

SIMULATION OF FLOUR FLOW IN EXTRUSION PROCESS BY USING COMPUTATIONAL FLUID DYNAMICS COMMERCIAL SOFTWARE

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ABSTRACT: In an extrusion process, food-shape formation is dependent on the complex physical and chemical transformation of biomaterials which occur under the influences of thermal and mechanical energy. On the other hand, the flow of raw material during process governs the final shape of the product. In order to obtain a stable product shape, there is traditionally a need of experimenting for an optimization of the process control parameters. Such a process is notable for time and budget consuming. The attempt of this study is to increase the efficiency of process optimization by applying the transport phenomena data obtained via computational fluid dynamics commercial software. The CFD simulation of flour flow in the extruder, presented here, is covered the prediction of the feed rate, screw rotating speed on the velocity and pressure profiles in the single screw extruder.

KEYWORDS: Single screw extruder, Numerical simulation, Extrusion process optimization, Pseudoplastic