

Problems of thermodynamic potential conversion into the output power in the model membrane systems

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Osmosis is one of the methods of thermodynamic potential conversion into the output power. Because of the energy dissipation occurring in the conversion, a need arises to elaborate some practical methods allowing to investigate quantitatively the energetic efficiency of osmotic membrane systems, which is understood as the ratio of output power to the total power produced in the system. The paper presents this method in its application to selected systems of model membranes. The method consists in: 1) deriving the equation describing osmotic volume transport, 2) formulating so - called global power equation, 3) deriving and discussing suitable explicit expressions describing the output power, the dissipated power, the total power and the energetic efficiency. On this basis it is possible, as it is shown in the paper, to formulate suitable conclusions concerning the osmotic conversion of thermodynamic potential into the output power. The paper deals with the problem in original way and should arise an interest of many readers, particularly those, who are concerned with the biophysical aspects of osmotic conversion of the thermodynamic potential into the output power.