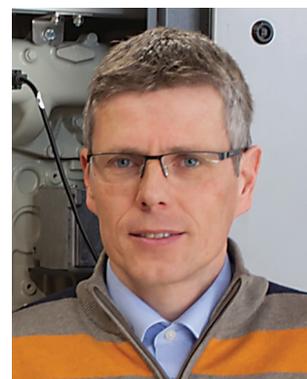


ENERGY EFFICIENCY CENTRE

EEC

The basic activities of the Energy Efficiency Centre are in efficient energy use, long-term planning in energy and the reduction of greenhouse-gases emissions. The centre is a focal point for the collection and transfer of energy-efficiency technologies to energy users, the state, energy service and equipment providers, and other interested agencies. At the same time, it covers the environmental effects of energy use and conversion. The most significant part of the EEC's activities is thus cooperation with state institutions in the preparation of strategic documents and legislation in the field of efficient energy use, energy planning, distributed electricity production, and emissions trading. Nevertheless, it still remains strongly connected, by its consulting and training role in energy, with industrial companies and other institutions as well as also being more and more involved in European research projects.



Head:
Stane Merše, M. Sc.

Energy and the environment

In 2016 the Energy Efficiency Centre with its professional work ensured high-quality support to ministries in the preparation of the strategic development documents and transfer of EU legislation in the field of energy planning, energy efficiency, use of renewables and greenhouse-gases emissions and the reduction of other pollutants.

Slovenia has ambitious goals in the framework of climate energy policy regarding an increase of energy efficiency, the exploitation of renewable energy sources (RES) and a reduction of greenhouse-gases emissions. Energy efficiency is a priority field to achieve these goals, in accordance with the demands of the European Commission and the directive on energy efficiency (2012/27/EU). In accordance with this directive a report on carrying out the Action plan for energy efficiency for the period 2014–2020 was elaborated. The EEC also cooperated in the updating of the Action plan for renewable sources for the period 2010–2020 and inclusion in the procedure for the integrated assessment of impacts on the environment. The EEC was also included in the updating of the national long-term strategy for the promotion of investments in the energy renovation of buildings.

The EEC cooperates with the Statistical Office of the Republic of Slovenia, where it prepares a model calculation for fuels and energy use in households for the national energy statistics.

Also in 2016, the centre continued with activities of the state referential centre for energy with the preparation of an expanded set of indicators for energy and the environment.

In the field of greenhouse-gases emissions reduction, the activities of the Centre for the Ministry of Environment and Space focused on the preparation of the Second annual report on carrying out the Operative programme of measures for the reduction of GHG emissions for the period 2013–2020, updating of GHG emissions projections by 2035 and the preparation of analytical bases for international reporting in the framework of the MMR mechanism. A professional support for the design of goals and national policy concerning pollutants from the NEC directive up to 2030 continued and a detailed study of transit road and impacts on motor fuel sales in Slovenia was elaborated (Figure 1).

Promotion of efficient energy use and energy consulting

The Energy Efficiency Centre in 2016 continued with its training activities where the ninth cycle of energy managers training was successfully concluded within the European programme EUREM. Due to a very positive reaction of participants and their interest (in Slovenia there is already more than 190 energy managers with the

Research and development work of the Energy Efficiency Centre is an important contribution to the preparation of key documents in Slovenia in the field of energy development, energy efficiency, renewables exploitation and the transition of Slovenia to a low-carbon society. With training activities and support to industry it significantly contributes to an increase in competitiveness and development restructuring.

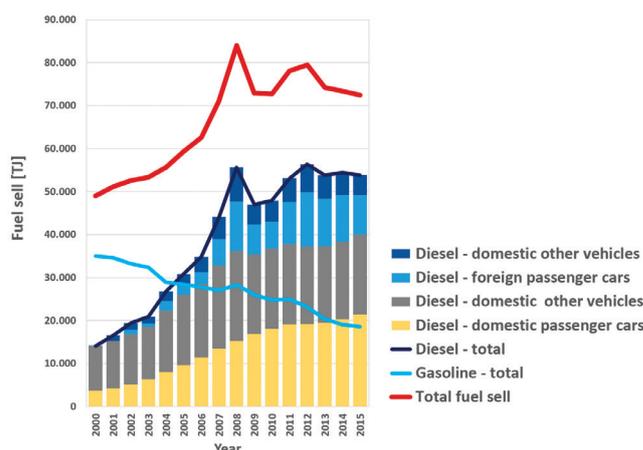


Figure 1: Trends of fuel sales in road transport in Slovenia - increase of diesel fuel use for personal vehicles and transit transport.



