

# SOAP RECYCLE KIT

Prepared by: Tan Zhi Zhou

## ABSTRACT

---

Environmental protection is one of the hot issues of concern in modern era. Recycling is also gradually more concerned by people. The practice of recycling is being encouraged by the government.

The "Soap Recycle Kit" is a system to drive a mechanical device to recycle those left over soaps into a disc cube for further use. The device can generate a regulated heat to partially soften the clusters of soap to ease the compression into disc cubes. Instead of being thrown, the soap recycle kit enable us to recycle the small, ineffective used soaps to be a new soap.

In this project, the main part is the design of the mechanism to compress the soaps under the assists of regulated heat. The PIC 16F877A microcontroller receives the signal from the sensors and the control circuits for controlling the motors in the process of compression and process of measuring load capacity. The loaded volume to the predetermined volume of soap which is measured through force sensing resistor (FSR) and the percentage of loaded will be displayed on the LCD. A control circuit of the heater is constructed by the LM35 and relay to regulate the temperature for ease of compression. The compression is done by the linear actuator with the control of IR sensor and a beeping sound and blinking LED will alert the user which the compression is done.

. Many testing and experiments were done on both of the hardware and software during the process. The servo motor Pulse Width Modulation testing, the testing of stepper motor, testing of IR sensor and the others which are covered in this report. Overall, the project is considered to be successful and all of the objectives is achieved. The device can compress the clusters of soap into a disc cube under the regulated heat.