ON THE QUESTION OF LOGIC-DIDACTIC ANALYSIS IN THE PROCESS OF TRAINING SPECIALISTS IN APCS (AGRICULTURE)

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Abstract. Automation of technological processes is one of the decisive factors in increasing productivity and improving working conditions, and this issue has been resolved at the state level.

Keywords. Specialist, technical universities, automation, systems, management, information, object, technological process.

Automation of technological processes is one of the decisive factors in increasing productivity and improving working conditions, and this issue was resolved at the state level. The task is solved by qualified specialists. In this regard, in technical universities, it was decided to open a specialty in the direction of automated process control systems (agriculture).
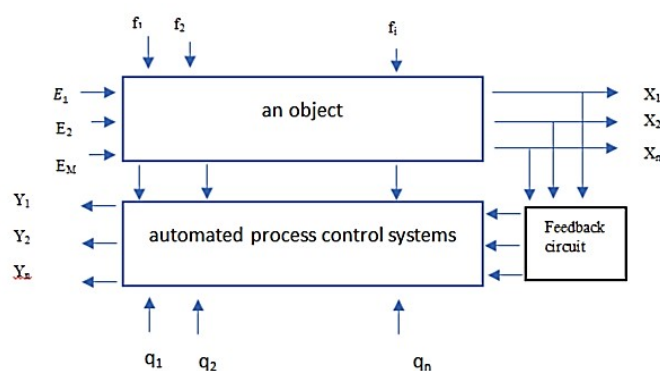

(1)

The automation system consists of an automation object and a control system, due to this, due to a certain interaction between the automation object and the control system, the automation system as a whole provides the required result of the operation of the object, characterized by the parameter $x_1, x_2, \ldots x_n$

These parameters include values that characterize the feasibility of the final product, the technological process, efficiency, ensuring an accident-free regime, as well as a number of auxiliary parameters $y_1, y_2, \ldots y_j$ that must also be monitored and regulated (for example, constant support for the operation parameters of installations, preparation of process steam, water supply etc.)

In the process of operation, the object receives disturbing influences $f_1, f_2, \ldots, f_i$ that cause deviations of parameters $x_1, x_2, \ldots, x_n$ from their required values, information and current values $x_1, x_2, \ldots, x_n$, $y_1, y_2, \ldots, y_j$, enters the control system and is compared with the prescribed values , $g_1, g_2, \ldots, g_k$ as a result, the control system generates control actions $E_1, E_2, \ldots, E_m$ to compensate for deviations of output parameters . from several to a greater or lesser extent related to each other management areas. They can be in the form of separate installations, units, etc. or in the form of local control channels.
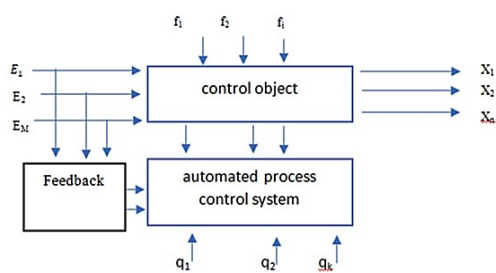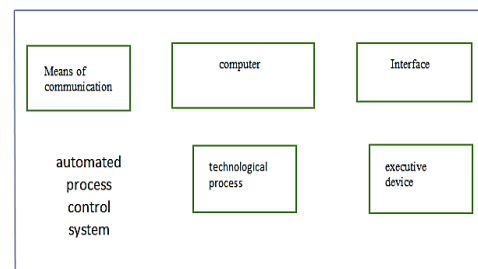
(2)   (3)

The automated process control system mainly consists of technical, mathematical and information support, actuators, sensors, audio and video devices, means of interface communication with the control object.

Where 1) APCS (agricultural) automated process control system. 2) COMPUTER-an electronic computer. 3) Interface interface device. 4) TP - technological process. 5) IGU - an executive device for managing technological processes. 6) Means of communication - audio, television, Internet connection. Mathematical software consists of mathematical models, a mathematical tool, an algorithm for the functioning of an object, an algorithm for a control system, operating systems for automated process control systems, a service program, and a package of applied programs. Information support consists of continuous information about the state of the object, current information, reference information.

Where - 1) MO APCS (agriculture) - software for automated process control systems (agriculture). 2) MM - mathematical model of technological processes. 3) MI is a mathematical tool. 4) AFO $_b$ - the algorithm of the object

functioning. 5) ASU - algorithm of automatic control systems. 6) OS - computer operating systems 7) OS APCS (agriculture) - operating systems for managing TP (agriculture) 8) SP-Service programs.

