

# EU-MERCI Newsletter

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### **First results from the project: the screening of energy efficiency policies in the EU Member States – Vlasia Oikonomou (JIN) and Elena Taxeri (CRES)**

The initial phase of EU-MERCI consisted of the screening of energy efficiency policies in the EU Member States (MS) regarding the industrial sector as a whole. The policies have been examined in all 28 Member States plus Norway, and comparative results are presented. The analysis of each individual policy per Member State provides an understanding of the policy, in general, and, in particular, of the requirements on the methods for the calculation and the report of the energy savings, as well as the process used for monitoring the materialization of savings.

According to the Energy Efficiency Directive, Member States should set up an energy efficiency obligation scheme, or use alternative policy measures, to achieve yearly energy savings of 1.5% of annual



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*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 693845.*

sales to final consumers. Specifically, when it comes to the industrial sector, more than half of the EU Member States (16) have implemented an industry-relevant energy efficiency obligation (EEO) scheme, of which most have combined this with alternative measures. For four Member States: Denmark, Hungary, Lithuania, and Luxembourg, we have identified the EEO scheme to be the sole relevant energy efficiency measure for the industrial sector. The other EU Member States, and Norway, have not implemented an industry-relevant EEO scheme, and have thus focused on alternative measures only. The most-used type of policy measure for energy efficiency in industry is financial support, including for instance incentives for energy efficient equipment or energy management systems. This type of measure is among the key policies for 19 of the Member States. Other types of policy measures – information/training measures; fiscal measures; voluntary agreements; and legislative/regulatory measures – have been implemented by five to seven Member States each.

On the technical specificities of these measures for industry, a particular focus was set on the monitoring and verification mechanisms for the energy savings. In principle, monitoring energy savings and achievements of targets are generally the responsibility of national ministries and occasionally of some kind of agencies (e.g. National Energy Agency) or independent public bodies. Considering the different types of measures (obligations, financing and others), the types of MRV schemes and reporting protocols vary significantly, depending on their degree of complexity and accuracy of information.

Obligations such as EEOs or certificate schemes are predominantly monitored annually, where obligated parties need to provide an energy audit or draw up a summary report on energy savings. Audits are usually carried out and verified by energy experts and in most cases energy auditors need to be accredited (e.g. certified and/or registered). Alternative measures, such as financing schemes, are in most cases either monitored annually or biennially (via financial reporting or auditing) or by random checks. In very few cases there are automated/online systems for reporting the performance and energy savings from either the national authorities, market parties or auditors directly.

The second part of the work consisted in conducting a survey aiming to collect information concerning the barriers and the best practices of the implementation of Energy efficiency measures in industry EU-wide. Most responses came from the industrial companies, being a total of 130 replies from 9 countries (Italy, Bulgaria, Romania, Slovenia, Netherlands, Poland, Greece, Czech Republic and the UK). 15 ESCOs responded to the survey and 13 Associations.

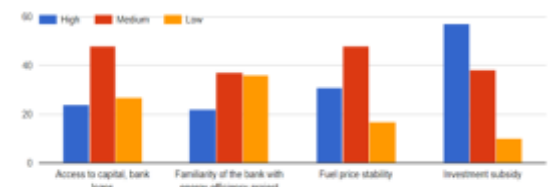
The industries that took part in the survey were mainly middle to very large size. It has been shown that most of the industries do have a very good awareness on energy issues (70%).

However, a few percentage have participated in EEO schemes (30%) and from those most have participated as a voluntary party. On the other hand, most of the industries have been certified to ISO 50001 (80%) and the survey has proven that most of them already have an energy manager and use performance indicators. Furthermore, almost all have conducted energy audits.

The vast majority of the industries (78%) aiming to reduce their energy consumption, have decided to implement energy efficiency measures in the manufacturing process. The most popular solutions implemented have been the use of inverters (VSD systems), the use of high efficiency electric motors and the energy management systems (PLC, automation, etc.). These energy efficiency projects have resulted to most of the industries in a 5% reduction to the annual energy bill, and the 45% of the industries stated that they have achieved the expected objectives in terms of efficiency, respective to their initial plan. The funding for the implementation of these measures has mainly been by their own capitals (81%) and only 11% has benefited from an EU project. Most of them (55%) stated that in the future they will finance their energy efficiency measures from their own capitals. However, a 17% would apply for an EU project funding.

