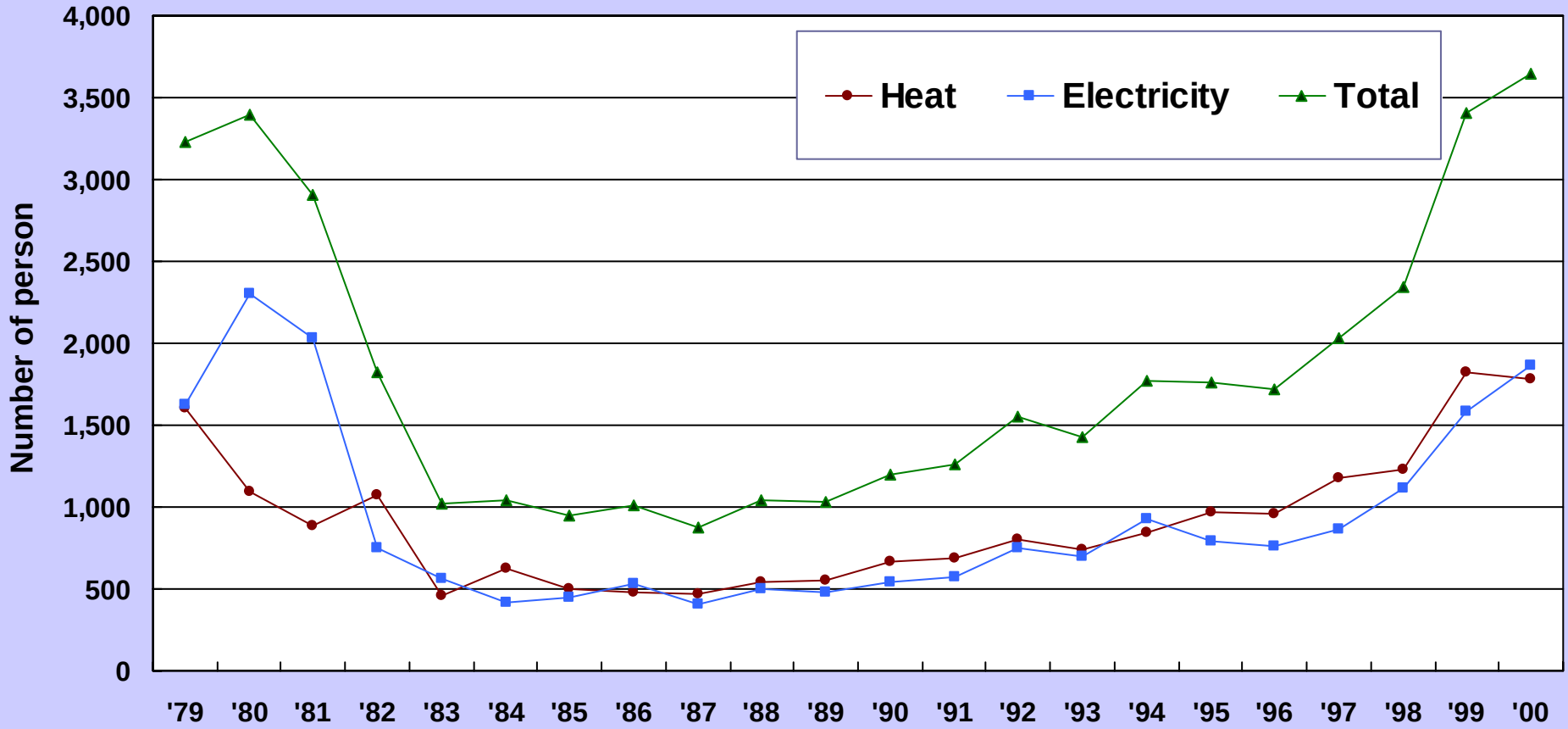
Qualified Person for Energy Management

Applicant / Examinee / Succeeded



Trend of Number of Energy Managers

Successful Applicant passing in Examinations & Qualification Courses



Revenues and Expenditures

(2000FY)

Apr.1,2000 - Mar.31,2001

		(Million of YEN)	(Thousand of US$) 1$=120YEN
Revenues	Fee of examination & training	388	3,238
	Other revenues	100	833
	Subtotal	488	4,071
[Total	*(All enterprises)]*	***6,546***	***54,553***
Expenditures	Operating expenses	184	1,526
	Personnel expenses	120	1,002
	Office expenses	50	422
	Other expenditures	95	796
	Subtotal	449	3,747
[Total	*(All enterprises)]*	***6,544***	***54,537***

ECCJ Activities for Examination and Skill-up

- Short-term Course for Examination
- Correspondence Course for Exam
- Practical Education Course for Skill-up
- Symposium for Energy Manager
- Publication of Reference books

Short-term Course for Examination

for Qualified Person for Energy Management

Heat course / electric course

From June to July

9 areas in Japan, each 4 days

Number of participants (2000 fiscal year)

Heat course: 392

Electricity course: 246

Participation fee:

¥37,000(for ECCJ members) or ¥53,000(no ECC members)

Members of correspondence course be discounted.

Correspondence course for examination

for Qualified Person for Energy Management

Contents

Term of course: 6 months

Fee: 38,000 yen (ECC member) - 44,000 yen (nonmember)

Heat manager course, electricity manager course

Home study with textbooks

Submitting answer sheets to have them corrected

Taking course-end test at home

Short-term schooling comprehensive course

Number of participants (2000 fiscal year)

Heat course: 561

Electricity course: 246

ECCJ 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 case development course are held.
- Each class is provided four times (two days each) a year.
- Lectures and practice with mini-plant 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).

Practice Education Course - Introductory Course

Course 1: Development and fundamentals of energy conservation

- Energy resources, global environment, energy cost
- 7 steps toward promotion of energy conservation
- Practice in energy conservation development approaches and MAP approaches

Course 2: Thermal energy conservation

- Combustion and heat transmission technology, measurement and analysis techniques
- Practice in combustion management

Course 3: Electric energy conservation

- Electric power technology/electricity measurement of pump, fans, and compressors
- Practice in electric power conservation of pumps, fans, and compressors

Course 4: Boiler, steam, and energy management

- Energy conservation technology for boilers, electricity charges
- Regular reporting and criteria of energy management and the Energy Conservation Law
- Management standards, tax privileges

Practice Education Course - Heat Course

Course 1: Thermal energy conservation and combustion management

- Energy conservation technology and improvement cases
- Heat transmission mechanism and experiment
- Combustion, practice in combustion, combustion calculation

Course 2: Steam management and steam trap

- Energy conservation for steam systems
- Practice in steam trap, drain collection, and calculation software

Course 3: Heat balance and measurement technology

- Measuring instruments and methods
- Heat measurement and analysis

Course 4: Waste heat recovery and energy management

- Improvement cases: Combustion, heat transmission, heat radiation, waste heat recovery
- Unit requirement management, regular reporting, criteria
- Management standards, tax privileges

Practice Education Course - Electricity Course

Course 1: Power saving and measurement

- 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

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

Course 3: Power conservation for pumps and fans

- 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

- 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

Practice Education Course - Case Development Course

- Energy situations in Japan
- Necessity of energy conservation
- How to implement energy conservation
- How to develop energy conservation seeds
- Practice in MAP approaches
- Cases of applications of MAP approaches

Key Word

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