

Breaking through the Information Barrier

Webinar Series for Industrial Excellence

Murat Mirata, Arvind Thekdi, Jean François Sautin, Ernst Worrell
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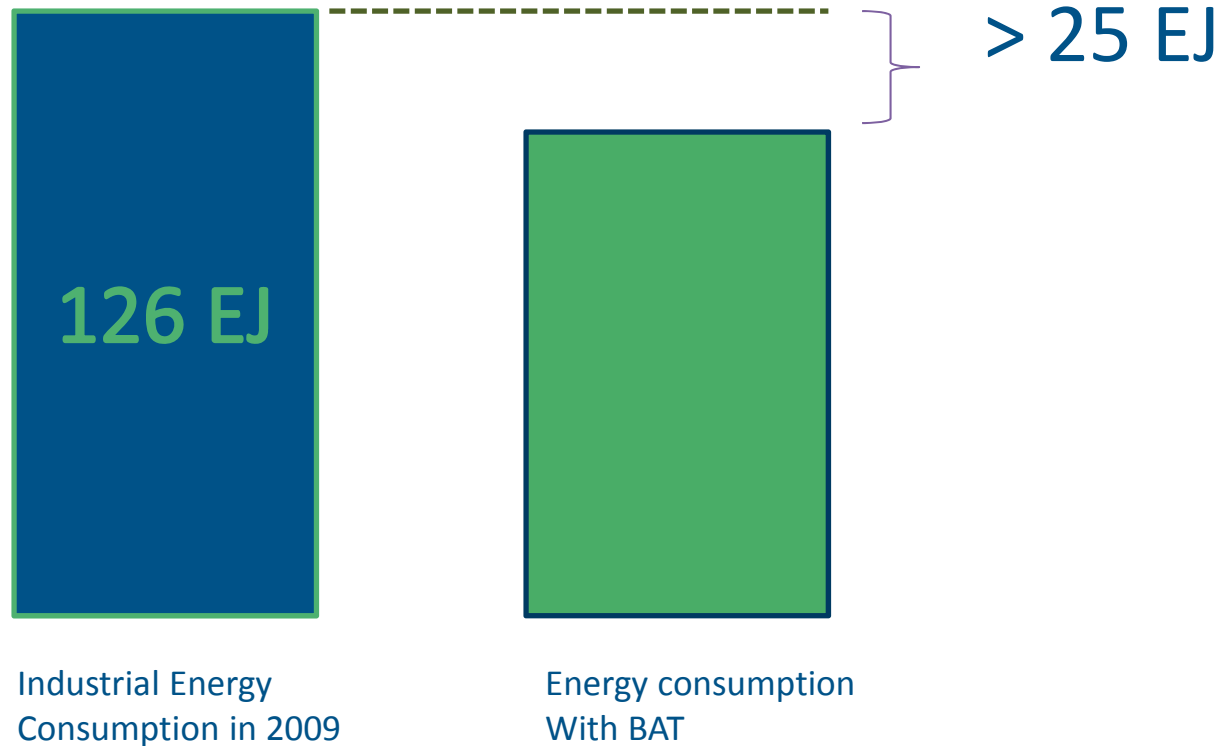
Agenda

1. **Murat Mirata**: Overview of the energy efficiency information barriers facing industry
2. **Arvind Thekdi**: Benchmarks, barriers and improvement strategies for SMEs and industry in developing countries
3. **Jean-François Sautin**: Information barriers and best practice management in global enterprises
4. **Ernst Worrell**: Role of benchmarks, current status and sector-specific gaps
5. **Murat Mirata**: IIP's Industrial Efficiency Technology Database
6. **Panel discussion and Q&A**

