The article is about the problem of determining the energy of power technology processes that are identified as a thermodynamic system. We made the selection and justification of physical and mathematical modeling techniques and analysis of process power technology of food production to assess their effectiveness. Physical analysis of the thermodynamic system is based on the laws of conservation, second law of thermodynamics using thermodynamic potentials and application of mathematical analysis and methods for providing this physical sense, which can objectively evaluate the effectiveness of a process in Energy. It is known that the physical properties of the approach to equilibrium is asymptotic values. So, the application of mathematical analysis and methods of providing this physical sense, will objectively evaluate the effectiveness of a process in Energy. It should be noted that if the process can be identified in Energy thermodynamic system, its evolution, development status can be analyzed on the basis of the laws of conservation, second law of thermodynamics and can be used the thermodynamic potentials. As an example of physical and mathematical models consider the process of heating the body. The process of heat was taken because it is common in the technology of food production. According to the definition of "heat" and "temperature" temperature always tends to equilibrium for any thermodynamic systems that are in thermal contact. To test these assumptions experiments were conducted with heat-known body mass and specific heat conductive and convective methods. As an example used an aluminum cylinder with a known mass and heat capacity. The experiment was considered complete withdrawal subject to fixed mode.

**Keywords:** enerhoeefynist, thermodynamic system, physical properties, process power technology, mathematical modeling, the potential for Gibbs.