

TITLE:

INVESTIGATION OF PID CONTROLLER FOR LIQUID FLOW CONTROL USING INTEGRAL MODEL CONTROL (IMC) AND TAKAHASHI APPROACHES

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AUTHOR'S DECLARATION

" I hereby declare that this report is the resof my own work except for quotations and summaries which have been duly acknowledged."

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ABSTRACT

Process Flow control is essential in a lot of chemical industries. PID controllers currently represent more than half all controllers used in industry. However, in the absence of mathematical model, the parameter must be experimentally. The method of determining the controller is referred to a controller tuning. Controller tuning enable process optimization by reducing the error between a process variable and its set point. The objective of this study is to compare the effect of two different type of tuning method performance regarding to liquid flow process control training system. At the beginning of this project, Open-loop test is carried out to obtain the process response curve and help to calculate the value of Response Rate (RR), Time Constant (Tc) and Dead Time (Td) was analysed using a Reformulated Tangent Method (RTM). The controller parameters, Proportional band (PB), Integral Time (I) and Derivative (D) are calculated using established tuning method in the literature which is IMC method and Takahashi method. The performance of the process for each of the tuning method is evaluated based on some criteria which is rise time, settling time, overshoot and steadystate error. The result show that the IMC method give a good effectiveness compared to Takahashi method.

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