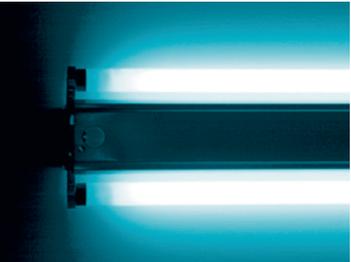


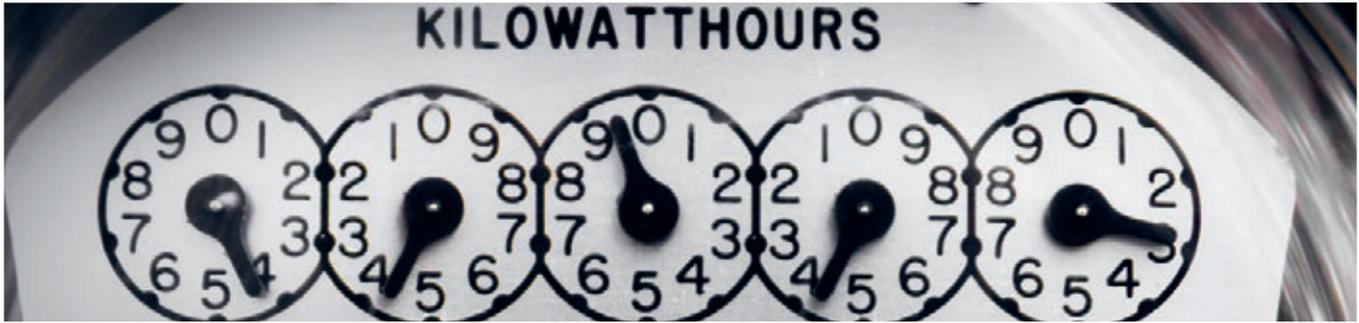
EUREM.NET



proud to save!

EUREM.NET – Training and Network of European EnergyManagers





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Companies consider energy more as a cost than a profit centre. However by adopting energy-efficient technologies and practices they can make huge profits! Many of these pay back within a short period and increase companies' competitiveness. This goes also hand in hand with other benefits such as an increase of quality and reduced environmental damages. Overall, it is estimated that about a fourth of the energy use in industries could be saved in a cost-effective way.

Initiatives that provide staff responsible for energy issues with the know-how needed to reduce energy consumption in an economically sound fashion are highly welcome. They supply the impetus for not only recognising these potentials but also for taking action to exploit them. They equally demonstrate how vital dedicated energy managers are for companies.

That is why I appreciate the initiative of the EUREM.NET cooperation partners from twelve European countries, which entails the use of a high-level standardised training course. I am pleased that the European Union has been able to support this initiative in the framework of the Intelligent Energy - Europe programme.

The Intelligent Energy Europe programme offers financial support to organisations committed to helping the European Union achieve its energy policy goals, in particular increasing its energy efficiency by 20% by 2020.

Projects supported under the Intelligent Energy Europe programme, like EUREM-NET, contribute to secure, sustainable and competitively priced energy for Europe. Not only do these projects increase companies' competitiveness but they also contribute to a cleaner and more secure energy future for all citizens.

DR. ENG. VINCENT BERRUTTO
HEAD OF ENERGY EFFICIENCY UNIT
EUROPEAN COMMISSION'S EXECUTIVE AGENCY FOR COMPETITIVENESS AND INNOVATION

EUREM.NET: A European initiative guarantees energy efficiency



EUREM.NET consortium meetings in Nuremberg (December 2006), Paris (April 2007), Lisbon (November 2008) and Milan (April 2009)

EUREM.NET (Training and Network of European EnergyManagers) is a project of the European programme



The goal of EUREM.NET was to implement the training programme for European EnergyManagers (EUREM) in the majority of EU countries. For that reason, the EUREM standardized training programme, which was developed in the years 2003-2005 by the Chamber of Commerce and Industry for Nuremberg and Central Franconia (CCI), the German-Portuguese Chamber of Commerce and Industry in

Lisbon (DUAL) and the Austrian Economic Chamber (WKÖ), was implemented by nine other EU countries. CCI, WKÖ and DUAL supported these nine countries as a coach due to their long-term EUREM experiences.

EUREM is now operated regularly at the highest level by twelve European countries as the standard qualification programme in the energy management area. The turbulent developments on the energy market require an approach which makes it possible to implement modern Energy Management systems in companies and to enhance the energy efficiency. EUREM is this approach,

as the remarkable energy-, CO₂- and cost saving potentials in the twelve countries show.

The EUREM.NET approach and the first version of the EUREM training materials were developed in the SAVE II project "European EnergyManager" between 2003 and 2005 by the CCI, DUAL, WKÖ and the British Energy Institute. The EUREM training programme was implemented in these countries. This preparation work and the experiences from the training courses facilitated the subsequent project EUREM.NET.

The twelve EUREM.NET countries:

- | | |
|--|---|
| <p>1. Nuremberg Chamber of Commerce and Industry (CCI), Germany
Coordination and coach for Czech Republic, Greece and Finland</p> <p>2. Austrian Economic Chamber (WKÖ), Austria
Coach for France, Spain and Slovenia</p> <p>3. Portuguese Chamber of Commerce and Industry (DUAL), Portugal,
Coach for Estonia, Italy and Poland</p> | <p>4. German-Czech Chamber of Industry and Commerce, Czech Republic</p> <p>5. EnPro Engineers Bureau Ltd. Estonia</p> <p>6. AEL, Finland</p> <p>7. ARENE Ile-de-France, France</p> <p>8. Centre for Renewable Energy Sources (C.R.E.S.) and German Hellenic CCI, Greece</p> <p>9. Ambiente Italia srl and The German Chamber of Commerce in Italy, Italy</p> <p>10. KAPE S.A. (The Polish National Energy Conservation Agency), Poland</p> <p>11. Jožef Stefan Institute Energy Efficiency Centre, Slovenia</p> <p>12. ESCAN, S.A., Energy Consulting, Spain</p> |
|--|---|

Contact details for the above organizations can be found on pages 38-39 and in the individual country descriptions.

EUREM.NET: The effects!

Four main goals were determined at the beginning by the EUREM.NET partners, in order to implement a standardized qualification for European EnergyManagers (EUREM) throughout Europe:

1. EUREM courses running in twelve EU countries
2. Continued development of the EUREM training materials
3. National acceptance of EUREM European wide certificate
4. Formation of a network for European EnergyManagers

With EUREM.NET all these goals were reached and the results show that with EUREM the energy efficiency has been optimized in the companies and remarkable energy-, cost-, and CO₂ – savings have been achieved in all twelve EU countries.

1.

EUREM courses running in twelve EU countries

22 EUREM courses were carried out by the twelve EUREM.NET partners in the years 2007 and 2008, all using the same method and standardized training materials. A total of 346 representatives from various companies and public institutions in twelve countries have qualified as European EnergyManagers.

Therefore the 346 European EnergyManagers had to invest a lot of hard work:

- ▶ attend the EUREM seminar modules
- ▶ successfully complete a written exam

- ▶ work out an energy concept for the optimization of a weak point in the company
- ▶ present the results of this energy concept to a jury
- ▶ exchange experiences with colleagues on a European wide internet platform

The **EUREM seminar modules** cover nearly all energy-relevant issues which can occur in a company:

- ▶ Energy fundamentals, Energy data management, Load management
- ▶ Energy requirement of buildings/ energy efficient buildings
- ▶ Heating, Process heat, Steam, Heat recovery
- ▶ Air conditioning, Cooling, Cogeneration
- ▶ Light, Compressed air, Electrical drives
- ▶ Solar technology, Energy from biomass, Geothermal energy
- ▶ Energy purchase and trade, Energy laws, Emission trade, Contracting
- ▶ Project management, Economy calculation

This variety of energy issues requires a highly qualified, practically orientated, interdisciplinary **team of trainers**. All the trainers of the twelve countries have to work with the same, only country-specific modified training materials. This challenge has been mastered brilliantly by them.

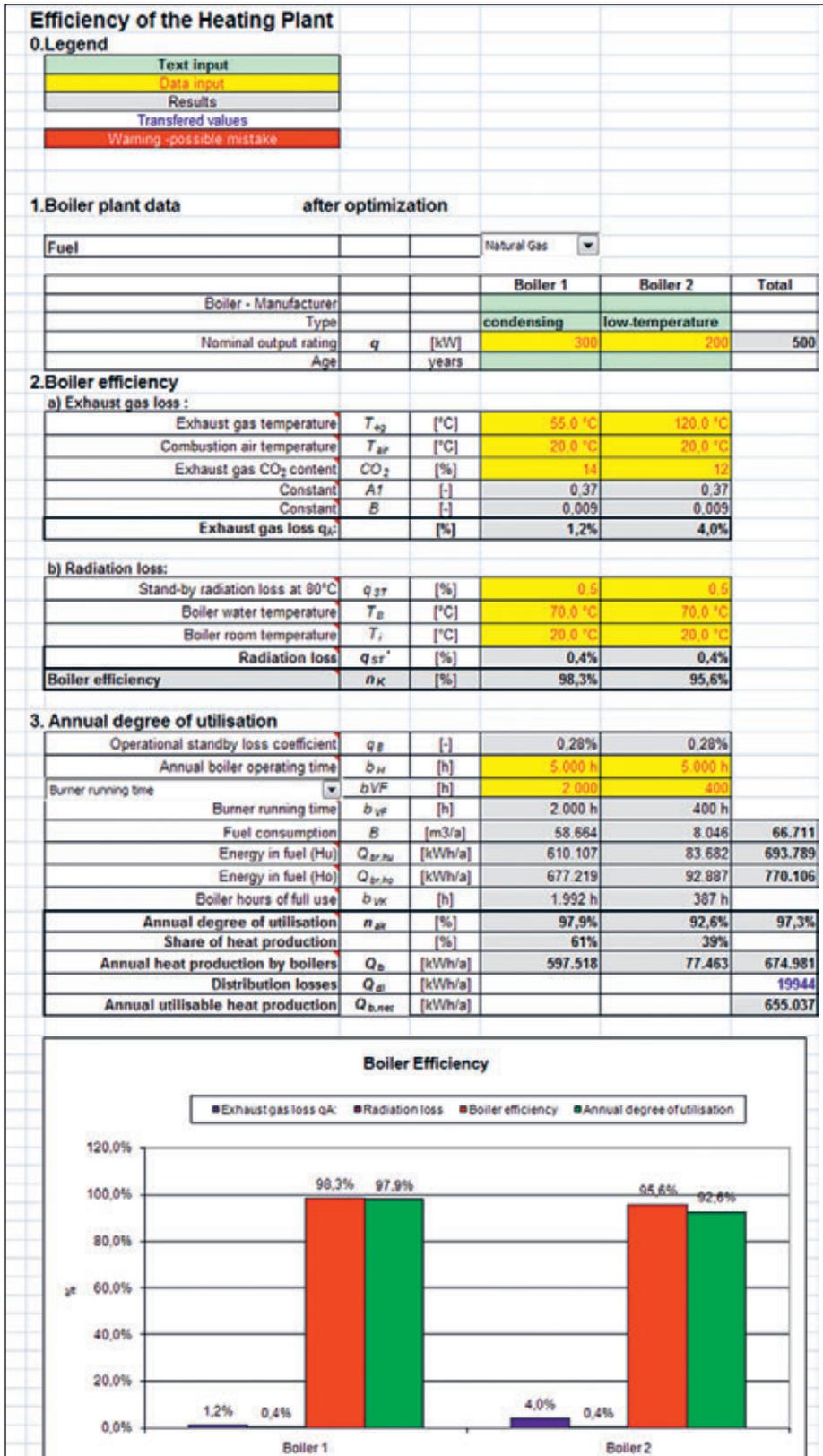
The curricula of the EUREM courses of the twelve partners include all the mentioned energy issues and are designed in a way that at least 200 training hours are covered by them. For the workshops, including the written exam and the presentation of the energy concept, at least 120 hours should

be scheduled. The remaining time is needed by the participants to develop the energy concept, for the calculation tasks with the Excel Tools, the exam preparation and the exchange of experiences through the internet. The time schedule of the EUREM seminar modules was arranged by each country, according to the geographical location and the accessibility of the venue. In several countries, the workshops took place on particular days, often in the evenings over several weeks, others decided to offer them in block form (e.g. 4 blocks à 3 days). The know-how passed on during the EUREM seminar modules is tested in a 2-hour **written exam**.

In order to transfer the skills of the seminar modules into practice, the EUREM participants develop an **energy concept** on an energy relevant issue for their company. Each energy concept must contain a comprehensible basic analysis, the description of optimization potentials and the economic calculations for the suggested solutions. In the process, the EUREM participant is supervised by a tutor from the team of trainers, who also evaluates the energy concept.

A standard evaluation of the energy concepts of all twelve countries is possible because the necessary information and data are available in a standardized short form.

The participants present the **results** of the energy concept usually 6-8 weeks after the last seminar module to a jury that consists of trainers, energy experts, and representatives of authorities or other institutions.



Example of a calculation tool from the topic heating (Boiler efficiency). Only with a few data inputs to quick results. Real benefit for the EUREM participants.

The “European EnergyManager” certificate is awarded to the EUREM participants if the assessment of their work (written exam, energy concept, final presentation) is positive.

EUREM assessment: max. 100 points

Written exam: max. 50 points
Energy concept: max. 35 points
Presentation: max. 15 points
Positive assessment: above 51 points

In most of the countries, the EUREM certificates are handed over to the European EnergyManagers in an award ceremony. The **Internet Platform** www.energymanager.eu is an important information medium for the European EnergyManagers, but also for others who are interested in EUREM. Training materials, calculation tools and further informative material are available to the EUREM participants via the country portals. A discussion forum allows a European-wide exchange of experiences between European EnergyManagers and EUREM trainers.

