ENERGY SAVING 2018

9th International Conference for European EnergyManagers

6th/7th November 2018

Prague, Czech Republic

www.energymanager.eu

This project is funded by the European Union

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PREAMBLE

Welcome in the Capital of European Energy Management 2018 – Welcome in Prague!

After the successful International Conferences of European EnergyManagers in Nuremberg (2009, 2013), Vienna (2010, 2014), Berlin (2016), Ljubljana (2017) and Prague (2011, 2015) the Czech Republic hosts the 9th edition of this important event. It is therefore indeed a pleasure for us to provide a platform for discussions and lectures on the preparation and implementation of energy-saving projects in companies and organizations for such a broad audience.

During the last years, the network of European EnergyManagers has been expanding not only in the EU member states but also outside the EU and even overseas. More and more energy managers are joining the network and are thus contributing to effective energy savings. Up to now, our network comprises more than 6 000 European EnergyManagers worldwide.

The international exchange of experience and knowledge and the raising number of contacts at our electronic platform www.energymanager.eu reflect not only the relevance of Energy Management for modern companies. It also shows the growing interest of many energy experts to benefit from existing know-how and to consider it for their own processes and technologies. No doubt: Energy Management is a global issue.

In this conference, organized by the German-Czech Chamber of Industry and Commerce, participate more than 150 European EnergyManagers from 21 countries. Today and tomorrow, you will have the unique chance to meet experts during 6 technical workshops covering all relevant areas of energy management that are also part of the training curriculum in each country.

A highlight of this year's conference will certainly be the European EnergyManager Award ceremony. As every year, the best 30 energy projects from 10 participating countries will be selected for the award during the conference. The international consortium has singled out three projects in the categories small, medium, and large companies.

On behalf of the organizers, I finally wish you a pleasant stay in Prague, fruitful and stimulating discussions and a lot of new ideas to let the energy always flow through our extraordinary network!

Bernard Bauer
Executive Director
German-Czech Chamber of Industry and Commerce

EUREM - Guarantor for more energy efficiency and more renewable energies in organisations

The European EnergyManager Training EUREM is a standardised advanced training course, which develops the skills of technical experts in the fields of energy efficiency and operational energy management. It covers almost all energy-related topics which can affect companies in a wide variety of ways.

The qualification is aimed at both future and real energy managers in organisations. As a blended learning concept, it usually takes place part-time and consists of around 160 presence units, online and self-learning programs (80 units) and a final project work as an 'individual energy concept'. The teaching units (45 minutes each) are held by experienced trainers and experts. The EUREM training contents are standardised and thus internationally comparable. The quality of the training itself and the training organisation is ensured by regular quality checks carried out by external auditors.

The creation of an 'energy concept' within the framework of the project work is an obligatory and unique element of the EUREM training. The participants examine in detail a solution for an energy challenge in their company - or in the case of consultants at one of their customers - including the technical elements and the analysis of the financial profitability. The participants will be supported by professional coaching from experienced EUREM trainers. In the end they present their solutions to a jury as part of the course examination. This and a written test are part of the nationally and internationally recognized EUREM certificate.

This means that this individually developed solution to improve the energy performance of a company at the end of the course is actually suitable to be presented to the management of the company and to suggest implementation scenarios. According to surveys, the implementation probability of the developed project solutions is around 80 percent. This means that 4 out of 5 project works are actually implemented into practice. An enormous and considerable yield, in my opinion.

In this way, companies successively improve their competitiveness and efficiency and contribute to achieving the EU 2020 targets, namely improving energy efficiency, reducing greenhouse gas emissions and increasing the share of renewable energy sources. The latter is not the only focus of EUREM training, but there is an increasing number of participants working on energy concepts dealing with the use of renewable energies in their companies.

EUREM training is often the starting point for more. Professional networking on specific topics and new personal contacts increase the benefits of the training. EUREM alumni continue to apply their energy knowledge and skills within their organisation, identify further projects to increase energy efficiency and plan line-oriented solutions. Once infected by the EUREM virus, no bad energy solution remains safe from them. About 6000 EUREMs are qualified and constantly active in energy matters. EUREM training providers worldwide help EUREM alumni to stay in touch, e.g. through network meetings at national level, through special events such as the International Conferences for European EnergyManagers. Welcome to Prague this year!

I wish you many interesting conversations, fruitful discussions, an intensive exchange of experiences about good implementation examples and a pleasant stay in the capital of the Czech Republic. We all know: Much remains to be done to save costs and energy and to protect the climate. It's worth the effort! Let's tackle it together!

Dr. Robert Schmidt
Speaker of the International EUREM Provider Consortium and Head of the EUREM Steering Committee, c/o Nuremberg Chamber of Commerce and Industry (CCI Nuremberg)

NEW EU PROJECT LAUNCHED: 'EUREMnext – TAKING EUROPEAN ENERGYMANAGERS TO NEXT EFFICIENCY LEVELS BY IMPLEMENTING ENERGY AUDIT RECOMMENDATIONS'

The 'EUREMnext' funding project was approved in the EU Horizon 2020 programme. This allows the EUREM idea to achieve next efficiency levels and to expand geographically. The Nuremberg Chamber of Commerce and Industry, Germany, is coordinator of the project consortium with 13 partners from twelve countries. The aim of the 36-month project is the future-oriented further development of the training content and, in addition to other focal points, the expansion of the EnergyManager training including network components to other countries.

The qualification as an EnergyManger is a highly effective measure of increasing energy efficiency in companies. The European Union is therefore promoting the introduction of energy manager training in six further member and candidate states. The EUREMnext project, now the fourth to be supported by the EU, aims to establish EUREM in Albania, Bosnia-Herzegovina, Estonia, Latvia, Serbia, and Turkey in order to make small and medium-sized manufacturing companies, in particular, more energy-efficient. To this end, partner institutions have been won in the respective countries, which adapt the EUREM training to the country-specific needs and introduce the courses in their country from 2019 on.

The other most experienced project partners come from Austria, Czech Republic, Finland, Germany, Greece and Spain. They are all developing complementary training modules on emerging energy issues. Mainly e-learning based, they will provide an overview on topics like Industry 4.0 & Energy Efficiency, Mobility Management in Businesses, Energy Audit Standards EN 16247/ISO 50002, Employee Motivation & Communication of Energy Topics without extending the presence time of the courses. An additional practical module will teach the design and evaluation of sustainable energy measures using a tool specifically adapted for EUREM.

A range of optional extra activities for those who prefer more in-depth information or support with carrying out energy audits or implementing energy measures foresees 'On the case' coaching on energy audits and on how to best present a project to decision makers as well as networking events for the EUREM alumni including representatives from the financial sector to enhance mutual understanding.

An integral part of the EUREMnext project is the organisation of two international conferences for European EnergyManagers in the Czech Republic and in Greece. Last, but certainly not least, the conferences in Prague 2018 and in Athens 2020 are two great possibilities to exchange experience with fellow energy experts in the EUREM community. These events offer excellent opportunities to maintain contacts and to keep up-to-date on the latest topics. Usually some hundreds of EnergyManagers discuss current energy efficiency issues across national borders and get to know exemplary energy efficiency projects in topic-related workshops. The highlight of the conferences is always the presentation of the prestigious international EUREM Awards. These will be granted to the creators of the best designed and implemented energy saving projects.

This project is funded by the Horizon 2020 Research and Innovation Programme of the European Union.

For more information, please visit
https://www.energymanager.eu/en/euremnext-project/
or https://twitter.com/EUREM_Energy

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Bernard Bauer, CEO DTIHK and AHK Services s.r.o.

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EUREM - Guarantor for more energy efficiency and more renewable energies in organizations
EUREMnext – Taking European EnergyManagers to next efficiency levels by implementing energy audit recommendations
Dr. Robert Schmidt
EUREM Speaker and Head of EUREM Steering Committee, c/o Nuremberg Chamber of Commerce and Industry (CCI Nuremberg)

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PROGRAM

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Moderation: René Harun, CEO AHK Services s.r.o.

