Thermoplastic polymers such as polyester and polypropylene have one component in common; they rely on extruders at some stage of the process. Carded polyester and polypropylene fabric use bales of staple fiber for the raw material. Staple fiber is produced on spinning lines that use extruders to turn thermoplastic pellets into a melt which is extruded into fibers. Spunbond and meltblown lines use extruders on the line to make a melt which is laid down as a web or blown against a drum or conveyor.

An extruder consists of a long metal tube, called a barrel, usually 4 to 8 inches in diameter which contains a metal screw. It takes quite a bit of horsepower to turn the screw. A large motor drives a reducing gearbox which in turn drives the screw up about 120 rpm. Plastic pellets are fed into the entrance throat of the screw. The barrel is heated with electric heaters. Heat is also produced as the screw compresses the pellets, with the resulting heat and pressure causing the pellets to melt. All the parameters of temperature, pressure, screw speed, and feeding rate are very closely controlled to produce a consistent melt from the extruder.

Extruders often have a filter at the exit of the screw to prevent contamination from going into the spinnerets. Usually this filter works automatically to constantly remove contaminants. An extruder can be started and stopped when hot, but there is an extensive heating process that can take several hours when starting an extruder from a cold state.

“if you want to be happy, set a goal that commands your thoughts, liberates your energy, and inspires your hopes. “

Andrew Carnegie