MODELING OF PERIODIC GROWING BAKING YEAST USING LANGUAGE UML

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We consider the process of growing biotech baking yeast, carried out periodic manner and has the following stages: fold accumulation, maturation, unloading and cleaning. Mathematical model of the machine for baking yeast cultivation consists of logical and dynamic parts. To describe the logic of using Unified Modeling Language UML.

The unit periodic operation, the logical part of a dynamic, class diagram, sequence diagrams, activity diagram.

Microbiological industry is a multi-sector, which is associated with medicine, food, genetic and cellular engineering, agriculture. Production of baking yeast is one of the many components of microbiological industry. In past years, and to date rather focuses on the development of the yeast industry, which is aimed at improving the quality and quantities of the process.

The purpose of research - the actual problem is the creation of optimal control system, which should be based on modern scientific approaches. To solve this problem it is necessary to construct a mathematical model that is adequate technological process of baking yeast cultivation.

Mathematical modeling allows for the analysis and synthesis process of baking yeast cultivation and display of complex technological devices. Mathematical modeling of microbial yeast cultivation process is reduced to the rate of biochemical processes, which in turn are determined by the rate of biochemical microbial growth depending on environmental parameters that ensure the progress of the process [1].

Methods of research. In some sectors of the food industry the main processes occurring in devices of periodic action (ADF). These include yeast vyroschuvalni apparatus for the production of baking yeast, vacuum - machines and mixers for

cooling crystallization of sugar and so on. Mathematical model of the ADF is logical and dynamic structure (LDS). The logical subsystem LDS describes the sequence of switching at different stages of the cycle, in fact it is the algorithm control unit. Dynamic subsystem describes the reaction inertial object to control impacts and disturbances [2].

Microbiological process of baking yeast cultivation, carried out periodic method consists of the following stages: fold accumulation, maturation, unloading, cleaning. The main stage is accumulation. Purification step consists of washing, disinfection and steaming [3].

Results. To simulate the logical subsystem apparatus for growing yeast baking (AVHD) using unified modeling language UML, which is a visual modeling language zahalnotsilovoyu and effectively used to build the conceptual, logical and graphical models of complex systems of different purpose.

Visual modeling in UML [4] presented as a transition from the most general model to a complex system of logic. All idea of the model is fixed in the form of graphic designs that are called charts. Now in terms of the UML diagrams used at 10, only use those from which further can be synthesized logic control algorithm AVHD.

According Nakopychennya, Dozrivannya, Vyvantajennya and Ochyshchennya meet stages of accumulation, maturation, unloading and cleaning.

In order to describe the logical control AVHD use two diagrams: sequence diagram and chart work.

Sequence Diagrams (sequencediagrams) shows the temporal sequence of transitions between stages of the process unit. This diagram has two axes: vertical represents time, horizontal - ob'yekty Controller, Skladka, Nakopychennya, Dozrivannya, Vyvantajennya, Ochyshchennya and Apparatus.

For stage Skladka sequence diagram shown in Fig. 3 and characterized in that the signal from Controller to Skladka the start of loading device, ie the valve supplying water. This message is transmitted from Skladka Apparatus components to the appropriate action to be done component that it perceives. Similarly, there are exchanges of messages between the following stages and Apparatus.

Conclusions

Thus, to describe the logical subsystem growing process of baking yeast used object-oriented programming language UML. Developed class diagrams, sequence and timing of Displays and logical connections between the controller and the device and between the device and all stages of the process of growing cycle of baking yeast.