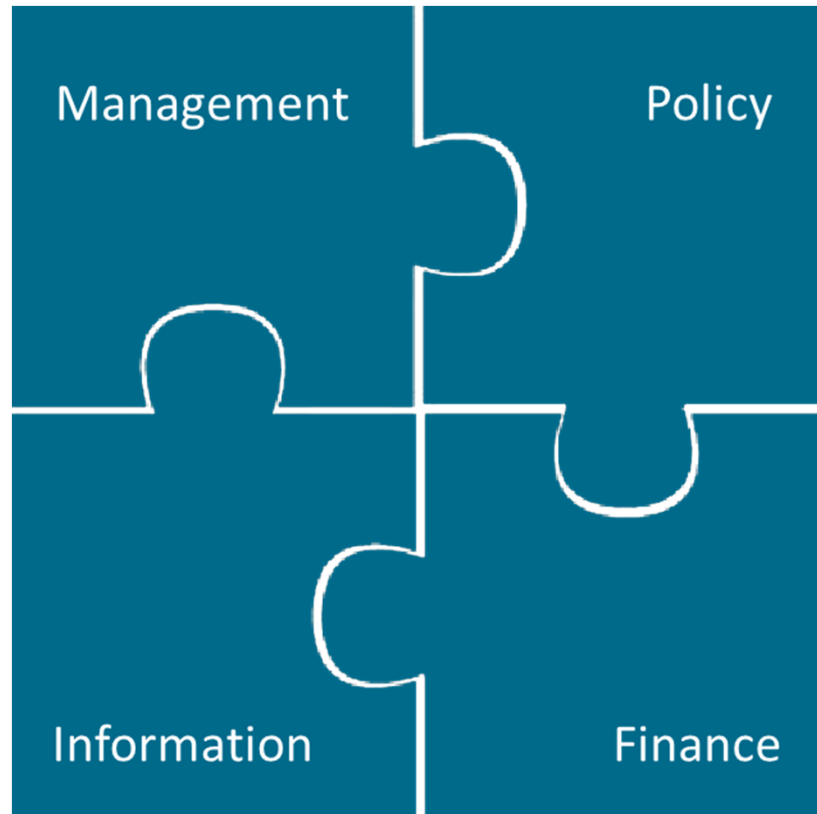
Energy Efficiency Information Barriers Facing Industry

Murat Mirata
Technical Manager, IIP

The Energy Efficiency Gap



Barriers to Energy Efficiency



Information Barriers Facing Industry



Barriers are primarily related to difficulties with:

- Understanding the current situation
 - Energy use
 - Improvement potential
- Identifying applicable options
- Assessing feasibility of options (information asymmetry)
- Assessing performance after implementation

Benchmarks and Best Practice Information for SMEs and Industry in Developing Countries

Arvind Thekdi
President, E3M Inc

What is Benchmarking?

- Benchmarking is:
 - The process of studying industry or competitive practices
 - Finding ways to meet or improve upon practices
- For SMEs it is:
 - A process of identifying the best practices for the industry sector
 - Improving their own organization's performance
- Benchmarking involves developing standards and operating procedures to measure, monitor and modify performance of operations *while complying with regulatory requirements*

Benchmarking Status

- Well established for several large industries and used internationally. Examples:
 - Aluminum industry (smelters)
 - Chemical processes – specifically mass-produced commodities (ammonia, ethylene etc.)
 - Cement
 - Petroleum refineries (process heaters, steam cracking units etc.)
- Emerging in other large industries
 - Iron and steel
- Fragmented efforts for SMEs
- Many of these are not accessible, available or applicable to SMEs and other industries, particularly in developing countries such as China and India

Information Sources Used for Benchmarking (1 of 2)

Conventional sources

- Informal information exchange through colleagues, industry contacts and gatherings
- Industry conferences, expositions, meetings
- Suppliers, vendors, consultants etc.
- Industry magazine articles, technical papers, proceedings etc.
- Industry organizations (i.e. AIST, API, ISI etc.)
- Government and government-supported institutions (e.g. national laboratories, national institutes)



Emerging sources

- Web-based groups and postings
- Webinars or webcasts
- Social media – many forms of communication means

Information Sources Used for Benchmarking (2 of 2)

- Many of these sources are easily accessible for a large part of the world
- Main concern is lack of specifics, reliability and “quality control”
- Any information one gets needs to be evaluated carefully for its applicability in their specific situation
- It is necessary to establish sources of accurate and verified, trustworthy information
- International organizations can play a key role in collecting, evaluating and disseminating benchmarking information

