ODESSA NATIOANAL ACADEMY OF FOOD TECHNOLOGIES

THERMOMECHANICAL AGGREGATE WITH THE THERMOSYPHONS

The purpose and scope of application

The field of application - the processes of heat treatment (heating, concentration, drying) of disperse and viscous products and materials.

Investment attractiveness - the intensity of heat and mass transfer in the apparatus is 2 - 20 times greater than in analogues. It is distinguished by reliability of construction, simplicity in operation.

Important parameters that characterize the level of scientific results

The constructive feature of TMA-T is the use of an autonomous rotary two-phase thermosyphon, the condensation zone of which performs, in addition to heat transfer, mechanical functions: mixing, transportation or crushing of product. For this purpose, the thermosyphon condenser has a shape that corresponds to the mechanical task of the unit.

The mechanical action on the "heating-product interface" zone contributes to the destruction of the thermal and diffusion boundary layers. As a result, the vapor phase is easily released from the product, the surface of the rotary thermosiphon is constantly cleaned, the heat transfer coefficients increase substantially. The degree of intensity increase grows with increasing of product viscosity. In the TMA-T aggregate the tasks of a number of apparatuses are carried out: "dryer-conveyor screw", "grinder-concentrator", "heater-stirrer". The TMA-T aggregate is tested during grain, rape, amaranth and coffee sludge drying and concentrating of vegetable and fruit puree. The design of the heat transfer module in the form of an autonomous rotary thermosyphon has a small value of thermal resistance, ensures the organization of processes at minimum energy costs, guarantees the safety of the food product during using various types of fuel and energy.

Intellectual Property Protection Status

One patent were obtained.

Market demand

Processes drying of grain-crops, receipt of the concentrated purees from vegetables and fruit important for the enterprises of Agroindustrial Complex. Receipt of thick and dry extracts it is important on pharmaceutical and processing enterprises.

Status of development

The operating pre-production model of setting is made.

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