2. Continued development of the EUREM training materials

Characteristic of the EUREM seminar modules is that in all twelve EU countries, the same standardized training materials are used. The training materials, which were developed in the first project EUREM (2003-2005) were updated by energy experts of the EUREM.NET partners. The English master version was taken as the basis.

3. National acceptance – European wide certificate

In Germany, Austria and Portugal the European EnergyManager qualification is already nationally recognized as an excellent standard training programme in the field of energy. This is also apparent in the cooperation between these three partners and the responsible energy institutions, the regulator or other recognized energy institutions in carrying out the EUREM courses.



First conference for European EnergyManagers in the Chamber of Commerce and Industry in Nuremberg

The nine new countries followed the same procedure and the responsible national energy institutions and other important energy experts were involved, in order to establish EUREM as an approved qualification for European EnergyManagers in the respective country.

The European Association of Chambers of Commerce and Industry (EUROCHAMBRES) should administrate all the European EnergyManagers in a central register.



For this reason, all EUREM graduates will be registered using the international country codes, city codes and their participant number e.g. DE-NUE-1. This European registration number helps to promote a European corporate identity for EnergyManagers.

4. Formation of a network for European EnergyManagers

Currently about 1,000 European EnergyManagers from twelve EU countries are part of a successful network of practical experts.

The EUREM Internet Platform www.energymanager.eu is the main communication medium. In the future initiatives to advance the personal contact between the European EnergyManagers will also be started.

An opportunity was offered by the first symposium for “European EnergyManagers”, which took place in Nuremberg on March 5th and March 6th 2009. 140 participants (European EnergyManagers, EUREM trainers, EUREM.NET partners) from Germany, Austria, Czech Republic and Portugal contributed to the success of this event. The event was held in German. In presentations, workshops and a relaxed social setting the participants engaged in an

enthusiastic transnational and personal exchange of experiences. The next conference will take place on April 29th and April 30th 2010 in Vienna.



EUREM.NET – The results:

The remarkable CO₂-, energy- and cost savings, which were identified by the 346 European EnergyManagers in their energy concepts, show that EUREM is the right way to meet the economic and ecological demands of today. The results in each of the twelve countries are displayed in the following chart.

EUREM.NET: Results					
Countries, number of EUREM courses (C), participants (P)	Energy saving potential MWh/a	Cost reduction potential EURO/a)	CO₂-saving potential t/a	Investment cost (EUR)	Average pay-back time (static) in years
Austria (2 C, 52 P)	108.346	4.115.547	24.649	12.049.931	3.8
Results/Participant	2.084	79.145	483	231.729	
Czech Republic (1 C, 15 P)	128.694	4.634.333	151.283	20.646.440	4.3
Results/participant	8.580	308.956	10.086	1.376.429	
Estonia (1 C, 13 P)	17.081	654.982	4.266	4.142.186	5.0
Results/participant	1.423	54.582	388	345.182	
Finland (1 C, 14 P)	129.559	4.089.050	23.339	11.641.000	3.5
Results/participant	9.254	292.075	1.459	831.500	
France (1 C, 10 P)	15.767	1.255.111	2.859	14.357.000	4.9
Results/participant	2.252	179.302	408	2.392.833	
Germany (8 C, 121 P)	114.213	5.331.367	41.228	18.621.994	4.3
Results/participant	1.002	44.801	344	159.162	
Greece (1 C, 12 P)	1.567	155.378	1.315	454.947	5.3
Results/participant	131	12.948	110	45.495	
Italy (1 C, 5 P)	3.220	295.500	1.771	745.000	5.8
Results/participant	1.073	98.500	590	248.333	
Poland (1 C, 11 P)	15.781	733.190	6.683	539.300	3.9
Results/participant	1.435	66.654	608	49.027	
Portugal (3 C, 45 P)	18.287	786.992	2.244	3.519.987	7.5
Results/participant	406	17.489	50	78.222	
Slovenia (1 C, 23 P)	82.550	2.553.051	20.884	6.246.140	3.8
Results/participant	3.752	116.048	949	283.915	
Spain (1 C, 25 P)	29.261	2.085.805	11.161	19.489.739	8.6
Results/participant	1.170	83.432	446	779.590	
Total (22 C, 346 P)	664.326	26.690.306	291.682	112.453.664	4.2
Average/participant	1.920	77.140	843	325.011	

1

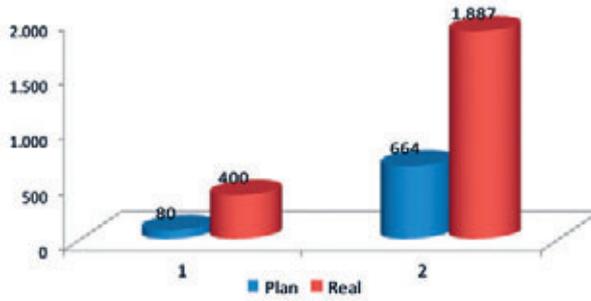


FIG. 1: COST SAVING POTENTIAL TOTAL IN EUR

2

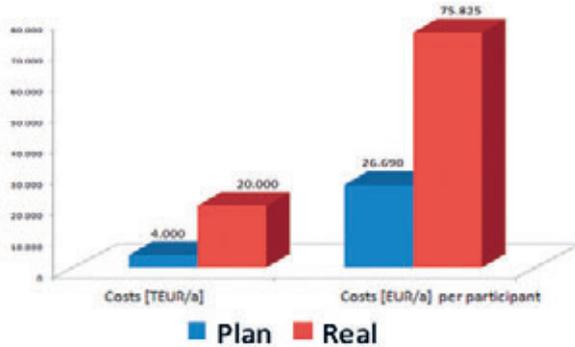


FIG. 2: COST SAVING POTENTIAL PER PARTICIPANT IN EUR

► The actual energy savings identified are eight times higher, the cost reductions six times higher than planned. Especially in times of worldwide economic crisis, these saving potentials are an important contribution to reduce costs and to increase the competitiveness of companies.

► The likelihood of implementing the 346 EUREM energy concepts is high for 52%, medium for 32% and low for 7%. 9% have already been implemented. Altogether, the chance of implementation is about 73%. If all measures are realized, the investment volume would be 112,453,664 €, which constitutes a significant boost to the economy in these countries.

► With the measures proposed in the energy concepts, the CO₂-emissions in the twelve countries can be reduced by 291.682 tons per year. This is an important contribution to climate protection and reaching the Kyoto goals.

3

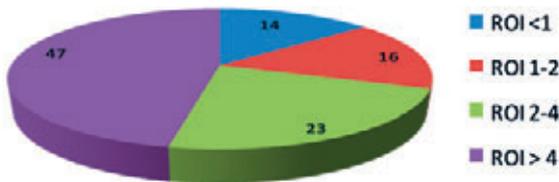
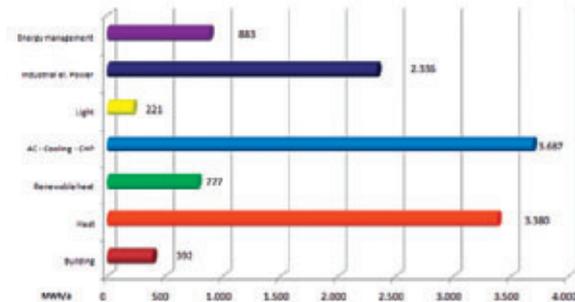


FIG. 3: AVERAGE PAY-BACK TIME IN YEARS

► The average pay-back time for the proposed optimisations measures is 4,2 years. 30% of the energy efficiency projects are already profitable within two years.

4



The following two graphics show in which subject areas from the 346 EUREM energy concepts the highest energy saving and cost saving potentials were achieved:

FIG. 4: AVERAGE ENERGY SAVING OF TOPIC GROUPS (MWh/a)

► The classic industrial main applications (heat, electrical drives and compressed air, as well as air conditioning, cooling and cogeneration) explicitly show the highest saving potentials.

5

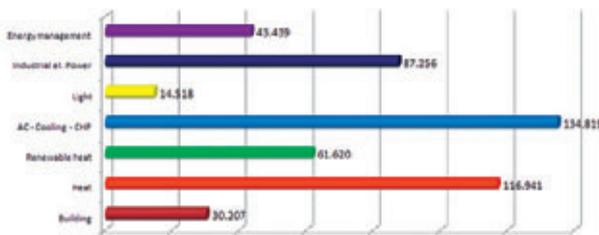


FIG. 5: AVERAGE COST SAVING OF TOPIC GROUPS IN EUR

► Economically most attractive are the proposals in the areas of process heat, heat recovery, compressed air, load-, and energy management. High cost savings correspond to low pay-back times, which are usually lower than two years.

Regarding on energy sources the largest energy savings were reached by electricity, followed by natural gas.

6

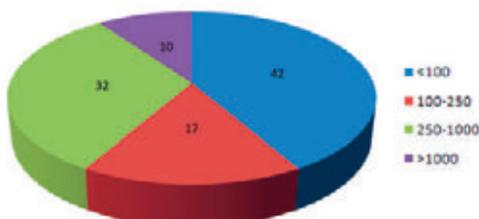


FIG. 6: SIZE OF COMPANIES (EMPLOYEES IN %)

► Also the size of the companies, which participated in the EUREM.NET project, was very different. The smallest company had three, the largest had 46,000 employees.

Energy Policy of the EU EUREM.NET's Contribution

European Energy Policy

Having a policy shared by all European member states to ensure the safe, competitive and environmentally friendly supply of energy is an essential requirement for Europe's future economic success. Energy supply will continue to be a great challenge, particularly given the finite nature of fossil fuels, the growing demand for energy, the long-term trend of rising prices for oil and gas, the unstable situation in many parts of the world and the effects of climate change.

In view of the goals of achieving secure supply, cost effectiveness and environmental compatibility, energy efficiency is of utmost importance. This is also shown in the EU's action plan for energy efficiency. The plan aims at the improvement of energy efficiency by 20 % throughout the EU until 2020. This saving can be achieved by implementing various energy efficiency measures.

Reaching these goals will require specific efforts, in particular by increasing energy consumers' awareness for the need to save energy, by improving manufacturing efficiency and by reducing all energy consumption associated with products and buildings.

Training based on extensive experience

Ideally, the expertise required for training should be transferred into companies through the individual participants. This is where 'EUREM.NET – Training and Network of European EnergyManagers' comes in, a training program that has been developed as part of an EU project. Its tried-and-tested curriculum, which covers a wide range of topics, provides participants with a holistic view of efficient energy technology and corporate energy management.

This enables specific energy efficiency measures which have the greatest savings potential to be identified. The twelve EU countries involved in the project (Austria, Czech Republic, Estonia, Finland, France, Germany, Greece, Italy, Poland, Portugal, Slovenia and Spain) have each established a standardized training program that is nationally recognized. Moreover they have also initiated and built up efficient energy expert networks. In this endeavor, the ten years of experience (gained in Germany in many efficiency projects and in its role as EUREM coordinator) have been highly beneficial for everyone involved within the project in achieving high-level and excellent results. This valuable experience was of great advantage in the successful transfer of the training program in the countries mentioned.

Qualified staff – Key for implementation

Carefully selecting both instructors and training materials ensures that the European EnergyManager Training maintains a high degree of practical relevance. Participants have the opportunity to perform a feasibility study during the training program to identify and implement energy efficiency measures for their companies. Writing such an energy concept has been integrated into the training program to help participants determine relevant measures. Any savings the participants are able to achieve at their companies as a result of their newly acquired knowledge contribute to meeting the EU's energy savings goal. As a high-quality training program that is recognized throughout Europe, the European EnergyManager Training is an important element in the continuous efforts to increase energy efficiency through qualified staff at the companies involved.

EUREM.NET – What's next?

As project partners and as coordinator, we are pleased to have ensured the sustainability of the project beyond the end of the funded period. To ensure that the European EnergyManager Training continues to be carried out and expands in a uniform way, a six-member steering committee has been elected that includes members from Austria, Czech Republic, Finland, Germany, Greece and Portugal. During the introductory phase, the group will be chaired by the Nuremberg Chamber of Commerce and Industry. The Austrian Economic Chamber will act as the deputy chair.

The great success of the European EnergyManager Training has also created interest in other countries. The steering committee has already received inquiries from countries such as Argentina, Brazil, Bulgaria, Chile, China, Egypt, Ireland, Jordan, Romania and Tunisia. This is a very positive sign showing that the European EnergyManager Training will ultimately be applied beyond Europe's borders, contributing to worldwide energy savings and better climate protection. Without reliable support no activity can be successful. All members of the EUREM consortium always felt responsible for the success of the project and demonstrated commitment, impetus and more. We are very grateful for this and in particular for the leading support provided by the company „pe projects energy“. Finally we would like to take this opportunity to thank the Directorate-General Energy and Transport as well as the European Agency for Competitiveness and Innovation (EACI) in Brussels for their financial and advisory support.

ROBERT SCHMIDT, PH.D.
HEAD, INNOVATION | ENVIRONMENT
NUREMBERG CHAMBER OF COMMERCE AND INDUSTRY
EUREM.NET COORDINATOR AND
CHAIRMAN EUREM.NET STEERING COMMITTEE
NUREMBERG, GERMANY

STEPHAN SCHWARZER, PH.D.
HEAD OF ENVIRONMENTAL AND ENERGY POLICY
AUSTRIAN FEDERAL ECONOMIC CHAMBER
DEPUTY CHAIRMAN EUREM.NET STEERING COMMITTEE
VIENNA, AUSTRIA

The courses of the 12 EUREM.NET partners

346 European EnergyManagers qualified in the 22 EUREM courses carried out by the twelve EUREM.NET partners between 2007 and 2008. On the following pages the EUREM courses of these twelve EUREM.NET partners are presented.

