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Energy efficiency information support for the industries

Project Closure/completion report

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*

1.0 INTRODUCTION

The industrial sector is one of the major consumers of energy in India and hence the best candidates on which to focus energy efficiency efforts. A number of research and development activities are carried out; technologies are developed and energy saving measures is introduced to promote energy efficiency in industries. In India, there are several industries which are not aware of or do not have access to this information. The information is also scattered. Hence, there is need for maintaining a central repository and an information support facility for industries in India. Against this backdrop, TERI with support from Department of Scientific and Industrial Research, Government of India, initiated a project titled “**Energy Information Support Services for the Indian Industries**”. The assistance to the project is for a period of two years starting November 2006.

2.0 OBJECTIVES

The objectives of the project are to provide information support services to Indian industries by collecting, collating and disseminating energy information with special focus on energy efficiency in Sugar, Fertilizer, Pulp & Paper industries. The project aimed at providing information services, viz., Virtual Reference Service; facilitate exchange of information between R&D institutes as well as various industries through developing products such as Databases of technologies, Industrial Energy Literature Abstracts among others, which could be easily made accessible to the industrial clientele using latest information and communication technologies. The project also caters to the information needs of the researchers, policy makers, students, and other users working in these fields.

3.0 BUDGET

The project was granted for the total budget of Rs 22.65 lakh.

4.0 PROGRESS OF ACTIVITIES

2.1 Web site design and development

2.1.1 Identification of information resources

- (a) Print documents such as books, journals, and electronic resources relevant to the project were identified contacting publishers, subject experts, libraries and information centers and web sites
- (b) R&D institutes, industries, industry associations working in the fields of energy efficiency were identified with the help of directories, internet searches, and consulting subject experts.

2.1.2 Information/data collection

Journals, books, conference proceedings, directories periodicals; on-line databases and CD-ROMs were identified, and purchased or subscribed.

2.1.3 Surveys / Field visits of R&D institutes/ organizations/ industry associations

The project team consulted a number of technology manufacturers and suppliers, and did field visits to the following organizations/ Associations for information collection

- APCTT (Asian and Pacific Centre for Transfer of Technology)
- ASSOCHAM (The Associated Chambers of Commerce and Industry of India)
- BEE (Bureau of Energy Efficiency)
- CPPRI (Central Pulp and Paper Research Institute)
- CII (Confederation of Indian Industry)
- FAI (Fertiliser Association of India)
- IARPMA (Indian Agro and Recycled Paper Mills Association)
- IIT-D (Indian Institute of Technology Delhi)
- ISMA (Indian Sugar Mills Association)
- NRDC (National Research Development Corporation)
- NSI (National Sugar Institute)
- TIFAC (Technology Information Forecasting & Assessment Council)

Besides, the team conducted surveys of select industries /equipment manufacturers through questionnaire by post as well as e-mail communications.

2.1.4 Scanning of publications, web sites, on-line and electronic resources

Various print as well as electronic publications including journals, books, newsletters, and relevant on-line resources were scanned and digitized for the preparation and development of content for the project web site in consultation with subject experts.

2.1.5 Information analysis, synthesis and content development

The following content has been meticulously synthesized, analysed and also validated by information professionals and subject experts before being uploaded into the project web site in a structured format:

- Various energy technologies employed by R&D institutions, organizations and industries as well as from different publications;
- Case studies and best practices implemented in the sectors;
- News topics and full text articles;
- Events and exhibitions related to the three sectors;
- Web links of R&D institutes, associations and government web sites;
- Government policies and notifications on energy efficiency and energy conservation;
- Research articles, abstracts and bibliographies, classification, and key wording for the database.
- Student theses and dissertations

These were developed based on the following criteria:

Technologies database

- New and upgraded energy technologies since year 2000
- Process description
- Energy savings, cost-benefits
- Environmental aspects

Case studies

- Relevant industries and institutes since year 2000
- Energy savings and resource conservation

News articles

- Scanning of Print and On-line News related to the three sectors
- Maintaining News Archives database

Government Policies and Notifications

- General and sector specific (2006/07)

Literature Abstracts Database

- Selection of abstracts and bibliographies is based on the five broad categories identified, viz., (1) Energy conservation, consumption and utilization; (2) Technology; (3) Environment, health and social aspects; (4) By-products; (5) Policy and Economics.