Considering the barriers of energy efficiency investments, most of the interviewees indicated as the most important one the payback timing, which is considered to be too long. Other important barriers are the access to subsidies and the mistrust of bureaucracy. The knowledge of the available solutions and the knowledge of the company's energy consumption have been indicated as the two most important factors for the positive development of the Energy Efficiency Measures.

Which factors are of high importance for investing in Energy Efficiency Measures?



## **What an efficiency Good Practice is and how to identify it – Giorgio Franchioni/ Anna Realini (RSE)**

A common understanding has been reached in EU-MERCI, by defining a “Good Practice” as applied to a manufacturing process of an industry sector: i.e. a technique or methodology that, through experience and research, has been proven to reliably lead to a desired result with the minimum use of resources. Therefore, a Good Practice must be, firstly, efficient, and then economically and technically feasible. That’s the reason why the Good Practices selected in EU-MERCI are mostly taken basing on the experience from the real industry world, through the analysis of thousands efficiency projects, implemented in several EU countries. It has to be pointed out the use of the adjective “Good” instead of a more ambitious (and, often, pretentious) “Best”, associated to the efficiency practice: it reflects the concrete attitude of EU-MERCI when considering the implemented projects. The selection of Good Practices is based on the assessment of very practical indexes, which attest the compliance of an implemented project to efficiency targets and to pre-fixed desired results. A number of KPIs have been defined to this extent, which are associated to essential targets of the industry activity, of technical, economic and social nature: efficiency improvement; costs saving; investments and payback time reduction; production increase; emissions and pollution control; energy intensity abatement; cost of products and job creation

### **An example of Good Practice in EU-MERCI project – Anna Realini/Claudio Zagano (RSE)**

The main purpose of EU-MERCI project is to promote good practices in the industrial field. Since there are many “universally acknowledged” Good Practices, that have been put in place in the different sectors, with similar results (e.g. use of Variable Speed Drives on different machinery, cogeneration plants), the main focus of this project will be to identify those practices that are more “sector-specific”, i.e. directly affect the execution or the technology of a manufacturing process. Here an example is shortly presented for

impact. KPIs are calculated for each efficiency project using data and information directly coming from measurements reported by the respective industry actor. The computation is supported by a specific industry-sector analysis, taking also into account local aspects of the EU-28 countries. A statistical analysis of the efficiency projects, sector-by-sector and process-by-process, allows to identify the most performing interventions, in order to understand the extent to which a certain practice has been implemented in different industry plants, and may be replicated in different sectors, in different countries. An engineering evaluation is of course performed, supporting especially the identification of “rare” (not spread) and original practices that show very good results in terms of efficiency or feasibility.

A ranking of the interventions will be proposed to extract the most promising Good Practices. These latter will be then “validated”, either against the solutions proposed in the specialist literature, BAT/BREFs documents and other projects’ outputs, and through direct surveys with the concerned stakeholders.

The degree of replication and the potential impact of each practice in different countries and industry contexts will be appreciated and will constitute the basis of a “technology transfer”, which will be implemented within the EU-MERCI Capacity Building action.

the Paper industry. Paper is produced in the so-called continuous machine, where pulp enters and sheet reels come out as a result. One of the main sections of the continuous machine is the drying section, where water is removed through an exsiccation process. The proposed Good Practice is related to the drying section in a machine that produces tissue paper (paper napkins, toilet paper, etc...). Here the drying operation uses the so-called “Yankee”, a large steel cylinder (drum) surrounded by an air cap (hood), under pressure.

The hood supplies hot, high velocity air that impinges on the sheet. This way, drying is accomplished by a combination of conduction (the steam drum) and convection (moving hot air), both produced with combustion of Natural gas. The drying work is more or less evenly divided between the drum and hood. The selected energy efficiency measure consisted in two types of interventions:

1. Installation of a thermal insulation system on the heads of the Yankee in order to reduce heat losses and thus cut down the consumption of natural gas in the drying process (both directly to produce hot air and indirectly to produce steam).
2. Installation of a new high-efficiency thermo-compressor, which recovers the flash steam generated in the condensate collector (placed on the bottom of the paper machine) and then recompresses it through a thermo-physical process, using the high pressure steam coming from the boiler. The recompressed

steam is re-used for the drying process.

