



**UNIVERSITI TEKNOLOGI MARA  
CAWANGAN TERENGGANU**

**MEC299**

**Level Control of Process Control**

**NAME:**

**ANWAR ZHARIF BIN AZHAR**

**STUDENT ID:**

**2020496728**

**SUPERVISOR:**

**ABDUL RAHIM BAHARI**

## **ABSTRACT**

The Final Year Project consists of a level control process in control system which basically pumps up the water in a sump tank to the process vessel. The experiment will be conducted in order to identify and analyse the inflow and outflow control of the water level. The main reasons that the students are having problems solving with this study of project is the reason why the project should be experimented. The experiment is to find the objectives as to how this project prevents and create safety by using different flow ranges of inflow and outflow with an open loop or closed loop.

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# CHAPTER 1

## INTRODUCTION

### 1.0 Introduction

This project is basically an application of process control which is a system that specializes in the industrial usage and it focuses on a level control process of water. The concept of use is a PID controller and PLC programming that involves along some processes to switch between the water level control process. It also involves the concept use of hydrodynamics as it is to achieve the inflow and the outflow without overflowing or deficiency flow of the water. Evidently, this project will also be used as a teaching instrument and programming automatically or manually in any school or university which are for their own research and studies.

The equipment and supplies of this project have already been prepared and supplied in the UiTM laboratory and will be provided for the students to use. The required accessibility of the equipment is called a PCT50 Armfield Level Control and a PCT50 Level Control software or ArmSoft software by Armfield which is available in the UiTM laboratory. The process of completing this project will be done at the UiTM laboratory under the surveillance of the laboratory assistant in order to avoid any hazardous incidents.

### 1.1 Background of Study

This project is focused on levelling control water which there are applications used in daily life. As for the equipment, the process is controlled using PCT50 Level Control software on a PC which is connected to the PCT50 Level Control equipment and it is an adaptation from a water level control in a tank for industrial applications. This project consists of a combined sump tank which is a process vessel and a lower sump tank with varying pump speed of the flowrate by controlling using PID controller and PLC programming with a solenoid valve.

## 1.2 Problem Statement

The students have to be knowledgeable and need to learn the basic operations of level control process in order to cope with the understandings in the industrial settings. The fact that the students have little knowing of their understandings is perceived as a challenging situation for the students to follow the procedure of the water level control manual as it may differ the results to be achieved, since this project have little guidance or short on references, the students must utilise the basic knowledge they have on the water level control process. Due to this fact, the issue of the results needs to be observed carefully because it has been a concern as the students have little understandings of the process.

With little guidance, it is really necessary for the students to follow as exactly instructed in the manual that is prepared at the UiTM laboratory. Most students are not aware that the PCT50 Level Control software already have a function that can automatically build a graph based on the procedure that was done and the orifice can be changed depending on the instructions. As a result, they may not be very successful in getting the perfect result but still can achieve with satisfactory data results.

## 1.3 Objectives

The main objectives of this project are:

1. To find the right level of water by controlling the water level in the process vessel at a constant flow of stability with different ranges of flow using inflow and outflow control process.
2. To determine the flowrate of a level control process with different flow as inflow and outflow control within the process.