FM7S_11905

XXI International Congress of Theoretical and Applied Mechanics
Warsaw, Poland, August 15–21, 2004

Experimental and Numerical Studies of Convection Flow in a Cylindrical-Conical Fermenting Tank

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In this paper the experimental and numerical investigations of the convection flow in a real cylindrical-conical fermenting tank of beer manufacturingare described. The experimental investigations in a cylindrical-conical fermenting tank was conducted using a two-dimensional ultrasonic Doppler velocity measurement method to measure the flow field during a real fermentation process in a opaque wort. In a further investigations the fermentation process was simulated with a model-fluid by heating and cooling the outside of the fermenter. In this work the proceeding of measurements, the experimental-setup and the measured flow fields are presented. In a numerical study the convection flow of the simulated fermentation process was analysed. Comparison of the numerical results with the experimental data of simulated and real flow shows for the first time a good prediction of the simulated flow of the model-fluid.

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