



University of Banja Luka  
Faculty of Mechanical Engineering  
26<sup>th</sup> - 28<sup>th</sup> May 2011

# DEMI 2011

*10<sup>th</sup> Anniversary International Conference  
on Accomplishments in  
Electrical and Mechanical Engineering and  
Information Technology*

# PROCEEDINGS

## ZBORNIK RADOVA

BANJA LUKA, May 2011.



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**PROCEEDINGS OF THE 10<sup>th</sup> ANNIVERSARY INTERNATIONAL CONFERENCE ON  
ACCOMPLISHMENTS IN ELECTRICAL AND MECHANICAL ENGINEERING AND  
INFORMATION TECHNOLOGY**

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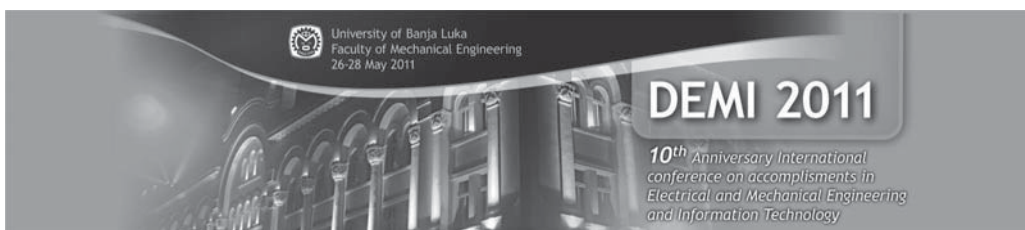
This year, the 10<sup>th</sup> Anniversary International Conference on Accomplishments in Electrical, Mechanical Engineering and Information Technology DEMI is going to be held. The number of countries taking part in DEMI is increasing so this year scientists and researchers from 17 countries are going to take part. This modest jubilee, but with a considerable number of participants, points to the fact that that DEMI Conference is becoming an internationally recognized conference with respectable participants from technologically developed countries.

The first DEMI Conference was held in 1998 and was organized by the Faculty of Mechanical Engineering in Banja Luka having aimed to draw together university and institute scientists and professionals as well as experts from a very weakened, post-war economy. Such mission and role of the DEMI Conference has remained one of its priorities to this day. From 1998-2003, the DEMI Conference was being held every year, and after that time, it started to be held every two years. The DEMI became a traditional conference and it took over a significant but demanding role of gathering researchers and scientists as well as economy experts with the aim to foster faster implementation of contemporary research and new technologies in production processes in order to ensure better competitiveness of our industry. Definitely, this task has not been an easy one to achieve.

This 10<sup>th</sup> anniversary DEMI Conference has seen a significant progress. For the first time, the official language of the Conference is English. The number of papers to be presented at the Conference is 145 from 17 countries (former Yugoslav countries, Austria, Germany, Switzerland, Italy, Norway, Poland, Romania, Bulgaria, Turkey, Australia, New Zealand). The previous DEMI 2009 Conference brought together researchers and scientists from 11 countries which indicates a greater interest in this conference. The Conference activities will be realized in six sections which encompass the following thematic fields: Production Technologies and Engineering, Mechanics and Design, Traffic Means, Thermotechnique and Energetics, Maintenance of Technical Systems and Mechatronics. Key note lectures will be delivered by scientists from universities from Switzerland, Norway, Serbia and Croatia who are involved in researches of the highest scientific level in the fields of: mechatronics, energetics, modern approaches to machine structure and product design, the ecology of transportation and global warming, paradigms of contemporary production and a company's adjustment to the current market requirements, etc.

Therefore, we hope that the papers to be presented will contribute in considering and reflection on the present situation of research in mechanical and electrical engineering as well as information and communications technologies in the regional conditions, enable comparison with developed European countries and offer new models for faster implementation of contemporary research as to encourage production in the country. As it is the most important scientific and professional conference in the fields of mechanical engineering, information and communications technologies in our country, this is expected from the DEMI Conference with good reason.





## TRANSPORT ECOLOGY AND GLOBAL CLIMATE CHANGE

Radivoje Pešić<sup>1</sup>, Stevan Veinović<sup>2</sup>

**Summary:** Heavy critics claim that a group of Western scientists has put together the prepositions for Kyoto protocol. The Kyoto protocol limits the production of the following six components with anthropogenic activities: carbon dioxide, methane, nitrous oxide, per fluorocarbons, sulphur hexafluoride and hydro fluorocarbons. The most dangerous role is assigned to carbon dioxide, so, on that basis, the elimination of carbon dioxide production is proclaimed as ecological success. The escalation is continued in such a pace, that clean technologies (?), clean fuels (?) and clean vehicles (?) and similar are defined. The controversy over global warming gets even more complicated when you include politics, economics, greed, and the self interests of the various governments, NGOs and companies. Astronomer Milutin Milankovic studied changes in the orbital eccentricity, obliquity, and precession of Earth's movements. Such changes in movement and orientation change the amount and location of solar radiation reaching the Earth. He hypothesized that when some parts of the cyclic variations are combined and occur at the same time, they are responsible for major changes to the earth's climate (even ice ages). The next stage of power train and fuel strategy involves using new high economy combustion engines that can be run with partially renewable fuels and used worldwide. Researchers are hard at work exploring new fuels, engines and vehicle technologies- but there are not clean cars, clean energy or full renewable fuels. Contrary to popular belief electric vehicles don't hold all the emission answers, until the electric power comes from coal-fired power stations or part renewable sources (hydro, wind and sun).

**Key words:** global warming, IC engine, renewable fuels, transport ecology

### 1. INTRODUCTION

Rational and controlled vehicle use in transport and traffic is an obligation for the future. Any activation of energy bears a burden to the environment in full amount. A warm-up lifts light gases like oxygen and nitrogen, while steam and carbon-dioxide choke the environment. Such are the signs of nature: there are no pure energy forms, no clean fuels, and no clean engine, neither clean vehicle. Actual reserves and natural

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