Each EUREM country description will give you information about:

- ▶ who carries out the EUREM courses and contact details
- ▶ how many EUREM courses were carried out during EUREM.NET
- ▶ when the next EUREM courses will take place
- ▶ the individual national structure of the EUREM courses
- ▶ results (energy saving, cost saving and CO₂-saving potentials, investment costs, pay-back time)
- ▶ two best practice examples

The very positive feedback from EUREM participants in each of the twelve countries and the saving potentials found and already achieved in many cases will motivate other companies to implement energy efficiency measures and to join the EUREM courses.

The great success of EUREM will be an incentive for other countries to implement the EUREM training programme und to use the experience of the twelve EUREM.NET partners.



The EUREM courses in Austria are carried out by:



Austrian Economic Chamber (WKÖ)
 Department of Environmental and Energy Policy
 Wiedner Hauptstraße 63, A-1045 Vienna,
Web: www.wko.at/up
Contact: Cristina Kramer, +43 (0)5 90 900 – 4222
E-mail: cristina.kramer@wko.at

Cooperation partners: E-CONTROL, Austrian Energy Agency, Energy Institute of the Economy

In Austria 148 European EnergyManagers have qualified in six EUREM courses between 1/2004 and 11/2008. These persons are implementing modern energy management in their companies or institutions and the results of their Energy Concept show that it is profitable for the company and the environment. At the moment the 7th EUREM course with 25 trainees is taking place and will finish in May 2009. Due to the great demand for European EnergyManagers EUREM VIII will start in April 2009.

The EUREM courses in Austria:

Every EUREM course consists of four modules (each lasting three days) and takes place in Vienna. Between the EUREM modules the trainees are supervised by Hermine Dimitroff and Karin Dullnig, who support WKÖ, and if necessary by the trainers. Austria has a very successful team of 20 trainers.

After every EUREM module the trainees have to carry out a quick analysis of the current situation in their companies with the checklists for the different energy topics of the module. The results of these analyses are presented by each trainee in the next module and discussed with the whole group. With this strategy optimization potentials for different energy topics are located in nearly every company – not only in the area chosen by the trainee for the Energy Concept. To promote the social interaction between trainees, trainers and WKÖ an informal experience exchange takes place on the Friday evening of every module, which is well attended.

After every module the trainees fill in a form with feedback on whether expectations regarding module contents and form were met, on the module trainers, etc and corrections are made if necessary. The average attendance of more than 95% shows the interest of the trainees in EUREM.

The EUREM Internet platform is used by all trainees to download the training material and for new information.

The final presentation of the Energy Concept takes place about two months after the last EUREM module in front of a highly qualified team of experts with representatives from the Austrian regulator E-CONTROL, the Austrian Energy Agency, the Federal Ministry for Economic Affairs, the Federal Ministry for the Environment and others. Every presentation is assessed by these experts. Afterwards Stephan Schwarzer (WKÖ) and a representative of the jury hand over the EUREM certificates to the new European Energy-Managers.



Working in groups – An impression of the EUREM workshops in Vienna

Evaluation in Austria

The EUREM.NET evaluation includes the Energy Concepts of 52 European EnergyManagers from EUREM V and VI with a general high implementation rate (41 high, nine medium, two low).

The considerable saving potentials for energy, CO₂ and costs found with the EUREM Energy Concepts are the best promotion for the EUREM courses in Austria.

The two best practice examples from a large and a small company should motivate other companies to find out and to realize their saving potentials.



Jury of experts 2008; Award of Certificates for EUREM V by Alfred Maier (BMW) and Stephan Schwarzer (WKÖ)

EUREM.NET results in Austria:

EUREM courses (Number of participants)	Energy saving potential (MWh/a)	Cost reduction potential (EUR/a)	CO ₂ – saving potential (t/a)	Investment costs (EUR)	Average pay-back-time static (years)
EUREM V (23 P)	93.463	2.805.077	20.494	4.909.286	2.1
EUREM VI (29 P)	14.883	1.310.470	4.155	7.140.645	4.9
Total EUREM V-VI (52 P)	108.346	4.115.547	24.649	12.049.931	3.8
Total EUREM I-VI (148 P)	295.884	11.606.160	77.933	55.540.049	3.8



	Company: EPCOS OHG, Deutschlandsberg Branch: Electronics industry Products/services: Electronic parts and components Employees: 1.600 Energy concept author: Siegfried Pabst, EUREM V Contact: siegfried.pabst@epcos.com
	Siegfried Pabst



	Company: Attwenger Franz & Söhne GesmbH Branch: Joinery Products: Joinery Products for homes and restaurants Employees: 30 Energy concept author: Alois Thalhamer, EUREM VI Contact: alois.thalhamer@energieag.at + 43 (0) 7612/9000-2391
	Alois Thalhamer

Installation of a regenerative thermal oxidiser (RTO)

“The aspects of energy efficiency were covered in depth in EUREM V and I am now part of a professional energy saving network”

Energy concept description: The exhaust air for volatile organic compounds (VOC) in the tape casting department is treated by a thermal oxidiser without heat recovery. Given a change in production, a regenerative thermal oxidiser no longer used can be relocated and adapted.

- ▶ The process exhaust has to be heated up to a temperature of 850°C to meet all Environment Agency and local authority regulations. A booster fan draws four VOC-laden exhausts into one of the system regenerators (an internally insulated vessel containing hot ceramic media). This ceramic media heats up the exhaust to 800°C.
- ▶ From there it is directed into the combustion chamber where minimal heat is added to ensure a proper oxidation temperature. The heated stream leaves the system through a second regenerator where energy is released into this ceramic media bed. Changing the sequence of regenerators every few minutes keeps the system running efficiently.

Results:	Energy saving potential: 5.000 MWh/a
	Energy source: Natural gas
	Cost reduction: 200.000 €/a
	CO₂ saving potential: 1.250 t/a
	Investment costs: 100.000 €
	Pay-back time (static): 0.5 years
	Likelihood of implementation: high (realized 12/2007)



EPCOS OHG, Deutschlandsberg

Illumination of a joinery

“The combination of theory and practice was perfect.”

Energy concept description: At the moment 252 fluorescent bulbs with iron-copper ballast (without regulation) and 12 halogen lamps are installed. The measured intensity of illumination all over the place meets the new EN 12464 ‘Illumination of workplaces’. At this facility the installed light fittings will remain. With daylight detection control and motion detectors at the lumberyard, single light arrays can be controlled step by step. Energy savings up to 32,035 kWh (57.7 %) are possible. Costs are only € 3,380. The return on investment is within 0.8 years. The installed lighting set was already armed with reflectors 12 years ago. Due to the low investment costs and the short time of amortisation this project is the first step implementing energy efficiency.

A few thoughts from the author:

- ▶ 30 employees are working for the company ‘Attwenger’, located in Upper Austria. The savings of 10 t/a CO₂ are equal to 0.33 t/a per employee
- ▶ 5 joineries with 120 employees are located in Kirchham. Savings of up to 40 t/a CO₂ are possible
- ▶ According to the WKO (Chamber of Commerce of Upper Austria) 1,560 joineries with approximately 10,000 employees are located in Upper Austria: 3,300 t/a CO₂ saving potential
- ▶ 42,000 joiners working in Austria. CO₂ saving potential: 13,860 t/a.

Results:	Energy saving potential: 32.035 kWh/a
	Energy source: Electrical energy
	Cost reduction: 3.008 €/a
	CO₂ saving potential: 10 t/a
	Investment costs: 3.380 €
	Pay-back time (static): 0.8 years
	Likelihood of implementation: high (realized 12/2008)



Attwenger Franz & Söhne GesmbH, Kirchham

The EUREM courses in Czech Republic are carried out by:



**Deutsch-Tschechische
Industrie- und Handelskammer
Česko-německá
obchodní a průmyslová komora**

German-Czech Chamber of Industry and Commerce
 Václavské náměstí 40, CZ – 110 00 Praha 1
Web: www.dtihk.cz
Contact: Mirjam Schwan, Hana Potůčková
Phone: 00420 224 221 200
E-mail: schwan@dtihk.cz, potuckova@dtihk.cz

- ▶ One complete EUREM course carried out during the EUREM.NET project period
- ▶ Starting date: 9th January 2008, final date: 4th November 2008. Number of participants: 17
- ▶ 15 successful participants
- ▶ Next EUREM workshop: starting on 11th February 2009.

The EUREM workshops in Czech Republic

The course consisted of 6 blocks, organized once a month from January to June and was held in the Technical University (CVUT) of Prague.

Every seminar block took 3 days (Wednesday, Thursday, Friday) composed of 8 learning hours.

The final written exam took place on 20th June 2008. The participants had to submit their final work till 25th September 2008. The date for the defense of the final works was set on 4th November 2008.

In March 2008, the topics of the final projects had been already defined and the participants started their collaboration with their supervisors, who participated as trainers in EUREM or came directly from the local companies. The programme also included field excursions that were highly evaluated by the participants. Each trainer was evaluated by all participants at the end of every single lecture day by special questionnaires. Due to the positive evaluation, all the trainers, experts and lecturers will be cooperating in the next EUREM workshop again.

The trainers' profiles are complementing theoretical knowledge from the university with the practical experience from the working area. For each training module, one person was named responsible for the realization of the training, the updating and translation of the training material during the project and for training quality. In total, there were 36 experts involved, including the trainers.

- ▶ The average attendance was about 92%.
- ▶ On the EUREM internet platform, one can find basic information about Czech Republic and news in the energy sector. Our participants are specifically allowed to use encrypted sites to check news about the program, lectures and look through the training material.



Pictures of the workshops and excursion



Final presentation

- ▶ Final presentation took place on 4th November 2008 in front of the jury of tutors, trainers and experts. The award ceremony took place on 20th January 2009, when the successful participants received their certificates.



Successful participants – Final ceremony

EUREM.NET is part of the project of lifelong learning for members of the Czech Chamber of Accredited Engineers and Technicians (CKAIT) and received an accreditation by the Ministry of Education of the Czech Republic.

It is the unique connection between theory and practical experience that attracts people to participate in the course.

Additionally, the issue of energy efficiency is becoming an important topic for the future of all sectors of the Czech economy, the environment and the country as a whole.

- ▶ 8 final practical works have high probability to be set into practice at short term, the other 7, at middle-/long-term.

EUREM.NET results in Czech Republic:					
EUREM courses (Number of participants)	Energy saving potential (MWh/a)	Cost reduction potential (EUR/a)	CO₂ – saving potential (t/a)	Investment costs (EUR)	Average pay-back-time static (years)
EUREM I (15 P)	128.694	4.634.333	151.283	20.646.440	4.3



Milan Poddany

Company: ŠKODAAUTO a.s.
Branch: Car manufacturing
Products/Services: Passenger vehicles
Employees: 23.559
Energy concept author: Milan Poddany
Contact: milan.poddany@skoda.auto.cz

Designing a cogeneration system for ŠKODA AUTO's painting shop – Kvasiny plant

“Eurem is first of all a complex view of energy problems.”

Energy concept description: Designing a cogeneration unit to cover the basic technological consumption of heat in the Kvasiny painting shop.

The painting shop's heat consumption is covered by a gas boiler station with an installed capacity of 41 MW situated inside the painting shop building. The painting shop is a three-shift operation with a capacity of ca 750 vehicles/day.

The heat consumption is made up of several components: heating the premises, heating hot water, technological consumption for the heating of baths and heating the air used in paint spraying shops. As the baths need to be heated also in summertime, a cogeneration unit designed to offer an appropriate capacity would make the use of primary energy (gas) more effective.

► The designed unit is going to cover the basic consumption of technological heat (used for heating the baths) throughout the year and, as a by-product, will generate cheaper electricity that will not have to be purchased. As a result, the plant's energy costs will be reduced.

Results:	Energy saving potential: 28.287 MWh/a
	Energy source: power
	Cost reduction: 668.600 €/a
	CO₂ saving potential: 14.980 t/a
	Investment costs: 3.368.000 €
	Pay-back time (static): 5 years
	Likelihood of implementation: low



ŠKODA AUTO's painting shop in Krasiny



Jiří Šubrt

Company: ZENTIVA, a.s.
Branch: Pharmacy
Products: Medicines and Pharmaceutical substances
Employees: 1.500
Energy concept author: Jiří Šubrt
Contact: jiri.subrt@zentiva.cz

Substitution of electric air moisteners for air conditioning in administration building by steam humidifiers

“The course convinced me there is still room for improvement and investment in energy saving will pay off.”

Energy concept description: In these days, air humidizing of Zentiva's administration building is provided by electric steam humidifiers. There are 5 electric air steam humidifiers (electric input: 169 kW and output: 225 kilogram of steam per hour). Unfortunately, the services of this equipment are economically disadvantageous because of the high price of electrical energy and the service costs. In this company, there is a steam boiler plant with high effectivity.

The goal of this project was to create a substitution of electric air humidifiers by direct steam humidifiers and to build a steam inflow. The highest consumption of the steam (years 2002 – 2007) from the monitoring data of electricity consumption – 130 t/a – and the highest load peak – 200 kg/h – were set. This means an electricity consumption of 105 MWh. According to the variance of electricity generation effectiveness in the electric plant, including the propagation loss (32 %) and the effectiveness of steam produced in own boiler house (90 %), the planned change means savings about 200 MWh/a in primary sources.