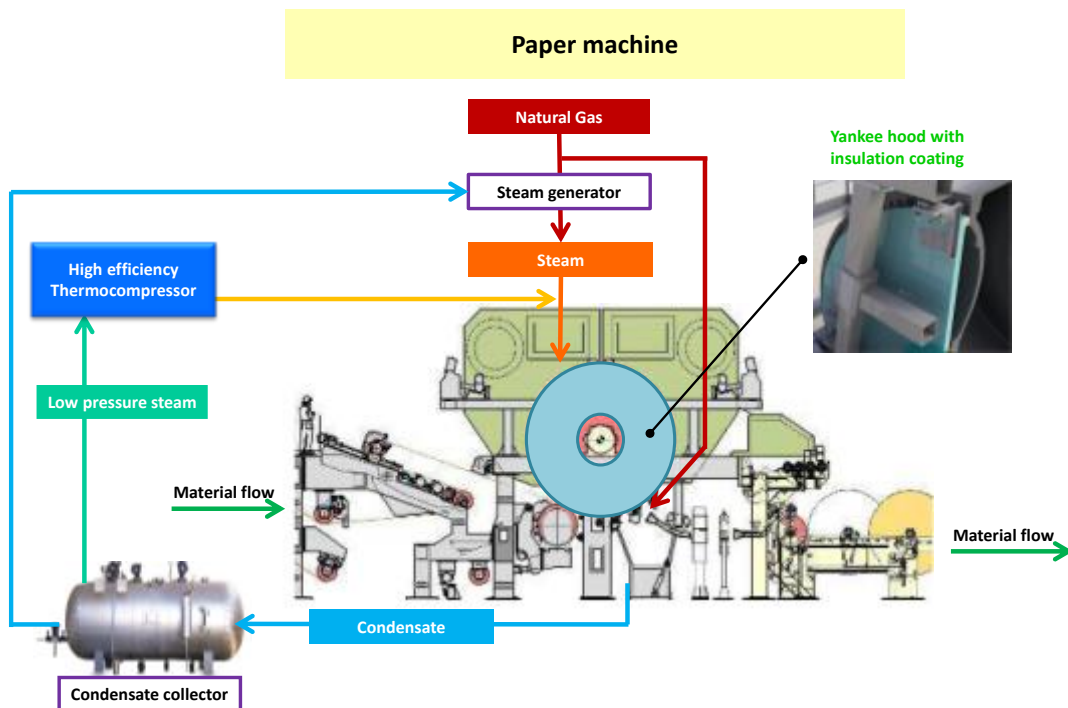
3. The working pressure of the new thermo-compressor is set on 7.5 bar against the 5.8 bar of the ex-ante situation. The increased pressure results in a reduction of the enthalpy provided by the boiler, thus allowing a significant energy saving in natural gas consumption.

The three measures result in significant improved efficiency, with interesting economic feedback as shown by the here below calculated performance indicators :

- Measured energy savings: 15%
- Payback time: 3,4 years
- Greenhouse Gas Reduction/investment: 1,78 kgeqCO<sub>2</sub>/€

All data come from real records at the concerned industry and this is another important feature of the EU-MERCI Good Practice concept.

A schematic of the intervention is reported in the figure below:



## Interviews with the Advisors – Valentina Bini (FIRE)

On EU-MERCI site we have collected a series of interviews with the advisors of the project. The objective is to define the impact of the project, as well as the trumpet to the dissemination of energy efficiency and the implementation thereof within the reference states.

**We report the interview with President SUNE-Romania: Nicolae Olariu.**

### 1) A short overview on Romanian policies about energy efficiency

Romania is fully committed to fulfilling the national and European targets regarding the “3x20” objectives. If the target for renewables energies has already been achieved is not the same situation for CO2 emissions reduction and energy efficiency (EE) targets. The EE obligations assumed by Romania consist in reducing, until 2020, the primary energy consumption by 19% (signifying 10Mtoe) ie from forecasted consumption of 52.99Mtoe to 42.99Mtoe. The issues regarding the EE are regulated by Law no. 121/2014 which came into force in August 2014. The Law transposes the European Union regulations into national legislation set out under Directive 2012/27/UE.

In accordance with the provisions of the Law no. 121/2014, within the Romanian Energy Regulatory Authority (ANRE) was established the Energy Efficiency Department (EED) which is responsible with transposing the provisions of the law into secondary legislation.

