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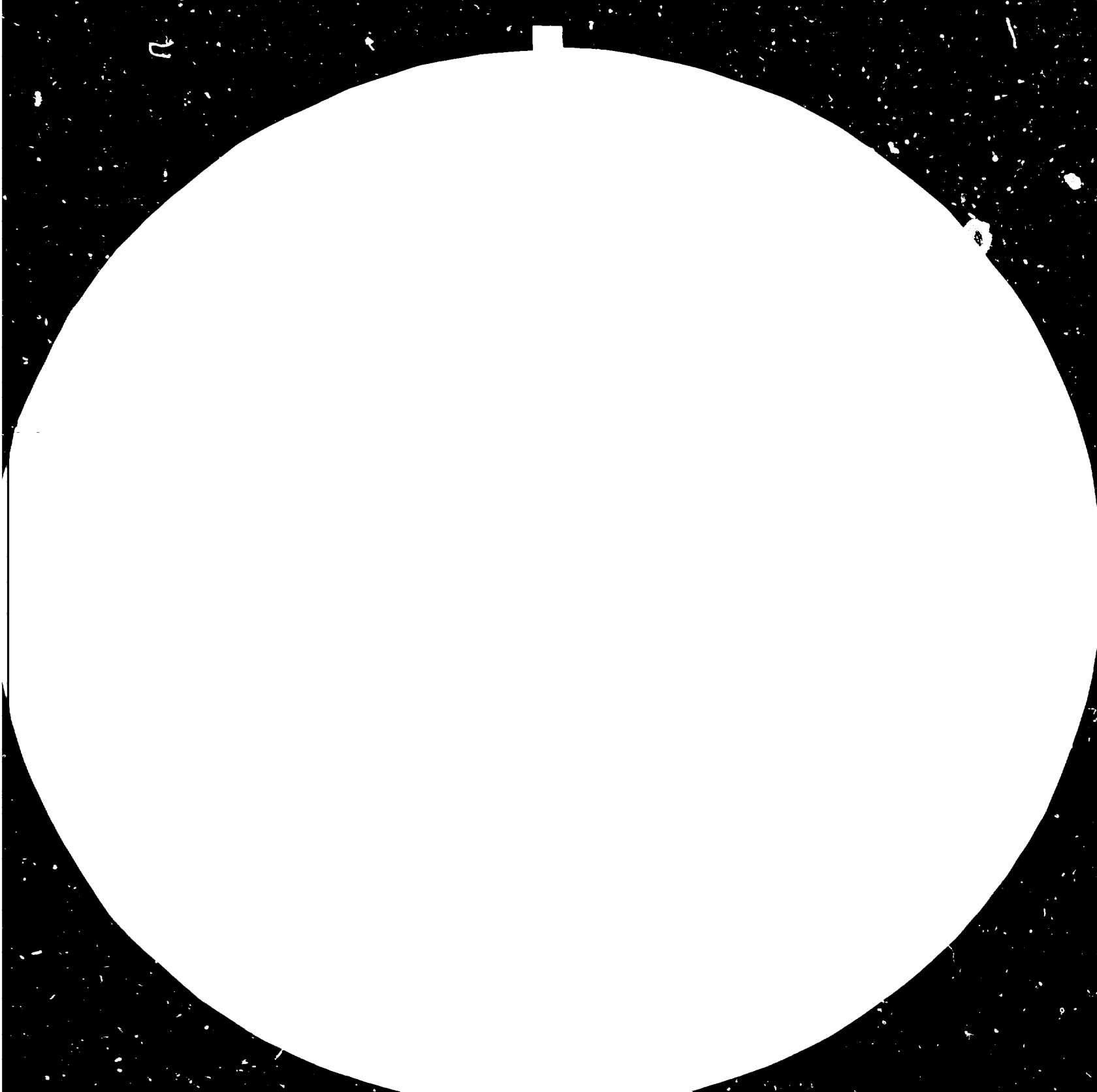
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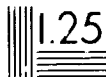
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Expert Group Meeting on Exchange of  
Experiences on Energy Conservation  
in Small and Medium Industries for  
ASEAN Countries

Kuala Lumpur, Malaysia, 5-7 December 1983

ENERGY CONSERVATION IN THAI INDUSTRIES\*

by

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The Industrial Finance Corporation of Thailand (IFCT) is a private development financing institution established by a special law in 1959 to assist in the establishment, expansion and modernization of industrial enterprises in the private sector and to assist in the development of domestic capital market. The main criteria applied by IFCT in its financing decision are the commercial and financial soundness of the projects and their contribution to Thailand's economic progress.

I. The energy conservation implementation program was included in the Fifth National Economic and Social Development Plan.