11:50 – 12:00 **How to increase energy efficiency in the Czech Republic**
Vladimír Sochor
Director, Energy Efficiency and Savings Department,
Ministry of Industry and Trade

12:00 – 12:15 **EUREM – quo vadis | new developments**
Dr. Robert Schmidt
EUREM Speaker and Head of EUREM Steering Committee,
Nuremberg Chamber of Commerceand Industry
(CCI Nuremberg)

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Managing Director of EUREM GmbH
Nuremberg Chamber of Commerce and Industry
(CCI Nuremberg)

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Dr. Stephan Schwarzer
Deputy Speaker EUREM Provider Consortium, WKÖ

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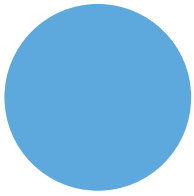
BLOCK 1
Tuesday, November 6th 2018
13:50-15:30

WORKSHOP A



Energy auditing / Energy management / ISO 50001

Moderation:
Sonja Starnberger
Energieinstitut der Wirtschaft GmbH
Austria

Impulse Speech:

Jürgen Fluch
AEE INTEC
Austria
Energy audits – pathways from needs to benefits

Practice Examples:

Zlatko Gjurchinoski
Vardar Dolomit dooel
Macedonia
Benefits from implementation of energy management system in line with ISO 50001 in Vardar Dolomit

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Peter Scheer
REWE International AG
Austria
Reduction of load peaks by using a storage battery fed by PV

Jan Vidomus
Energy Agency of the Zlínský Region
Czech Republic
Energy management in the organizations run by the Zlín Region

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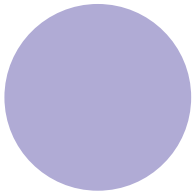
Aleš Průšek, Pavel Bursa
Magna Exteriors (Bohemia) s.r.o.
Czech Republic
Reducing energy intensity of production plant in Liberec

Janine Hansen
DIHK Service GmbH
Germany

Mária Boros-Huber
German-Hungarian Chamber of Commerce and Industry (AHK Ungarn)
Hungary
Benefits of professional qualification – synergies of the Energy Scouts in Hungary, the Czech Republic, Greece and Bulgaria

BLOCK 1
Tuesday, November 6th 2018
13:50-15:30

WORKSHOP B



Energy efficiency in companies: Cooling / Air conditioning / Ventilation

Moderation:
Markku Harmaala
AEL
Finland

Impulse Speech:

Miloš Lain
ČVUT Praha
Czech Republic
Ventilation and air conditioning of industrial halls

Practice Examples:

Helena Skalská
Slovenský plynárenský priemysel
Slovakia
More efficient production and supply of cooling water from a central energy source in the area of the SPP in Bratislava

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Timea Kiss-Molnar
Hipp Termelő és Kereskedelmi Kft.
Hungary
Waste heat utilization for cooling

Miroslav Dudrik
U. S. Steel Košice, s.r.o.
Slovakia
Intensification of the production at the batch annealing operation

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Tarek Hassan Masaud
Vodafone Egypt
Egypt
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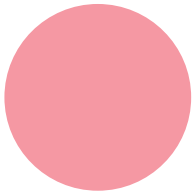
16:00-17:30

WORKSHOP C



Vehicle Fleet / Mobility management

Moderation:
Christoph Petri
DIHK
Germany

Impulse Speech:

Jan Peter Vasiliadis
DIHK
Germany
Corporate mobility management and its sustainability potential

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Practice Examples:

Nikolaus Engleitner
heise fleetconsulting GmbH
Austria
Successfully influencing driver behavior

Katrin Pucher
Knapp AG
Austria

Peter Sattler
sattler energie consulting GmbH
Austria
Corporate concept of employee mobility

František Vašek
innogy
Czech Republic
innovations manager

BLOCK 2
Tuesday, November 6th 2018
16:00-17:30

WORKSHOP D

Energy efficiency in companies: Compressed air systems

Moderation:
Hana Potůčková
AHK Services s.r.o.
Czech Republic

Impulse Speech:

Erwin Ruppelt
Kaeser Compressors SE
Germany
The compressed air specialist. The IHK´s advanced "Energy Manager" certification course

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Practice Examples:

Georgi Koparanov
Magna Powertrain Plovdiv EOOD
Bulgaria
Year-round utilization of the waste heat generated by the air compressors

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Jiří Dušek
Continental Automotive Czech Republic s.r.o.
Czech Republic
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Wilhelm Fandler
Brigl & Bergmeister GmbH
Austria
Compressed air system optimization

BLOCK 3
Wednesday, November 7th 2018
9:30-11:10

WORKSHOP E

Industry 4.0 / Electrical Drives

Moderation:
Peter Sattler
sattler energie consulting GmbH
Austria

Impulse Speech:

Engelbert Lang
Siemens AG – Digital Factory Division
Germany
Integrated energy management in digital enterprise

Practice Examples:

Daniel Gosse
Bosch Industriekessel GmbH/Bosch KWK Systeme GmbH
Germany
Smart efficiency assistant helps saving energy costs in dairy production

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Zarko Trpkovski
Distribution of Heat Balkan Energy
Macedonia
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Andrei Gutu
„Termoelectrica“ Joint Stock Company
Moldova
Optimization of electric energy consumption for own needs

BLOCK 3
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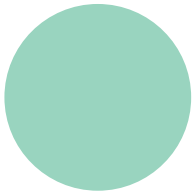
9:30-11:10

WORKSHOP F



Energy efficiency in companies: Steam / Process Heat / Heat Recovery

Moderation:
Boris Sučić
Jožef Stefan Institute
Slovenia

Impulse Speech:

Marco Wagner
projects energy gmbh
Germany
Energetic optimization of process heat systems

Practice Examples:

Martin Vrba
LASSELSBERGER, s.r.o.
Czech Republic
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Roman Hutta
Spirax Sarco
Slovakia
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Uroš Grošelj
Resalta for Zito d.d., PE Kruh pecivo Maribor
Slovenia
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Michael Humer
AGRANA Stärke GmbH
Austria
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Michael Labek
Bioenergie Kufstein GmbH
Austria
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BLOCK 1
Tuesday, 6th November 2018
13:50 – 15:30

WORKSHOP A

Energy auditing /
Energy management /
ISO 50001

Moderation:
Sonja Starnberger
Energieinstitut der Wirtschaft GmbH
Austria

WORKSHOP A

Energy auditing /
Energy management /
ISO 50001

IMPULSE SPEECH

Jürgen Fluch

Company:
AEE INTEC
Austria

Energy audits – pathways from needs to benefits

Project description

Content

Doing an energy audit or implementing an energy management system in an industrial company becomes widespread. Nevertheless, mainly SMEs with a practiced ecologic or economic awareness or the large companies legally required are doings so. Creating a baseline and knowing about the status quo of energy demand and supply is supplementing the knowhow on the production process itself. It is the basis to optimize potentials on both levels including the integration of renewable energy sources. Planned activities as changes in the production capacity and supply system, implementation of innovative process technologies or employee awareness can be evaluated and monitored using defined and within an auditing process developed key performance indicators (benchmarks). Step by step this becomes an important part in financial controlling and companies recognize the advantages.

Why are legal requirements still the main driving factor for an audit? Mandatory audits are a good business case for auditors – short-term. But they don't create awareness or commitment for an efficient and sustainable production. The mid- and long-term challenge is to get all kind of companies attracted by the outlook of being audited or implementing a monitoring system.

Finally, it's all about the costs. And the ones for an energy audit or management system are reasonable and the benefits traceable. But an audit is seen as legal requirement and real advantages are invisible. So, the service provided has to be changed addressing actual challenges of industry.

Solution

An audit isn't just the evaluation of the status quo. It is the identification of optimization potentials on all levels and the assistance in the implementation process of the identified measures. Therefore, we need well trained experts covering innovative methodologies and approaches in the data acquisition and their assessment (digitalization) being the basis for energy efficiency and renewable energy projects. Along the evaluation process the energy cost assessment has to be supplemented by non-energy benefits, LCA and cost benefits as interruption-free production independently from external suppliers. Even detailed engineering, the feasible business and financing model and marketing is part of this work, seen as high-level service provider. Future trainings as EUREM have to cover all this and ensure that companies get what they expect on the highest level of quality.

WORKSHOP A

Energy auditing /
Energy management /
ISO 50001

PRACTICE EXAMPLE

Zlatko Gjurchinoski

Benefits from implementation of Energy Management System in line with ISO 50001 in Vardar Dolomit

Company:
Vardar Dolomit dooel
Makedonie

Sector:
Industry

Products / Services:
Refractories Production

Project description

Initial Situation

Company with prior experience and good portfolio in implementation of energy efficiency projects

Optimization

Implementation of Energy Management System in line with ISO 50001:2011

- Raising awareness of energy management importance
- Building model for monitoring performance of all energy sources (electricity, light and heavy fuel oil)
- Training to change the employees´ behavior to a more efficient energy use
- Giving priority to no cost measures for reducing energy consumption
- Implementation of different low cost energy efficiency projects

Benefits

Reduced energy consumption and cost, reduced CO_2 emissions, improved reliability and sustainability, better company reputation

Results

Form of energy	Electricity / Fuel oil
Energy saving potential	3 527 GJ
Cost saving potential	57 530 EUR
CO_2 – saving potential	233 t/CO_2
Project total costs	15 520 EUR
Payback period	0.27 years
Date of implementation	2017

WORKSHOP A

Energy auditing /
Energy management /
ISO 50001

PRACTICE EXAMPLE

Peter Scheer

Reduction of load peaks by using a storage battery fed by PV

Company:
Rewe International AG
Austria

Sector:
Retail

Products / Services:
Food retail market

Project description

Initial Situation

An average BILLA-store has an usage of about 284 MWh of yearly power consumption and a monthly load peak up to 80 kW.

Optimization

The load peaks occur in the early morning, mainly caused by operating the baking ovens. Around this time it is not possible for them to be reduced by using only the PV-system. So additionally to the PV-system a storage battery is going to be installed. It will be charged by the PV-system during the off-peak period.

Benefits

Through the PV-system up to 15% of the electricity purchase from the grid through renewable energy can be replaced and an additional load peak of 10 – 15 kW can be reduced. These measures can be carried out in many locations in Austria. The potential is estimated for 250 locations.

Results

Form of energy	Electricity
Energy saving potential	35.000 x 250 kWh/year
Cost saving potential	4 150 x 250 EUR/year
CO_2 – saving potential	1 164 t/a
Project total costs	27 900 x 250 EUR
Payback period	6,7 years
Date of implementation	project planning

WORKSHOP A

Energy auditing /
Energy management /
ISO 50001

PRACTICE EXAMPLE

Jan Vidomus

Energy management in the organisations run by the Zlín Region

Company:
Energy Agency of the Zlín Region
Czech Republic

Sector:
Energy consultancy

Products / Services:
Services

Project description

Initial Situation

Public administration bodies like those of the Zlínský Region are faced with challenges caused by the need to implement energy management systems in the organisations they run. Energy data is crucial for identifying trends and priorities in the energy policy and for the adequate targeting of energy efficiency improvement projects. Energy management is an essential tool for business management and environment protection aimed at low carbon economy.

