



iets

Industrial Energy-Related Technologies and Systems

An Implementing Agreement established under the auspices of the International Energy Agency

INDUSTRY-BASED BIOREFINERIES ANNEX XI

The largest industrial consumers are those producing chemicals, iron and steel, non-metallic materials, pulp and paper and non-ferrous metals. The interest in biorefineries has recently increased significantly as it is aligned with policies of diversification, considering conversion processes for heat and power generation simultaneously with biofuels production and chemicals.

Objectives

The general objective is to provide a sound basis for the 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, also considering opportunities of bio-products generation with added value.

This project – named Annex XI - aims at putting together competences in different countries, bringing in projects in different industrial sectors focusing on industry based biorefineries. Apart from the international cooperation considered within the limits of IETS Implementing Agreement, work will be carried out in close cooperation with other Implementing Agreements with related R&D, namely the Bioenergy IA.



Work Scope

The scope of this Annex is the integration of the biorefinery concept in industry, integrating with an existing plant (e.g. pulp and paper mill) or other, either individual or a complex of industrial companies.

The scope includes economic evaluation, energy efficiency and technical integration of processes that provide energy and higher value-added products.

Technologies to be considered include:

- Biomass gasification, including waste and black liquor gasification;
- Pyrolysis;
- Biogas production and integration;
- Biological conversion;
- Combustion;
- Gas clean-up processes, including CCS techniques (e.g. using microalgae for CO₂ fixation producing hydrocarbons and/or hydrogen);
- Fuels and chemicals synthesis.

Also included in the scope is the impact of the above technologies on the environment.

Activities & deliverables

The Annex is divided into three tasks:

- Task 1 – Bioenergy & Biofuels
- Task 2 – BioChemicals & New Fibre Materials
- Task 3 – Sustainability Analysis of Process Integrated Biorefineries

As a result of this development, the following products are envisaged:

- pilot and demonstration plants;
- progress reports;
- technical and technological brochures;

- publication of information by creating a specific website area within the IETS;
- identification of research needs and gaps for future projects through brainstorming sessions and workshops.

Audience, beneficiaries

The following are noted:

- Industries – Forest products, allied and others
- Consultants
- Technology suppliers
- Researchers
- Universities
- National laboratories
- Institutes
- Government
- Industry organizations

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IETS
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The Industrial Energy Related Technologies and Systems (IETS) Implementing Agreement is an 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.

In IEA terminology, the term Task is used for the collaborative IEA projects. The tasks are outlined in Annexes, which are appendixes to the Implementing Agreement for IETS. The Annex describes the scope of work and briefly summarizes the joint activities to be carried out within the framework of that Task.