Benchmarking for SMEs

- Benchmarking requires reliable and “quality” information that is hard to get for SMEs and even mid-size to large industries
- Benchmarking needs are for all types of SMEs (e.g. foundries, food and beverage, metal, plastics, non-metallic minerals)
- In India, several organizations led by BEE and UNIDO are cooperating for SMEs benchmarking
- In China, several organizations led by CNIS and supported by organizations such as Energy Foundation, IIP and a number of Chinese government and industry organizations are cooperating to develop benchmarks and use of best practices for SMEs

Benchmarking Information – Barriers and Actions

- No clear definition of the term “benchmark” that is accepted by industry, financial community, government organizations etc.
- Development of accepted practices or methodology for measurement and reporting of benchmarks
- Wide variations in products, production processes and operating practices that may need a large number of “correction factors”
- Lack of source(s) for reliable best practices information that can help improve or achieve accepted benchmark values
- Limited experience in use of “modern or social” media to compile and widely disseminate the available information
- Need for “traffic police” and “oversight” quality controller to assure trustworthy information



Arvind Thekdi

Potential Strategies for Improvement

- Develop clear definition and understanding of benchmarking and its scope for SMEs for as many manufacturing areas (cells) as possible
- Development of easily usable “tools” or methodology for benchmarking process
- Address confidentiality concerns without sacrificing quality of the information
- Information has to be developed by industry-led efforts, preferably with international cooperation
- Common and easily understandable format for presentation of the available information
- Well-organized information dissemination using emerging methods such as social media
- Establish (use) one or more internationally recognized and “trusted” organizations for information dissemination

Best Practice Management in a Global Enterprise

J. F. Sautin – Senior Advisor



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Synopsis

1. The challenges of technological upgrades
2. The example of Lafarge, world leader in construction materials
3. Making progress through knowledge
4. Reach out to expertize and knowledge
5. Setting a road map and timetable

The Challenges of Technological Upgrades

1. Similar technologies applied in different local contexts
 - The devil is in the details
 - There is never a “one size fits all” solution
2. Strong ownership by local management and experts
 - A necessity for buy-in and efficiency
 - Potentially blocking infusion of new ideas
3. Different systems of measurement complicate matters
 - Necessity to have clear and applied definitions
 - Find the balance between science and technology

The Lafarge example

1. World leader in construction materials: >150 cement plants
2. Creation of a 'Cement Know-How Center' in early 90s
3. Systematic recording of plant operating data
 - Strictly applied group-wide definitions and standards
 - Technical and economic (coordinated with financial)
 - Centralized analysis and feedback to operations
4. Rewards and emulation between operating plants
5. Targeting improvements: 20% reduction in CO₂ (1990-2010)

Making Progress through Knowledge

1. A collegial task

- Science and engineering define limits of reachable goals
- Technology suppliers have developed some solutions
- Local practitioners "know" the specific constraints of their site
- Capital availability depends on company results and policies
- External financial support requires specific enquiries

2. Balance short and long-term visions

- Reap all operational improvements that require little or no capital, establishing credibility and willingness of local team
- Invest through well-structured and managed projects



Reach Out to Expertize and Know-How

1. Look critically into the glut of internet information
2. Technology suppliers provide know-how and solutions
 - Should be assessed against specific plant features
3. Internal company-wide information is strong, unbiased if collected rigorously
 - Can still benefit from outside sources
4. Industry associations provide stimulus and facilitate development of new technologies
 - Also facilitate interface with regulatory bodies that set mandatory goals and rules

Set a Road Map and Timetable

1. Energy management standards (ISO 50001) are an excellent starting point, providing the basis of a road map and a guideline on processes
www1.eere.energy.gov/manufacturing/pdfs/webcast_2009-0122_energy_mngmnt_stnds.pdf
2. Mobilize a multi-disciplinary project team, preferably sponsored by a high-ranking manager
3. Establish realistic timetables, taking into account regulatory and financial constraints
4. Communicate, discuss, seek external expertize and support

Realizing Industrial Energy Efficiency: Information = Information ?

