

**TO STUDY ON THE EFFECT OF TUNING RULES USED ON THE WATER
LEVEL CONTROLLABILITY**

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ABSTRACT

The purpose of this research is to study on the effect of tuning rules used to recover from disturbances for the liquid level controllability. This research extract the information upon mostly primary sources including books, published journals, and experiments in laboratory. In the experiment, the time will indicate the respond of PV whether it is fast or slow if the controller output is changed. Time is observed by several tuning methods which are Ziegler-Nichol's tuning rule, tuning rule by Takahashi and tuning rule by Chien, Hrones and Reswick (CHR). The Water Level Control Using PID Controller is a design of an intelligent automatic level measurement system using PID controller. The system will allow users to measure and set the desired level of water with the PID controller controlling the process of water flowing into the tank. The system will be connected with a control valve and level sensor for the control section. The system is able to show the trend of water flowing into the tank and the responses of the measurements. The PID controller has the ability to control the trend and specific responses for a smooth transition of the water reaching the desired level point with the tunings and algorithm parameters entered by the handler (human) together with safety aspects monitored by the PID controller especially in hazardous plant.

Table of Contents

DECLARATION	i
STUDENT'S CERTIFICATION.....	ii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
CHAPTER 1	1
INTRODUCTION	1
1.1 Background Study	1
1.2 Objective	1
1.3 Problem Statement	1
1.4 Scope of Research	2
CHAPTER 2	3
LITERATURE REVIEW	3
2.1 Controlling Flow Rate and Fluid Level by Variable Frequency drive Unit	3
2.2 Microcontroller Based Automated Water Level Sensing and Controlling: Design and Implementation Issue.....	4
2.3 Simulator of Water Tank Level Control System Using PID-Controller	5
2.4 PLC Based Automated Water Level Control system.	6
2.5 Construction of Automatic Water Level Controller for Both Overhead and Underground Tanks	7
2.6 Importance of Three-Elements Boiler Drum Level Control and Its Installation in Power Plant.....	8
2.7 Level Control Applications for the Chemical Processing Industry	9
2.8 Comparative Analysis of Conventional PID Controller and Fuzzy Controller with Various Defuzzification Methods in a Three Tank Level Control System	11
2.9 Application and comparison of level control strategies in the slug flow problem using a mathematical model of the process.....	12
2.10 Model based Controller Design for Level Process	14
CHAPTER 3	17
METHODOLOGY	17
CHAPTER 4	19
RESULT AND DISCUSSION	19
CHAPTER 5	25
CONCLUSION	25

CHAPTER 1

INTRODUCTION

1.1 Background Study

Process Level Control illustrates the essential elements of a process. A level transmitter (LT), a level controller (LC) and a control valve (LV) are used to control the liquid level in a process tank. The purpose is to maintain the liquid level at some prescribed height (H) above the bottom of the tank. It is assumed that the rate of flow into the tank is random. The level transmitter is a device that measures the fluid level in the tank and converts it into a useful measurement signal, which is sent to a level controller. The level controller evaluates the measurement, compares it with a desired set point (SP) and produces a series of corrective actions that are sent to the control valve. The valve controls the flow of fluid in the outlet pipe to maintain a level in the tank.

1.2 Objective

There are several objectives that need to be achieved to make this project successful which are to perform the performance test in laboratory and observe the settling time for every method that is available. Then, to determine which method gives the best effect on the level controllability

1.3 Problem Statement

The Proportional-plus-Integral-plus-Derivative (PID) controllers have found wide acceptance and applications in the industries for the past few decades. It has a simple control structure which was understood by plant operators and which they found relatively easy to tune. In spite of the simple structures, PID controllers are proven to be sufficient for many practical control problems and hence are particularly appealing to practicing