



University of Banja Luka
Faculty of Mechanical Engineering
26th - 28th May 2011

DEMI 2011

*10th 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 10th ANNIVERSARY INTERNATIONAL CONFERENCE ON
ACCOMPLISHMENTS IN ELECTRICAL AND MECHANICAL ENGINEERING AND
INFORMATION TECHNOLOGY**

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PREFACE

This year, the 10th 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 10th 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.



TEST BENCH FOR NON-STANDARD MEASUREMENT CHARACTERISTICS OF RECIPROCATING COMPRESSOR

Dragan Taranovic¹, Radivoje Pesic², Jovanka Lukic³, Aleksandar Davinic⁴

Summary: A dynamic test of the reciprocating compressor requires non-standard measurement of input parameters (pressure, temperature, flow, and humidity), output parameters (pressure, mass of compressed gas) and process parameters (pressure in the cylinder, piston position) of reciprocating compressors. For non-standard testing is necessary to establish a special test bench. Non-standard measurements required automatic adjustment of power unit and actuators parameters in the test bench to enable the change of compressor working point and to control input and output compressor parameters in order to be constant during a measurement time. The paper describes the test bench and some results of non-standard measurement characteristics of reciprocating compressor. Presented solution enables the automation of the test process through setting of the operating regimes, control of operation conditions, measurements, and data processing.

Key words: Test bench, Reciprocating compressor, Measurement

1. INTRODUCTION

Testing of all produced parts is essential to achieve the optimal product with respect to ecology, economy and their utility and exploitation characteristics. In order to perform the necessary tests, test bench is necessary to conduct measure characteristics of these parts. For each part testing, it is necessary to develop a specific measurement installation. Depending on the testing type, test benches can be classified into: standardized test benches where typical, standard parameters of produced parts are tested and non-standard test benches where testing parameters and characteristics are not covered by standard tests. Non standard tests are necessary in the product development phase and in post production phase when it is necessary to improve parts characteristics and to monitor parameter changes in use.

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