

ABSTRACTS of PAPERS

In the 10th Fair Pneumatics, Hydraulics, Drives and Controls PNEUMATICON

1.

Prof. dr hab. inż. Piotr Dudziński,

Wroclaw University of Science and Technology, Faculty of Mechanical Engineering.

INNOVATIVE STRATEGY IN SCIENCE AS INSPIRATION FOR MODERN INDUSTRY – APPLICATION EXAMPLES

The author presents main pillars of innovative strategy in science and research of the Department of Off-Road Machine and Vehicle Engineering in Wroclaw University of Technology and Science. This strategy aims at comprehensive innovative projects for industrial practice. The article presents examples of original solutions and the research potential for application in design and operation of heavy duty machines and off – road vehicles.

2.

Dr inż. Piotr WOŚ

Department of Mechatronics Devices, Faculty of Mechatronics and Machine Design, Kielce University of Technology

STUDY OF THE VIBRO-ISOLATING PROPERTIES OF THE SEMI-ACTIVE PNEUMATIC SUSPENSION OF THE WORKING MACHINE SEAT

The paper presents issues related to improving the vibro-isolating properties of the semi-active electro-pneumatic suspension of the working machine seat. A practical implementation of the system controlling the force of the pneumatic spring mounted in the seat suspension mass- produced was presented herein. An output function controlling the pressure valve of the pneumatic system supplying the bellows actuator was suggested. The developed solution made it possible to conduct dynamic tests over the pneumatic spring applied in relation to the semi-active suspension system.

3.

Mgr inż. Katarzyna PAWELEC

Department of Mechatronics Devices, Faculty of Mechatronics and Machine Design, Kielce University of Technology

DETERMINE THE PERFORMANCE LEVEL OF PNEUMATICS ELEMENTS

The paper presents into three parts. First deal with safety concept in pneumatics and hazard in the workplace. Next focus on Performance Level and presents a general diagram about determine the PL, which is describe in EN ISO 13849-1. Next discuss all parameters, which we should determine when we'll get a Performance Level. The next point like to make is a program which count PL and generate technical documentation (SISTEMA). Finally evaluate this method.

4.

Dr inż. Jakub TAKOSOGLU

Department of Mechatronics Devices, Faculty of Mechatronics and Machine Design, Kielce University of Technology

DETERMINATION OF FLOW-RATE CHARACTERISTICS AND PARAMETERS OF PIEZO PILOT VALVES

Pneumatic directional valves are used in most industrial pneumatic systems. Most are two-stage valves controlled by pilot valve. Pilot valves are often chosen randomly. There was no carried out experimental research in order to determine the flow-rate characteristics and parameters of pilot valves. Pilot valves may affect the safety of machinery and equipment. The paper presents experimental research of two piezo pilot valves

5.

Mgr inż. Józef BARYCKI, mgr inż. Janusz MATYAS,

Órodek Badawczo-Rozwojowy Elementów i Układów Pneumatyki Sp. z o.o. Kielce

INNOVATIVE PNEUMOHYDRAULIC ACTUATORS OBRE.X SERIES- A CHANCE TO INCREASE THE COMPETITIVENESS OF THE OBRE KIELCE SP. Z O.O.

Based on knowledge and experience in the design, research, and performance of components and pneumatic and hydraulic was developed at the Centre for Research and Development Components and Systems Pneumatics (OBRE Kielce Sp. z o.o.) new series of OBRE.X pneumohydraulic actuators. These actuators are energy efficient pneumatic drive units with integrated hydraulic system and automatic activation of the power stroke. OBRE.X actuators are powered solely by compressed air without additional hydraulic circuits, the control system is similar to conventional pneumatic actuators. Simple design with fewer moving parts, guarantees many years of trouble-free operation. They are used in automation of technological processes: combining, cutting, riveting, bending, marking, etc., Making them extremely attractive on the market. Implementation of pneumohydraulic actuators OBRE.X series increase competitiveness of the Centre on the domestic market pneumatics.

