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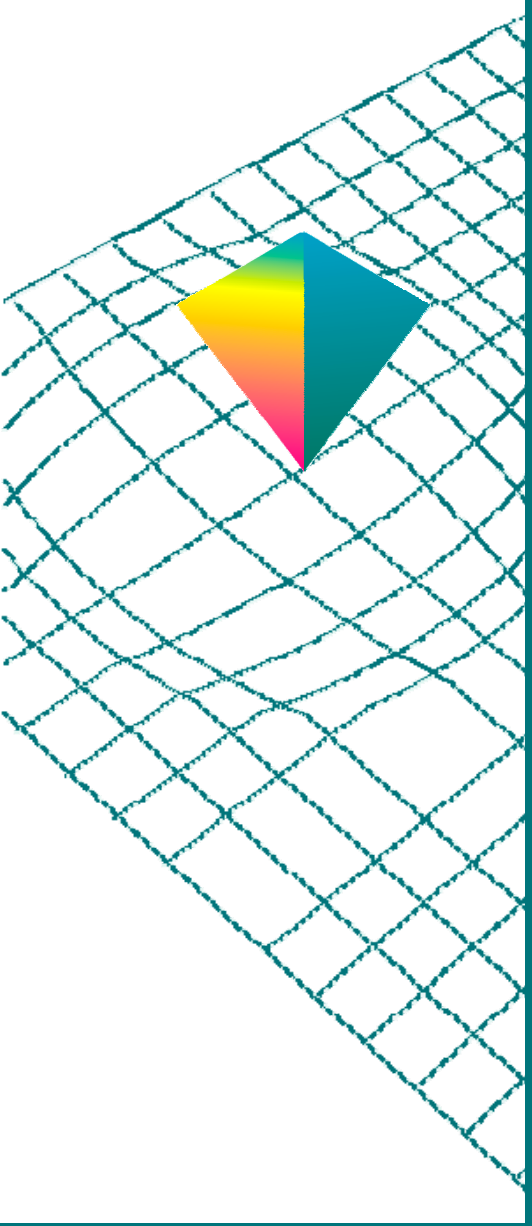

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50. Internationales Wissenschaftliches Kolloquium
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V.Bayeu / I.Dainiak / S.Karpovich

Interactive Visualization of Elements and Systems of Electro-Pneumatics

ABSTRACT

The principles of interactive visualization of pneumatic schemes were described. The interactive multimedia module "PneumoLab" which allows to build imitation model of pneumatic system was presented.

1. INTRODUCTION

The electropneumatic devices are often used as execution units of robots, technological equipment, mechanical systems etc. But modern equipment is complex, and the imitation and simulation are becoming a very important problem. To solve this problem, the multimedia means can be used [1].

2. PRINCIPLES OF INTERACTIVE VISUALIZATION OF PNEUMATIC ELEMENTS AND SYSTEMS

The aims and principles of interactive representation of pneumatic elements and systems are:
– interactive building of pneumatic scheme using the library of elements;
– interactive visualization of scheme functionality;
– possibility of changing the state of elements;
– quick access to information according to any elements of scheme at the moment.

3. MODULE "PNEUMOLAB"

The interactive multimedia module "PneumoLab" was developed in the Laboratory of Mathematical Modeling of Technical Systems for the imitation and simulation of pneumatic systems. Module "PneumoLab" was built on Macromedia Flash and fully realizes the aims and principles mentioned above. User can create the pneumatic scheme from menu of elements by simple "drag and drop" methods. Then he connects elements by lines, which means the pneumatic hoses and he can observe the functioning of the system.

The current version of pneumo-library consists of 24 elements, which can be combined into the pneumatic or electro-pneumatic scheme. A example of scheme inside window of Module

"PneumoLab" is presented on Fig.1.

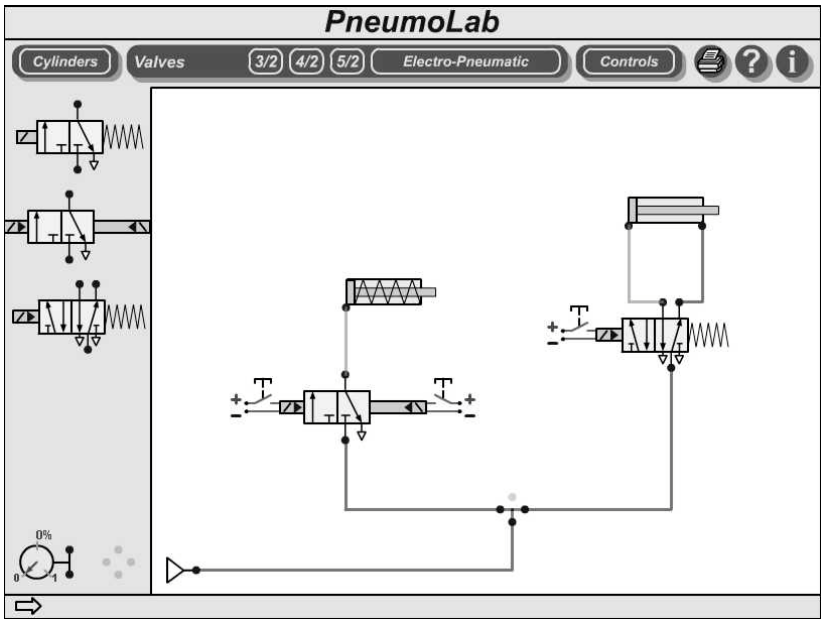

Fig.1 – Module "PneumoLab" Windows with Pneumatic Scheme

User can change the state of system by means of valves and regulators, which are built into them. To control the work of scheme, valves can be used, with different control methods: manually, by pressure or by electromagnet (the later is electro-pneumatics). Pressing the valves's buttons or adjusting the element by throttle, user can observe the functioning of elecro-pneumo-scheme.

4. CONCLUSION

The multimedia pages for interactive visualization of pneumatic elements and interactive multimedia module "PneumoLab" can be also used for the educational purposes, for example, for the training of personnel.

References:

[1] Siemieniako F., Karpovich S., Dainiak I. Interactive Multimedia Laboratory Practical Training on Pneumatic Automation // Scientific Proceedings. – Vol.2. – Aachen: Shaker Verlag, 2004. – p.516-517

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