WEBSITE CONTENT SUMMARY

The following table furnishes the collection strength of information against each section developed and maintained in the project web site:

Sections	Information/Data collected, compiled and validated
Technologies	63
Case studies	35
Policies and notifications	10
R&D web links	50
Resources (Directories, Links, Contacts)	10
Students thesis	30
News items	200
Events	30
Industry literature Abstracts and bibliographies	
• Sugar abstracts ...	450
• Fertiliser abstracts ...	500
• Pulp and paper abstracts ...	550

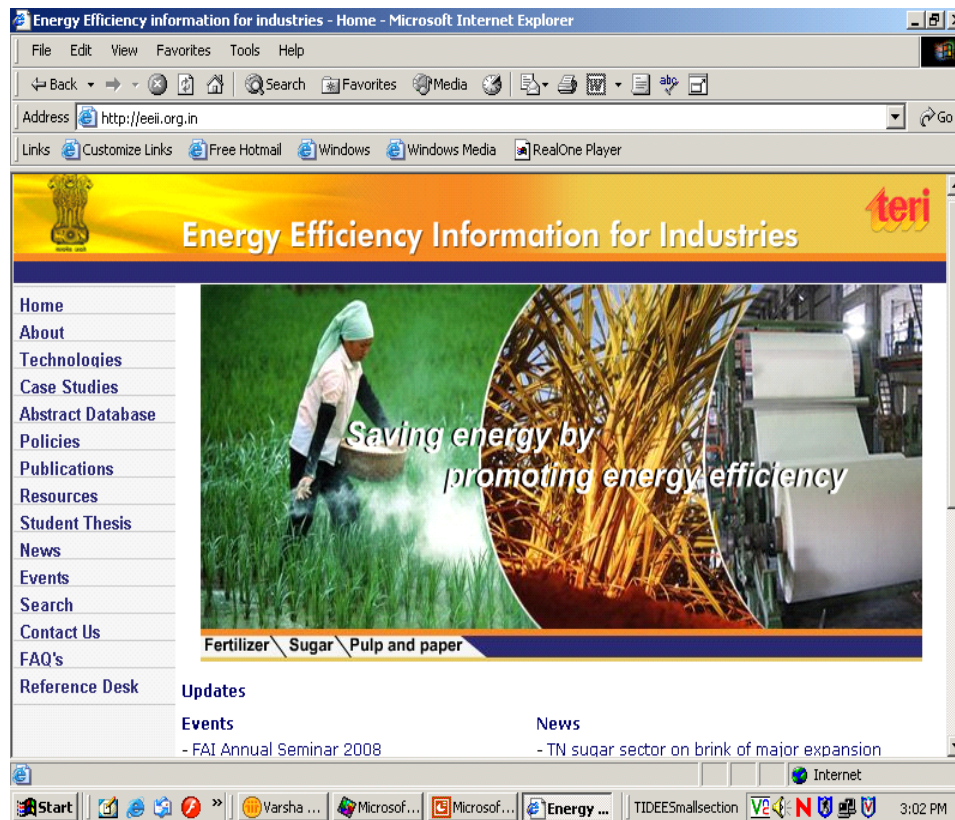
REVIEW AND VALIDATION OF CONTENT

The final output of the information products were reviewed and revalidated by a panel of subject specialists before being published in the project web site.

7.0 DESIGN, DEVELOPMENT AND HOSTING OF WEB SITE

The project web site was designed and developed by a team of IT professionals, using one of the most dynamic portal engines and with a recognized content management system (Figure 1). Dynamic databases were created for

technologies, case studies, industry literature abstracts and other major sections in the web site. The website has been hosted at <http://www.eei.org.in>



Screenshot 1: Project Website

8.0 DESIGN AND DEVELOPMENT OF DATABASE OF INDUSTRIAL ENERGY LITERATURE

Activities

8.1 Identification of resources

Print and electronic documents - Journals, Books, Conference proceedings were identified in consultation with the subject experts

8.2 Information collection and abstracts preparation

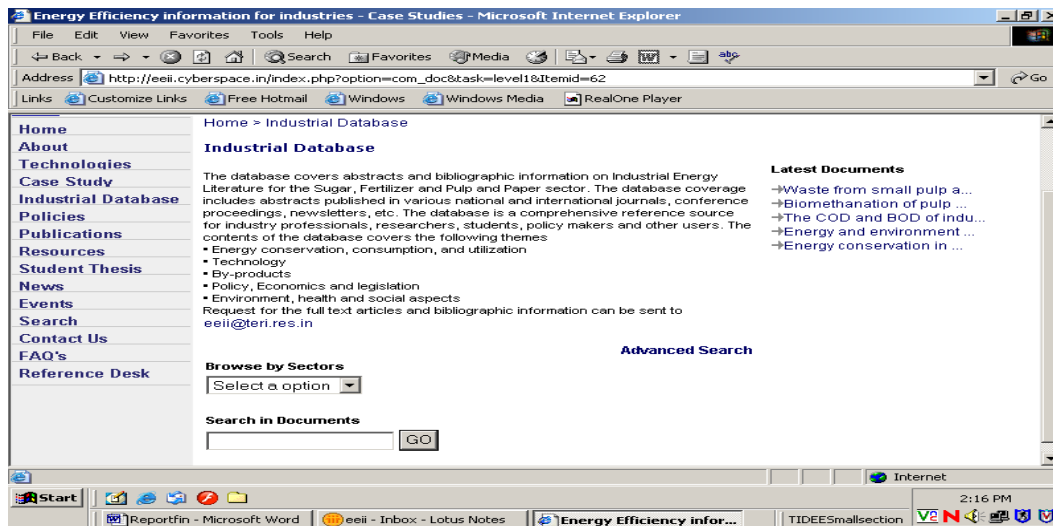
Literature abstracts and bibliographies were collected from select articles published in various journals and validated by subject experts. Coverage during the first phase of the project was from 2003 to the present. The database now has a collection of over 450 abstracts and bibliographic information with appropriate classification and key wording.

