

CONSTRUCTION OF A STRUCTURAL SCHEME FOR OBTAINING SUGARSYRUP BY HOT METHOD IN KVASI PRODUCTION

Gaponova O.O., Kotelevets V.O.

National Technical University

“Kharkiv Polytechnic Institute”, Kharkiv

The paper considers the issue of compiling a structural diagram for obtaining sugar syrup, which is widely used in the food industry. In the production technology of carbonated fruit drinks, it is used to make blends, commercial syrups, and fermentation kvass. When boiling using the hot method, the process of obtaining sugar syrup includes the following stages: dissolving sugar in water, boiling the aqueous sugar solution, filtering and cooling the syrup.

Based on a general description, sugar syrup production can be represented by various visual models: functional, structural, technological, and operator diagrams. Such diagrams provide a general idea of the operating process in the form of graphs or drawings. Each of the graphic models describes the production of sugar syrup in the production of kvass in a different way. The choice of model depends on the purpose of displaying the object.

The structural diagram consists of blocks depicting common elements of production and technological connections between them, indicating the direction of movement of material and energy flows. It is advisable to use it at the stage of development or modernization of individual stages of production; it clearly reflects the flows between elements. The following structural scheme for obtaining sugar syrup is proposed, which is presented in Fig. 1.

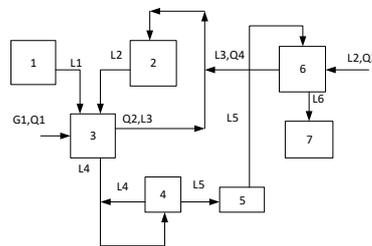


Fig. 1. - Structural diagram of obtaining sugar syrup by the hot method.

Where: 1-weight collector of sugar; 2- measuring collector of water; 3- syrup-making apparatus; 4- filter; 5- pump; 6-heat exchanger (refrigerator); 7-measuring collector of syrup; G1 -heating steam; L1-sugar; L2 -water; L3 -condensate; L4 -sugar syrup; L5 -filtered syrup; L6 -cooled syrup; Q1, Q2 - energy flows of the coolant; Q3, Q4 - energy flows of the coolant.

Granulated sugar is fed into weighing collector 1. Filtered drinking water enters measuring collector 2, and then syrup making machine 3. The syrup is brought to a temperature of 100 degrees and boiled. At the same time, the required amount of water evaporates and the concentration of the syrup increases. The apparatus is heated by steam. After boiling (evaporation), the syrup is filtered through filter 4. Filtered hot sugar syrup with a concentration of 60 – 65 % is fed by pump 5 to heat exchanger 6 for cooling. Sugar syrup cooled to a temperature of 100C enters the measuring collector 7 and is then sent to the preparation of fermentation kvass or the production of beverages from bread raw materials.