Figure 2: Four European award EUREM winners in 2016: Goran Matešić (Luka Koper), Drago Zupanc (Maksim), Kristijan Plesnik (Metal Ravne) and Jani Uranič (Xella porobeton) and their mentors at the Annual conference of European energy managers in Berlin

EUREM licence), it is clear that there is a great need for such training. High-quality knowledge in this field is of key importance for the execution of efficient solutions in practice.

This year an intensive development of the GIS tool for the spacial analysis of heat consumption in buildings (“heatmap”) has been going on. With the elaboration of spacial analysis of heat use and production concept for the preparation of the local energy concept it has been tested as a pilot project in the Municipality of Maribor (Figure 3).

In 2016 the Energy Efficiency Centre carried out several consulting tasks in industry and the public sector, where with the study of optimization of energy system started the cooperation with the company KOTO. The professional cooperation with Luka Koper, Energetika Ljubljana, BTC, etc. continued. For the company Petrol Energetika Ravne an elaboration of a study for the introduction of advanced energy services for industry and the local community, which are based on smart energy networks, started.

The centre continued professional cooperation with the company Petrol d.d. in carrying out the largest programme of large consumers to ensure energy savings for end users. The centre prepared the programme for the eighteenth conference “Energy Managers Days”, the annual meeting of energy managers with more than 200 participants confirms the quality and public profile of the EEC professional work.

International cooperation

In 2016 the EEC carried out as many as 7 international projects, financed from the European Union resources in the framework of HORIZON 2020 and programme Intelligent Energy for Europe.

Projects cover activities in the fields of:

- compiling and elaboration of current data on renewable energy sources use (EurObserv`ER Barometer),
- carrying out the EU directive on energy efficiency (CA - EED),
- carrying out the EU directive on renewable energy sources (CA - RES),
- monitoring of indicators for energy use and energy efficiency in the EU (ODYSSEE MURE 2012).
- Energy contracting Plus (EPC Plus)
- Promotion of the introduction of energy contracting in the public and private sectors in the EU (guarantEE),
- Tool for the evaluation of the suitability of integrated energy retrofit (ENERFUND).

Projects include cooperations with research and development organisations from Europe with a strong emphasis on concrete applications and the promotion of energy efficiency. In the framework of each project the EEC staff took part in numerous foreign professional meetings and visits.

Some outstanding achievements in the past year

1. Preparation of several key support documents for the government of the Republic of Slovenia in the field of energy policy (Green paper and strategic studies for the National Energy Programme), energy efficiency (First and Second National Action Plan for Energy Efficiency), renewable energy sources (Action Plan for Renewable energy sources for the period 2010–2020) and climate policy (Operative programme of GHG emissions reduction up to 2020).

for Renewable energy sources for the period 2010–2020) and climate policy (Operative programme of GHG emissions reduction up to 2020).

2. Establishment of energy managers training in the framework of the European project EUREM and professional support to industry and other institutions by carrying out energy audits, feasibility studies and other consulting (Goodyear, TE-TOL, Luka Koper, Salonit Anhovo, Telekom Slovenije, Letrika–Mahle, BTC, KOTO, etc.).

3. In the framework of the European project Transparens the EEC led, very successfully, the preparation of the European code of Conduct for energy contracting. The Code identifies the basic values and principles, which are of key importance for the successful preparation and carrying out of projects with third-party financing. The Code was very successfully accepted at the European level and currently already has 171 signatories, among them also the European association of companies for energy services (eu.ESCO) and the European federation for intelligent services of energy efficiency (EFIEES), supported also by the European Commission. In Slovenia the code was already tested in practice in a project of integrated energy renovation of the municipal building of the municipality Brda.



