Lab scale injection molding machine

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Abstract

Plastic pollution is the buildup of synthetic plastic waste items in the environment it threats human population, wildlife, and the ecosystems. Plastics have drawn more attention recently as a substantial contaminant. Scientists and engineers are developing innovative concepts to reduce plastic accumulation. Injection molding is a widely used manufacturing process. This project is to produce an injection molding machine that uses waste plastic materials as raw materials. The project mainly focuses on creating a semi-automatic single extruder machine suitable for industrial and domestic purposes. Arduino programming for PID temperature control and motor control is the main controlling platform in this product. The machine uses barrel heating to heat the barrel and melt the plastic waste pallets into melted plastics. Because of the continuous production output, various output products are not limited to mold or the single injection press. Compared with others, this machine is lightweight and portable. This product recycles waste polyethylene and plastics. The machine is user-friendly, and any person can use it without knowing technical details and develop their self-employed businesses.

Keywords: *Plastic recycling, injection molding, extruder machine, plastic manufacturing, waste plastics*