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SOFTWARE MODULE FOR TECHNICAL STAFF TRAINING OF THE SATURATION DEPARTMENT OF AMMOPHOS PRODUCTION

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A reduction in production volumes, erratic work up to a stop and an increased outflow of specialists leads to a partial loss of qualifications and professional skills of technical staff. When returning to work, technology personnel must restore their skills, because even minor errors in maintenance, repair or diagnostics of the technological process can lead to an emergency, damage to equipment or pollution of the environment. To restore the necessary skills of the technological staff, a training module for the technological staff of the Department of neutralization of ammophos production was developed within the framework of the cooperation agreement with PJSC Sumyhimprom and NTUU KPI. It is the first link in the production of ammophos in normal and emergency situations. Using Flash technology, the user can interact with the parameters of a virtual circuit in real time and select task conditions that simulate a specific state of the object, in which the user must evaluate the dynamics of changes in the scheme parameters and find the cause of the emergency.

Fig. 1. shows a screen fragment of visualization of one of the schemes of the software system for technical staff training of the saturation department of ammophos production.

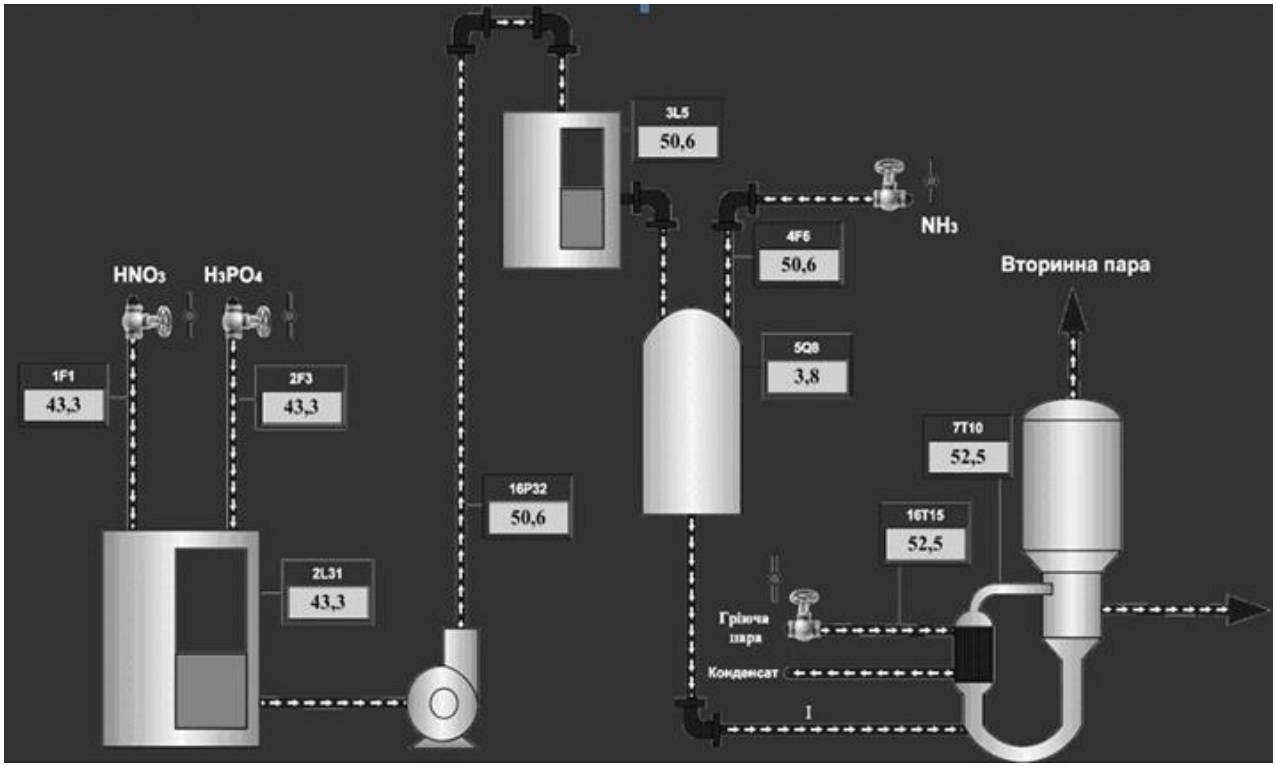

Fig. 1. Screen of the process mnemonic before completing the task mode in the training module

The software module is able to work in the network both in the task mode and in the mode of simulation of possible failures of technological equipment. A mathematical model for simulating the process and implementing the logical-dynamic consequences of an abnormal production situation is implemented and formed using graph theory. The software product simulates the departments of the saturation shop in the production of ammophos, as well as the control panel, a fragment of which is shown in Fig. 2, where the operator can control and regulate the work of his shop in real time.

The scheme can be easily adapted for a different arrangement of control and control devices, as well as a different arrangement of technological units.

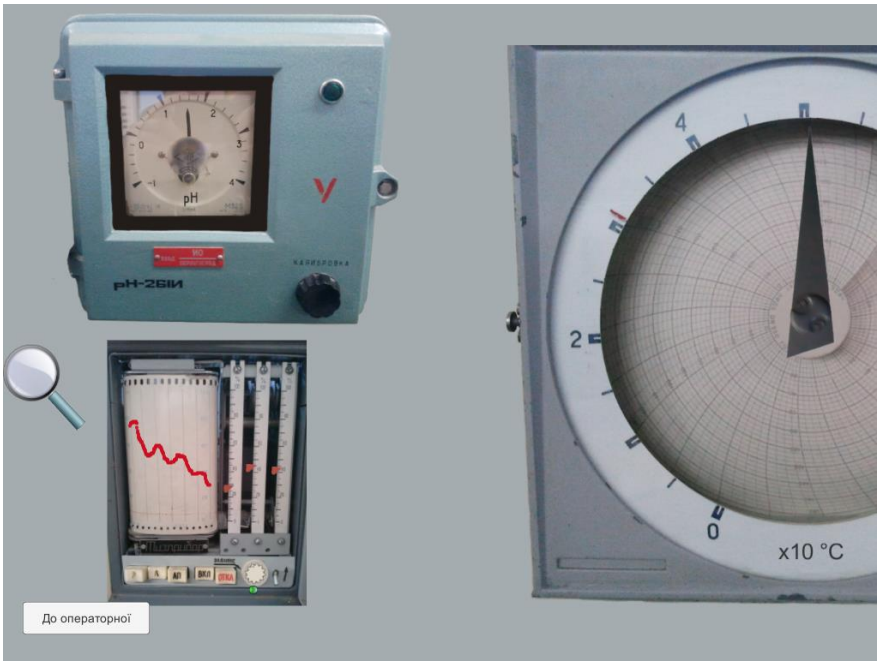

Fig. 2. Simulation of the saturation shop control panel

The control panel can also be adapted to another production or even act as an independent software product as a control panel, or as a program to simulate a separate device. The user can work with the program, examining the influence of certain parameters on the course of the technological process, or perform a task to fix a system malfunction by manually controlling the regulatory authorities. If desired, the tasks simulating the alarm conditions may be supplemented by new tasks.

In the conditions of forced introduction of distance learning, the proposed developments can be successfully applied to create simulated laboratory work from different academic disciplines, which is extremely necessary in the absence of access to laboratory stands for students.