(4)
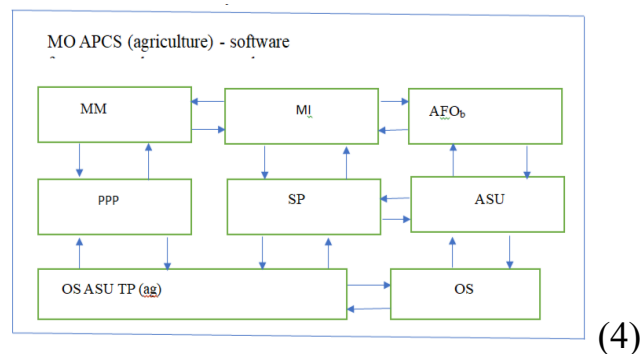
In order to prepare a specialist in automated process control systems (agriculture), it is necessary and sufficient:

1. Recruitment of students should be the appropriate level of knowledge requirement. 2. Training must be an appropriate curriculum for a fundamental and technical subject. 3. Appropriate educational and software documentation on and special subjects 4. One of the most important stages studying passing practices properly in a real facility (where the process control system operates)

Work program for training process control systems Lemma, Axiom,

1. The criterion for the competition of applicants to the university in the direction of automated process control systems (agriculture) should be the appropriate level studied, both general education and general technical subjects, we will denote the criterion K_1. 2. The criteria for teaching fundamental and technical subjects of the proper level control correspond to the level of training, for special subjects we will designate K_2 3. The curriculum in special subjects should be adequate to the curriculum of universities with high ratings, let's designate the criteria for the level of education and the body of knowledge K_3.

4. Practical training should be real objects and the level of knowledge should comply with international standards, denoted by K_4. Thus logico - didactic analysis $L_{analys} = K_1 V K_2 V K_3 V K_4 (1)$

$K_1 = \Pi_1 \wedge \Pi_2 \ldots, \wedge \Pi_i (i = 1 \div n)$ $K_2 = \textit{ФИТ} \Pi_1 \wedge \phi T \Pi_2 \ldots, \wedge \Pi_i (i = 1 \div n)$

$K_3 = \textit{СУП}_1 \backsim \textit{СУ Л}_1 \vee \textit{СУП}_2 \backsim \textit{СУ П}_2 \vee \textit{УПр} \backsim \textit{УПр}$

$\textit{СУП}_i \ldots \wedge \textit{СУ}_i (i = 1 \div n) K_4 = \textit{ПО}_1 \vee \textit{ПО}_2 \vee \textit{ПО}_3 \vee \Pi O_4 = 1$

Π_1- 1- item Π_2– 2- subject Π_3- 3- subject Π_i- i - subject

$\textit{ФИТ} \Pi_1$-fundamental or technical subject $\textit{ФИТ} \Pi_2$-fundamental or technical subject $\textit{ФИТ} \Pi_i$-fundamental or technical subject $i = (1 \div n)$

$\textit{С У} \Pi_1$-special curriculum of the $1\text{st}^{\text{subject}}$ $\textit{С У} \Pi_2$-special curriculum of the $2\text{nd}^{\text{subject}}$ $\textit{С У} \Pi_i$-special curriculum the ith subject.

$\textit{ПО}_1$- first-year practical training $\textit{ПО}_2$– second-year practical training

$\textit{ПО}_3$- third year practical training $\textit{ПО}_4$- practical training of the fourth year.

Theorem. The learning outcomes for automated process control systems (agriculture) are true only when all components are true, otherwise the results can be presented.

$$K_1 \vee K_2 \vee K_3 \vee K_4 = 1 \qquad K_1 = 1 \; K_2 = 1 \qquad K_3 = 1 \; K_4 = 1$$

1. Natural and human sciences; mathematics, physics, chemistry, inter-graphics, theoretical and engineering mechanics, philosophy, native language and history of Uzbekistan. The curriculum of these subjects should take into account the specifics of the trained specialists, i.e. for example, mathematics with biases, discrete mathematics, physics - electronics, semiconductors, measuring technology, taking into account nanotechnology, mechanics with precise mechanics, philosophy from the point of view of cybernetics and artificial intelligence, etc.

1. General education and general technical subjects should also take into account the specifics of the trained specialists, i.e. Computer science, measuring technology, information technology, subjects on electricity, algorithmic

languages, language theory, automata theory, audio, video technology, VT elements and microelectronics, MP, MK, software for devices assemblies, etc.

2. For special subjects as well as for the program of these subjects.

TAR, ACS, technical means of automation and automated systems, CAD, Diagnostics of automated process control systems, ASOID, installation of automated control systems, measuring systems and measurement methods, elements and assemblies of a TP simulation device , TP optimization, a special course in mathematics , artificial intelligence and its theory, and etc.

1. Items as needed. 2. Additional items.

For the training of specialists in 5311000 - APCS (agriculture) according to international standards, it is necessary:

1. Laboratory equipment in all subjects. 2. Necessary materials, devices, electronic devices, MP, MK. at the international level. 3. Classes should be led by teachers, associate professors, professors with knowledge in basic education, i.e. in cybernetics. 4. On the required subject coursework at the level of international standards.

1. $LO_{br} - \Pi_1 \vee \Pi_2 \vee \ldots \vee \Pi_i\, i = 1 \div n$ 2. $MA \vee И\Pi \vee ЭУ \vee М\Pi \vee МК$

3. $\Pi_1 \vee \Pi_2 \vee \ldots \vee \Pi_i (i = 1 \div n)$ 4. $КР\Pi_1 \vee КР\Pi_2 \vee \ldots \vee КР\Pi_i (i = 1 \div n)$

Here 1. L O $_{br}$ - laboratory equipment. Π_1- items Π_2- items Π_i- items 2. ML - materials for practical and laboratory work. 3. a) IP - measuring instruments for practical and laboratory work. b) EU - electronic installations. c) MP – microprocessors d) MK – microcontrollers 4. $КР\Pi_1$- term papers of the [1st] subject $КР\Pi_2$- term papers of the [2nd] subject $КР\Pi_i$- term papers of the [i th] subject

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