Results:	Energy saving potential: 200.000 kWh/a
	Energy source: natural gas
	Cost reduction: 6.960 €/a
	CO₂ saving potential: 365 t/a
	Investment costs: 52.000 €
	Pay-back time (static): 4 years
	Likelihood of implementation: high



ZENTIVA a.s. in Prague

The EUREM courses in Estonia are carried out by:



EnPro Engineers Bureau Ltd
 Laki 14A, 10 621 Tallinn, Estonia
Web: www.enpro.ee
Contact: Heinar Nurste,
Phone: +372 50 65 181;
phone/fax: +372 65 17 830
E-mail: info@enpro.ee

Cooperation partners: Tallinn University of Technology,
 Estonian Association of Thermal Engineers,
 Ministry of Economy and Communications

Short summary:

- ▶ In 2008 one course was carried out
- ▶ Number of participants: 13
- ▶ Course started in February 2008 and ended in May 2008
- ▶ Next courses will take place
- ▶ EUREM course is nationally recognised and integrated into the training system of engineers as a complementary training course

The EUREM workshops in Estonia:

- ▶ The EUREM workshops were carried out in four 3-day blocks
- ▶ Between the blocks the contact was kept and information distributed via e-mail or telephone
- ▶ Participants were instructed to contact lecturers or EUREM managers if questions or problems arose
- ▶ The venue of the course was in Tallinn, 6 participants came from outside Tallinn
- ▶ In total 14 trainers were in the trainers team
- ▶ Average attendance was nearly 100%
- ▶ Training material was distributed to participants via the web-page one week before every workshop block

Final presentation and award ceremony took place on June 10th, 2008 in front of 3 experts, led by Prof. Aadu Paist, Head of the Thermal Engineering Department at the Tallinn University of Technology.

The EUREM course is profitable in Estonia, as it is the practice-oriented complimentary course, covering important topics for enterprises. All comments from participants were favourable, with some minor remarks.

Two projects were realized in 2008, other projects have high or medium probability to be realized. The following two projects were chosen as Best Practice Examples because of their scale, ambition and quality.



EUREM.NET results in Estonia:

EUREM courses (Number of participants)	Energy saving potential (MWh/a)	Cost reduction potential (EUR/a)	CO ₂ - saving potential (t/a)	Investment costs (EUR)	Average pay-back-time static (years)
EUREM I (13 P)	17.081	654.982	4.266	4.142.186	5



	
	<p>Company: OÜ Livilla Branch: real estate Products/services: heating Employees: 5 Energy concept author: Erik Gabrel EUREM I Contact: erik.gabrel@pkcgroup.ee</p>
<p>Erik Gabrel</p>	

	
	<p>Company: AS Tallinna Küte, Tallinn Branch: network unit Products/Services: DH (District heating) Employees: 250 (site, where the project work is carried out) Energy concept author: Janek Trumsi, EUREM I Contact: janek.trumsi@dalkia.ee</p>
<p>Janek Trumsi</p>	

Geothermal Energy for the Heating of Apartment Building

“High fuel prices demand to study alternative solutions”

Energy concept description: The heat supply for the existing building (1105,48 m²) is carried out via DH from light oil firing boilerhouse.

DH heat prices have grown fastly and alternative heating option using heat pump is considered.

- ▶ Heat source is horizontal underground heat collector
- ▶ Heat pump Nibe Fighter 1330 – 40 is recommended
- ▶ Peak load is covered by electrical boiler

Results:	<p>Energy saving potential: 221 MWh/year Energy source: electricity Cost reduction: 14.385 €/a CO₂ saving potential: around 0 Investment costs: 63.757 € Pay-back time (static): 5 years Likelihood of implementation: medium</p>
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Apartment Building in Kurtna settlement, selected for Study

Hydraulic interconnection of two DH regions in Tallinn

“Energy conservation is on the forefront for all enterprises”

Energy concept description: The aim of the direct interconnection is to optimise the network operation, reduce heat losses, pumping energy costs, maintenance costs and improve the efficiency of Vao CHP (Cogeneration of Heat and Power) plant.

- ▶ Current situation – two large DH networks are hydraulically independently connected through heat exchanger
- ▶ Operation without heat exchangers allows to reduce temperatures, heat losses and pumping costs
- ▶ For that a new bypass should be built and all open consumer substations supplied with heat exchangers

Results:	<p>Energy saving potential: 5.582 MWh/a heat and 400 MWh electricity Energy source: biofuel, natural gas, oil Cost reduction: 210.000 €/a CO₂ saving potential: 7.178 t/a Investment costs: 501.000 € Pay-back time (static): 3 years Likelihood of implementation: high (2008-9)</p>
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Laagna Pumping Station with Heat Exchangers and Pumps

The EUREM courses in Finland are carried out by:

	AEL
	Kaarnatie 4, FI-00410 Helsinki
	Web: www.ael.fi
	Contact: Iikka Upanne
	Phone: +358 50 3641 808
	E-mail: iikka.upanne@ael.fi

- ▶ AEL has carried out the first EUREM pilot course during the EUREM.NET project (12/2006 – 5/2009) which has been included in the EUREM.NET evaluation
- ▶ 16 participants started the course and 14 participated successfully in the final test
- ▶ Course number two starts on 10.3.2009.

The EUREM workshops in Finland:

- ▶ The workshops are carried out in six sets of two working days each, starting at 9:00 am and ending at 5:00 pm.
- ▶ Between the workshops the participants are contacted by email and phone. Personal guidance takes place during the workshop days.
- ▶ The course manager is available during each workshop also to monitor and receive feedback from the participants. In addition a standard form is used to collect written feedback after each module.
- ▶ The courses take place in AEL Training centre in Helsinki, which can easily be reached also from a further distance by train or domestic flights.



EUREM workshops in AEL Training Centre

- ▶ The trainer team consists of 16 trainers responsible for the individual training modules. In addition 10 lecturers participated in the Renewable energy sources -seminar included in the training.
- ▶ Average attendance to the workshops was very high, over 90%. Only occasional absence due to heavy workload occurred.
- ▶ The EUREM Internet platform was used to manage and distribute the standard training material as well as additional material supplied by the trainers.
- ▶ The Final presentations of the project works took place during the last workshop day. All participants presented their results in front of a three person jury.

EUREM training in Finland has resulted to excellent results in terms of company energy savings and CO₂ emission reduce. Further more the training has resulted to further development of the energy efficiency activities in the participating companies.

All reported projects are realistic and likely to be realized three of them have already been started and five of them are in budgets for year 2009.

The two following projects were chosen as examples of straight forward solutions for quite typical problems. In addition the dairy-case shows the possibilities of sharing the best practises.



Participants worked in groups using their personal laptops

EUREM.NET results in Finland:

EUREM courses (Number of participants)	Energy saving potential (MWh/a)	Cost reduction potential (EUR/a)	CO ₂ - saving potential (t/a)	Investment costs (EUR)	Average pay-back-time static (years)
EUREM I (14 P)	129.559	4.089.050	23.339	11.641.000	3.5

	<p>Company: Ovako Bar Oy Ab, Imatra Branch: Metal industry Products/Services: Steel bar production Employees: 700 Energy concept author: Jukka Kyllönen, Ovako Bar Oy Ab Contact: jukka.kyllonen@ovako.com</p>
	<p>Jukka Kyllönen</p>

	<p>Company: Valio Oy, Joensuu Mill Branch: Dairy Products/Services: Milk and cheese production Employees: 180 Energy concept author: Antti Sorsa, Valio Oy Contact: antti.sorsa@valio.fi</p>
	<p>Antti Sorsa</p>

Installation of an air filtering and circulation system for production building TEK2

Energy concept description: The building in question houses four independent steel bar grinding stations and two inspection stations. Originally the exhaust air of all the stations was blown outside by ventilation stations using coarse filters. This way the inlet air consumption was very high and lots of heat energy was wasted. The inlet air is heated with natural gas.

As a result of the project the grinding units were installed with circulation units using fine filters. Now the filtered air can be circulated back to the production area. As a result the inlet air flow is reduced substantially and thus the natural gas and electrical power consumption is reduced. The inspection units, that already were equipped with fine filters, will now also be installed with dampers allowing the possibility of air circulation.

As a result of the changes made the energy consumption in total was reduced with 560 MWh/year. Also the contamination of the exhaust air at the site is now lower.

Results:	Energy saving potential: 560 MWh/a
	Energy source: Natural gas
	Cost reduction: 19.000 €/a
	CO₂ saving potential: 113 t/a
	Investment costs: 85.000 €
	Pay-back time (static): 4.5 years
	Likelihood of implementation: high (realized 10/2008)



Ovako Bar, Imatra, Finland

Installation of a heat recovery system in the waste water system of a production plant

Energy concept description: Milk and cheese production produces remarkable amount of waste water and condensates. The focus of the project work was to evaluate the waste heat energy and find technical solutions for the heat recovery.

- ▶ The pilot case focuses on the cheese production unit the waste water neutralization reservoir is located close (< 100m) to the production building.
- ▶ The existing utility services room has enough free space to also house the heat exchangers and accumulators, which means that constructional investments are not required.
- ▶ The heat exchanger is optimized for the actual features of the process in order to obtain the best possible efficiency. The peak loads are being balanced with three heat accumulators: superheating 15% / 80°C, medium 70% / 50°C and undercooling 15% / 30°C.
- ▶ The total investment of the heat recovery system is 300,000 €, saving potential 100,000 € / year and 3,100 MWh / year (equals to 70% existing energy consumption). Direct pay-pack time 3,0 years.
- ▶ A leading target was to explore solutions that could easily be utilized in all of the 15 production sites of the company. The described heat recovery solution reached also this target and is very likely being introduced in other sites as well in the near future. The solutions saving potential at all the 15 sites results to 112,000 MWh/year.

Results:	Energy saving potential: 3.100 MWh/a
	Energy source: Bioenergy (wood-chip / peat)
	Cost reduction: 100.000 €/a
	CO₂ saving potential: 1.200 t/a
	Investment costs: 300.000 €
	Pay-back time (static): 3 years
	Likelihood of implementation: high (app. for realization 9/2008)



Valio, Joensuu Mill, Finland

The EUREM courses in France are carried out by:



Agence Régionale de l'Environnement et des Nouvelles Energies
 94 bis avenue de Suffren, 75015 Paris
Web: www.arenidf.org
Contact: Marie-Laure Falque-Masset
Phone: +33 1 53 85 61 91
E-mail: ml.falquemasset@arenidf.org

Three cooperation partners are involved in the project: the CFI, Centre de Formation Industrielle (industrial training centre), the GEFEn, Groupement d'Établissements de Formation à l'Énergie (group of public training institutes on energy), and the Ecole Nationale Supérieure des Mines de Paris (a national industrial engineering school).

- ▶ In France the first EUREM training started in September 2008.
- ▶ Ten professionals from industries as well as local authorities participated in the first EUREM course.
- ▶ The first session started on the 23rd September 2008. The theoretical course ended on the 11th December and test and jury took place on the 13th and 14th of January 2009.
- ▶ A second session of EUREM in France is planned for September 2009.

The EUREM workshops in France:

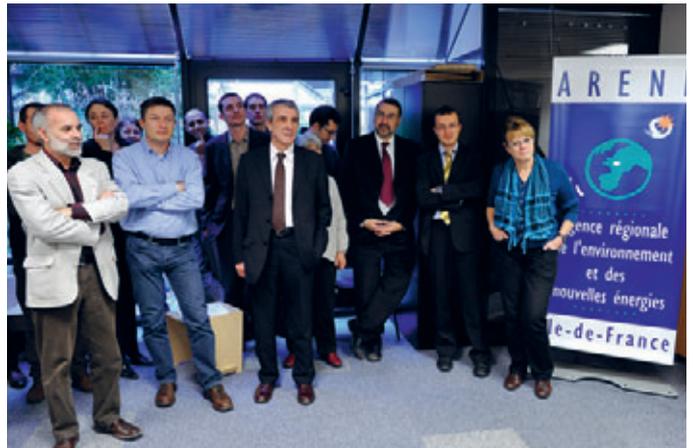
- ▶ The EUREM training was organised in 6 sessions of 3 days. Prior to the first session an opening day was organised for the participants to meet the pedagogic team and fellow participants.
- ▶ Participants were kept posted by e-mail or phone call of any changes in organisation. This system proved to be very efficient and allowed the team to be reactive.
- ▶ Feedback was given by participants as well as teachers through a questionnaire distributed at the end of the course.
- ▶ The sessions took place at the three partners institutes in Paris and its close suburb. The final test and jury for energy concept took place in the ARENE office.
- ▶ There were 11 trainers from the 3 different partners institutes. Each one was chosen depending on its specialty and personal experience regarding the topic.
- ▶ The global attendance at the courses was very good. Most participants attended all the sessions although some missed a few courses because of professional obligations.
- ▶ On the EUREM Internet platform participants had a restricted access where they got the courses' materials and could also get information about events concerning their fields of interest.
- ▶ The final presentation took place on the 13th January 2009. The jury was composed of some of the teachers as well as specialists

invited for the occasion. The award ceremony followed on the 14th. Certificates were handed by the President of the ARENE, Mrs Marie-Pierre Digard.

As anywhere else in Europe, French companies have to face demanding environmental goals to reduce their emissions, fierce competition and financial troubles. Reducing fossil fuels consumption through energy efficiency or the use of renewable energies is a way to meet these intertwined issues.



Future managers learning everything about geothermics



The award ceremony at the ARENE office

EUREM.NET results in France:

EUREM courses (Number of participants)	Energy saving potential (MWh/a)	Cost reduction potential (EUR/a)	CO ₂ - saving potential (t/a)	Investment costs (EUR)	Average pay-back-time static (years)
EUREM I (10 P)	15.767	1.255.111	2.859	14.357.000	4.9

<p>Sébastien Garcia</p>	Company: Hospital Branch: Public health Products/Services: Medical care Employees: 1.600 Capacity: 400 beds Energy concept author: Sébastien Garcia, Dalkia France, EUREM I Contact: seb-garcia@hotmail.fr

<p>Anthony Cunault</p>	Company: Cesson city, Ile-de-France Branch: Local authority Products/Services: Administration Employees: 8.517 inhabitants Energy concept author: Anthony Cunault, Ville de Cesson, EUREM I Contact: a.cunault@ville-cesson.fr

Substitution from heating oil to biomass for the heating system of an hospital

“The EUREM training showed me new topics to work on, especially on renewable energies. I am really glad I took this training.”

