

Design and Fabrication of an Industrial Semi-Automatic Label Shrinking Machine for Polyethylene Terephthalate (PET) Bottles

Abstract

A company that produce bottled drinking water had been facing issues with manual label shrinking that involve high temperature water and steam. Thus, this project focus on the design of a semi-automatic label shrinking machine to shrink the PVC 40-Micron label around the specially shaped PET bottles. The structure of the machine was designed and analyzed using 3D software. The water tank, heating element and thermal insulator necessary were also properly selected through calculation and analysis. The design of the actuation, bearings and control for the machine were also done through proper steps of selection as well. The machine was fabricated and experiments were done where the best temperature to shrink the label at the satisfaction of the company was determined. The rates of labels shrunk per hour were recorded and it was found that the machine perform better than the theoretical result by 3.54%.