ABSTRACT

At this time the pattern of coffee consumption is developing, this pattern is encouraging by the public in terms of consuming coffee that wants to be instantaneously, and time efficiency in serving. One of the most preferred serving is the espresso-based coffee dish, espresso has a standard of manufacture in serving, if you do not use these standards it will affect the taste of the results. Making espresso manually goes through several processes that require more effort and takes a long time.

In this design an automatic espresso coffee machine based on a microcontroller is made, this machine can present a single shot espresso menu. This machine can automate the process of heating water to a temperature of 90-95 ° C, pouring 12 grams of coffee powder, water pouring as much as 50-55ml, tamping process, and the process of extracting coffee powder with water at a pressure of 9-11 bar ($90N/cm^2–110N/cm^2$).

Based on the results of testing the performance of tools and flavors from the results of espresso, the system can work well and produce espresso coffee flavors well. However, some deviations from the test results were found to the reference values in each process, including the testing of coffee powder pouring has an error of 1.94%, pouring water has an error value of 1.14%, and the extraction process has an error value of 2.15%. The error produced in the process is due to the absence of hardware that can detect accurately the pouring of coffee grounds, the pouring of water and the pressure required for the extraction process in a machine that has been made. Deviations from some of these processes also affect the taste of the results of the presentation.

Keywords : Espresso, Automatic espresso coffee machines, Microcontrollers.