In order to making operational the measures regarding the EE a National Energy Efficiency Action Plan (2014-2020)-NEEAP III was approved by Governmental Decision no. 122/2015. The measures provided by the NEEAP III represented the basis for establishing 12 national EE Programs, grouped into five sectors: (1) EE in energy supply system; (2) EE in industry sector; (3) EE in the buildings sector; (4) EE in the services sector and (5) EE in the transport sector. The share of this five sectors in achieving the national target on EE is: 16% for energy supply, 23%

for industry, 30% for buildings, 13% for service and 18% for transport sector (NEEAP III ). For all this sectors an increased attention has been given to implementing energy efficiency in buildings. It was defined the concept of building type NZEB (with an energy consumption near to zero), offering funding for such projects. For this sector two specific national programs have been established: Energy efficiency in the residential sector and Energy efficiency in governmental buildings.

An important barrier in stimulating investments in EE is the lack of support schemes (such as white certificates). There exist, however, a series of programs to finance EE projects mainly from structural funds or various investment funds.

### 2) How can EU-MERCI project help Romania to improve the national policies?

The EU-MERCI project must define and propose a series of methods and procedures to be followed in the implementation of a sustainable energy efficiency policy, based on real cases, in order to motivate stakeholders from public and private sector, to join together in making a structure objective analysis, to highlight the current technically and economically level. The project should mediate the communication between decision makers and the parties directly involved in shaping and enactment of policies and measures in the field. These policies must help the industry stakeholders that are interested to improve the energy efficiency of a process, to overcome the existing barriers in order to maximize the economic and technical benefits and to simplify the access to possible incentives. By creating a database at Community level, encompassing as many indicators of technical and economic relevance in different industries and depending on the structure of these industries will have to provide a picture of the ensemble on process efficiency based on energy consumption. [Read the full interview and the other addressed to the Advisors of EU-MERCI.](#)



EU coordinated **M**ethods and procedures  
based on **R**eal **C**ases for the effective  
implementation of policies and measures  
supporting energy efficiency in the Industry



Open Conference of the project EU-MERCI ([www.eumerci.eu](http://www.eumerci.eu))

## Good Practices of Energy Efficiency in the European industry processes

### *Policies of incentivisation and implementation*

Rome – February, 23<sup>rd</sup> 2017

GSE Headquarters, Viale Maresciallo Pilsudski, 92

#### AGENDA

- 13:30 – 14:00** Registration
- 14:00 – 14:10** Welcome & Introduction to the Meeting  
*Giorgio Franchioni (EU-MERCI Coordinator) – Ricerca sul Sistema Energetico RSE*
- 14:10 – 14:40** EU-MERCI goals and approach  
**Growing Energy Efficiency in the European Industry: policies, good practices and technology transfer**  
*EU-MERCI Consortium representatives*
- 14:40 – 15:30** EU Policies and Financing  
**EU policies in support of Efficiency in the Industry**  
*EASME Officer (tbc)*  
**EE financing mechanisms**  
*Clemens Rohde – ISI-Fraunhofer (EEFig Project)*  
**The Italian White Certificate Mechanism: results and energy fallouts**  
*Domenico Rotiroti - GSE*
- 15:30 – 16:45** Trends and needs of Energy Efficiency in the Italian Industry  
**Overview of trends and needs**  
*Corine Nsangwe Businge - Ricerca sul Sistema Energetico RSE*  
**The Iron & Steel sector**  
*Filippo Cirilli - Centro Sviluppo Materiali S.p.A.*  
**The Pulp & Paper sector**  
*Alessandro Bertoglio - Assocarta*  
**The Food & Beverage sector**  
*Massimiliano Boccardelli – SPES GEIE-Federalimentare*  
**The role of ESCOs**  
*Dario Di Santo - Federazione Italiana per l'uso Razionale dell'Energia FIRE*
- 16:45 – 17:15** Discussion & conclusions

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## Events and milestones

- **Webinar for dissemination of EU-MERCI results (17 February)**  
Energy efficiency has been a critical target within the EU, as is proven with the Directive “Energy Efficiency” (2012/27/EU-EED). The aim of the Webinar is to inform on current EU schemes and regulations concerning energy efficiency policies for industry. The target to which it is addressed is made up of European/National Decision Makers, Financing Institutes, Energy Associations; Consumers associations, Industry Associations Especially followers.
- **Open Conference of the project (23-24 February-Rome)**

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