

Study of the kinetics of biomass fermentation processes resulting from the alcohol industry

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Abstract

A new-generation intensive ecological technology and integrated bioreactor for biogas production were developed, based on the valorisation of agro-industrial wastes, hazardous for the natural environment. An easily manageable technology proposed is environmentally friendly and an acceptable method beneficial for the population. This technology bears a breakthrough character and is based on the use of natural phyto-catalysts introduced into the digested biomass in micro-concentrations. Biomethane contents in biogas is thus increased from 62% with a caloric value of 5 232 kcal/m³ to 85-92% with a caloric value of 8 010 kcal/m³. In addition, the stabilized biomass residues can be used as organic fertilizers, whereas the treated water meets the requirements for irrigation scopes. The technology ensures the generation of a renewable “green” heat and electric energy, and contributes to the improvement of energy and environmental security in accordance with the existing national and international standards.