

APPLICATION ELECTROMAGNETIC FIELD OF ULTRAHIGH FREQUENCY FOR GRAIN DRYING PROCESSES

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The influence of high frequency activation of the intensification of its grain drying active ventilation. The influence of various parameters on moisture diffusion coefficient, investigated the possibility of using thermocouples in the microwave field with determination temperature in the range of the microwave.

Ultra high frequency, temperature, thermocouple, microwave field drying process, diffusion coefficient, moisture, heat, drying agent, electromagnetic field, thermodynamics, convective drying, partial pressure.

Increased productivity agricultural products is the main task of agriculture to meet the needs of the population in food. Storage grown harvest is achieved primarily by means of dryers, which are the only reliable way to stop active biochemical processes of nutrient materials and their conservation. Low productivity drying facilities and inadequate supply of lead to the fact that because of untimely drying ZERNOTOKA year round lost a significant amount of grain yield.

In practice, the agricultural use different ways to intensify the process of drying grain: elektroaktyvovano use air preheating grain use recirculation modes vakuumuvalni drying zone, changing gas composition of the drying chamber, etc. Among these recent years have increasingly used the effect of magnetic field ultrahigh frequency (UHF). As a result, developed systems that allow you to improve industrial plants, for use in agricultural enterprises. Existing plants for intensification of microwave drying used in mining, conveyor dryers, but practically not been studied for use intensification microwave drying hoppers active ventilation.

The purpose of research - analysis of electromagnetic field of ultrahigh frequency activation grain drying to intensify its active ventilation.

Materials and methods of research. Analysis intensification of drying grain active ventilation using electromagnetic microwave field, reducing the high power magnetrons tanning to prevent overheating of the grain, uneven heating, cracking material.

In experimental studies of electromagnetic microwave field to the material it is necessary to study the grain passing through the core, the conditions for the smooth processing of grain in the microwave core system, the state grain layer during drying. Change parameters of drying material and drying agent determined using known diffusion coefficient depends on the temperature and pressure in gases, methods of thermodynamics of irreversible processes, dependence on masoviddachi hydrodynamic, physical and geometrical factors.

Results. The purpose of using microwave activation zone with active ventilation is: create a zernivtsi gradients of temperature and humidity, directed in one direction; creating temperature gradients inside pressure water weevil, the intensification volohoznimannya.

Conclusions

The data results suggest that the initial time (5-10 s) after cessation of exposure to microwave fields grain layer by changing the temperature difference between the surface of grains and its center can judge the relaxation of vapor pressure in zernivtsi. The value of the coefficient of convective heat transfer during microwave heating is significantly different from the value of this ratio during relaxation of pressure that must be considered in the calculations. The rate of change of pressure in zernivtsi microwave heating in a linear (correlation coefficient of 0.999) with the dynamics of the temperature difference between the center and the surface of the grains, allowing you to control the process of change of pressure in zernivtsi the difference in temperature.

Enough high correlation coefficient (0,956-0,885) to judge the relaxation of pressure zernivtsi only for 10 seconds after the impact of the suspension of the microwave field. In a microwave reactor core, which is used in the process of active ventilation, it is advisable to use multiple low-power magnetrons uniformly distributed on the surface.