DEVELOPMENT OF UNIVERSAL IR-DRYER
OF ORGANIC NATURAL RAW MATERIAL

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Today the demand of the population of Ukraine and other European countries for quality organic food products is growing. First of all, it is the demand for organic natural semi-finished products which contain a significant amount of biologically active agents, smell and look good, and are also reasonably priced. In most cases drying is used to process this raw material. Drying of organic natural raw materials is a complex technological and structural task for modern engineering.

To solve this problem, many enterprises carry out technical upgrades by equipping them with modern economic, reliable equipment, which allows minimizing the raw material losses during technological operations. But increasingly there is a need for the development of conceptually new resource- and energy-saving equipment using modern low-metal infrared emitters and energy-saving devices.

The purpose of this article is to increase the resource and energy efficiency of the organic natural raw material drying process by developing a conceptually new multi-purpose infrared continuous dryer with a rational shape of the process chamber intended for simultaneous drying of up to four types of raw materials.

During the design process, the following tasks were assigned, i.e. improvement of the heat transfer efficiency; reducing the duration of the drying process due to ensuring the uniformity of the temperature field on the receivers and in the process chamber of the device as a whole and using the vibration; effective constructive placement of the energy-saving device and improvement the quality of the output products.

Multi-purpose infrared dryer for organic natural raw materials is intended for drying of up to four types of organic natural raw materials due to continuous operation. In the device a flexible film electrical resistance heater of radiant type is used as a heater, which is installed on the inner surface of the dryer and the outer surface of the inner overhead pipeline located in the center of the device's operating space.

The high quality of dried semi-finished products is achieved by reducing the duration of heat treatment of raw materials with the application of mild temperature conditions (40–60°C) and vibration.

Keywords: development, multi-purpose infrared dryer, organics, flexible film electrical resistance heater of radiant type (GPRENVT), vibration, energy saving.