

ENERGY EFFICIENCY, ENVIRONMENTAL PROTECTION AND SUSTAINABLE DEVELOPMENT IN Kragujevac (SERBIA)

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Abstract

This paper presents a methodology development and the results achieved in the process of establishing energy management system in the City of Kragujevac (Serbia) and in its public services. The paper is an overview of influential factors in the field of energy management, analyzing their impact on raising the energy efficiency of individual utility service and the city of Kragujevac, as a whole. The paper also presents the most interesting scientific and research projects realized in the cooperation of several actors which were coordinated by Regional Euro Energy Efficiency Center Kragujevac. The municipal companies together with the city administration are the direct beneficiaries of the results realized in the following areas:

- Development of energy management in municipalities and the establishment of energy planning at the local level;
- Improvement of municipal services by applying energy efficiency measures in public enterprises:
 - "Energetika" (heating),
 - "Cistoca" (communal waste management),
 - "Vodovod i kanalizacija" (water and waste water management);

Promotion of ideas and projects realized in the field of energy management, environmental protection and sustainable development at the Festival of energy efficiency (starting from this year) held during the April.

Keywords: energy efficiency, sustainable development, public utility municipality

1. Introduction

Department of Energy and Process Engineering (DEPE) of Faculty of Mechanical Engineering in Kragujevac have been aware of the development trends and the load to which is exposed modern energy sector in the world and also in Serbia. In accordance with their scientific and technical findings DEPE adopted appropriate strategic plans of its operation and special emphasis was given to:

- Improving the quality of teaching and raising the popularity of studies of energy and process engineering;

- Educational, scientific and professional fostering of energy efficiency, renewable energy sources, environmental protection, modern methods of management of energy and environmental projects, and financial engineering in the field of energy and process technology, as the infrastructure of teaching and research areas in basic courses, master and doctoral studies;
- Inclusion of students in the implementation of local, regional, national and international projects;
- The creation of appropriate internationally applicable forms of organization for the inclusion of productive research potential of DEPE in the strategic development plans at the local, regional, national and international level and
- Taking appropriate recognizable unpretentious marketing-media niche in the territory of the Republic of Serbia and southeastern Europe.

This position and long term action of DEPE, which some authors now call "the new engineering school", made a number of interesting results to:

- Popularization of studies of energy and process engineering (Figure 1),
- Increasing interest of students for team work and R&D projects and energy and process engineering and
- Inclusion of researchers and students in the implementation of all major projects that are realized on the territory of the City of Kragujevac, Sumadija and Pomoravlje and the Republic of Serbia.

As a special result of DEPE new work methodology and its market-oriented organizational units (REEECKG) we are considering the fact that the administration of the City of Kragujevac and its municipal companies understood the importance and the need to implement in the strategy of development of the city following principles: new policies and principles for improving the energy efficiency of the public and manufacturing sectors, principles wide spread use of renewable energy sources and principles of environmental protection and sustainable development. Signing of the memorandum and agreement/contract on the establishment of permanent/long term business cooperation with the SEEA and REEECKG, City of