8.3 Database development and maintenance

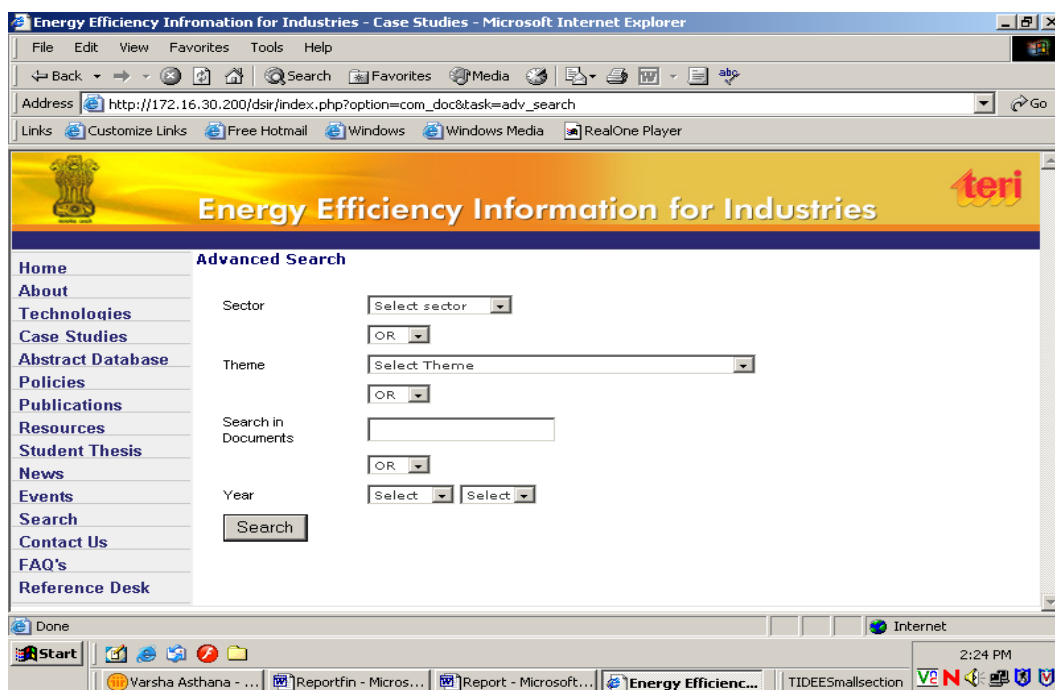
The abstracts database has been designed and developed using My Sql software . The on-line access to the database is made available through the project web site. The database covers abstracts and bibliographic information on Industrial Energy Literature for the Sugar, Fertilizer and Pulp and Paper sector. The contents of the database covers the following themes.

- Energy conservation, consumption, and utilization
- Technology
- By-products
- Policy, Economics and legislation
- Environment, health and social aspects

The database has been further enriched with new collection of literature abstracts with more focus on raw materials- and water conservation-based technologies in pulp and paper sector. Request for the full text articles and bibliographic information can be sent to eeii@teri.res.in