Optimization

Energy management, which since 2008 has been gradually introduced in all organisations run by the Zlínský Region, is mainly practiced in high schools, social services and cultural facilities. In 2016 energy management was implemented in hospitals managed by the Zlínský Region. At present the Energy Agency of the Zlínský Region carries out energy management for 120 organisations in the entire Zlínský Region. Since 2008 energy management has helped to identify several faults such as spontaneous leaks of water and natural gas and failed electricity meters.

Benefits

Energy management implemented in all organisations has improved the decisions made by the regional councillors of the Zlínský Region on buildings requiring refurbishment. Based on the energy management data seven buildings were refurbished in 2017. Ongoing monitoring of consumption is an essential part of energy management and it is equally important for the assessment of the benefits of the projects completed.

Results

Form of energy	Natural gas
Energy saving potential	1 032 MWh/year
Cost saving potential	856 000 EUR
CO_2 – saving potential	235 tons/year
Project total costs	4.9 mil. EUR
Payback period	6 years
Date of implementation	2017

WORKSHOP A

Energy auditing /
Energy management /
ISO 50001

PRACTICE EXAMPLE

Aleš Průšek
Pavel Bursa

Reducing energy intensity of production plant in Liberec

Company:
Magna Exteriors (Bohemia) s.r.o.
Czech Republic

Sector:
Automotive

Products / Services:
Manufacture

Project description

Initial Situation

The production plant was built in 1963. In 1992 it refocused on the automotive industry as a new paint shop for car bumpers was built and energy-intensive injection moulding machines and other process equipment were acquired. At present these process systems are considered as less energy efficient because they have the flow filtration, positive pressure combustion system for exhaust air from paint shops, discharge lamps used for lighting, inefficient ways of heating etc.

Optimization

Already in 2015, the Energy Security Analysis was launched in the Liberec plant which stressed effectiveness. The outcome of the analysis was a project aimed at plant energy efficiency improvement in 2015-2019 which included the following key areas:

- *In the area of lighting* studies were developed for each production hall and outside areas taking into consideration what they are mainly used for; the system of lighting was converted to LED based which can be better adjusted, has an extended warranty period and guaranteed performance and stability
- *In the area of paint shops filtration and disposal of exhaust air* the necessary modifications, based on our own analyses, were made for the implementation of the by-pass filtration and reactive combustion
- *In the area of waste heat* generated by the injection moulding machine cooling systems and vacuum pumps the installation of a heat pump and adequate heat recuperation resulted in reduced cost of heat and chill generation
- *In the area of direct energy losses* caused by the human factor the monitoring of inefficient consumption at a time of non-production was implemented

Benefits

The implementation of individual projects resulted in reduced electricity and natural gas consumption; the quality of lighting has improved in the plant and the amount of harmful emissions went down.

Results

Form of energy	Electricity / Natural gas
Energy saving potential	2 477 MWh/year – electricity 15 822 MWh/year – natural gas
Cost saving potential	446 160 EUR/year in energy 1 652 000 EUR/year in overhead cost
CO_2 – saving potential	6 062 tons/year
Project total costs	420 000 EUR
Payback period	1.5-2.9 years
Date of implementation	2015-2018

WORKSHOP A

Energy auditing /
Energy management /
ISO 50001

PRACTICE EXAMPLE

Janine Hansen,
Mária Boros-Huber

Benefits from professional qualification – synergies of Energy Scouts in Hungary, the Czech Republic, Greece and Bulgaria

Company:
DIHK Service GmbH
Germany

AHK Ungarn
Hungary

Sector:
Business Association

Products / Services:
PPP projects

Project description

Content

In companies, energy-related knowledge is often concentrated in the energy or a related technical department. However, basic knowledge with respect to the use of energy and the potentials of energy efficiency is fundamental for all employees. Each employee can save energy and thus contribute to making the workplace a better, more climate-friendly and cost-effective place when trained in basic facts on energy efficiency.

Solutions

Young Energy Europe is a project with the aim to enhance climate protection measures in companies. Young professionals from a wide range of sectors will be trained to become Energy Scouts allowing them to help monitor and reduce energy consumption in their companies.

The training involves a general introduction on how energy consumption affects global climate and how its reduction can help companies and the environment. The Energy Scouts will learn to

- analyze energy consumption within their company
- use energy meters and interpret their data
- apply the newly-acquired knowledge by implementing an energy efficiency project at their workplace

The Energy Scouts will devise an energy efficiency project for their company and work towards implementation during the course of their training. They are free to choose any topic that suits the needs of their own company.

Young professionals and companies equally profit from the program: Companies can make use of the vocational know-how their employees receive, become more energy-efficient and save costs. The young professionals benefit both personally and professionally as they develop and introduce new ideas and solutions for their companies on the way to a low carbon economy.Young Energy Europe has started in Bulgaria, Greece, Hungary and the Czech Republic in November 2017. The talk will provide examples from the countries involved.

BLOCK 1
Tuesday, 6th November 2018
13:50 – 15:30

WORKSHOP B

Energy efficiency in companies: Cooling / Air conditioning / Ventilation

Moderation:
Markku Harmaala
AEL
Finland

WORKSHOP B

Energy efficiency in companies: Cooling / Air conditioning / Ventilation

IMPULSE SPEECH

Miloš Lain

Company:
Czech Technical University in Prague
Czech Republic

Ventilation and air conditioning of industrial halls

Project description

Content

The presentation is dealing with the ventilation and air-conditioning of industrial halls, it consists of five parts:

- Introduction
- Three case studies of real industrial halls
- Conclusions

Solutions

In the introductory part, the basic ventilation and thermal inputs for the energy balance of industrial halls are presented and the most critical issues associated with internal and external gains are described.

The first case study presents the thermal balance of a hall with glass furnaces for which the computer simulation was used to establish the required capacity of the air conditioning system. The second case study deals with the application of free cooling using external air to reduce energy consumption of the air-conditioning system in an assembly shop. The last case study presented describes the situation in another production hall where the data from measurements and their analysis was used for a proposed measure to improve the thermal comfort and air quality.

The most important steps for quality design and operation of industrial halls VAC systems are presented in the conclusions.

WORKSHOP B

Energy efficiency in companies: Cooling / Air conditioning / Ventilation

PRACTICE EXAMPLE

Helena Skalská

More efficient production and supply of cooling water from a central energy source in the area of the SPP in Bratislava

Company:
SPP
Slovakia

Sector:
Cooling

Products / Services:
Production and supply of cooling water to office spaces and data center room

Project description

Initial Situation

The SPP complex in Bratislava consists of several buildings heated and cooled by the central station which includes cogeneration units and absorption coolers to generate heat, electricity and cooling water for air conditioning. However, not all buildings are cooled with cooling water from the absorption coolers.

Optimization

This project aimes to demonstrate that the supply of cooling water from the absorption coolers located in the central station to AB02 office building and data center makes sense because at the moment they have their own air condition units.

Benefits

The comparison of the existing and proposed methods of air conditioning confirmed that the proposed measure makes sense because its implementation can reduce the costs of energy generation and purchase, especially in case of the data center.

Results

Form of energy	Cooling water
Cost saving potential	70 000 EUR/year
Project total costs	470 000 EUR
Payback period	6.7 years
Date of implementation	01/2019

WORKSHOP B

Energy efficiency in companies: Cooling / Air conditioning / Ventilation

PRACTICE EXAMPLE

Timea Kiss-Molnar

Waste heat utilization for cooling

Company:
Hipp Termelő és Kereskedelmi Kft.
Hungary

Sector:
Food industry

Products / Services:
Baby food production

Project description

Initial Situation

Because of the production technologies and working conditions the suitable humidity and temperature is of high importance. The project at HiPP Company aims for the cooling of the building. The goal of is to find the most cost-efficient and sustainable cooling system.

Optimization

The HiPP Company uses steam for its technology which means that there is a possibility for waste heat recycling. Therefore a further analysis of the absorption cooling device was undertaken as a potential option and calculations as well as a comparison of the absorption device to a compressor liquid cooling system were made. Absorption cooling devices can use waste heat for cooling processes. The waste heat recycling system at HiPP contains several heat exchangers, which means that the exchanger of the heating system 1 MW (not used in the summer) and a 460kW flow-type heat exchanger can be used. For 1 000 kW cooling energy, 1 322 kW heat energy are needed. With the two 44 000 m^3/h flow rate ventilation devices on the roof, a maximum of 2x400 kW cooling capacity can be transferred into the new building. With the remaining 200-250 kW of heat energy, the cooling heat exchanger of the old building can be driven in the future. The place of installation has already been developed for the new building during the installation of the ventilation system. Electricity is only used for the circulation of distilled water.

