

409a Mixing Analysis of a Coaxial Mixer

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The objective of this work is to present the mixing mechanism in a coaxial mixer technology for Newtonian and non-Newtonian fluids in the laminar flow regime. These mixers are equipped with two kinds of impellers: a high speed centered turbine and a low speed anchor mounted on two independent coaxial shafts. A numerical approach based on the virtual finite element method (POLY3D software) coupled with a Lagrange multiplier method to deal with the non linear rheological model was utilized to obtain the incompressible flow field. Both co-rotation and counter-rotation mode were compared. To understand the complex flow inside the tank, different mixing parameters were selected, namely, mixing time, power consumption, flow patterns and pumping rate. It will be shown that the numerical results give an excellent agreement with the experimental data.