Figure 3: Spacial analysis of heat use in the area of Maribor: annual heat use in buildings, space density of heat use, types of heating appliances and energy infrastructure (distribution network of district heating and natural gas).

Awards and appointments

1. Award TARAS – for successfully carrying out the project for the useful exploitation of waste heat in the steel industry in a district heat system in Ravne na Koroškem, which is a recognition for the most successful cooperation of economic and scientific research work

Organization of conferences, congresses and meetings

1. Energy Managers Days 2016 – 18th meeting of Slovenian energy managers, Portorož, 19. – 20. 4. 2016
2. Partnerships of small and medium enterprises (SMEs) for standardized energy contracting, Ljubljana, 14.10.2016
3. European energy managers, Ljubljana, 13.-15.1.16, 2.-4.3.16, 16.-18.3.16, 12.-15.4.16



Figure 4: EEC and companies Petrol Energetika and Metal Ravne were awarded a prize TARAS for successfully carrying out a project for the useful exploitation of waste heat from the steel industry in the system of district heating in Ravne na Koroškem, which is a recognition for the most successful cooperation of economy and scientific research work in the field of innovations, development and technologies.

INTERNATIONAL PROJECTS

1. IEE; EurObservER, The EurObserv'ER Barometer (2013-2016)
Matjaž Česen, B. Sc.
European Commission
2. H2020 - EPC_PLUS; Energy Performance Contracting Plus
Damir Staničič, M. Sc.
European Commission
3. H2020 - ENERFUND; An ENERgy Retroit FUNding rating tool
Peter Bevk, B. Sc.
European Commission
4. H2020 - ODYSSEE-MURE; ODYSSEE-MURE, A Decision Support Tool for Energy Efficiency Policy Evaluation
Dr. Fouad Al-Mansour
European Commission
5. H2020 - guarantEE; Energy Efficiency with Performance Guarantees in Private and Public Sector
Damir Staničič, M. Sc.
European Commission

RESEARCH PROGRAM

1. Modelling and environmental impact assessment of processes and energy technologies
Dr. Fouad Al-Mansour

NEW CONTRACTS

1. A supermonitoring of the guarantee measurements of the Flue Gas Desulphurization Plant of unit 6 of the Šoštanj Thermal Power Plant
Boris Sučić, M. Sc.
Teš d. o. o.
2. Elaboration of a study of energy system optimization
Stane Merše, M. Sc.
Koto d. o. o.
3. Concerted action in the field of the Directive on end energy efficiency (CA ESD II)
Damir Staničič, M. Sc.
Ministry for Infrastructure and Spatial Planning
4. Allocation of financial means and cooperation in the European project Concerted action in the field of the RES II directive
Damir Staničič, M. Sc.
Ministry for Infrastructure and Spatial Planning
5. Action plan for energy efficiency and reporting on its carrying out
Damir Staničič, M. Sc.
Ministry for Infrastructure and Spatial Planning
6. Framework agreement on the professional advising in the field of cogeneration
Stane Merše, M. Sc.
Energetika Ljubljana, d. o. o.
7. Updating, Upgrading and Publishing on the Web of Energy and Environment Indicators 2015 and preparation of a framework proposal for the publication Environment and energy in Slovenia
Matjaž Česen, B. Sc.
Ministry for Environment and Spatial Planning