Implementation:
1st step (2018): air technology modification, aeration, measurement system installation in the system for natural gas, steam and electricity, losses can be located
2nd step (2019): installation of 3 heat exchangers for cooling (2 pcs. for the new building, 1 pc. for the old building), installation of a cooling water system, installation of a rental compressor liquid cooling device for 3 months – continuous testing (based on hours)
3rd step (2020): option of buying an absorption cooling device

Benefits

An absorption cooling system has the following advantages compared to conventional compressor liquid cooling devices:

- Environmental friendly cooling refrigerant
- Waste heat energy
- No rotating or moving parts
- Less maintenance needs, longer life time
- Less noise
- Steeples controlling, no relevant losses till 10% loading
- Less electric power consumption

Results

Form of energy	Steam power
Energy saving potential	720 MWh
Cost saving potential	65 000 EUR/year
Project total costs	337 000 EUR
Payback period	2 years
Date of implementation	2018-2020

WORKSHOP B

Energy efficiency in companies: Cooling / Air conditioning / Ventilation

PRACTICE EXAMPLE

Miroslav Dudrik

Intensification of the production at batch annealing operation

Company:
U. S. Steel Košice, s.r.o.
Slovakia

Sector:
Metallurgy

Products / Services:
Coil / coil annealing

Project description

Initial Situation

The bell annealing furnaces are used for heat treatment of cold-rolled steel coils and as a consequence of this operation the material recrystallises achieving its desirable mechanical and physical properties while maintaining the glossy surface of the strip. During the cooling process of coil, an ambient air is drawn from the bottom of the cooling hood by the cooling fan placed on the top of the cooling hood.

Optimization

By a more intense cooling process electricity consumption goes down and HNx used for the protective atmosphere is saved and at the same time the output of bell annealing furnaces is increased. Modification of the cooling hood is based on optimization of cooling air inlet where it enters the interim space between the protective and cooling hood.

Benefits

By changing the design of existing cooling hoods, we have achieved 10% reduction in cooling time which improved the overall energy efficiency of the process.

Results

Form of energy	Electricity energy
CO_2 – saving potential	4 119 tons/year
Payback period	1.7 years (without considering productivity increase)

WORKSHOP B

Energy efficiency in companies: Cooling / Air conditioning / Ventilation

PRACTICE EXAMPLE

Tarek Salah Kotb Hassan Masaud

Chiller replacement & Server room direct free cooling

Company:
Vodafone
Egypt

Sector:
Private Sector - Telecom

Products / Services:
Telecom services & products

Project description

Initial Situation

Beni Suif Data Center is one of Vodafone biggest Data Center sites in Egypth. Its cooling is carried out by two different air-cooled chillers, 300 TR each, new one (installed in 2016) and old one (installed in 2007), complying with Tier redundancy of 2N (one is operating and one is standby). The cooling load is three server rooms, main one is representing 33% of total cooling load, all are cooled using CRAH* units.

Optimization

1. Replacing old technology chiller with a new more efficient one instead of overhauling it.
2. Install free cooling system for CRAH units of main computer room.

Benefits

1. **Chiller replacement:**
   - Unification of site chillers for better maintenance contracting
   - Smoother operation with higher availability & reliability
   - Less noise level
   - Electrical energy saving by **648 MWh/year**
2. **Free cooling:**
   - Chillers' loading will decrease during winter, which decreases maintenance frequency of chillers
   - Low capital cost with high energy saving
   - Ability of scalability with no hydraulics
   - Electrical energy saving by **87 MWh/year**

CRAH* = Computer Room Air Handler

Results

1. Chiller replacement:

Form of energy	Electricity
Energy saving potential	648 MWh/year
Cost saving potential	44 000 EUR/year
CO_2 – saving potential	370 t/year
Project total costs	222 000 EUR
Payback period	3.7 years
Date of implementation	August 2018

2. Free cooling:

Form of energy	Electricity
Energy saving potential	87 MWh/year
Cost saving potential	7 500 EUR/year
CO_2 – saving potential	50 t/year
Project total costs	13 000 EUR
Payback period	2.2 years
Date of implementation	In progress "exp. Oct 18"

BLOCK 2
Tuesday, November 6th 2018
16:00 – 17:30

WORKSHOP C

Vehicle Fleet /
Mobility management

Moderation:
Christoph Petri
DIHK
Germany

WORKSHOP C

Vehicle Fleet /
Mobility management

IMPULSE SPEECH

Jan Peter Vasiliadis

Company:
DIHK
Germany

Corporate mobility management and its sustainability potential

Project description

Content

The European Union aims to cut carbon dioxide emissions by up to 40% until 2030. With a share of 20% in overall emissions the traffic sector is the second largest emitter and will therefore need to contribute significantly to that aim. However, the continuously increasing traffic in European Countries has been a major drawback for saving schemes and increasingly efficient combustions engines so far. Additionally, nitrogen oxide and fine dust levels in the air exceed critical values and forces many cities to act.

Today new approaches such as the electrification and digitalization of mobility in combination with the promotion of public transport and bicycles are expected to be the key to an innovative and modern low emission mobility system.

For companies the future mobility bears a wide range of challenges and restrictions for the existing approaches to transporting goods and people but also offers numerous chances and opportunities. In the past years German Chambers of Industry and Commerce have been involved in a range of projects supporting the transition to a low emission corporate mobility. Within the organizations “SME Initiative Energiewende and Climate Protection” companies are supported in actively implementing corporate mobility management.

Solutions

Corporate mobility and vehicle fleet management can lead to cost savings, emission reductions and improvement of health and work satisfaction to the employees. As interdisciplinary approach it engages both technical and behavioral elements and offers a wide range of tools and measures such as: fleet management, business trip guidelines, corporate car policies, tax allowances and corporate bikes. The impulse speech will give a brief overview of low emission mobility politics, the respective implementation of corporate mobility management and its sustainability potential.

WORKSHOP C

Vehicle Fleet / Mobility management

PRACTICE EXAMPLE

Nikolaus Engleitner

Successfully influencing driver behavior

Company:
heise fleetconsulting GmbH
Austria

Sector:
Business Services

Products / Services:
Online marketing

Project description

Initial Situation

- Fleet of 200 passenger cars (mostly VW Golf Diesel)
- Poor awareness of drivers in terms of:
  - Fuel consumption
  - Traffic hazards
  - Accident costs
  - Prudent treatment of the cars

Optimization

- Review and amendment of existing car policy
  - Specification of general CO_2 limit (115g/km)
  - Bonus if drivers voluntarily go below this limit – 100 € for options for every 1g below
  - Integration of binding guidelines regarding eco-driving
- Regular communication of fuel saving tips to drivers
- Implementation of eco- & road safety training every three years
  - Accompanied by monthly micro-trainings in between (interactive and online)
- Introduction of fuel-saving competition
  - Gamification of initiative
  - Standardized reporting of fuel consumption/100 km & periodic disclosure of results
  - Rewards for most fuel-efficient drivers – e.g. hotel vouchers

Benefits

- On average 8.5% less fuel consumption
- -11% less accidents
- In general, higher awareness of drivers that company cars are to be treated more carefully.

Results

Form of energy	Diesel
Energy saving potential	36 850 Liter/356 338 kWh/year
Cost saving potential	44 000 EUR/year (only fuel)
CO_2 – saving potential	90 tons/year
Project total costs	60 000 EUR every 3 years 20 000 EUR in between
Payback period	24 months (dynamic amortization)
Date of implementation	2016/2017

WORKSHOP C

Vehicle Fleet / Mobility management

PRACTICE EXAMPLE

Katrin Pucher
Peter Sattler

Corporate concept of employee mobility

Company:
Knapp AG
Austria

sattler energie consulting GmbH
Austria

Sector:
New technology for warehouse and industry logistics

Products / Services:
Automation, warehouse and industry logistics

Project description

Initial Situation

Knapp AG employs more than 2 000 people at its location in Hart bei Graz, some of whom travel long distances to get to the company and return to their place of residence. The company has been growing for many years and is confronted with numerous challenges in terms of sustainably implementing this growth as well as the efficient and sustainable use of available capacities.

Optimization

In addition to the existing covered bicycle parking spaces, an additional 110 will be set up at the location to enable all potential bicycle commutants. Ten minibuses with nine seats are being purchased for the provision of transportation services for employees traveling to and from the company. The company encourages the use of public transport by covering the costs of public transport subscriptions for employees traveling to and from the company. The location has a direct connection to the “S-Bahn” and a connection to the public bus network.

An average of 3.2 employees will be provided with an electric vehicle for a period of 36 months to commute to and from the workplace as part of a carpool. The employee to whom the vehicle is registered may also use the electric vehicle for private driving outside of normal working hours.

Benefits

Reduction of the ecological footprint of the company, which results from the arrival of employees to the location, reduction of parking space requirements and soil sealing at the site, contribution to the company’s sustainability strategy, promotion of employee health.

Results

Form of energy	Fuels
Energy saving potential	1 500 MWh
CO_2 – saving potential	453 tons/year
Project total costs	350 000 EUR
Date of implementation	May 2018 to May 2021

The VCÖ Mobility Prize is awarded every year in Styria for innovative projects in the field of soft mobility. KNAPP AG was awarded the main prize in 2018 with its program for occupational mobility management, which promotes public transport and bicycles.

WORKSHOP C

Vehicle Fleet /
Mobility management

PRACTICE EXAMPLE

František Vašek

innovations manager

Company:
innogy
Czech Republic

Sector:
Energy supplier and provider of energy saving solutions (energy utility)

Products / Services:
Natural gas, electricity, clean mobility (EV, CNG), PV and batteries, energy savings

Project description

Initial Situation

Companies and municipalities are interested in new trends such as e-mobility and renewables, but they are often concerned to start their implementation. This can be resolved by flexiauto.cz, a product/service combining electric vehicle + charger + M&O services + HW/SW solution and support services for efficient sharing of the vehicles by employees, teams etc.