Screen shot 2: Database with simple search feature

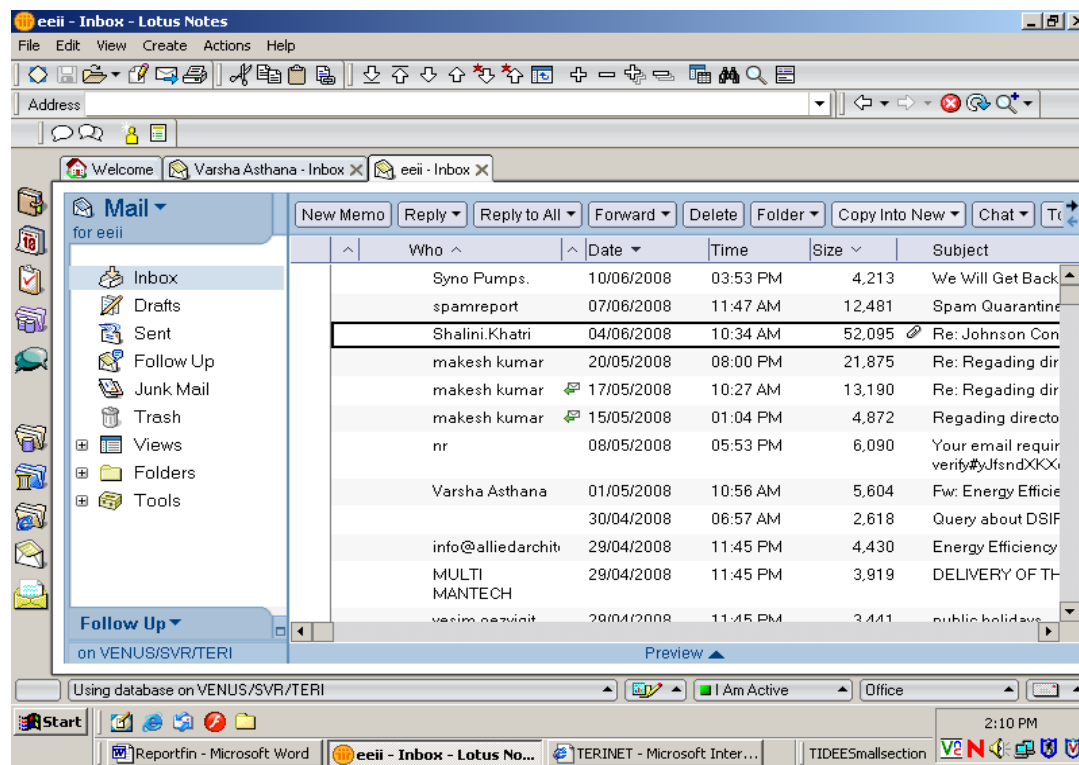


Screen shot 3: Database with advanced search feature

Sections	Information/Data collected, compiled and validated
Industry literature Abstracts and bibliographies	
<ul style="list-style-type: none"> • Sugar abstracts ... • Fertiliser abstracts ... • Pulp and paper abstracts 	<p>450</p> <p>500</p> <p>550</p>

Virtual Reference Services

An on-line reference query service is designed and developed for the industries and remote users to (i) facilitate library services and provide access to the large collection of information resources (both electronic and printed) available in TERI library and other resource centres; (ii) render reference and referral services to industries and remote users who do not have access to information resources. Users are directed to simply send in their information requests through e-mail or Contact/Feedback section of the project web site or post and receive response. The technical queries will be answered by the subject experts .Over 100 queries have been received since the creation of the mailbox eei@teri.res.in



Screenshot 4 : Reference Query Mailbox

Incorporation of the inputs/recommendations by PRC members

A number of useful inputs and suggestions were provided by the Programme Review Committee meetings during the first and second phase of the project . The suggestions included- inclusion of more raw materials and water conservation-based technologies in pulp and paper sector, case studies from Bureau of Energy Efficiency, online access to thesis and presentations of students from different institutes, process flow chart for sugar, fertilizer, and pulp & paper sectors, links to PCRA, BEE, FAI web sites, installation of web hit counter, a section on frequently asked questions, feedback form, a separate link to DSIR web site, a brief write-up about TERI and DSIR , inclusion of directory of experts during first and second phase of the project. The suggestions have been incorporated successfully in the project web site .

Marketing and Information Dissemination

The project utilized TERI's strong information outreach wing for disseminating its products and services. Information was disseminated through various publications including TERI's own publications, TERI website . Approx. 3,000 e-mails were sent to industries and other related organisations for three sectors after the website launch. Besides, Questionnaire surveys through post, reference query response services; regular contacts with industry associations , and subject experts were also maintained.

Website Updation and Maintenance

The web site is updated regularly with latest technologies, case studies, publications, events information, daily news, policy information, articles etc. The project team continues to strengthen the project by identifying, collecting resources, and providing access to on-line and electronic information resources including directories, statistical information, best practices, reports and documents relevant to pulp & paper, fertilizer, sugar sector.

Financial Aspects

The project was granted a sum of Rs. 20.20 lakhs in three installments against the total sanctioned budget of Rs 22.65 Lakhs.

Audited statement of Accounts and Utilization Certificate as per DSIR Performa are attached.

Benefit of the project to the S&T community

Various research and development activities are carried out for promoting energy efficiency and energy conservation among the industrial sectors. However, the mechanism for the wider dissemination of such useful information is lacking. The project aimed at filling this gap by collecting and disseminating information with the help of a comprehensive website. The reference service has been of help in catering the information needs of the industries. Databases developed through the project have been made accessible to the users through the project web site. The users found useful references in the database in support of their research, policy making, and new product

development. It is hoped that the project has helped improve energy efficiency in the Indian industrial sector and facilitated exchange of information between the industrial sector and research institutes.

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