The targets in restructuring energy production and consumption are consistent with the main objectives of the Fifth Plan in lowering the external trade deficit and restoring the country's financial position. Targets have been formulated to reduce both energy consumption and energy import. Energy will be produced from indigenous sources to substitute imported energy. The government's main aims are as follows:

- 1) To reduce the overall energy consumption growth rate to 4.8 percent per year on the average by emphasizing efficiency improvement and energy conservation particularly in the transportation and industrial sectors.

- 2) To reduce the volume of oil imports by 3 percent per annum.

- 3) To reduce imported energy of fuel oil from 75 percent of total energy consumption in 1980 to 46 percent in 1986 by developing utilizing indigenous sources of energy for substitution, for example, natural gas, lignite, hydro-power, and non conventional energy sources.

To encourage the government's current policy regarding energy saving schemes, IFCT has launched an energy saving programme to:

- 1) Promote energy saving and conservation.
- 2) Increase efficiency in the utilization of energy.
- 3) Reduce where possible the use of imported energy (petroleum base)
- 4) Develop renewable energy resources.

II. The Energy Saving Section has been established under the Research and Planning Department since 1979 to support these aims. The job description of the section can be described as follows:

- a) Project Appraisal
- b) Factory survey for collecting energy data.
- c) Coordination with government and private sectors.

1. IFCT's financial services are provided only to privately owned industrial enterprises and so far a total of 13 energy conservation projects have been undertaken with the results as detailed below:

(Million Baht)

<u>Types of Industry</u>	<u>Total Cost of Project</u>	<u>Cost of Saving/Year</u>
Food	8.4	10.2
Ceramic	4.9	23
Chemical	3	4.5
Cement	4,285	851
Textile	24	6
Glass	<u>70</u>	<u>23</u>
Total	<u>4,444.4</u>	<u>917.7</u>

Note: 1 US\$ = 23 Baht

IFCT provides loans only to medium and large industries for energy saving projects. The methods of process modification and modernization are summarized as follows:

- Use of agricultural waste as fuel.
- Switch from oil to coal and process modernization.
- Using Waste gas in process as fuel.
- Solar hot water in process.
- Waste heat recovery.
- Regenerative Waste heat recovery.

2. Factories have been surveyed for the purpose of collecting energy data. The data has been collected and summarized to analyse the cost reduction in energy and to permit analysis and summarization of possible savings which could lead to higher profits for the factories and energy savings for the country.

Energy usage as production costs

<u>Types of Industry</u>	<u>as % of total factory cost</u>
Commercial farming & food processing	1-4%
Tobacco curing & redrying	1-2%
Textile & textile products	4-18%
Wood based industries	2-14%
Printing & packaging	2-2.5%
Rubber & rubber products	1.5-4.5%
Chemical & chemical products	2-6%
Non-metallic mineral products	4-50%
Iron & steel products and others metal products	1-9%
Machinery & appliances	1-6%

3. Energy conservation information services. IFCT distributes handbooks to small and medium energy users. The content is as follows:

- How to formulate energy saving programme.

- Easy ways of house keeping.

Energy Conservation Seminar

- Solar cell with Sharp Co., Ltd.

- Energy saving in industries in coordination with the Ministry of Industry.

- Solar cell and Solar water heater in coordination with Belgium Embassy.

- Energy saving in Thai Industries in coordination with UNIDO experts.

### III. Methodology for energy audits.

Because of the shortage of energy experts, IFCT tries to obtain assistance from Government Agencies and International Organizations.

IFCT has joined NEA\* in asking for energy experts from UNDP and ADB, and worked on energy audits with them in 1981. The experts from UNDP carried out an audit in 27 factories, each within 1 day. The audits concentrated on "housekeeping" savings which is the first phase at conservation, and which requires the smallest investments but also shows very good rates of return.

This year (1983) the experts from ADB are now conducting a programme which includes a survey of 50 factories. The initial or preliminary audit will cover 50 factories in different sectors according to their energy utilisation. Detailed audit will be conducted by selecting 20 factories from the total 50 factories with a view to identifying energy saving projects for implementation. This programme will end in August 1984.

IV. Major problems facing implementation of the programmes and projects are concluded as follows:

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\* National Energy Authority



- Uneducated labourers and supervisors.
- Lack of equipment
- Lack of energy experts
- Unclear points of Government Policy
- Lack of low-interest loan
- Energy is not their major problem
- No guidelines for promotion
- Lack of government incentives
- Lack of trained personnels
- Lack of loan security

V. The approach to strengthen Asian cooperation on energy conservation should be the setting up of promotional guidelines in the same direction. Energy Management Center for this region should be established to help member countries in coordinating with one another in energy information and experts. This Center will arrange an annual seminar for 1 week to educate both the public and industrial sectors on energy matters. It should engage a computer expert and an energy economist to systematize and organise energy data collection, storage and retrieval. In conjunction with the above mention the Center should investigate the potential of alternative non oil base for industries in member countries.

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