Energy concept description: The heating system of the hospital is composed of boilers fuelled with heavy oil. This system is ageing and needs to be replaced. Under the framework of its contract of maintenance and operation, the hospital board asked for more efficient and ecological solutions to be researched.

- ▶ A comparative technical, economical and environmental analysis underlined the benefits of a biomass plant on the middle and long term.
- ▶ A site study has been made to check the compatibility of the site with the supply.
- ▶ The consumption substitution reaches 11 GWh: the biomass boiler will cover 80% of the needs and the remaining 20% will be covered with a gas boiler. Thanks to local sourcing the environmental gain will be maximised to 2,700 tons of CO₂ a year compared to the current situation.

Results:	Energy saving potential: 11.000 MWh/a Energy source: Biomass (80%) and gas (20%) Cost reduction: 150.000 €/a CO₂ saving potential: 2.700 t/a Investment costs: 1.250.000 € Pay-back time (static): 8 years Likelihood of implementation: high
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The old heavy oil boiler to be replaced

Efficient public lighting in a city

“Thanks to the energy concept of the EUREM training, I have been able to develop an efficient solution for the public lighting of Cesson.”

Energy concept description: The public lighting system in Cesson is getting old and needs to be replaced. The city is looking for the most economical solution.

- ▶ The public lighting system is actually composed of mercury vapour lamps fitted with ferromagnetic ballasts. The material does not meet the new standards and needs to be changed.
- ▶ The new system will be composed of sodium vapour lamps fitted with electronic ballasts. It will also involve dimming, which allows additional energy savings and reduces light pollution. The new lamp posts will also have an improved degree of watertightness and also be more resistant to vandalism, meaning more economies on maintenance.
- ▶ Some 350 MWh of electricity will be save each year in Cesson meaning some 240 tons of CO₂ avoided.

Results:	Energy saving potential: 350 MWh/a Energy source: Electricity Cost reduction: 12.000 €/a CO₂ saving potential: 240 t/a Investment costs: 2.000.000 € Likelihood of implementation: high
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Inefficient lamp posts wasting energy and money

The EUREM courses in Germany are initiated and carried out by:



Nuremberg Chamber of Commerce and Industry
 Hauptmarkt 25/27, D-90403 Nürnberg
Web: www.ihk-nuernberg.de
Contact: Dr.-Ing. Robert Schmidt | Stefan Hübel
Phone: +49-(0)911 / 1335-299 | -445
E-mail: iu@nuernberg.ihk.de

Cooperation partners:



pe projects energy gmbh
 Bundesstr. 76, D-20144 Hamburg
Contact: Marco Wagner
Phone: +49-(0)40 / 41466990
E-Mail: info@projects-energy.de
Web: www.projects-energy.de

30 Chambers of Commerce and Industry in Germany

Actual courses are carried out in the following locations: Augsburg, Berlin, Bremen, Darmstadt, Dresden, Duisburg, Emden, Erfurt, Hagen, Hamburg, Kassel, Koblenz, Lübeck, München, Norderstedt, Nürnberg, Passau, Potsdam, Saarbrücken, Ulm. Additional courses are planned for 2009 in Bielefeld, Bonn, Frankfurt, Heilbronn, Karlsruhe, Krefeld, Pforzheim, Remscheid, Stuttgart, Villingen-Schwenningen, Wetzlar.

During the EUREM.NET project (2006 to 2009) 41 courses were carried out all over Germany with all together 488 participants. In that time the Nuremberg Chamber of Commerce and Industry (CCI Nuremberg) realized 4 courses with together 67 participants. Since the first EUREM project in 2003 nearly 60 courses were carried out all over Germany with all together approximately 710 participants. From 2003 to 2009 the Nuremberg Chamber of Commerce and Industry realized 7 courses with together 109 participants. Because of the great success of the EnergyManager training the German government decided to support the training programme in the framework of an common project named “climate protection partnership“. Aim is to qualify 500 EnergyManagers per year.

The EUREM courses in Germany:

Every EUREM course consists of 240 hours (each 45 minutes), 160 hours take place as seminars and 80 hours via self learning and for creating the energy concept. The seminars take place at Friday afternoon and Saturday, in some cases in the evening of a workday.

Between the EUREM seminars the trainees are coached by regional training organisers and trainers. Additional there is a discussion forum on the EnergyManager Forum where questions can be raised to other EnergyManagers. Feedback occurs continuously per evaluation form.

At the end of the EnergyManager Training there is also a personal feedback round with all the trainees and the training provider. 90-100% of the participants attend the courses each time, showing the high satisfaction degree of the participants.

Over the years the interdisciplinary trainer team in Germany grew up to 250 persons and represent the state of the art in energy efficiency.

There are more than 700 EnergyManagers registered on the German EnergyManager platform (eForum), using the extensive information possibilities like news, calendar, best practise descriptions and calculation tools.

Additional to the final test a presentation of the results of the energy concept takes place. The jury of experts consists of one to two experienced trainers, one energy and environmental expert and one employee of the training provider. The certificates are handed over by the Head of the department Innovation | Environment of the CCI Nuremberg. There is a short celebration in the CCI Nuremberg which ends with a visit in a restaurant in the evening.



During the final test



after the final test



Pictures of the award ceremony in the CCI Nuremberg

EUREM.NET results in Germany (Nuremberg):

EUREM courses (Number of participants)	Energy saving potential (MWh/a)	Cost reduction potential (EUR/a)	CO ₂ - saving potential (t/a)	Investment costs (EUR)	Average pay-back-time static (years)
EUREM 2007 (67 P)	81.386	3.214.590	31.845	13.119.951	4.7
EUREM 2008 (54 P)	32.827	2.116.776	9.383	5.502.043	3.8
Summary	114.213	5.331.367	41.228	18.621.994	4.3



	
	<p>Company: Mekra Lang GmbH & Co. KG Buchheimerstr. 4, D-91465 Ergersheim Branch: Automotive supplier Products/Services: Rearview systems Employees: 850 Energy concept author: Gabriele Wittmann, Mekra Lang GmbH, EUREM IX Contact: gabriele.wittmann@mekra.de, +49-9847-989154</p>
	<p>Gabriele Wittmann</p>

	
	<p>Company: Finanz Informatik Technologie Service Witschelstraße 81, D-90431 Nürnberg Branch: Information technology Products/Services: IT services Employees: 90 (site, where the project work was carried out) Energy concept author: Hans Jordan, IZB, EUREM IX Contact: hans.jordan@izb.de +49-911-94511-9204</p>
	<p>Hans Jordan</p>

Installation of a heat recovery system

“During this course I got a good grasp for possibilities of improvement in our company”

Objective: Use of waste heat from the furnaces Base situation: Exhaust is blown directly to the outside area.

Optimization: The hot & uncontaminated exhaust air will be conducted to a heat exchanger (air / water). From there the hot water flows to an integrated heat and cooling system. In winter times the system produces hot water with a temperature of 60°C to heat the production building and via pipeline the new office building. In summer times the heat will be used for the cooling of the new office building (via absorption process), saving the installation of air conditioning machines.

Additional Effects: Reduced temperatures at the furnaces and therefore better working conditions for our employees in this area.

Results:	Energy saving potential: 1.500 MWh/a
	Energy source: heating oil
	Cost reduction: 77.000 €/a
	CO₂ saving potential: 420 t/a
	Investment costs: 253.800 €
	Pay-back time (static): 3.3 years
	Likelihood of implementation: realisation in 2009

Installation of a free cooling system for a IT centre

“The course has fully satisfied my expectations, the knowledge is very practical and can be used directly in the operations of our company.”

In computing centre W81 cold in large quantities is needed to cool the IT hardware. The cold is produced in cooling machines that are causing a huge consumption of electrical power. At the starting of the computing centre in 1988 was a “free cooling-system” implemented, but after several technical breakdowns and failures taken out of service.

Through the re-introduction of the “free cooling-system” in a improved technical solution (use of a heat exchanger), energy and costs can be saved. Implementing the measure is especially important to ensure that no shutdowns will be required. The presented project meets these conditions, as hydraulic lines in the required dimension and numbers are available.

Results:	Energy saving potential: 312 MWh/a
	Energy source: electrical power
	Cost reduction: 33.100 €/a
	CO₂ saving potential: 188 t/a
	Investment costs: 71.000 €
	Pay-back time (static): 2.1 years
	Likelihood of implementation: high



Furnaces in the production hall



Cooling machine

The EUREM courses in Greece are carried out by:



**Deutsch-Griechische
Industrie- und Handelskammer**
Ελληνογερμανικό Εμπορικό
και Βιομηχανικό Επιμελητήριο

German Hellenic Chamber of Industry and Commerce
Voulgari str. 48-50, GR – 542 48 Thessaloniki
Web: www.german-chamber.gr
Contact: Tavlaridou Alexandra, Phone: +30 2310 327733
E-mail: a.tavlaridou@mail.ahk-germany.de



**ΚΑΠΕ
CRES**

**Centre for Renewable Energy Sources
(CRES)**
19th Km Marathon Ave., Pikermi GR – 19009 Attiki
Web: www.cres.gr
Contact: John Nickoletatos
Phone: +30 210 6603373E-mail: inikol@cres.gr

One EUREM course was carried out in Greece during the EUREM.NET project. The course started in February 2008 and ended in November 2008, and was attended by 17 participants. The participants were mainly engineers, engaged by companies of the industrial sector or free trade consultants. Next courses will take place.

The EUREM workshops in Greece:

The EUREM workshops were carried out in 7x2 days, in the period from 21/2/2008 to 23/5/2008. They took place at CRES’s facilities, located at 19th Marathon Avenue, Pikermi, Athens.

The workshops were given by 13 trainers, all of them experts in their field, originating from CRES, University and private sector. The participants were receiving the preparation material before each workshop and the presentation material after each workshop. They also had the ability to get information by the EUREM Internet platform.

The attendance of the workshops by the participants was high, of a 91%.



Workshops in Athens (CRES’s facilities)

A separate day in January 2009 was dedicated to the presentation of results by the participants in front of a group of experts and for the delivery of the certificates.

The EUREM courses seem to be profitable for Greece, for the promotion and establishment of the role of the Energy Manager, which is currently of small recognition, with multiple benefits to companies and environment.



Presentation of results by the trainees

EUREM.NET results in Greece:					
EUREM courses (Number of participants)	Energy saving potential (MWh/a)	Cost reduction potential (EUR/a)	CO₂ - saving potential (t/a)	Investment costs (EUR)	Average pay-back-time static (years)
EUREM I (12 P)	1.567	155.378	1.315	454.947	5.3





Company: Epirotiki Bottling Company S.A.
Products/Services: Mineral water bottling
No of employees: ~ 300
 (site, where the project work is carried out)
Name of energy concept producer:
 Fotis Katrantzis, EUREM I
Contact: fkatrantzis@yahoo.gr, +30 210 6042284

Fotis Katrantzis





Company: Schneider Electric
Branch: electrical engineering
Products/Services: Transformers Manufacturing Plant
Employees: 200 (site, where the project work is carried out)
Energy concept author: George Loizos, EUREM I
Contact: georgios.loizos@gr.schneider-electric.com

George Loizos

Energy savings in the low pressure Compressed Air System of a water bottling plant

“The seminar has provided the theoretical background for my work and - most importantly - the necessary links to practical expertise and testing equipment”

Aims: investigate potential energy savings for the low pressure compressed air system of the facility

Base situation: Network of 4 compressors (455 kW overall), one compressor with inverter, air-dryers (13.2 kW), air-receivers (8,000 lt), filters, valves, etc.

Optimization potentials / weak points: (a) air leaks (b) compressors operation management (c) sizing of air-dryers and receivers

Proposals of solution / Optimization possibilities: (a) locate and repair leaks (b) install an automated compressor management system (c) install one extra receiver (d) future replacement of existing dryers with bigger ones.

Effects: Action	Estimated savings		Implementation cost
	kWh	€	
Leak repairs	300.000	20.000	
Installation of an automated compressor management system	265.000	20.000	11.000
Air receiver installation	40.000	2.700	2.500

Results:	Energy saving potential: 605 MWh/a
	Energy source: Electricity
	Cost reduction: 42.700 €/a
	CO₂ saving potential: 514 t/a
	Investment costs: 13.500 €
	Pay-back time (static): 0.3 years
	Likelihood of implementation: high



Part of compressed air network at Epirotiki Bottling Company, Ioannina

Energy Efficiency Project – Transformers Manufacturing Plant

“A seminar which gives very useful and directly applicable knowledge”

Aims: To reduce by 10% the energy consumed per employee in 2008 compared to 2006, at transformer construction plant located at Inofyta, close to Attiki.

Base situation: The electrical energy consumption per employee for the year 2006 was 2,392.12 kWh/employee. The target was a 10% reduction for 2008, compared to 2006 value, e.g. a value of 2,096.21 kWh/employee.

