

食品双螺杆挤出机比能耗量化研究 Quantitative Study on the Specific Energy Consumption of Food Twin-screw Extruder

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摘要: 采用有限元技术,对食品双螺杆挤出机中流体的速度场、压力场进行了仿真研究。通过后处理计算,得到了各种工况下的比能耗。采用可旋转的中心组合设计方法进行了试验,分析仿真与试验结果存在差异的原因,并对仿真计算结果进行了修正。以修正后的仿真计算结果和试验结果为基础,对所建立的BP神经网络进行训练,建立了食品双螺杆挤出机挤压系统模型,此模型可用于挤出机比能耗的定量预测。 The velocity and pressure fields of the fluid in the twin-screw extruder were studied using FEM. The specific energy consumption of various operations was obtained by post-processing. The experiment was designed using the rotatable and central composite method. The reason for the existing differences between the simulation and experimental results was analyzed, and the simulation results were corrected. The BP algorithm was trained based on the simulation and experimental results. The extruding system model of twin-screw extruder was built, and could be used to quantitatively predict the specific energy consumption of the extruder.

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