6.

Mgr inż. Paweł BURY, dr hab. inż. Piotr OSIŃSKI

*Wrocław University of Science and Technology, Faculty of Mechanical Engineering
(www.lhiw.pwr.edu.pl).*

THE NEW GENERATION OF GEAR PUMPS WITH REDUCED ACOUSTIC EMISSIONS SERIES PC

This article presents some aspects of the assessment of the hydraulic and acoustic properties of prototype low-pulsation gear pump developed in Wrocław University of Science and Technology in cooperation with the company PHS HYDROTOR S.A. A new generation of pumps have been deployed into production as series PC. Here is presented comparative diagrams of volumetric efficiency and the characteristics of acoustic emission for newly designed and competing low-noise pumps. The work carried out under the Operational Programme Innovative Economy for the years 2007- 2013, Priority 1. Studies and the development of new technologies, Measure 1.4 Support for special projects. Project No. POIG.01.04..00-04-345 / 13.

7.

Mgr inż. Rafał ŁABIK

AMET S.C. Wrocław

KONCEPCJA I BADANIA ROZPOZNAWCZE INNOWACYJNEGO ZASILACZA HYDRAULICZNEGO

Prepared speech by company Amet from Wrocław presents main areas of company activity. Primarily focus on innovatives which Amet develops in power hydraulic. Researches in cooperation with the Wrocław University of Technology trusts using frequency inverters in hydraulic systems such as constant pressure system.

8.

Artur GUZOWSKI, Piotr KUCYBAŁA, Janusz POBĘDZA, Andrzej SOBCZYK, Paweł WALCZAK

*Laboratory of Techno-Climatic Research and Heavy-Duty Machines, Faculty of Mechanical Engineering,
Cracow University of Technology*

NEW RESEARCH CAPABILITIES OF MACHINES AND DRIVE SYSTEMS UNDER EXTREME ENVIRONMENTAL CONDITION

Laboratory of Techno-Climatic Research and Heavy-Duty Machines, established to operate from 1 January 2017, continues the work founded in 1973 Institute of Heavy-Duty Machines. An experienced and well-qualified academic staff conducts a lot of research and development in the fields of drive and control hydraulic and pneumatic, energy recovery system, ecological drives, diagnostics, automation, vibro-acoustics and a number of other works related to the construction and operation of machinery and equipment. In addition to the activities of research Laboratory conducts teaching activities in most fields of study at the Faculty of Mechanical Engineering of Cracow University of Technology, including post-graduate studies and training courses in the field of fluid power according to CETOP standards.

Laboratory of Techno-Climatic Research and Heavy-Duty Machines continues implemented earlier in the Cracow University of Technology unique testing machines and equipment in extreme climatic conditions. The Laboratory performs interdisciplinary studies of large-size engineering real objects in the thermo-climatic chamber, which is unique in Poland. The chamber is 24 long, 7,7 m wide and 7,5 m high. In the chamber there can be examined in a variety of climatic and environmental exposures objects weighing up to 60 tons, such as heavy working machines, including building equipment (excavators, loaders, bulldozers, graders), trans-lifting equipment, civil and military wheeled tracked or rail vehicles , manned and unmanned special units used in conditions of crisis. There also can be tested internal combustion engines, hydraulic drive and control systems, components of aircraft and vessels.

9.

Dr inż. Zygmunt DOMAGAŁA

Wroclaw University of Science and Technology, Faculty of Mechanical Engineering

SYNCHRONIZING METHOD OF ACTUATORS MOVEMENT USED IN HYDRAULIC SYSTEMS

The paper concern the design of the drive and hydraulic control systems. Hydraulic systems have many advantages, as well as disadvantages. One of disadvantage is actuators synchronizing. The article presents schematics of the most commonly used methods of synchronization of the actuators. An analysis in terms of the accuracy of synchronization was presented as well. This information is presented in tabular form, which in author's opinion, is very useful for designers of hydraulic systems who must design systems with adequate synchronization accuracy of actuators.