Optimization potentials / weak points: 1) Cores process, 2) Lighting, 3) Compressed air system, 4) Power metering

Proposals of solution / Optimization possibilities: 1) Core process optimization (wasted heat recovery), 2) Lamps replacement, 3) Lighting control, 4) Variable speed drive at the compressor & system upgrade, 5) Power meters, web energy

Effects: Action	Energy saving	Cost reduction	Installation cost
Lamps replacement + electronic ballasts + control	101.405 kWh	8.112	28.000
Compressed air system	66.190 kWh	5.295	7.500
Cores process optimization	252.600 kWh	20.208	-
Monitoring system	-	-	23.155

Results:	Energy saving potential: 421 MWh/a
	Energy source: Electricity
	Cost reduction: 33.616 €/a
	CO₂ saving potential: 358 t/a
	Investment costs: 62.000 €
	Pay-back time (static): 1.8 years
	Likelihood of implementation: high (realized 12/2008)



View of the transformer construction plant, at Inofyta

The EUREM courses in Italy are carried out by:

AMBIENTEITALIA
ISTITUTO DI RICERCHE

Ambiente Italia srl
 Via Carlo Poerio 39, I – 20129 Milano
Web: www.ambienteitalia.it
Contact: Chiara Wolter
Phone: +39 02 277441
E-mail: chiara.wolter@ambienteitalia.it

AHK Camera di Commercio
 Italo-Germanica
 Deutsch-Italienische
 Handelskammer

The German Chamber of Commerce in Italy
 Via Napo Torriani 29, I – 20124 Milano
Web: www.ahk-italien.it
Contact: Lara Iungo, Michelle Arnold
Phone: +39 02 39800923
E-mail: iungo@deinternational.it; arnold@deinternational.it

In the framework of the EUREM.NET project (12/2006 – 5/2009) Ambiente Italia and the German Chamber of Commerce in Italy organized and implemented a training course. A second course will start in April 2009.

The first Italian EUREM.NET course, divided in 13 modules, was held in Milan. Lessons took place in the autumn of 2008, from September 3rd to November 14th. The energy concept phase began in November 2008, with the presentation of various topics of interest. Seven participants attended the first training course, all from the industry except for a few consultants. The results were shown on March 5th, with an opening ceremony targeted to the industrial sector.

The EUREM workshops in Italy:

The training workshops were organized in a total of 13 modules, divided in five groups held within 2 or 3 consecutive days. The trainer team was set up by Ambiente Italia: it was composed by academics from Universities (Milano, Udine, Padova) along with consulting experts from the market.

Modules combined both a theoretical and practical case studies. Therefore students could get acquainted with both operational approaches.

The dialog between the trainers and the trainees was a very important tool in order to enucleate questions or doubts on the presented themes. A supporting tutor, attending all the sessions, organized the communication process mainly through e-mail exchanges. On the contrary the forum was not well received by the students.

The internet EUREM.NET platform was used mainly for the distribution of the training material. The basic material of each lesson was uploaded on the restricted area the week before the relative lesson. The following week additional material was also distributed in order to answer specific questions on different topics. After each workshop module the students filled out a useful questionnaire about their satisfaction level on the training contents. The teaching skills and the usefulness of the topics were also evaluated. The average attendance of the course was about 75 %.



Final presentation and award ceremony in Italy

The final presentation, which included the award ceremony, took place at the beginning of March 2009, as the main event of the new year programme presentation of the German Chamber of Commerce in Italy. During this ceremony, the second EUREM.NET training course was presented.

Energy Management is an important challenge for the Italian industry. The EUREM.NET course can promote a positive experience for a new approach on energy matters.

Currently none of the energy concepts are implemented, but the two chosen as best practice examples are next to be realized. Some difficulties are generally expected due to the decreasing energy costs on the international market.

The two best practice examples were selected for their high repeatability potential. In fact, the diffusion of a good energy management system in Italy can be helped by the ease of the realization of the works and their clear advantages.

EUREM.NET results in Italy:

EUREM courses (Number of participants)	Energy saving potential (MWh/a)	Cost reduction potential (EUR/a)	CO ₂ - saving potential (t/a)	Investment costs (EUR)	Average pay-back-time static (years)
EUREM I (5 P)	3.220	295.500	1.771	745.000	5.8



Maurizio La Rosa

Company: Oplidürr Italia SpA (Milano)
Branch: automotive and major household appliance
Products/Services: Oplidürr offers turn-key paint shops for mass production paint finishing.
Energy concept author:
 Dipl. Eng. Maurizio La Rosa, project manager
Employees: n.a. (production indicator: 100.000 shell p.a.)
Contact: maurizio.larosa@oplidurr.it

Installation of variable speed drives for the fans of an existing automated coating shop for automotive industry

“I learned the importance of a different mental attitude: a little more attention is crucial sometimes to achieve a major result.”

Energy concept: Reducing electricity consumption from the ventilation system in an automated coating shop of a car industry by varying the speed of the fans according to the effective air demand during the high-gloss surface finishing. The air flow through the paint hall is essential to control temperature, humidity and cleanliness in the paint shop. Currently the 9 fans of the line run always at the nominal speed and the air flow is controlled by means of automatic valves so that the consumption at the highest level.

- ▶ Installed power: 926 kW (9 motors); Normally used power = 738 kW
- ▶ Working hours = 6,000 p.a.; Yearly consumption (calculated) = 4,428 MWh

In reality during the painting cycle the air demand varies greatly and the air speed should be strictly controlled. The inverters (VSD) are a winning solution to reduce power consumption without an invasive retrofit of the plant. Due to the fact that also the motors already have to be changed, the consumption will be further reduced by Eff. 1 class motors.

Results:	<p>Energy saving potential: more than 2.550 MWh p.a. Energy source: electricity from the grid Cost reduction: more than 230.000 € p.a. Investment costs (inverters+motors): 138.000 € Pay Back Time (static): less than 1 year CO₂ saving potential: 1.400 t p.a. (550 kg/MWh) Likelihood of implementation: 90% by the end of 2009</p>
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Oplidürr Italia SpA, Milano



BOSCH



Francesca Gattinara

Company: Robert BOSCH Italia SpA
 Headquarter – via Colonna 35, Milano
Branch: automotive, household appliances, heating and warm water
Employees: 350
Covered area: 13.000 m²
Energy concept author: Dipl. Eng. Francesca Gattinara, building manager
Contact: francesca.gattinara@bosch.it

Reducing electricity consumption used to illuminate the headquarter in Milan

“Our society wanted my participation at this course because one of the main aims of the whole Group Bosch in the world is to contribute to the protection of environment and global climate.”

Energy concept: Reducing up to 40 % electricity consumption used to illuminate the inside and the outside of the buildings. Currently the most part of lamps, which are always on, are of 3 types: halogen, high-intensity discharge lamp, fluorescent tube with ballast.

- ▶ Installed lighting power: 240 kW; Mean used power = 182 kW
- ▶ Working hours = 2,075 p.a.
- ▶ Yearly consumption (calculated) = 378 MWh

The energy concept includes:

- ▶ Replacing halogen and high-intensity discharge lamps with CFL and/or led types
- ▶ Replacing fluorescent tubes with new ones electronically controlled and dimmerable
- ▶ Installing photocells to enhance the natural light source in the rooms and in the external areas
- ▶ Installing IR sensors in the toilettes and stairs so that the light is on only when occupied.

Results:	<p>Energy saving potential: more than 150 MWh p.a. (40%) Energy source: electricity from the grid Cost reduction: up to 21.500 € p.a. Investment costs: 122.000 € Pay Back Time (static): less than 5.7 year CO₂ saving potential: 82.5 t p.a. (550 kg/MWh) Likelihood of implementation: included in the 2009 budget</p>
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Robert BOSCH Italia SpA, Milano

The EUREM courses in Poland are carried out by:



KAPE S.A.
 (The Polish National Energy Conservation Agency)
 ul. Mokotowska 35, PL – 00-560 Warsaw
Web: www.kape.gov.pl
Contact: Marek Paweloszek
Phone: +48-22-825-86-92
E-mail: mpaweloszek@kape.gov.pl

The first so called pilot training course was launched in 2008. It started on 14th May with the first three-day session. Following sessions took place on 11th June, 29th September and 10th October. The last session which included presentations of energy saving concepts and the final exam was organized on 9th December 2008 and lasted one day only.

Altogether 11 participants attended the course. All of them have successfully completed it and have been awarded the European Energy Manager Certificate.

The EUREM workshops in Poland

- ▶ Total duration of the training course was 13 days (4 sessions,



Pictures of the workshops

each lasting 3 days and the final session lasting 1 day)

- ▶ In periods between the sessions constant contact with the participants was maintained through e-mails, telephone and the Internet platform.
- ▶ After each session an evaluation was performed based on the input given by the participants through filling in the questionnaires. All necessary changes have been introduced to meet the needs and the expectations of the participants.
- ▶ All sessions took place at KAPE Energy Conservation Technology Centre located at the Warsaw University of Technology in Warsaw.
- ▶ The EUREM trainer team consisted of 24 trainers representing academic teachers, industrial engineers and independent consultants.
- ▶ All eleven trainees attended all 5 sessions, no absence was registered.

All energy concepts are feasible. They have been developed in close cooperation with the plant management therefore the prospects of their implementation are from moderate to high.

Below are the selected energy concepts. They have been selected to illustrate a typical energy efficient

- ▶ The EUREM Internet platform which was developed and launched by SHW Networks company includes the Polish country portal where all necessary information regarding the course is presented. After logging in access to training materials is provided with a possibility to request more related materials. The platform is also a forum to exchange knowledge on energy efficiency.
- ▶ Final presentation of elaborated energy saving concepts took place on 9th December 2008 in front of the jury of experts.
- ▶ The European Energy Manager Certificates have been awarded and sent by registered post to the addresses indicated by the participants

All participants found the course very valuable. It broadened and systematized their knowledge on energy issues.

Further EUREM training courses will take place in 2009 and the years to come!



The EUREM group

EUREM.NET results in Poland:

EUREM courses (Number of participants)	Energy saving potential (MWh/a)	Cost reduction potential (EUR/a)	CO ₂ – saving potential (t/a)	Investment costs (EUR)	Average pay-back-time static (years)
EUREM I (11 P)	15.781	733.190	6.683	539.300	3.9



	
 <p>Slawomir Cieszczyk</p>	<p>Company: FTT Stomil Wolbrom S.A. Branch: Rubber industry Products/Services: Conveyor belts, rubber compounds Employees: 550 (site where the project work is carried out) Energy concept author: Mr Slawomir Cieszczyk, FTT Stomil Wolbrom S.A., Contact: scieszczyk@fttwolbrom.com.pl</p>

	
 <p>Krzysztof Pedzisz</p>	<p>Company: TELE-FONIKA Kable Sp. z o.o. S.K.A. Branch: Cable industry Products/Services: Electric cables Employees: 250 (site where the project work is carried out) Energy concept author: Mr Krzysztof Pedzisz, TELE-FONIKA Kable Contact: krzysztof.pedzisz@tfkable.pl</p>

Modernization of compressed air system

“This course allowed me to broaden my knowledge and professional skills. It also provided directions for my everyday activity in the factory related to energy efficiency. I will definitely make use of what I have learned during the course in my professional auditing career”

Energy concept description:

- ▶ **Target:** to modernize and optimize the existing compressed air system
- ▶ **Current status:** four compressors are installed which are owned by an external company. The factory pays for electricity and delivered compressed air volume. The existing compressed air system is badly designed and cannot respond to constantly changing compressed air demand. Too high pressure drops are observed in the system. Pipeline diameters are too small, the system shows leakages. It consumes too much of electrical energy.
- ▶ **Solutions:** compressed air system has to be rebuilt where necessary, leakages have to be eliminated, master control system should be introduced, pressure at generation points should be decreased, air drying process should be optimized and waste heat of compressors should be recovered.

Results:	<p>Energy saving potential: 700 MWh/a Energy source: Electrical energy Cost reduction: 41.900 €/a CO₂ saving potential: 719 t/a Investment costs: 18.200 € Pay-back time (static): 0.5 years Prospects for implementation: high</p>
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FTT Stomil Wolbrom S.A. factory in Wolbrom near Krakow

Use of heat pump for heating of service water

“I found this course very helpful, it broadened and systematized my knowledge on energy. The atmosphere during the course was fantastic and helped to exchange knowledge and experience among all of us participating. The teachers were very knowledgeable and open.”

Energy concept description:

- ▶ **Target:** reduction of energy consumption and operating costs of one of the production departments
- ▶ **Current status:** oil fired boiler. Annual energy consumption is 423,2 MWh, energy cost amounts to 26,000 Euro/a
- ▶ **Solutions:** modernization of the local boiler house, replacement of the existing oil fired boiler with heat pump and ground heat exchanger.

Results:	<p>Energy saving potential: 295 MWh/a Energy source: Geo-thermal Cost reduction: 16.800 €/a CO₂ saving potential: 115 t/a Investment costs: 73.400 € Pay-back time (static): 4.4 years Prospects for implementation: moderate</p>
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TELE-FONIKA Kable Sp. z o.o. S.K.A. factory in Myslenice

The EUREM courses in Portugal are carried out by:




German-Portuguese Chamber of Commerce and Industry DUAL
 Avenida Infante Dom Henrique, Lote 320, Edifício do Entrepósito 2,
 Piso 2, Fracção 2 | 1800-220 Lisboa

Web: www.dual.pt
Contact: Bernadette Dambacher
Phone: +351 213 474 415
E-mail: bdambacher@dual.pt

In Portugal 45 European EnergyManagers have qualified in five Eurem courses between 1/2004 and 12/2008. There are carried out courses in Lisbon and Porto. In 2009, there are two more courses planned. Because of the special environment conditions of Portugal, the majority of the final projects developed are mainly based on Solar Energy.

The EUREM courses in Portugal:

Every Eurem courses includes classes on Friday afternoon and Saturday morning. In the cases of 12 hours modules, the classes take Saturday all day, and Friday afternoon.

Before the began of the each course there is a module (4 hours) to teach the trainees to work with the e-learning platform because, one week before each module starts, teaching material is published in these e-learning platform by the trainers. This material includes check-lists, calculation tools and practical examples. The trainers are available on-line to clarify any question or doubts that the trainees can have. The objective is that the trainees, that have different backgrounds, have the opportunity to study and to tidy oneself before start each module and in these sense when the module starts the level of knowledge of the participants its similar. To the other hand, the trainees also should carry out quick analyses of the current situation in their companies through the checklists. The result of these analysed its presented by each participant and discussed and it's the base to start each module. With this strategy the trainees have the possibility to audit the company in the different topics of energy use and maximize the reduction of energy costs by savings and rational use.