Ernst Worrell
Copernicus Institute for Sustainable Development
Utrecht University, Utrecht, The Netherlands

Information Needs

Where am I?

- Benchmarking
- Monitoring

What can I do?

- Identify opportunities
- Evaluate the menu of opportunities
- Assess individual options

Where can I find this information?

- Different sources
- Bias/trustworthy
- Experience



Where am I?

Gather and track data

- “What you don’t measure, you can’t manage”

Benchmark

- Companies often have the perception that they are highly energy-efficient
- Benchmarking provides a tool to test this perception using accepted benchmark values for technology
- Benchmarking can improve the understanding of a process and help identify best practices
- Experience with benchmarking programs worldwide has shown increased attention for energy-efficiency and performance

A *fair* comparison of the performance

- Benchmarking addresses the specific product and feedstock mix
 - NOT comparing energy intensities
 - NOT an infinite number of correction factors
 - NOT comparing apples and oranges



Sources of Information

Surveys in Europe have shown that companies use the following sources:

- Trade literature
- Suppliers
- Trade shows/exhibitions
- Associations
- Colleagues
- Consultants
- Trade seminars



Independent Information Sources

In the past, government programs used to disseminate information on demonstration projects – *not anymore...*

Selected programs collect and disseminate information:

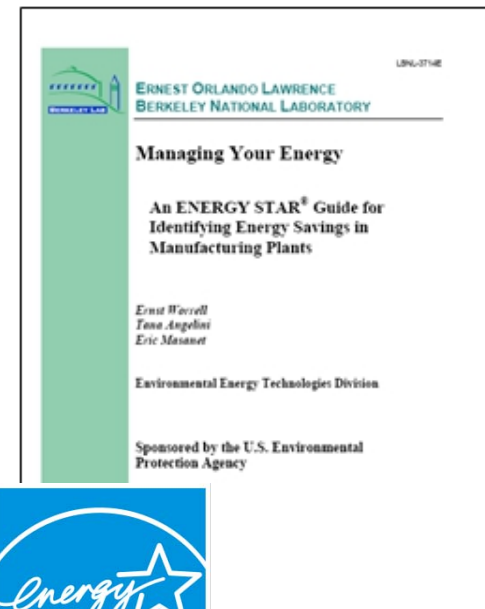
- ENERGY STAR (www.energystar.gov)
- CIPEC (oee.nrcan.gc.ca/industrial/cipec/13673)
- IIP (www.ietd.iipnetwork.org/)

Advantages:

- Unbiased, vetted information
- Industry reviewed (ENERGY STAR)

Disadvantages:

- Reports may be a few years old



Working with your Suppliers

Suppliers can provide information on *their* technologies and know your situation.

Close collaboration may be beneficial:

- Motor management plans
- Identify energy-efficient replacement for existing motors (on failure)
- Suppliers can stock them

Advantages:

- Easy access
- Two-way

Disadvantages:

- Supplier information may overrate performance
- Information may be limited to a few brands



The Role of Colleagues/Networks

Colleagues are an important source of information.

Informal

Formal

- Regular networking
- In-company events
- In-company electronic systems
- Regional networks (Germany, Switzerland)
- Support programs (e.g. ENERGY STAR in the U.S.)

Advantages:

- Experience
- Trusted source

Disadvantages:

- Cross-sectoral information lacking
- Distinguishing “Urban myths”



Kaizen:

Kai = "change"

Zen = "better"

Corporate database for all plant managers to access good ideas for energy efficiency improvement (Toyota)

Kaizen event (“Treasure Hunt”) combines a quick technical assessment with brainstorming to develop a better solution (Kodak)



Universiteit Utrecht

Ernst Worrell

Thank you for your attention

Ernst Worrell

Utrecht University

e.worrell@uu.nl



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Ernst Worrell

IIP's Industrial Efficiency Technology Database (IETD)

