WORKSTATION VERIFICATION BY MEANS OF SIMULATION PROGRAM FLEXIM

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Abstract: Simulation of selected workstation by means of simulation program assists in decision making when creating real production systems and also simplifies, quickens and decreases costs of this creation since changes done on computer are executed considerably faster and easier as the ones done in real systems.

Key words: disassembly, CAPP systems, visualization.

1. INTRODUCTION

Swift development of computer technics allows its utilization even in scope of simulations, not only in production spheres, but also in logistic, transportation, mining and other. For intentions of simulation model’s creation special programming languages are created – simulation languages, which main purpose is to simplify work of model constructor when doing experiments and handling results. As they have another tool for simplification of model creation, experiment automation and results handling, they are called simulation systems. Error! Reference source not found.

Simulation nowadays presents unthinkable part especially in larger companies, for it saves time as well as costs, what helps companies to resist competition. First of all it is excellent support when doing decision in real systems creation. Utilization of simulation does not lies only in systems creation but also during operation. Creator however has to realize that simulation models only creates some alternatives of real systems, yet do not designate optimal alternative of existing system.

2. UTILIZATION OF SIMULATION PROGRAMS IN WORKSTATION VERIFICATION

Keystone of simulation model’s creation and realization of very simulation is simulation software. Currently there is lot of simulation programs divided according to computer platform, performance and extent of exploitation. According to this fact the price of particular simulation programs varies.
It has to be said that even in case of relatively high prices these were greatly exceeded by achieved benefits in many simulation projects. Currently the market offers notable quantum of simulation programs. From the most simple, based on the base of mathematical models, to the most complex equipped with animation environment, 3D graphics and virtual reality and including the possibility of connection with company information system.

For daily multi-hour work with simulation software it is important to offer suitable user’s environment and interactive communication with user. Fast searching support and easy correction of arose errors is indeed acceptable. Important factor also is running ability under most used operation systems.

3. SIMULATION SOFTWARE FLEXIM

It is simulation software of Flexsim Software Products inc., developed in February of 2003.

Flexsim is suitable for discreet and linear simulations displayed in 3D space. It is the only simulation system that includes C++ compiler, which allows to set the logic of individual models.

It can be used in several fields, such as simulation of:
- road transportation,
- manufacturing lines,
- packaging,
- storage,
- supplies delivery,
- presentations,
- user’s defined areas.

Fig. 1 Example of simulation in 3D space in program FlexSim 3.0
Library window serves for adding new components into the simulation model is open right after program start or can be open with View/Library Icon Grid entry in upper menu.

Library window includes basic components, such as:
- Source – source of material got
- Queue – warehouse (buffer-stock)
- Procesor - machine
- Sink – output unit, where final products end
- Combiner - conjuctor
- Separator - divider
- Conveyor – transport belt
- Rack - stand
- Dispatcher – dispatching unit
- Operátor - worker
- Transportér - cart
- Network Node - interconnections
- Visual Tool – visual factor for appearance improving
- Recorder – graphical information achiever

**Fig. 2 Model components in program FlexSim**

Particular components are added in model by classic left mouse button clicking on the component icon and dragging it into the model window. All necessary model components are added this way.

Interconnections between particular components are created after pressing A button on keyboard, following by clicking on component from which material gets off and dragging the mouse onto the one that accept it. Such interfaces are called connections with end points. There are also center points in model, which are created same way as end points but pressing the D key instead of an A. These center points serves for interconnection of additional components, as when the material is moved from one machine to another using an operator – these machines would be connected with end points and operator is connected to material’s output machine with center point.

End points are in upper parts of particular components, center points are in lower sections.

**Fig. 3 3D model created in simulation program FlexSim 3.**
After setting attributes of particular components we compile the program and run the simulation.

In order to see the outputs of our simulation, we have to launch so-called system of information gathering before running it. This can be done with Stats/Stats Collecting/Global On entry. If Global ON entry is enabled, simulation can be run. After the end of simulation graphs can be found in Properties entry of each component that can be opened after right button click on the component a selection of Properties option. Particular statistic data of existing component can be found in Statistic entry. In our case we use button Char… in section State to create a graph displaying general duration of existing component in process.
5. CONCLUSION

Simulation currently presents key techniques of industrial engineering. This actuality rises out of fact that solved problem complexity has risen and also because simulation programs are not used only for research purposes anymore, but are utilized in projective agencies and manufactories. It is necessary to point on unavoidable implementation of simulation software into the general conception of planning, proposal, realization as far as production management, while possibilities of computer simulation are still growing according to quick development of information technologies. Simulation expressly becomes reputable support instrument in technical as well as in social and natural sciences.

6. REFERENCES


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