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IEA Industrial Energy-Related Technologies and Systems
An implementing Agreement under the auspices of the OECD International Energy Agency

Industrial Energy Related Technologies and Systems (IETS) - A new initiative for international cooperation

The Industrial Energy Related Technologies and Systems (IETS) Implementing Agreement is a new initiative within IEA (International Energy Agency). The mission of IETS is to foster international co-operation among OECD and non-OECD countries for accelerated research and technology development of industrial energy-related technologies and systems. In doing so, IETS seeks to enhance knowledge of cost-effective new industrial technologies and system layouts that enable increased productivity and better product quality while improving energy efficiency and sustainability.

This document gives a brief presentation of:

- The IEA system and its Implementing Agreements (technology collaboration)
- The IETS programme, with ongoing and planned activities
- Participation - benefits and costs



What is an IEA Implementing Agreement?

IEA Background

Founded by the OECD countries during the oil crises of 1973-74, the IEA's initial role was to coordinate measures in times of oil supply emergencies. As energy markets have changed, so has the IEA. Its mandate has broadened to incorporate energy security, economic development and environmental sustainability and to include also non-OECD countries..

The IEA conducts a broad programme of energy research, data compilation, publications and public dissemination of the latest energy policy analyses and recommendations on good practices.

International Collaboration

Through the Technology Collaboration Programme, the IEA provides a framework for more than 40 international collaborative energy research, development and demonstration projects known as Implementing Agreements. It enables experts from different coun-

tries to work collectively and share results, which are usually published. The programme deals with technologies for fossil fuels, renewable energy, efficient energy end-use and fusion power, as well as electric power technologies and technology assessment methodologies.

Most R&D activities within an Implementing Agreement are performed in so called Annexes, i.e. working groups consisting of experts from countries participating in the Annex. Other typical activities are workshops and other dissemination projects.

The R&D activities are mainly financed through national energy research programmes. The IEA provides the framework that enables international collaboration and the resulting synergy effects.

Who Can Participate?

The IEA technology collaboration programme is open

to IEA member and non-member countries. Typically, participants are Governmental or energy technology entities representing governments, research institutes and universities, energy technology companies and industry.

Industry Participation

In the earlier industrial implementing agreements, now being merged, the involvement of industry was high in several cooperation projects/Annexes. Generally speaking, a project needs to be well defined to attract industry participation. For this reason, industry's involvement is normally on the project/Annex level (not on the more general Implementing Agreement level), where a project and its projected outcomes are thoroughly specified.



The IETS Implementing Agreement

The IETS is an Implementing Agreement under the International Energy Agency (IEA) that deals with energy efficient industrial technologies. The Programme was established in 2005 as the result of merging, revamping and extending activities formerly carried out by separate industrial IEA Programmes.

Strategic Objectives of the IETS

- To strengthen international cooperation on energy saving and GHG mitigation in industry;
- To facilitate cooperation between different industrial R&D disciplines;
- To improve knowledge transfer and information between countries, researchers and industries;
- To provide IEA and the G8 countries with energy consumption data and energy efficiency opportunities;

Scope of Effort

The IETS started out as a merger of three former Implementing Agreements, plus one new area: Process Integration; Pulp and Paper; Heat Exchangers and Heat Transfer; Separation Technologies (new). The IETS will be evolving continuously with the aim to include other energy-intensive sectors such as iron and

steel, cement, non-metallic materials, aluminium, petrochemicals, chemicals and food, as well as manufacturing industries and small and medium-sized enterprises.

The IETS Programme covers a broad range of cooperative activities, including scientific research; technology and systems research, development, demonstration and deployment (RD&D); technology and systems foresighting (forecasting technology priorities); assessment of policy options and consequences; and information dissemination.

Member Countries


Currently, 12 countries participate in IETS. Additional countries have expressed interest; some are already preparing participation.

Organizing the work

Each member country is represented in the IETS Executive Committee. Decisions on activities, start-up of new annexes, budgets, etc are taken by the Executive Committee, which meets twice a year. There is also a secretariat, which for the first three-year period is operated by KanEnergi, Norway.

