DESIGN AND ANALYSIS OF WATER DISCHARGE CONTROL OF DAM USING FUZZY LOGIC METHOD

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ABSTRACT

Dams are buildings that aim to hold back the rate of water. If the rainfall is high, and the river cannot accommodate the rainfall, a flood will occur. To avoid flooding, a tool is made that can control the level and discharge of water. Ultrasonic sensors are placed in both dams to detect water levels, as input data for fuzzy logic calculations, the results of fuzzy logic calculations are used to determine the size of the floodgate opening. Servo motor measurement results get an average error value of 1.34%. The measurement results of the ultrasonic sensor get an average error value, that is, for an average upper sensor it is worth 10.04% and an average error for a lower sensor is 6.91%. The small opening measurement results on the upper sensor read 14 cm and the lower sensor 24 cm, the small opening fuzzification calculation results with a 20 ° servo motor output. Medium open measurement with sensor readings above 7 cm and sensor below 13 cm, results of fuzzification calculations obtained medium open with 50 ° servo motor output. Measurement of large opening with sensor readings above 22 cm and sensor below 12 cm, fuzzification calculation results obtained large opening with 75 ° servo motor output.

Keywords: *Ultrasonic, fuzzy logic, servo motor, fuzzification*