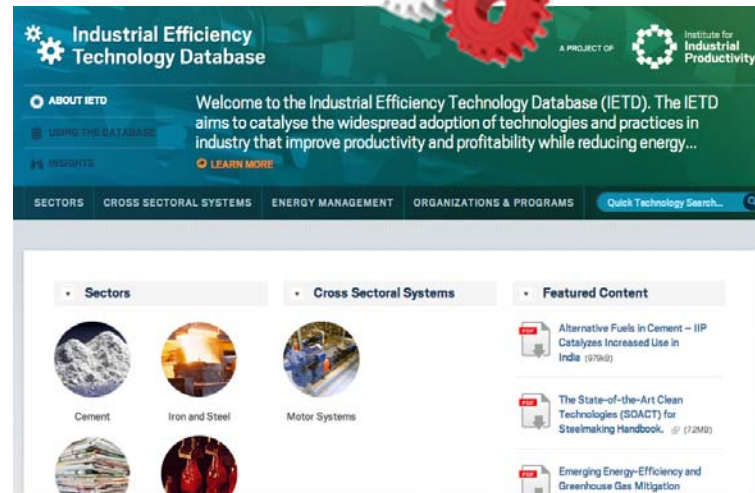
www.ietd.iipnetwork.org

Murat Mirata
Technical Manager, IIP



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IIP's Best Practice Databases



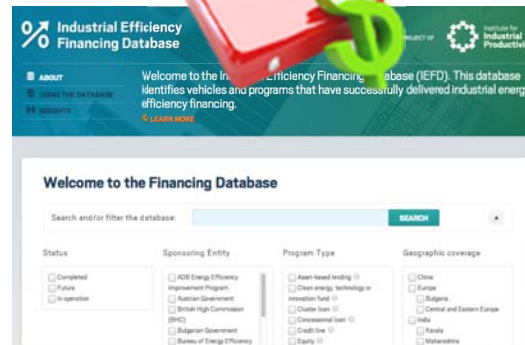
Industrial Efficiency Technology Database

www.ietd.iipnetwork.org



Industrial Efficiency Policy Database

www.iepd.iipnetwork.org



Industrial Efficiency Finance Database

www.iipnetwork.org/databases/finance



Supply Chain Initiatives Database

www.iipnetwork.org/databases/supply-chain

Database Objectives

Assist decision-makers in:

- Identifying energy efficiency options applicable in their context
- Performing an initial screening of feasibilities of identified options
- Accessing additional related information resources

...by providing relevant, credible and easily accessible information

Target Audience



- Primarily decision-makers in industry
- But also ...
 - Policy makers
 - Financial institutions
 - Industry associations
 - Others

Database Contents

- Best technologies and measures:
 - Description
 - Energy, CO₂ and other productivity performance
 - Cost
 - Applicability and limitations
 - List of additional related resources (Publications, case studies, tools, etc.)
- Benchmarks
- Key data
- Organizations and programs
- Additional resources

> 500 technologies/measures
> 1300 resources

Populating contents in collaboration with experts

Extensive review of publicly available material:

- LBNL-China Energy Group
- Fraunhofer ISI
- IREES
- University of Coimbra
- Utrecht University
- IIP

Review & customization of content:

- Atkins Global
- University of Tsinghua
- Holtec
- E3M Inc.
- Industry experts



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Murat Mirata

Future Plans and Ambitions

- Database available in Chinese (August 2013)
- Expanding the scope
 - Ammonia (June 2013)
 - Co-generation / tri-generation (?)
- Improving information quality and accessibility
 - Looking for partners
 - Creation of dedicated social networks of practitioners
 - Moving towards a Wiki-structure

Panel discussion

Murat Mirata, Arvind Thekdi,
Jean François Sautin, Ernst Worrell

Panel Discussion

- Value of best practice information and benchmarks for the financial community, policy-makers, and industry associations
- Role of networks of practitioners/experts in improving the quality and accessibility of information
- Role of the IIP Industrial Efficiency Technology Database:
www.ietd.iipnetwork.org
- Q&A