Optimization

There are analytical methods for fleet optimization, usually based on the current pattern of vehicle usage. The involvement of employees will contribute to the acceptance of new trends to meet the mobility needs.

Shared vehicles increase utilization and help to replace several cars used only in a certain period of time. In a later stage we can model further penetration of the shared mobility and clean vehicles in the entire fleet. After the assessment of the pilot operation managers can adopt specific decisions.

At the start of the e-mobility implementation its impact on the load profile of electricity consumption must be considered and its overall impact on energy management. The spread in prices for electricity can be even 1–10 CZK/kWh depending on the source, e.g. from own solar panels or fast chargers at motorways.

The crucial factor for the successful transition to clean and shared mobility is a long-term co-operation in which the benefits of energy source optimization can be fully used including its capacity components as well as all aspects of energy management.

Benefits

Costs, energy and CO_2 savings thanks to lower number of vehicles and transition to clean mobility

BLOCK 2
Tuesday, November 6th 2018
16:00 – 17:30

WORKSHOP D

Energy efficiency in companies: Compressed air systems

Moderation:
Hana Potůčková
AHK Services s.r.o.
Czech Republic

WORKSHOP D

Energy efficiency in companies: Compressed air systems

IMPULSE SPEECH

Erwin Ruppelt

Company:
Kaeser Compressors SE
Germany

The compressed air specialist. The IHK's advanced 'Energy Manager' certification course

Project description

Content

Compressed air is a specialised field, which is taught for approximately 12 to 14 hours as part of the training for EnergyManagers. However, practical experience shows that this area requires additional special training. Therefore, the 'Compressed Air Specialist' course was established. This course comprises 56 hours of in-depth theory and practice on the subject of compressed air audit implementation. The lecture will show how the course is structured and will present detailed results from the first five years of the course from 2012 to 2017.

Solutions

The process for audit implementation will be explained and how the 10 000 MWh/year compressed air energy saving was achieved in the 55 companies that participated.

WORKSHOP D

Energy efficiency in companies: Compressed air systems

PRACTICE EXAMPLE

Georgi Koparanov

Year-round utilization of the waste heat generated by the air compressors

Company:
Magna Powertrain Plovdiv EOOD
Bulgaria

Sector:
Automotive industry

Products / Services:
Manufacture of other parts and accessories for motor vehicles

Project description

Initial Situation

Currently the compressors waste heat is being utilized for:

- 23 MWh/year for household hot water (year-round)
- 19 MWh//year for heating of the old office building (seasonally)

Optimization

The regenerated waste heat can be utilized additionally for:

- Heating of the old production hall – 274 MWh /year (during winter season)
- Technological needs – 178 MWh/ year (year-round)

Effects

In result of the proposed energy-saving measure we could realize savings of 452 MWh/year by replacing electrical energy in the production process or gas for heating, with regenerated compressors waste heat.

Results

Form of energy	Heat recovery
Energy saving potential	452 MWh/year
Cost saving potential	26 230 EUR
CO_2 – saving potential	202 t/year
Project total costs	27 167 EUR
Payback period	1 year
Date of implementation	30.09.2016

WORKSHOP D

Energy efficiency in companies: Compressed air systems

PRACTICE EXAMPLE

Jiří Dušek

Cost savings in compressed air production in the company

Company:
Continental Automotive Czech Republic s.r.o.
Czech Republic

Sector:
Automotive

Products / Services:
Manufacture of high pressure pumps, turbo compressors, actuators and sensors

Project description

Initial Situation

Continental Automotive in Trutnov uses compressed air for its production process. The project objective is the reduction of costs of compressed air production at one section of Trutnov 1 plant.

Optimization

The objective was achieved by replacing the old compressors with more energy efficient ones, by modifying the compressed air drying process, by installing a master I&C system and by using waste heat from compressors for hot water preparation.

Effects

During expected operations the proposed measures can potentially save 624 MWh of electricity annually. That is 750 t CO_2/year.
The cost savings in compressed air production are 32 000 €/year.
All preparations for the use of waste heat from compressors have been made.
The potential savings in case of full recuperation are 28 370 €/year.

Results

Form of energy	Electricity
Energy saving potential	624 MWh/year
Cost saving potential	32 000 EUR/year
CO_2 – saving potential	750 t/year
Project total costs	115 000 EUR
Payback period	3.6 years
Date of implementation	compressed air - 2017 heat recuperation – project in progress

WORKSHOP D

Energy efficiency in companies: Compressed air systems

PRACTICE EXAMPLE

Wilhelm Fandler

Compressed air system optimization

Company:
Brigl & Bergmeister GmbH
Austria

Sector:
Paper industry

Products / Services:
Production of different types of label paper and further processing and refining

Project description

Initial Situation

Currently there are 3 air compressors with a total nominal power of 382 kW and a nominal capacity of 68.6 m³/min. Matched to the compressors there are 3 air dryers. The whole system has a yearly electricity consumption of 2 257 MWh. There is no utilization of the waste heat.

Optimization

There are different actions within the compressed air system, which lead to a reduction of energy consumption:

- Changing all three compressors to more efficient machines, one of them is a frequency-controlled compressor
- Installing only one central hybrid-dryer, instead of 3 single engines for each compressor
- Implementation of a heat recovery system for all 3 compressors

Benefits

Due to the high efficient compressors and the new dryer, we can achieve an average energy-saving of about 410 MWh/a electrical energy and a total heat recovery of 330 MWh/a.

Results

Form of energy	Electrical energy, Heat recovery
Energy saving potential	740 MWh/year
Cost saving potential	57 500 EUR/year
CO_2 – saving potential	210 t/year
Project total costs	500 000 EUR
Payback period	8.5 years
Date of implementation	2014

BLOCK 3
Wednesday, November 7th 2018
9.30 – 11.10

WORKSHOP E

Industry 4.0 /
Electrical Drives

Moderation:
Peter Sattler
sattler energie consulting GmbH
Austria

WORKSHOP E

Industry 4.0 /
Electrical Drives

IMPULSE SPEECH

Engelbert Lang

Company:
Siemens AG – Digital Factory Division
Germany

Integrated energy management in digital enterprise

Project description

Content

Digitization enables companies to transform their enterprise and to optimize their value chain with respect to shorter time-to-market, higher flexibility and better quality. Energy efficiency is one additional optimization criterion in this value chain. From product design and production planning up to engineering and production phase.

The digital twin of a plant can be used in many ways, e.g. to simulate and optimize all aspects of plant operation, including the aspect of energy efficiency.

In the engineering- and operation phase, an integrated energy management from machine up to the enterprise level is an important leaver to achieve higher energy efficiency in a digitized production environment. Important enablers are integrated metering hardware and integrated engineering – one standard engineering software for automation as well as energy management. Based on that and by means of seamless vertical integration a transparent operation is possible for immediate reaction and continuous optimization.

How this comes into reality will be shown. From cloud-based monitoring of the drive-chain up to the efficiency monitor for production machines and the plant-wide energy data management solution.

Digitization is the enabler for integrated energy management in the digital enterprise, energy efficiency as new DNA in each step of the value chain.
It is not only a vision but can already be implemented today.

Solutions

- Energy efficiency simulation and optimization in production planning, e.g. dairy plant or in automotive powertrain plant
- Integrated energy metering on field level
- Energy data management on plant and enterprise level
- Efficiency evaluation for production machines
- Digital Drive Train Services for higher availability and efficiency

WORKSHOP E

Industry 4.0 /
Electrical Drives

PRACTICE EXAMPLE

Daniel Gosse

Smart efficiency assistant helps saving energy costs in dairy production

Company:
Bosch Thermotechnology @ Bechtel private dairy
Germany

Sector:
Energy

Products / Services:
Steam boilers, hot water boilers, combined heat and power, waste heat recovery

Project description

Initial Situation

- Two 23 years old steam boilers supplying 16 tons of steam per hour, high annual energy costs
- Manual operation with old relays-operated controls, no touch displays, no connectivity or connection to production automation system

Optimization

- New steam boilers fully equipped with the newest efficiency modules: Economizer, combustion air preheating, multi-fuel burners with O2-combustion control, modulating burner fan, waste heat recovery for deaerator, adaptive desalting control
- New process heat controls and digital efficiency assistant with preventive maintenance, intelligent energy loss management, condition monitoring and remote connectivity to production automation system and company network

Effects

- More than 10% reduction in gas consumption and significant reduction of electric consumption of 64 kWh burner fans. Estimated savings 189 000 € per year, 0.7 years payback time for efficiency measures.
- Fully automatic control of process heat system and harmonization with production processes by connection to the production automation system.
- Efficiency assistant continuously monitoring sources of potential efficiency gains and providing proposals for the operator on how to implement the measures.