Between the modules of the course, the trainers are available through the e-learning platform to answer the questions of the participants. The e-learning platform also has a discussion forum where question can be raised to other Energy managers, a calendar with information about energy events and legislation.

After each module the trainees answer to a satisfaction questionnaire and give feedback about the trainers, material and organization of the course. The average of high satisfaction to these points is 90%.

The team of trainers includes 8 specialists working in the area of teaching and with teaching experience.

At the end of each course the trainees have a written test, in order to demonstrate their theoretical and calculation skills. This test is about five modules, which are chosen by the class: one module should be management; two modules are about renewable energies and three modules should be technical. The final project is presented one month after the seminar finished to a jury that consists in one or two trainers, one energy and environmental specialist and a coordinator of the course. The certificates are sanded by post by the DUAL, the service of qualification of the German Portuguese Chamber of Commerce and Industry.



Award Ceremony

EUREM.NET results in Portugal:

EUREM courses (Number of participants)	Energy saving potential (MWh/a)	Cost reduction potential (EUR/a)	CO ₂ - saving potential (t/a)	Investment costs (EUR)	Average pay-back-time static (years)
EUREM (3C, 45 P)	18.287	786.992	2.244	3.519.987	7.5



	
	<p>Company: K-Solar Holdings B.V. Branch: Hospitality Products/Services: Renewable Energies and Energy Efficiency Employees: 15 Energy concept author: João Garrido Contact: mail joao.garrido@k-solarholdings.com mobil: +351 966 535 593</p>
	<p>João Garrido</p>

	
	<p>Company: UNION FENOSA Comercial, S.L Branch: Energy supply Products/Services: Energy commercial operator and electrical supplier Employees: 10 Energy concept author: José Carrilho Contact: +351 220 130 120 ufc@unionfenosa.pt</p>
	<p>UNION FENOSA</p>

Energy Efficiency and Solar Thermal applications in Corinthia Hotel (Lisbon)

“An holistic experience that has improved my analytic skills”

Energy concept description: Firstly, this study assessed the overall energy demand from one of the largest 5-star hotels in Lisbon, Portugal. Specific energy requirements were then accounted for and a first-order approach to the potential use of energy-thermal applications (e.g. sanitary hot water systems) was realized.

The hotel’s hot water heating system is based on a natural gas boiler. In order to reduce the natural gas consumptions a solar thermal system was designed taking into consideration the structural/physical limitations of the hotel and its surroundings. When implemented, this system can correspond to an operational solar fraction saving the hotel’s costs with sanitary water heating needs and represent an energy saving potential.

During the study an analysed of the potential energy efficiency was, also, carried out and there was proposed some changes in terms of lighting (electrical energy) increased, in these sense, the saving potential.

Results:	<p>Energy saving potential: 490 MWh per year Energy source: Electrical Power and Natural Gas Cost reduction: 12.000 €/a CO₂ saving potential: 16 t/a Investment costs: 92.500 € Pay-back time (static): ≥ 9 years Likelihood of implementation: High</p>
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Energy Efficiency in a Supermarket

“It gave me the possibility to increase the knowledge of different matters, that until than I was apart. Nowadays, it’s an important tool for my professional activity development.”

Energy concept description: With the objective to reduce the energy consumption in a supermarket, an energy audit was carried out. The audit was focused in the study of the current level of lighting, air condition and cooling that corresponds to the major electrical consumptions. From this analysis improvements and modifications were proposed in order to optimize the energy consumption associated.

Some of the proposed measures were: replace the existing lamps by others with optical system and reflecting surface; replacing electromagnetic ballasts by electronic; install presence detectors in areas of low activity; in areas with high intensity of natural light making independent connection to the lamps; installation of a programmer clock in all lighting circuits; installation of an air curtain at the door of main entrance; install springs in the doors of freezers and installing a heat pump central.

With the implementation of these measures and others it will be possible to save 436 Mwh per year.

Results:	<p>Energy saving potential: 436 MWh per year Energy source: electrical Cost reduction: 15.330 €/a CO₂ saving potential: 20 t/a Investment costs: 32.000 € Pay-back time (static): 2 years Likelihood of implementation: high</p>
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The Hotel



The EUREM courses in Slovenia are carried out by:



Jožef Stefan Institute
Energy Efficiency Centre

Jamova cesta 39, SI-1000 Ljubljana
Web: <http://www.rcp.ijs.si/ceu>
Contact: Barbara Petelin Visočnik, Polona Lah
Phone: +386 (0)1 588 52 10
E-mail: barbara.visocnik@ijs.si; polona.lah@ijs.si
Cooperation partners: Ministry of the Environment and Spatial Planning

During the EUREM.NET project (12/2006 – 5/2009) a first EUREM course in Slovenia was organised. The course started in May, continued in June, September and November 2008 and finished with a final presentation of energy concepts on 17th December 2008. 24 participants took part and 23 finished the course successfully. Due to a big interest for the training, the EUREM II course, again with 24 participants, started in October 2008 and it is going to end in June 2009. The EUREM III course is foreseen for October 2009.

The EUREM workshops in Slovenia

The first EUREM course was organized in the form of four three days long modules (7th to 10th May, 18th to 21st June, 24th to 26th September and 12th to 14th November 2008) and also following courses will be structured in the same way. Lectures normally last from 9:00 in the morning until 17:00 in the afternoon. Interdisciplinary trainers’ team for the course is composed of 21 highly qualified trainers covering 25 different topics. As the first group of participants was highly motivated to join the training, the average attendance of the course was very high.

Courses are organized in Ljubljana, in the central part of the country, which gives most of the participants a possibility to travel to the training on a daily basis.

In between the modules the participants were via E-mail regularly receiving relevant information about the needed preparations for the next module, case studies and energy concepts. Also their tutors were available to help them with the preparation of their energy concepts. During the first course our country portal at the EUREM Internet platform was not yet operational; however, it is going to be available for the participants of the following EUREM courses. At the end of every module, participants filled out an evaluation questionnaire. Lectures of the first course were given an average mark 4,27 with 5 being the highest mark, while the whole course received 8,43 points out of 10. A lot of valuable comments about the training were received as well. The feedback from the trainers is gathered via a personal communication.

A final presentation of energy concepts and an award ceremony took place in Ljubljana on 17th December 2008. Participants presented



Participants of the first EUREM course in Slovenia

their results in front of the board composed of 3 examiners. The certificates were awarded by Mr. Hinko Šolinc, Head of Department of Efficient Energy Use and Use of Renewable Energy Sources at the European Affairs and Investments Directorate, Ministry of the Environment and Spatial Planning, and Mr. Stane Merše, Head of Energy Efficiency Centre at the Jožef Stefan Institute.

All participants of the first EUREM course agreed that this kind of training is absolutely needed in Slovenia. The course gives a systematic approach to the implementation of energy efficiency measures in different areas, enabling participants to substantially contribute to the energy consumption and cost reduction in their companies, and thus, due to lower CO₂ emissions, also to a better environment.



An award ceremony and a social gathering afterwards

EUREM.NET results in Slovenia:

EUREM courses (Number of participants)	Energy saving potential (MWh/a)	Cost reduction potential (EUR/a)	CO ₂ - saving potential (t/a)	Investment costs (EUR)	Average pay-back-time static (years)
EUREM I (23 P)	82.550	2.553.000	20.884	6.246.140	3.8

	Company: ACRONI, d. o. o. Branch: manufacture of basic iron and steel and of ferro-alloys Products/Services: stainless, structural and electrical steel Employees: 1.540 (site, where the project is carried out) Energy concept author: Dušan NOVKOVIČ, ACRONI, d. o. o., EUREM I Contact: dusan.novkovic@acroni.si
	Dušan Novkovič

	Company: Cinkarna Celje, d. d. Branch: manufacture of dyes and pigments Products/Services: dyes, pigments Employees: 1.090 (site where the project work is carried out) Energy concept author: Alojz ULAGA, Cinkarna Celje, d. d., EUREM I Contact: alojz.ulaga@cinkarna.si
	Alojz Ulaga

Use of electric arc furnace waste heat for heating, preparation of sanitary hot water and steam production

“My expectations for the course were very high and they were fulfilled 110 % – I was very satisfied with the contents and organisation of the training and I wish JSI team a lot of success also in the future.”

Energy concept description: Cooling of an electric arc furnace is carried out using heat exchangers and two cooling towers. Cooling towers system needs to be renovated, as it cannot meet the requirements for increased melting efficiency anymore. Besides that the waste heat from cooling is now fully lost.

With an appropriate regulation as much energy as possible will be kept in the furnace itself and thus its efficiency will increase, while the waste heat will be transferred to the hot water system using an additional heat exchanger and an appropriate heat accumulator. The new heat exchanger will be placed in front of the existing one, which is now used to transfer all the waste heat to the cooling towers. After realization of also planned renovation of exhaust gas system more than half of the waste heat from cooling will be available for heating, preparation of sanitary hot water and production of steam and electricity. As a result reduction of natural gas consumption of app. 8 million Sm³ per year is expected, which equals to cost reduction of 600.000 € and CO₂ emissions reduction of 15,500 tons annually.

Results:	Energy saving potential: 64.500 MWh/a
	Energy source: natural gas exchanged by waste heat
	Cost reduction: 1.500.000 €/a
	CO₂ saving potential: 15.500 t/a
	Investment costs: 1.500.000 €
	Pay-back time (static): 1 year
	Likelihood of implementation: high

Installation of frequency converters on electric motors of exhaust ventilation and transport systems in TiO₂ production plant

“EUREM course was excellently prepared and performed. I gained a lot of additional knowledge for the implementation of energy efficiency measures and thus my management of the project, Optimisation of energy use in Cinkarna Celje’ is going to be even better.”

Energy concept description: In TiO₂ production plant in Cinkarna Celje complex exhaust ventilation and transport air systems are installed. Flow of air or material is managed automatically, on the basis of negative pressure measurements, by the flaps on the suction side of ventilators. Flaps are always partially opened – on the lines 41.18 A, B, C and 41.36 A, B, C from 20 to 60 %, and the flaps of the exhaust ventilation systems 27.03 A, B, C are even more closed – both flaps are opened only up to 40 %. These ventilators are at the moment driven by electric motors with nominal powers from 30 to 90 kW equipped with soft starters. To improve air flow regulation and reduce electricity consumption, an exchange of current regulation with frequency converters is foreseen. According to the calculations made, annual reduction of electricity consumption is estimated to be 640 MWh, which equals to cost reduction of 51.200 €. Due to lower electricity consumption, CO₂ emissions are expected to be reduced for 320 tons per year.

Results:	Energy saving potential: 640 MWh/a
	Energy source: electricity
	Cost reduction: 51.200 €/a
	CO₂ saving potential: 320 t/a
	Investment costs: 74.400 €
	Pay-back time (static): 1.45 years
	Likelihood of implementation: high



ACRONI, d. o. o



Cinkarna Celje, d. d.

The EUREM courses in Spain are carried out by:



ESCAN, S.A.
 Avda Ferrol 14, B-3, ES – 28029 Madrid, Spain
Web: www.escansa.com
Contact: Margarita Puente, Phone: +3491-3232643
E-mail: escan@escansa.com

Cooperation partners: Energy Agency Madrid,
 Gomez Pardo Foundation of Polytechnic University of Madrid

The first European Energy Manager Course in Spain was carried out in the period March-October 2008 by Escan, S.A. with the cooperation of the Energy Agency of Madrid and the Gomez Pardo Foundation –Polytechnic University of Madrid. The EUREM I Course took place between 03/2008 and 10/2008 with 25 participants.

The EUREM workshops in Spain:

- ▶ Sixteen modules about Energy Efficiency and Renewable Energy Sources were explained during four months – two days per week.
- ▶ The participants evaluated the contents of the modules, trainers and course organisation and the results were very positive.
- ▶ The course took place at Madrid Foundation Gomez Pardo of Polytechnic University of Madrid.
- ▶ Escan has created an interdisciplinary trainer team with 15 trainers who are specialised in the areas of these modules.
- ▶ The attendance of the participants was 80% approximately.
- ▶ Using the EUREM Internet platform to download the material and keep information of seminars and conferences.

- ▶ Final presentation – award ceremony – was celebrated 31st October 2008 and the first Spanish EUREM certificates were handed over by Escan, Polytechnic University of Madrid and Energy Agency.



Pictures of the workshops

EUREM in Spain is profitable because the course helps the participants to know most energy saving possibilities in their companies and how to put this knowledge into practice.

The implementation of the EUREM projects:

In the first course 25 energy projects – best practice – were developed by the participants, 60 per cent of these projects are likely to be carried out and a few have already been realized. Two best practice examples were chosen: one is about district heating with the newest technology, that provides hot water and heat for 2,750 households, and the second one is about acclimatization with heat pumps for an industrial plant.



Pictures of the award ceremony – EUREM – group

EUREM.NET results in Spain:					
EUREM courses (Number of participants)	Energy saving potential (MWh/a)	Cost reduction potential (EUR/a)	CO₂ – saving potential (t/a)	Investment costs (EUR)	Average pay-back-time static (years)
EUREM I (25)	29.261	2.085.805	11.161	19.489.739	8.6



 Resinas Termoplásticas, S.A.	
	<p>Company: Residencial Altamira Branch: professional technical activities for buildings Products/Services: buildings heating maintenance Employees: 7 Energy concept author: Luis Cabrera, Residencial Altamira, EUREM I Contact: l.cabrera@corral@hotmail.com</p>
Luis Cabrera	

 Resinas Termoplásticas, S.A.	
	<p>Company: Resinas Termoplásticas-Climati Branch: manufacturer of Plastic components Products/Services: automation systems Employees: 450 Energy concept author: Joaquin Garcia, Climati, EUREM I Contact: climati@climati.com</p>
Joaquin Garcia	

District Heating renovation with new heating plant that supplies Sanitary hot Water and heat for a residential area of 2750 households

“I will recommend this course to my colleagues and friends!”

