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AUTOMATION OF FLAKES HEATING TECHNOLOGICAL PROCESS IN THE USH AEROVIBRATION DRYER

Maintaining the quality of grain drying process control during interruptions in energy supply, switching to alternative energy sources, and lack of qualified employees have become a challenge for grain processing companies [1]. Automated grain drying process control systems are one of the indispensable assistants in ensuring the quality of the grain drying process.

The object of research: a system of automated control of flakes heating in an aerovibration dryer USH. The subject of research: methods, models, and information support for controlling flakes heating. Purpose: to improve the quality of the flake heating control process in the USH dryer. The thesis analyzes the technological process of flake production and drying and describes the operation of the automation object, the USH aerovibration dryer. To the requirements for an automated control system, a scheme for automating the process of heating flakes in the USH dryer was developed, as well as a schematic diagram and a list of elements of the automated control system for heating flakes.

Information support was developed, covering the movement and transformation of information, including classification lists of all data, and methods of their encoding, storage, and transmission. Based on the description of the technological process and the principle of operation of the dryer, a method was selected, and an active experiment plan was developed to identify the control object and obtain the transfer characteristic during the modeling of its functioning through the channel "temperature of the drying agent - temperature of flakes heating".

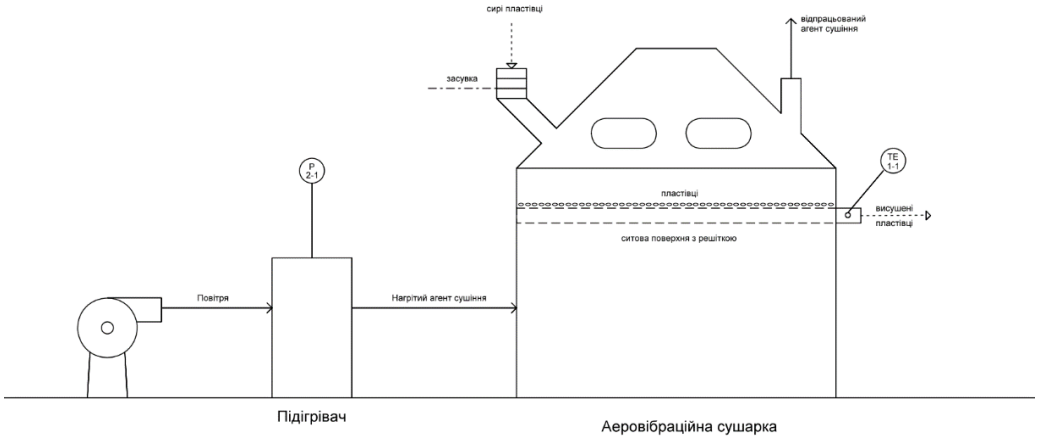

Figure 1 – Scheme of automation of flakes heating process in the USH aerovibration dryer

The developed automation project documents, an active experiment plan, and a transfer characteristic will improve the quality of the flake heating control process during drying.

References

1. Ogichuk V. Adaptaciaya sushinnya / V. Ogichuk //The Ukrainian farmer.–№3.–2023 [Electronic resource]. – Access mode: https://agrotimes.ua/article/adaptacziya-sushinnya-zerna/