8. Strategic Studies for the Revision of the NEC Directive, Questionnaires CLRTAP and Improvement of Emission Inventory
Matjaž Česen, B. Sc.
Ministry for Environment and Spatial Planning
9. Inclusion in the procedure of integrated assessment of impacts on the environment for an updated Action plan for RES for the period 2010 – 2020
Andreja Urbančič, M. Sc.
Ministry for Infrastructure
10. Preparation of the second two-year report of developed countries for carrying out of the Kyoto Protocol in accordance with relevant conclusions of the Conference of the Parties of the UN Framework Convention on Climate Change
Andreja Urbančič, M. Sc.
Ministry for Environment and Spatial Planning
11. Preparation of the tender ELENA for acquiring grants for carrying out Preparation and financing of investments in sustainable energy in littoral municipalities
Damir Staničič, M. Sc.
Golea, Nova Gorica
12. Strategic studies for elaboration of a report on measures for the reduction of greenhouse gases emissions and projections of GHG emissions, Second annual report on carrying out of the Operative programme of emissions reduction measures
Andreja Urbančič, M. Sc.
Ministry for Environment and Spatial Planning
13. European energy manager IX
Stane Merše, M. Sc.
14. Energy managers days
Časnik Finance
Stane Merše, M. Sc.
15. Refreshment, Upgrading and Publishing on the Web of Energy and Environment Indicators 2015
ARSO
Matjaž Česen
16. Energy Consumption of Slovenian Households Based on Model Calculation for 2015
SURS
Matjaž Česen
17. Improvement of model data on energy use in transport and impact of transit transport
MOP
Matjaž Česen
18. Preparation of strategic studies for elaboration of strategic documents, action plans and measures from the field of energy
Mzl
Stane Merše, M. Sc.
19. Elaboration of the concept of space analysis of heat consumption and production for carrying out of the local energy concept of the Municipality of Maribor
JP Energetika Maribor d.o.o.
Damir Staničič
20. Study of the natural gas consumption in the Coastal-Karst region
Plinovodi d.o.o.
Stane Merše, M. Sc.
21. Elaboration of a concept of introduction of advanced energy services and solutions for industry and local communities based on smart energy grids
Petrol Energetika Ravne
Aleš Podgornik, M. Sc.
22. Refreshment, of indicators from the field of Environment and Energy for the needs of the report on Environment for 2017
MOP
Matjaž Česen

STAFF

Researchers

1. Dr. Fouad Al-Mansour
2. Stane Merše, M. Sc., Head
3. Damir Staničič, M. Sc.
4. Andreja Urbančič, M. Sc.

Technical officers

5. Matjaž Česen, B. Sc.
6. Jure Čizman, M. Sc.
7. Polona Lah, B. Sc.
8. Marko Pečkaj, B. Sc.

9. Barbara Petelin Visočnik, M. Sc.
10. Aleš Podgornik, M. Sc.
11. Dr. Matevž Pušnik
12. Boris Sučić, M. Sc.

Technical and administrative staff

13. Peter Bevk, B. Sc.
14. Marko Đorić, B. Sc.
15. Roza Pergarec, B. Sc.
16. Igor Ribič

BIBLIOGRAPHY

ORIGINAL ARTICLE

1. Matevž Pušnik, Fouad Al-Mansour, Boris Sučić, Andrej Gubina, "Gap analysis of industrial energy management systems in Slovenia", *Energy (Oxford)*, vol. 108, pp. 41-49, 2016.
2. Boris Sučić, Fouad Al-Mansour, Matevž Pušnik, Tomaž Vuk, "Context sensitive production planning and energy management approach in energy intensive industries", *Energy (Oxford)*, vol. 108, pp. 63-73, 2016.

PUBLISHED CONFERENCE CONTRIBUTION

1. Viktor Jejčič, Fouad Al-Mansour, Tomaž Poje, "Ogljični odtis sadjarske pridelave", In: *Actual tasks on agricultural engineering: Proceedings of*

the 44th International symposium on agricultural engineering, Opatija, Croatia, 23rd-26th february 2016, pp. 447-457.

2. Aleš Podgornik, Boris Sučić, Boštjan Blažič, "Effects of customized consumption feedback on energy efficient behaviour in low-income households", In: *SDEWES 2014, 9th Conference on Sustainable Development of Energy, Water and Environment Systems*, Istanbul-Venice, September 20-27, 2014, *J. Clean. Prod.*, vol. 130, pp. 25-34, 2016.

MENTORING

1. Matevž Pušnik, *Contextual model of energy use in industry*: doctoral dissertation, Ljubljana, 2016 (mentor Andrej Gubina).
2. Kristijan Lesan, *Recommissioning for more efficient use of energy in non-residential buildings*: master's thesis, Krško, 2016 (mentor Zdravko Praunseis; co-mentor Boris Sučić).