As described above, the main R&D activities are organised through so-called Annexes, which are international projects in which experts from countries participating in the Annex form a working group. A country or organisation can join any number of Annexes. An Annex Manager coordinates the work, identifies synergy effects, prepares synthesis documents and coordinates the compilation of the final report. The Annex members get together typically twice a year, but this is up to each Annex to decide.

The IETS member countries

| | | |
|--|---|--|
|  Brazil |  Korea |  Portugal |
|  Sweden |  Belgium |  Finland |
|  Canada |  United States |  Denmark |
|  Norway |  The Netherlands |  Mexico |

Ongoing and planned IETS activities

Currently, IETS has 3 ongoing Annexes, with an additional seven being prepared:

Energy Efficient Separation Technologies (Annex IX)

The goal of this annex is to take stock of the state-of-the-art of separation systems analysis tools and concepts and:

- Extend/combine previously developed methods and tools to address advanced separation systems design or retrofits;
- Automate or guide the design/retrofit process to the extent practicable;

Energy efficient drying and dewatering technologies (Annex X)

The need for enhanced assessment of key energy-related drying and dewatering technologies highlights the need for dissemination of results from different areas and different countries. Some of the objectives of this Annex are to highlight ongoing research projects in the drying area, compile relevant information about legislation and how to increase the dry matter content.

Industry-based Biorefineries (Annex XI)

Efficient integration of biorefinery concept in different industrial sectors where biomass is used as resource or biomass based waste is available, which could be used for fuel/energy production, is the focus of this Annex.

In addition, 7 new Annexes are under preparation:

- Membrane Technologies
- Energy efficiency and energy recovery in the aluminium industry
- Process integration and energy efficiency for the steel industry
- Industrial CO₂ separation
- Clean Development Mechanism (CDM)
- Life Cycle Assessment (LCA)
- Industrial Combustion egration in the Pulp and Paper Industry

As the work of IETS proceeds, more Annexes will be added to the list.

The IETS is continuously developing new projects in order to meet the arising needs of its members.

Joining and Participating in IETS

Benefits of Participation

There are numerous advantages to international energy technology RD&D collaboration through the IETS. Some examples include:

- Synergy effects, reduced costs and avoidance of duplication of work;
- Synthesis and analysis reports
- Networking and direct communication with leading research groups in an international setting;
- Strengthened national RD&D capabilities;
- Accelerated development and deployment;
- Knowledge transfer between countries and industries on:
 Ongoing R&D areas; Energy consumption in industry; Potentials for energy efficiency improvements; Use, planning and experience of policy instruments for e.g. CO2 mitigation

A number of aspects concerning energy efficiency and rational use of energy in industry can profit from international

cooperation, such as technologies, systems, technoeconomic aspects, tools for process integration and thermodynamic optimization, policy consequences, implementation and obstacles, etc.

Establishing New Projects

Selection of Annexes or other cooperation projects is based on input from and interest in the countries participating in IETS. Any member can suggest a new area (e.g. through a research group, an industry, or academia and industry together) for international cooperation. With sufficient interest from at least one other country and with the necessary funding being guaranteed, a new Annex or cooperation activity can start. In this way all participating countries influence cooperation areas and direction of the work within IETS.

Costs

For a country or an organisation joining the IETS, the financial commitment consists of the annual fee to the secretariat only.

This annual fee is US\$ 7 000 or US\$ 4 500, depending on the country's gross domestic product (GDP) at purchasing power parity (PPP) per capita (above or below US\$ 25 000).

Through the Annexes, the IETS provides a framework for collaboration, but the Agreement does not have any common resources for funding. The Annexes and the related R&D activities are funded by the participating countries, either through a fee (cost shared) or through work (task shared).

In a task shared Annex, each participant contributes with developments and results from one or more national project(s). In most cases, the projects are already funded through national R&D programmes (ongoing or planned). The Annex Manager can be funded by a small cost-shared part of the Annex or by one of the participants. This means that the costs to join an Annex in many cases consists of travel and meeting costs and in some cases a small contribution to the Annex Manager. In the former industrial Implementing Agreements, the R&D Annexes were mainly task shared.

Project initiation is based on the arising needs of the members



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