Energy concept description: the District Heating plant is 33 years old and a refurbishment with new heating plant that supplies sanitary hot water and heat for a residential area of 2,750 households is necessary.

The solution is to improve the system that consists of different components:

- ▶ The overheated water system is replaced by a new hot water system – 110° C maximum –. Reduction of losses is achieved.
- ▶ Hot water boilers, sensors to control the oxygen rate. The utilisation of these sensors reduces the losses at burners. Also heat recoveries, management control systems, a new isolation system for the pipes and new circulating pumps are installed.

The good results are:

- ▶ Increased performance and energy efficiency improvements are achieved; fuel, water and electricity consumption is reduced.

Results:	<p>Energy saving potential: 6,981 MWh/a Energy source: natural gas Cost reduction: 286.518 €/a CO₂ saving potential: 2.443.53 t/a Investment costs: 2.381.908 € Pay-back time (static): 8.3 years Likelihood of implementation: high (realized 9/2008)</p>
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Altamira Heating Plant, Madrid, June 2008

Installation of roof-top heat pumps at industrial plant

“Good trainers and high quality course provide me enjoyable time.”

Energy concept description: The heat supplied for this 5,000 m²-industrial factory is carried out through gas oil boilers with more than 20 years. It is necessary to replace the old boilers and the air-conditioning in summer time by efficient systems.

The solution to improve the systems are:

- ▶ In order to provide new air-conditioning for summer and winter seasons, four roof-top heat pump systems, air-air with cooling systems and heat recovery will be installed.

The good results are:

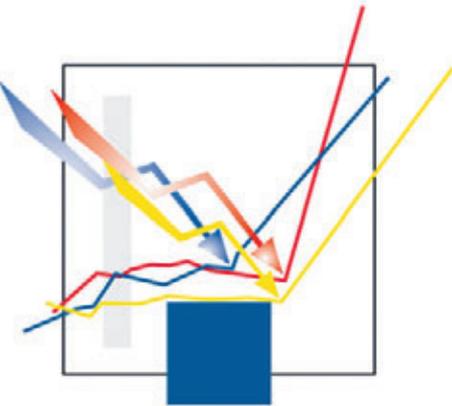
- ▶ Comfort conditions are achieved for the factory workers
- ▶ Energy saving potential is 402 MWh per year and 40,000 € per year of costs reduction.

Results:	<p>Energy saving potential: 402 MWh/a Energy source: heat pump Cost reduction: 40.000 €/a CO₂ saving potential: 128.7 t/a Investment costs: 310.000 € Pay-back time (static): 7 years Likelihood of implementation: high</p>
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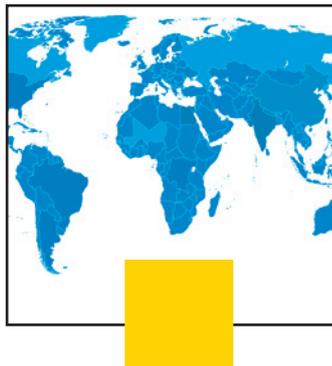
Factory Plastic components, September 2008

The future of EUREM can be seen in the following six trends:



1. Increased number of trainings

In 2009 about 500 new European EnergyManagers will be trained in the 12 EUREM countries. Due to an increase in training opportunities (frequency, number of sites), it is a declared aim to train 1.000 new European EnergyManagers per year in the future.



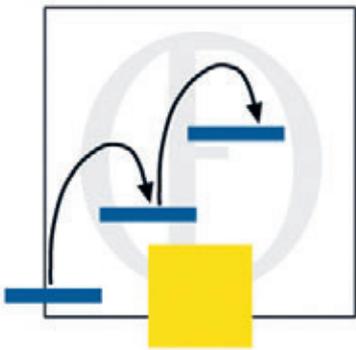
2. Geographical expansion

Currently EUREM is offered in 12 European countries. 68% of EU citizens have the opportunity to take part in a EUREM training in their country. The success of the EUREM approach and the growing visibility of EUREM lead to requests from countries in which no EUREM training provider is active. The EUREM consortium reacted to this development and created a licensing model which offers new providers the possibility to become a partner of the consortium. The expansion in the EU area or on the European continent will be a priority. At the same time cooperation with America and especially Asia are of interest.



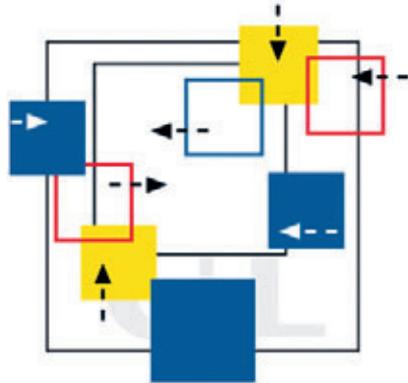
3. European Register

To promote the EUREM brand and to position the EUREM community as a high-level energy management qualification, a European register of all graduates is set up on the web. With a standardized code (Country - City - number, e.g. DE-NUE-001), each graduate is registered in the EUREM community. Membership is evidence of the European EnergyManager's specialist qualifications.



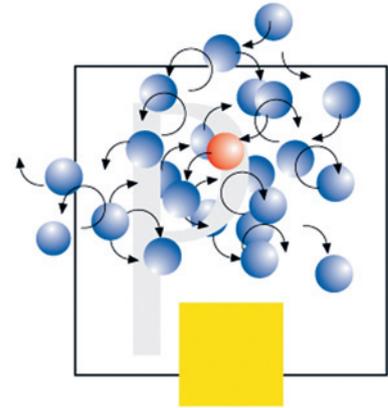
4. Vertical specialization

The concept of EUREM training is a cross-section concept: every important topic for an EnergyManager is included. Because of the limited total number of hours it isn't possible to treat individual subject areas in depth. Participants with a special interest in specific topics will be offered advanced modules in future. Currently the German DIHK learning company (DIHK = umbrella organization of chambers) is developing advanced modules in the areas of compressed air and light for the German market. More advanced modules, each amounting to 60 hours, are in preparation. Graduates of EUREM gain the opportunity to expand and deepen their knowledge. Following the philosophy of lifelong learning, graduates can continuously educate themselves.



5. Continuous improvement

The energy sector is in constant movement. New laws and regulations, but also new technologies call for the updating of training materials and the integration of new sub-topics. Calculation tools are becoming even more userfriendly. The process of continuous improvement for the benefit of all present and future graduates goes on.



6. Enhanced networking

Currently EUREM graduates prefer to interact via personal contacts: they phone or e-mail colleagues from their own course. Networking via the electronic forum is still lagging behind. The enormous knowledge potential of the EUREM community is not really being adequately exploited. In future, there will be more opportunities for personal experience exchange. The first European EnergyManagers conference in Nuremberg in March 2009 was the starting point of these activities. The electronic interaction will be significantly boosted through new software features oriented on Web 2.0 architectures.

Germany

Project coordinator

Nuremberg Chamber of Commerce and Industry (CCI)

Hauptmarkt 25/27, DE-90403 Nürnberg
 Web: www.ihk-nuernberg.de Phone: +49 (0) 911/1335-299

Contact:

Robert SCHMIDT, Head of Business Unit Innovation | Environment
 (iut@nuernberg.ihk.de)

Stefan HÜBEL, stefan.huebel@nuernberg.ihk.de
 Tom ANKIRCHNER, DIHK Bildungs GmbH, ankirchner.tom@wb.dihk.de

Supported by:

projects energy gmbh

Bundesstr.76, DE-20144 Hamburg
www.projects-energy.de

+49 (0)40/41466990

Contact: Marco WAGNER, Managing partner
marco.wagner@projects-energy.de

Germany coached Czech Republic, Greece and Finland to implement EUREM



Robert SCHMIDT



Stefan HÜBEL



Marco WAGNER



Tom ANKIRCHNER

Austria

coach

Austrian Economic Chamber (WKÖ) Department of Environmental and Energy Policy

Wiedner Hauptstraße 63, A-1045 Vienna, Austria
 Web: www.wko.at/up, Phone: +43 (0) 590 900-4222

Contact:

Stephan SCHWARZER
 Head of the Department of Environmental and Energy Policy
 (stephan.schwarzer@wko.at)

Cristina KRAMER (cristina.kramer@wko.at)
 Asiye Toker (asiye.toker@wko.at)

Supported by:

Hermine DIMITROFF-REGATSCHNIG, eco4ward
 Nikolaiplatz 4/II, A-8020 Graz
www.eco4ward.at
 +43 (0)316 72 08 15-350

Austria coached France, Spain and Slovenia to implement EUREM



Stephan SCHWARZER



Cristina KRAMER



Asiye TOKER



Hermine DIMITROFF-REGATSCHNIG

Portugal

coach

German Portuguese Chamber of Commerce and Industry DUAL

Avenida Infante D. Henrique | Lote 320
 Entrepasto 2 | Piso 2 | Fracção 2 | 1800-220 Lisbon, Portugal
 web: www.dual.pt, phone: +351 213 474 415

Contact:

Bernadette DAMBACHER, DUAL Manager (bdambacher@dual.pt),
 Fátima RAMOS LOPES (flopes@dual.pt)

Portugal coached Estonia, Italy and Poland to implement EUREM



Bernadette DAMBACHER



Fátima RAMOS LOPES

Intelligent Energy - Europe
 Unit 2 Energy Efficiency

Vincent BERRUTTO, Head of Unit, vincent.berrutto@ec.europa.eu
 Waltraud SCHMID, Senior Project Officer, waltraud.schmid@ec.europa.eu
 Patrick NAGHTEN, Technical Project Officer, patrick.naghten@ec.europa.eu

Czech Republic

German-Czech Chamber of Industry and Commerce

Vaclavske nam. 40
CZ-110 00 Prague 1
www.dtihk.cz

Contact:
Mirjam SCHWAN
Hana POTUCKOVA
+420 224221200
schwan@dtihk.cz
potuckova@dtihk.cz



Mirjam SCHWAN



Hana POTUCKOVA

France

ARENE Ile de France

94 bis Avenue de Suffren
F-75015 Paris
www.arenedf.org

Contact:
Marie-Laure FALQUE-MASSET
Judith CAZAS
+33(0)1 53856175
ml.falquemasset@arenedf.org
j.cazas@arenedf.org



Marie-Laure FALQUE-MASSET



Judith CAZAS

Italy

Ambiente Italia srl

Via Carlo Poerio 39
I-20129 Milano
www.ambienteitalia.it

Contact:
Chiara WOLTER
+39 02 27744 1
chiara.wolter@ambienteitalia.it

The German Chamber of Commerce in Italy

Via Napo Torriani 29
I-20124 Milano
www.ahk-italien.it



Chiara WOLTER



Michelle ARNOLD



Lara IUNGO

Contact:
Michelle ARNOLD
+39 02 398009 04
arnold@deinternational.it
Lara IUNGO
+39 02 398009 23
iungo@deinternational.it

Estonia

EnPro Engineers Bureau Ltd.

Laki 14A
EE 10 621 Tallinn
www.enpro.ee

Contact:
Heinar NURSTE
Sulev SOOSAR
+372 50 65 181
info@enpro.ee



Heinar NURSTE



Sulev SOOSAR

Greece

Centre for Renewable Energy Sources (C.R.E.S.)

19th Km Marathon Ave.
GR19009 Pikermi, Athens
www.cres.gr

Contact:
John NICKOLETATOS
+30 210 6603373
inikol@cres.gr



John NICKOLETATOS



Alexandra TAVLARIDOU

German Hellenic CCI
Voulgari str. 50
GR-55133 Thessaloniki
www.german-chamber.gr
Contact:
Alexandra TAVLARIDOU
+30 2310 327733
a.tavlaridou@mail.ahk-germany.de

Poland

KAPE S.A.
(The Polish National Energy Conservation Agency)

ul. Mokotowska 35
PL-00-560 Warsaw
www.kape.gov.pl

Contact:
Marek PAWELOSZEK
Katarzyna SWIERCZEWSKA
+48 22 825 8692
mpaweloszek@kape.gov.pl
kswierczewska@kape.gov.pl



Marek PAWELOSZEK



Katarzyna SWIERCZEWSKA

Slovenia

Jožef Stefan Institute Energy Efficiency Centre

Jamova cesta 39
SI-1000 Ljubljana
www.rcp.ijs.si/ceu

Contact:
Barbara PETELIN VISOČNIK
Polona LAH
+386 (0)1 588 52 10
barbara.visocnik@ijs.si
polona.lah@ijs.si



Barbara PETELIN VISOČNIK



Polona LAH

Finland

AEL

Kaarnatie 4
FI-00410 Helsinki
www.ael.fi

Contact:
Iikka UPANNE
+358 50 3641 808
iikka.upanne@ael.fi

Markku HARMAALA
+358 44 7224 734
markku.harmaala@ael.fi



Iikka UPANNE



Markku HARMAALA

Spain
ESCAN, S.A. Energy Consulting

Avda. Ferrol, 14, B-3
ES-28029 Madrid
www.escansa.com

Contact: Margarita PUENTE
+3491-3232643
escan@escansa.com



Margarita PUENTE



Country Portals

Each EUREM training provider has its own Online Country Portal, which is a supporting tool for the EnergyManager Training and its participants. On each Portal you will find more information about the EnergyManager Training in these countries as well as the country specific training material. You will get directly to the different Online Country Portals by following the links:



AT Austria



GR Greece



CZ Czech Republic



IT Italy



EE Estonia



PL Poland



FI Finland



PT Portugal



FR France



SI Slovenia



DE Germany



ES Spain

www.energymanager.eu

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