# WATER LEVEL CASCADE CONTROL

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### ABSTRACT

This paper is a study on water level cascade control and how to control the control system in a chemical process plant in order to maintain its stability and efficient process control by using Foxboro Intelligent Automation DCS at various Proportional Band (PB) and Integral time (I) value. It is very important to keep the condition of process system under specification at certain limit in order to ensure the safety of chemical plant as well as to avoid any changes during the operation so the process maintains at its operating conditions. Accordingly, when the value of PB is high, the process response would be slower and when the I is high, process would take longer time to stabilized and reach set point. However, increasing the PB and I value make the overshoot to be decreased.

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## **CHAPTER 1**

### INTRODUCTION

#### 1.1 RESEARCH BACKGROUND

The liquid level controlling is useful and important phenomena in industrial, domestic and many other applications. The use of liquid level control is extensive and varied. The main uses are in chemical and power plants where a slight deviation can lead to major accidents and huge losses in revenue. Hence, it has become necessary to develop a control system which is far more accurate and also cost effective (Dey et. al., 2009).Level of liquid being an important process parameter has to be maintained at the desired level for smooth running of the process and for better quality products (Shrimanth et. al., 2013).

To maintain the arrangement of proper controlling of the level of the fluid many alternative controlling techniques or many controllers are used. Cascade control and PID control have emerged over the years and become one of the most active and fruitful areas of the research in the intelligent control applications (Kala et. al., 2014).

Cascade control, theoretically, gives a better response than other control strategies such as feedback and feedforward control to counteract disturbances and errors. Therefore, in this research, double loop cascade control is applied to