

UNIVERSITAS INTERNASIONAL BATAM

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DESIGNING AND MAKING OF SEMI AUTOMATIC T-SHIRT FOLDING MACHINE BY USING FUZZY PROPORTIONAL DERIVATIVE (FPD)

METHOD

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ABSTRACT

Laundry is one of the micro business enterprises mushrooming right now. Many strategies used by the perpetrators of the laundry business to increase productivity and customer satisfaction. Based on research, the process of ironing and folding clothes is a process that takes a long time compared with the washing and drying process, so that required the method or tool to fold the clothes become more practical. The method that has been developed is a Terapsi. However, used of Terapsi still manually. Therefore, on this research is designed and manufactured the Semi Automatic Folding Machine with the more dynamic design of the form, stronger materials, and durable.

Fuzzy Proportional Derivative (FPD) control system designed to implant on the microcontroller as control the movement of flip folder motor at the machine. Set point is given in a corner of the arm against the base of machine. Output value rotary encoder sensor compared with the set point. Furthermore, the resulting error value will be used to determine the control action to drive the movement of motor.

The results of the study found that the movement of each flip folder will depend on the DC motor. Implementation FPD method with 2 values input error (Err) and delta error (Δ Err) from reading the value of rotary encoder sensors are converted to degree with 5 membership function. Time to folding shirt in one cycle process of 1 strands is 9,56 second and compared with manual folding clothes 1 strands of shirt is 16,42 second, this proves the application of FPD method on the Semi Automatic T-shirt Folding Machine runs well in controlling the movement of the DC motor.

Keywords: *flip folder, DC Motor, Fuzzy Proportional Derivative, microcontroller, setpoint.*