



COMPUTER MODELING FOR COUNTER ROTATING TWIN SCREW EXTRUSION

K. Wilczyński*, A. Nastaj, A. Lewandowski, K.J. Wilczyński

Polymer Processing Institute, Warsaw University of Technology, 02-524 Warsaw, Narbutta 85, Poland

**Corresponding author: k.wilczynski@wip.wp.edu.pl*

A composite TSEM computer model of solids conveying, melting and melt flow has been developed for closely intermeshing counter-rotating twin screw extrusion. The model is based on the White & Wilczynski melting behaviour description, and on the local three-dimensional FEM Ansys-Polyflow melt flow computations. FEM simulations have been used to design the screw pumping characteristics which have been implemented into the composite model of the process. A backward scheme of calculation has been applied for composite modeling. Experimental studies have been carried out for starve fed extrusion of various polymers. The polymer melting and filling of the screw channel in the machine were investigated using "Screw Pulling-out Technique". Pressure, temperature and torque were also measured. A composite TSEM model has been applied for simulation of the experimental runs. The model predictions were consistent with experimental data.