Results

Form of energy	Natural gas
Energy saving potential	2.1 MWh
Cost saving potential	189 000 EUR
CO_2 – saving potential	1 950 tons/year
Project total costs	250 000 EUR
Payback period	0.7 years (only efficiency measures)
Date of implementation	July 2017

WORKSHOP E

Industry 4.0 /
Electrical Drives

PRACTICE EXAMPLE

Zarko Trpkovski

Reconstruction of district heating substation for pump energy efficiency

Company:
Distribution of Heat Balkan Energy
Macedonia

Sector:
Department for investments and district heating network development

Products / Services:
Distribution of heat

Project description

Initial Situation

The heat transfer in the substation was direct with two mixing loops and two heating circuits. Each heating circuit had two pumps (active and spare). The pumps were from the same manufacturer, they had identical characteristics and significantly were oversized (noise has been detected in the heating installation of some tenants). During the heating season they have operated 24 hours per day, or in total 50% more time than necessary.

Optimization

The goal was rational and reduced power consumption of circulation pumps for hot water in the district heating substation with installed heat capacity of 2.4 [MW].

Effective operation and reduced power consumption will be achieved by the optimization of the pumps' work and pumps' operating time by installing regulation and measuring equipment (automatic balancing valves, temperature thermostat and valves for segregation).

Benefits

Situation 2013

- Installed heating capacity 2.8 [MW], active heating capacity 1.4 [MW] (upper part 751 [kW] & 561 [kW] lower part)
- Annual consumption of electric power 117.8 [MWh], around (16 913 EUR)
- Circulation pumps in district heating substations work 50% more than necessary during the heating season

Benefits 2015

- Annual electric power consumption of the existing circulation pumps 117.8 MWh
- 75 % power saving with pump bypassing and mounting temperature thermostat – 88.4 MWh

Results

Form of energy	Electrical energy (Circulation pump power)
Energy saving potential	88 400 kWh/year
Cost saving potential	12 685 EUR/year
CO_2 – saving potential	84 t/year
Project total costs	5 322 EUR
Payback period	0.42 years
Date of implementation	2015

WORKSHOP E

Industry 4.0 /
Electrical Drives

PRACTICE EXAMPLE

Andrei Gutu

Optimization of electric energy consumption for own needs

Company:
“Termoelectrica” Joint Stock Company
Moldova

Sector:
Combined heat & power, District Heating

Products / Services:
Production of electricity, production, transportation and distribution of thermal energy

Project description

Initial Situation

Considering the fact that the actual thermal load is smaller than the projected load, most pumps and fans are operating at medium load, which is 40% from the rated load. Thus, electricity consumption for own needs is about 10-12% from total electricity production, which should normally amount 4-6%.

Optimization

In order to reduce electricity consumption, „Termoelectrica” Joint Stock Company planned the installation of VSDs (Variable Speed Drives / frequency converters) for electric motors operating at small and variable loads.

Benefits

The implementation of this technical solution is planned for 2018-2019, the estimated annual savings are about 13.7 million kWh or € 1 035 000.

Results

Form of energy	Electrical energy
Energy saving potential	13.7 mln kWh/year
Cost saving potential	1 035 000 EUR/year
CO_2 – saving potential	2 768 t/year
Project total costs	2 180 000 EUR
Payback period	2.1 years
Date of implementation	September 2019

BLOCK 3
Wednesday, November 7th 2018
9.30 – 11.10

WORKSHOP F

Energy efficiency in companies: Steam / Process Heat / Heat Recovery

Moderation:
Boris Sučić
Jožef Stefan Institute
Slovenia

WORKSHOP F

Energy efficiency in companies: Steam / Process Heat / Heat Recovery

IMPULSE SPEECH

Marco Wagner

Company:
projects energy gmbh
Germany

Energetic optimization of process heat systems

Project description

Content

Steam

- Boiler house
- Steam distribution
- Condensate, steam traps

Process Heat

- Heat sources, heat sinks
- Heat recovery technologies
- High-temperature heat pumps
- Power from waste heat

Solutions

- Heat recovery in air conditioning plant
- Heat recovery from waste water
- Usage of kiln waste heat for heating of washing plants

WORKSHOP F

Energy efficiency in companies: Steam / Process Heat / Heat Recovery

PRACTICE EXAMPLE

Martin Vrba

Reducing the energy intensity of ceramic sludge drying by utilizing the waste heat of flue gases from gas kilns in the spray dryer

Company:
LASSELSBERGER, s.r.o.
Czech Republic

Sector:
Ceramic industry

Products / Services:
Wall and floor tiles

Project description

Initial Situation

The production of ceramic wall and floor tiles is a very energy-intensive process. It requires high consumption of electricity and especially high consumption of natural gas. In the initial situation the flue gases from burning kilns are exhaled into the atmosphere.

Optimization

The subject of the project the utilization of the energy potential of flue gases from burning gas kilns for the optimization of the ceramic sludge drying process in the spray dryer at the RAKO 3 plant of LASSELSBERGER, s.r.o. The intent is to use waste heat from the gas kilns and thereby reduce the consumption of natural gas in the spray dryer. The proposed measures will use waste energy from the end of the production process back at the beginning of the production process. The project involves installing of transport pipelines between burning kilns and the spray dryer as well as installing the flue gas cleaning device - fluorine filter.

Effects

The project will save the primary energy - natural gas as well as reducing CO_2 emissions.

Results

Form of energy	Natural gas
Energy saving potential	8 900 MWh/year
Cost saving potential	160 000 EUR/year
CO_2 – saving potential	1 800 t/year
Project total costs	1 030 000 EUR
Payback period	5 years
Date of implementation	4/2018

WORKSHOP F

Energy efficiency in companies: Steam / Process Heat / Heat Recovery

PRACTICE EXAMPLE

Roman Hutta

Reconstruction of steam and condensate loop of the paper machine

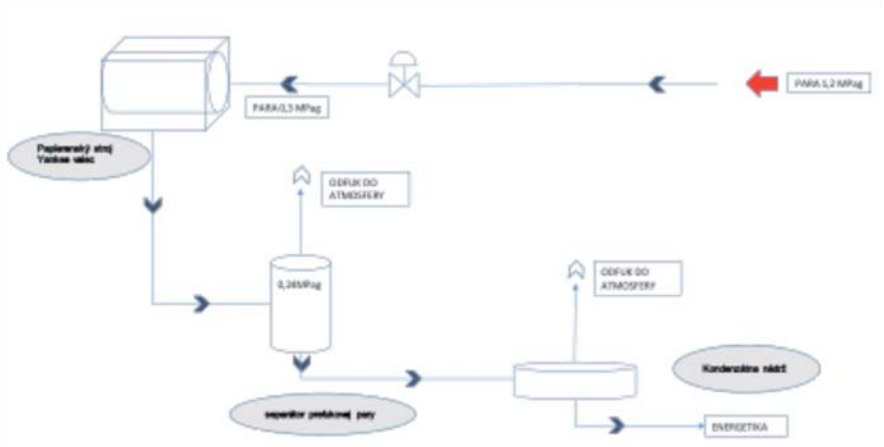
Company:
Spirax Sarco
Slovakia

Sector:
Manufacturing/Paper production

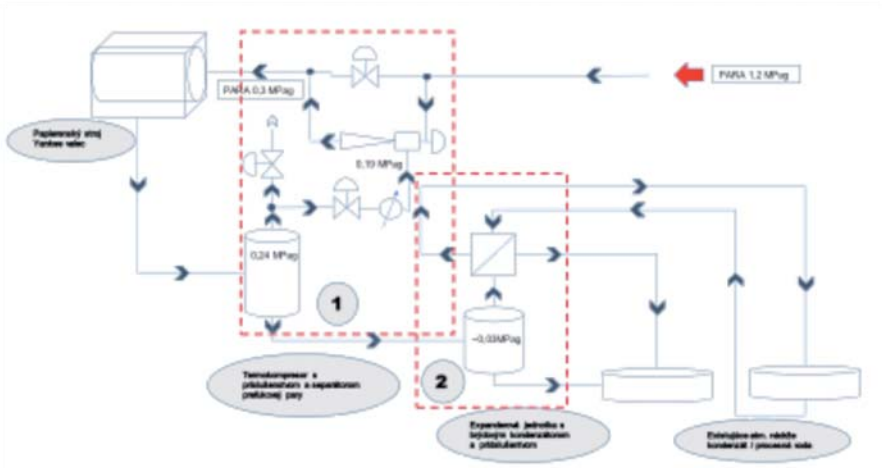
Products / Services:
Hygienic paper

Project description

Initial Situation:



Optimization



Benefits

The proposed measure is very simple and based on blow-off steam recovery which leads to a reduced demand for life steam used for heating. This is achieved by the installation of a thermal compressor with controls and other accessories. This arrangement is complemented with a system for the recovery of residual heat from pressurised condensate which consists of an expansion unit with the vapour condenser and the heat generated is used for warming up process water. Every kilogram of steam used in this way has not only economic and environmental benefits but it also reduces the quantity of boiler feed water the treatment of which is expensive.

WORKSHOP F

Energy efficiency in companies: Steam / Process Heat / Heat Recovery

PRACTICE EXAMPLE

Uroš Grošelj

Energy optimization of steam production and heat recovery in the largest bakery in the north east part of Slovenia

Company:
Resalta for Žito d.d.,
PE Kruh pecivo Maribor
Slovenia

Sector:
Manufacture of bakery and farinaceous products

Products / Services:
Manufacture of bread; Manufacture of fresh pastry goods and cakes

Project description

Initial Situation

Oversized steam boilers were installed and there were no heat recovery on existing process oil-fuelled boilers.

