

ENERGY EFFICIENCY IN SME'S

Reference

International Energy Agency (IEA) IETS Annex XVI:

International study on energy end-use data among industrial SMEs (small and medium-sized enterprises) and energy end-use efficiency improvement opportunities

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Introduction

The industrial sector is one of the major energy-using sectors and it is responsible for a major share of CO₂ emissions. Therefore, studies on improved industrial energy efficiency is of high importance within this sector. This work focuses on energy efficiency in industrial small and medium-sized enterprises (SMEs). Often SMEs have a larger relative energy efficiency potential than energy-intensive industry due to, for example, that too few resources are put into energy management. Knowledge about where and how energy is used, as well as where opportunities for improvement exists,

may provide good support for developing the most effective policies.

Where is the potential?

Two important questions are; What is the allocation of energy-end use in industrial SMEs? Where is the energy efficiency potential found for these enterprises?

To address this, an international research study was conducted on data extracted from four countries - Belgium, Italy, Sweden and Japan. These countries were part of IEA IETS *Annex XVI, Energy efficiency in SMEs*. In addition, all four countries have a large industrial sector.

For Belgium and Sweden, data sets were gathered from national energy agencies, stemming from governmental industrial energy policy programs. For Italy, the data was collected from research-oriented industrial energy audits supported by governmental industrial energy policy programs, while for Japan it was collected from trade organizations (as no national data from for example energy audit programs was available).

Large variety in country data

The intention was to use a common taxonomy, for categorization of industrial energy end-use as well as for energy efficiency measures, where a distinction is made between production processes and support processes:

- Production processes are constituent steps for manufacturing different

goods and they can be divided in eleven categories including for example disintegration, mixing and drying. Sometimes these are referred to as unit processes.

- Support processes are necessary to maintain manufacturing activities but do not result in manufacturing as such. These can be divided into ten categories including for example lightning, compressed air and ventilation. Sometimes, these are referred to as auxiliary processes.

It was found, however, that there was such a large variety in categorization of data in between the countries, so that the study had to rely on each country's own categorization. For example, the countries used different classifications of industrial sectors and moreover, results on energy savings potential was either given in absolute values or in percentages. This non-homogeneous data did not allow for a deeper analysis and comparison between countries, processes or sectors.

Barriers and challenges

Regarding the question of where the energy efficiency potential is found in industrial SMEs, the following results were obtained:

- The potential for improved energy efficiency in the production processes was found to be about 20% for both Italy and Sweden.
- For Belgium, the second largest energy efficiency measure (after the measures in the production processes) was found in the steam system, followed by cooling and power systems.

- For Italy the largest figure, apart from production process related energy efficiency measures, was found in the HVAC systems (heating, ventilation and air conditioning), followed by compressed air and lightning.
- For Sweden, the largest energy efficiency potential was found in space heating followed by ventilation and production process-related energy efficiency measures were only in third place.
- The high figure for Belgium is related to the fact that the Belgian data set consists of medium-sized energy-intensive companies taking part of a Belgian voluntary agreement scheme, while the datasets for Sweden and Italy are related to a less homogeneous set of industrial SMEs.
- As for Japan, the data was only based on eight companies, and did not use production processes or steam in the categorization of measures, for which reason no general figures could be presented, based on that dataset.

This study provides clear evidence of existing institutional barriers and challenges that need to be removed and overcome, in relation to energy end-use and energy efficiency measure data on an aggregated level for industrial SMEs. The development of a common structure for gathering information as well as a general taxonomy should be promoted as it can enable effective benchmarking activities that, in turn, represents a basis for the promotion of the best actions at all policy-making levels - local, national and even international.

Supporting sustainable industrial energy systems

In conclusion, this work of energy end-use and energy efficiency measures in

industrial SMEs addresses the high importance of future research in creating a harmonized data categorization, as this will greatly support the transition towards sustainable industrial energy systems.

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About IETS

The IEA TCP on Industrial Energy-Related Technologies and Systems (IETS), founded in 2005, is dealing with new industrial energy technologies and systems.

The mission of IETS is to foster international cooperation 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 and facilitate deployment of cost-effective new industrial technologies and system layouts that enable increased productivity and better product quality while improving energy efficiency and sustainability.

Through its activities, IETS will increase awareness of technology and energy efficiency opportunities in industry, contribute to synergy between different systems and technologies, and enhance international cooperation related to sustainable development.

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