On the Mechanics of Texturing Polypropylene Fibers

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Attemps have been made to develop a mathematical model for the understanding of the false-twist draw texturing process in the steady state operating conditions.

Based on the mass-and twist-balance conditions, a theoretical prediction has been made for a yarn diameter profile, yarn translational velocity, twist distribution, and the twist contraction along the threadline for the steady operating conditions of false-twist draw texturing.

According to the experimental results in the steady operating conditions of draw texturing of polypropylene POY yarns, the theoretical predictions have shown good agreements with the experiments provided that some modifications of the model had to be made to facilitate the differences in real operating conditions.