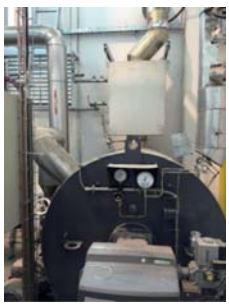
Optimization

The goal was to reduce the natural gas consumption for the process needs. The implemented solution included the replacement of the steam boilers (to suit the actual process needs) and installation of heat recovery units in oil-fired boilers to pre-heat the feed water for the steam boilers. Additionally, existing hot sanitary water treatment with steam was replaced with the existing hot water boiler (installed for heating purposes).

Efekty

Yearly reduction of natural gas consumption of more than 2 000 MWh.

New steam boiler station



Installed heat-recovery unit

Results

Form of energy	Natural gas
Energy saving potential	2 185 MWh/year
Cost saving potential	98 000 EUR/year
CO_2 – saving potential	437 t/year
Project total costs	170 000 EUR
Payback period	1.7 years
Date of implementation	November 2015

WORKSHOP F

Energy efficiency in companies: Steam / Process Heat / Heat Recovery

PRACTICE EXAMPLE

Michael Humer

Energy saving due to installation of a mash preheater in ethanol distillation

Company:
AGRANA Stärke GmbH
Austria

Sector:
Distilling industry

Products / Services:
Production of starch and starch products and other chemical products

Project description

Initial Situation

The temperature level of the alcoholic mash before entering the distillation column was about 55°C. The energy for preheating comes from the released condensation energy of the ethanol steam mixture. Due to the fact that the residual energy which was dissolved by cooling water was quite high the utilization of that energy by implementation of a heat exchanger was considered.

Optimization

To increase the efficiency in the ethanol distillery plant in Pischelsdorf an additional bundle-heat exchanger to preheat the mash shall be integrated. The alcoholic mash will be heated up by the condensing raw alcohol out of the mash stripper. Increasing of the average mash temperature from 55 °C up to 62 °C by heat recovery leads to an energy saving potential of 16 900 MWh/a.

Benefits

The temperature level of the mash before entering the distillation column increased after start-up of the heat exchanger from 55 °C to 60 °C. Therefore an energy saving of 10 115 MWh/a was realized.

Results

Form of energy	Steam
Energy saving potential	16 900 MWh/year
Energy saving realization	10 115 MWh/year
CO_2 – saving potential	1 932 t/year
CO_2 – saving realization	3 230 t/year
Project total costs	508 000 EUR
Date of implementation	15.12.2017

WORKSHOP F

Energy efficiency in companies: Steam / Process Heat / Heat Recovery

PRACTICE EXAMPLE

Michael Labek

Woodchip drying and underground buffer storage in a fortress hill

Company:
Bioenergie Kufstein GmbH
Austria

Sector:
Heating and cooling supply

Products / Services:
District heating and electricity from biomass (CHP)

Project description

Initial Situation

The plant consists of a boiler with almost 28 MW thermal output and a downstream steam turbine with about 5 MW electrical peak power. The residual heat is fed into the district heating network. Currently, the waste heat from the CHP and the boiler house is not used and partially cooled with river water. For firing, wood chips with residual moisture of 48% to 55% are used. For peak load coverage, additional gas boilers are used. The use of wet wood chips does not only reduce the efficiency of the boiler but it may cause losses because of rotten wood. In summer, the system has a low electrical efficiency in base load operation. The waste heat from the buildings is not used.

Optimization

With the wood chip drying, unused heat from the CHP and the boiler house can be sensibly used. The boiler efficiency increases and the material consumption decreases. A buffer in the fortress hill of Kufstein could smooth the load spikes and lower the gas consumption.

Benefits

- Material savings of 4% per year
- Boiler efficiency increased by 0.8%
- Use of unused waste heat
- Shaving of the load peaks in winter
- Reduction of gas consumption

Results

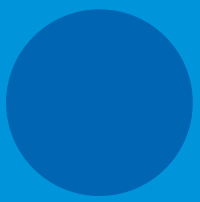
Form of energy	combined heat and power from biomass
Energy saving potential	3 700 MW/year
Cost saving potential	132 000 EUR/year
CO_2 – saving potential	Electricity: 0.302 kg/kWh * -378 720 kWh = -114 tons Natural gas: 2.467 kg/m³ * 49 800 m³ = 122 tons District heating: 0.191 kg/kWh * (720 MWh + 3 700 MWh) = 844 tons Total: 852 tons/year
Project total costs	409 000 EUR
Payback period	3.1 years
Date of implementation	2019

EUREM Awards 2018

SMALL ENTERPRISES

MEDIUM ENTERPRISES

LARGE ENTERPRISES

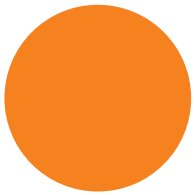


EUREM AWARDS 2018

Results

There were 30 energy efficiency projects in total nominated by 10 EUREM training organizers worldwide for the EUREM Awards 2018. 12 EUREM member states voted on these nominations. Here are the results:

SMALL ENTERPRISES

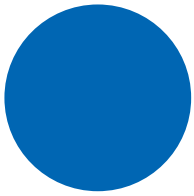


Grošelj Uroš, Slovenia
Hau Thomas, Germany
Hutta Roman, Slovakia
Labek Michael, Austria

MEDIUM ENTERPRISES

ElMolla Hossam Ahmed, Egypt
Humer Michael, Austria
Koparanov Georgi, Bulgaria

LARGE ENTERPRISES



San Mateo Julian, Spain
Segovia Andrés, Argentina
Scheer Peter, Austria
Vrba Martin, Czech Republic

SMALL ENTERPRISES

Uroš Grošelj

Energy optimization of steam production and heat recovery in the largest bakery in the north east part of Slovenia

Company:
Žito d.d., PE Kruh pecivo Maribor
Slovenia

Products/Services:
Manufacture of bread; manufacture of fresh pastry goods and cakes

No. of employees:
100

Energy concept description

The goal was to reduce the natural gas consumption for process needs.

Existing situation

5x too big steam boilers are installed & there is no heat recovery on existing process thermal oil boilers.

Solution

Replacement of steam boilers (dimensioned to real process needs) and installation of heat recovery units in thermal oil boilers with the aim of pre-heating of steam boilers feeding water. More, existing hot sanitary water treatment with steam will be replaced with existing hot water boiler (installed for heating purposes).

Effect

Yearly reduction of natural gas consumption for more than 2 000 MWh.

Results

Form of energy	Natural gas
Energy saving potential	2 185 MWh/year
Cost saving potential	98 000 EUR/year
CO_2 – saving potential	437 t/year
Project total costs	170 000 EUR
Payback period	1.7 Years
Date of implementation	November 2015

Results: period gas consumption measurements show even better results as predicted (depends on production)

SMALL ENTERPRISES

Thomas Hau

Environmentally compatible design of water pumps in the supply network

Company:
OsthessenNETZ GmbH
Germany

Products/Services:
Electricity, gas and water network operators

No. of employees:
250

Energy concept description

The pump systems in the water supply network are not yet controlled intelligently. It takes stock of the technical equipment to know the actual state. By calculating the best hydraulic efficiency of the pumps, the pump systems that have the largest deviations from the best point (BEP) become visible. In these a digital flow measurement including frequency converter is installed so that the pumps are only operated if water is needed. By means of the intelligent control of flow measurement and frequency converter, the greatest technical and economic benefit can be achieved. After implementing the measures, the West XII well saves 163 MWh of energy per year and reduces 85 t of CO2, resulting in an energy price of € 0.197 / kWh for € 32 000.

Results

Form of energy	Electrical power
Energy saving potential	163 MWh/a
Cost saving potential	32 000 EUR/year
CO_2 – saving potential	85 t/a
Project total costs	6 043 EUR
Pay-back time	0.3 Years

SMALL ENTERPRISES

Roman Hutta

Reconstruction of steam and condensate loop of the paper machine

Company:
Spirax Sarco
Slovakia

Products/Services:
Hygienic paper

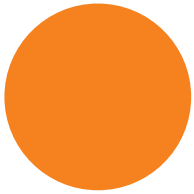
No. of employees:
200

Energy concept description

The purpose of the reconstruction of steam and condensate loop is to increase energy efficiency which means to maximalize the usage of potential in supplied heat energy. The basic situation and potential is given by the venting of blowthrough and flash steam into atmosphere. Solution proposal is simple and is based on recovering of blowthrough steam in technological process which means reduction of direct boilerhouse steam consumption. This is assured by means of installation controlable thermocompressor with accessories. Consequently this solution is completed with a flash steam recovery unit which consists of flash vessel with exhaust vapour condenser and the heat is used for process water heating. Every kilogram of flash steam used in this way is a kilogram of steam that does not need to be supplied by boiler- this is not only economical and environmental benefit, but it also reduces the quantity of expensive boiler feed water.

The proposed solution will save totally 7 460 MWh per year, which means 44% of costs for heat energy production in comparison to measured year 2015. These arrangements consists of thermocompressor installation and flash steam recovery unit have a high degree of the return on investment and payback time is 8 months only.

SMALL ENTERPRISES



Michael Labek

Woodchip drying and underground buffer storage in the fortress hill

Company:
BIOENERGIE Kufstein GmbH
Austria

Products/Services:
District heating and electricity from biomass

No. of employees:
9

Energy concept description

Aims

Reduction of wood chips consumption
Use of unused heat
Improvement of boiler efficiency
Load peaks should be smoothe
Reduction of gas consumption

Base situation

The plant consists of a boiler with a firing capacity of almost 28 MW/h thermal and a downstream steam turbine with about 5 MW/h of electrical peak power. The residual heat is fed into the district heating network. Currently, the waste heat from the CHP and the boiler house is not used and partially cooled with river water. For firing, wood chips with a residual moisture of 48% to 55% are used. For peak load coverage, additional gas boilers are used.

Optimization potentials / weak points

The use of wet wood chips not only reduces the efficiency of the boiler but also makes it possible to lose rotten wood. In summer, the system has a low electrical efficiency in base load operation. The waste heat from the buildings is not used.

Proposals of solution / Optimization possibilities

With the woodchuck drying, unused heat can be sensibly used. The boiler efficiency increases and the material consumption decreases. A buffer could smooth the load spikes and lower gas consumption.

Effects

- Material savings of 4% per year
- Boiler efficiency increased by 0.8%
- Use of unused waste heat
- Smoothing the load peaks in winter
- Reduction of gas consumption

Results

Form of energy	Natural gas
Energy saving potential	3 700 MWh/a
Cost saving potential	132 000 EUR/year
CO_2 – saving potential (according to CO_2 calculator Environment Federal Office, UBA)	Electricity: 0.302 kg/kWh * -378 720 kWh = -114 tons Natural gas: 2.467 kg/m³ * 49 800 m³ = 122 tons District heating: 0.191 kg/kWh * (720 MWh + 3 700 MWh) = 844 tons Total: 852 tons/year
Project total costs	409 000 EUR
Payback period	3.1 Years

MEDIUM ENTERPRISES

Ahmed Hossam ElMolla

Data Center DC Stations Enhancement

Company:
Vodafone
Egypt

Products/Services:
Telecommunication services

No. of employees:
6000

Energy concept description

According to the current technology of the DC stations which as data centers power source, the criticality of load restricts some level of continuous secured power energy like dual source, which perform inefficient for the low loading (40%).

The main target of the energy concept is to replace the old technology DC power station with new and intelligent technology DC power station to optimize efficiency under low loading and keep the load dual source.

After that we can reduce DC power modules to increase loading level and decrease no load consumption in other DC modules by activate new technology called Echo Mode. Which will affect the operating costs, energy consumption, greenhouse gases in the generation sites and reduce the required storage backup time of the DC power stations.

Results

Form of energy	Electrical power
Energy saving potential	2 306 MWh/a
Cost saving potential	99 918 EUR/year
CO_2 – saving potential	1 335 t/a
Project total costs	575 354 EUR
Payback period	5.8 Years
Date of implementation	2017
Project life time	10 years

MEDIUM ENTERPRISES

Michael Humer

Energy saving due to installation of a mash preheater in ethanol destillation

Company:
AGRANA Stärke GmbH
Austria

Products/Services:
Production of starch and starch products and other chemical products

No. of employees:
960

Energy concept description

Aim

Increasing of the average mash temperature by heat recovery out of the ethanol-steam mix of the mash stripper from 55 °C up to 62 °C.

Base situation

Preheating of fermented mash at 55°C before distillation.

For increasing the efficiency in the ethanol distillery in plant Pischelsdorf an additional bundle-heat exchanger to preheat the mash shall be integrated. The alcoholic mash will be heated up by the condensing raw alcohol out of the mash stripper.

Results

Form of energy	District heating
Energy saving potential	16 900 MWh/a
Cost saving potential	845 800 EUR/year
CO_2 – saving potential	3 230 t/a
Project total costs	508 000 EUR
Payback period	0.6 Years
Date of implementation	15.12.2017

MEDIUM ENTERPRISES

Georgi Koparanov

Year-round utilization of the waste heat generated by the air compressors

Company:
Magna Powertrain Plovdiv EOOD
Bulgaria

Products/Services:
Manufacture of other parts and accessories for motor vehicles

No. of employees:
450

Energy concept description

Aims

Utilization of compressors´ waste heat for the whole year.

Base situation

Currently the compressors´ waste heat is being utilized for:

- about 23 MWh/year for household hot water (year-round)
- about 19 MWh/year for heating of the old office building (seasonally)

Optimization potentials / weak points

The utilization potential of waste heat regenerated yearly by the air compressors is 750 MWh/year, or monthly - 62 MWh/month

Proposals of solution /possibilities

The regenerated waste heat can be utilized additionally for:

- Heating of the old production hall – 274 MWh/year (during winter season)
- Technological needs – 178 MWh/year (year-round)

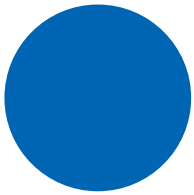
Effects

In result of the proposed energy-saving measure we could realize savings of 452 MWh/year by replacing electrical energy in the production process or gas for heating, with regenerated compressors´ waste heat.

Results

Form of energy	Electrical power
Energy saving potential	452 MWh/a
Cost saving potential	26 230 EUR/year
CO_2 – saving potential	202 t/a
Project total costs	27 167 EUR
Payback period	1.0 Years
Date of implementation	30.09.2016

LARGE ENTERPRISES



Julian San Mateo

Energy efficiency on lighting improvement of automotive industry

Company:
CONTINENTAL AUTOMOTIVE SPAIN, S.A
Spain

Products/Services:
Automotive

No. of employees:
600

Energy concept description

Optimization from the point of view of energy efficiency of the lighting system of the two warehouses of the plant, warehouse of raw material and finished product.

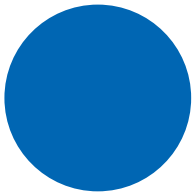
Both warehouses have an area of 1 500m² and 70 halogen-type luminaries with a unit consumption of 400w.

The project consists in designing a lighting system of lower consumption based on the installation of LED luminaries and automatic ignition systems by presence and twilight detectors.

Results

Form of energy	Electrical power
Energy saving potential	193 MWh/a
Cost saving potential	38 000 EUR/year
CO_2 – saving potential	56 t/a
Project total costs	30 000 EUR
Return of investment	1.6 Years

LARGE ENTERPRISES



Andrés Segovia

Heat recovery in the process of making "dulce de leche"

Company:
MASTELLONE HNOS
Argentina

Products/Services:
Dairy products

No. of employees:
3 500

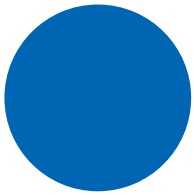
Project description

The proposal consists of the recovery and use of the heat lost in the process of making "dulce de leche". The preheating of the syrup that enters the pails with the heat provided by the sweet that comes out of them, through an intermediate fluid is proposed, achieving savings in the consumption of heating steam, a reduction in the consumption of cooling water and the reduction of cooking time in the pails and the consequent increase in productivity.

Results

Energy saving potential	1 018 MWh/a
Cost saving potential	35 000 EUR/year
CO_2 – saving potential	267 t/a
Project total costs	48 400 EUR
Payback period	2.2 Years

LARGE ENTERPRISES



Peter Scheer

Reduction of load peaks by using a storage battery fed by PV

Company:
Rewe International AG
Austria

Products/Services:
Food retail market

No. of employees:
42.800 (in Austria)

Energy concept description

Aims

Reduction of load peaks in stores of at least 10 kW as well as covering a part of the yearly power consumption through a PV-system.

Base situation

An average store has an usage of about 284 000 kWh of a yearly power consumption and a monthly load peak up to 80 kW.

Optimization potentials / weak points

The load peaks occur in the early morning. Around this time it is not possible for them to be reduced by using only the PV-system.

Proposals of solution / Optimization possibilities

Additionally to the PV-system a storage battery is going to be installed. This will charge the PV-system during the off-peak period.

Effects

Through the PV-system up to 15% of the electricity purchase from the grid through renewable energy can be replaced and an additional load peak of 10 – 15 kW can be reduced. These measurements can be carried out in many locations in Austria. The potential is estimated with 250 locations.

Results

Form of energy	Electrical power
Energy saving potential	8 750 MWh/a
Additionally through Energy project installed renewable Energy	35 x 250 MWp
Cost saving potential	1 037 500 EUR/year (cost reduction for power consumption and peak load)
CO_2 – saving potential	1 164 t/a
Project total costs	6 975 000 EUR
Payback period	6.7 Years

LARGE ENTERPRISES

Martin Vrba

Reducing the energy intensity of ceramic sludge drying by utilizing the waste heat of flue gases from gas kilns in the spray dryer

Company:
LASSELSBERGER, s.r.o.
Czech Republic

Products/Services:
Wall and floor tiles

No. of employees:
1 570

Project description

The production of ceramic wall and floor tiles is a very energy-intensive process. It requires high consumption of electricity and especially high consumption of natural gas.

The subject of the project is utilization of the energy potential of flue gases from burning gas kilns for optimization of the ceramic sludge drying process in the spray dryer at the RAKO 3 plant of LASSELSBERGER, s.r.o. The project will save the primary energy - natural gas. The intent is to use waste heat from the gas kilns and thereby reduce the consumption of natural gas in the spray dryer. The proposed measures will use waste energy from the end of the production process back at the beginning of the production process.

Results

Form of energy	Natural gas
Energy saving potential	8 900 MWh/a
Cost saving potential	160 000 EUR/a
CO_2 – saving potential	1 800 t/a
Project total costs	1 030 000 EUR
Payback period	5.0 Years

The European Commission or EASME and DTIHK do not accept responsibility for any use made of the information contained in this broschure.

This project is funded by the European Union

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