



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

**DEVELOPMENT OF IOT BASED AND MONITORING
SYSTEM FOR QUALITY CONTROL**

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Electronics Engineering Technology (Industrial Electronics) with Honours.

by

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This report is submitted to the Faculty of Electrical and Electronic Engineering Technology of Universiti Teknikal Malaysia Melaka (UTeM) as a partial fulfilment of the requirements for the degree of Bachelor of Electronics Engineering Technology (Industrial Electronics) with Honours. The member of the supervisory is as follow:

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ABSTRAK

MAP-200 memperkenalkan pelbagai jenis stesen yang berbeza dan mempunyai fungsi yang berbeza untuk memenuhi permintaan syarikat luar dan pusat latihan. Stesen pertama iaitu MAP-201 yang berfungsi untuk mengesan kedudukan tapak dan menolak bahagian yang salah. Mesin MAP-201 dikawal oleh suis tekan tutup yang kurang cekap dan kurang sesuai dari segi kawalan dan penampilan untuk mesin itu sendiri. Suis tekan tutup hanya boleh dikawal secara manual oleh pengguna. Selain itu, sistem yang sedia ada tidak mempunyai sistem pemantauan masa nyata yang membolehkan pengguna memantau dan mengawal mesin itu sepanjang masa dan di mana sahaja. Projek ini akan menaik taraf “Human Machine Interface (HMI)” dengan menambah lebih banyak fungsi dan menaik taraf “Supervisory Control and Data Acquisition (SCADA)” dengan menggunakan perisian “NB-designer”. Sistem pemantauan akan dinaik taraf dengan membangunkan “Internet of Things (IoT). Satu aplikasi akan dibangunkan yang membolehkan pengguna untuk memantau kualiti pengeluaran yang dihasilkan oleh mesin.

ABSTRACT

MAP-200 enables the introduction of different types of stations that give different functions so that it will adapt to the requirement of companies and training centers. Station one or MAP-201 that function as a part feeder with detector an ejector for incorrect parts is choose to be developed. The MAP-201 is controlled by a push button panel that is inconvenient in terms of control and appearance. The push button only can be controlled manually by the user. Besides that, the existing system is not provided with real-time monitoring system that will able the user to monitor and control the machine anytime and anywhere. This project is to upgrade the Human Machine Interface (HMI) with more functions and develop the Supervisory Control and Data Acquisition (SCADA) by using NB-designer. The monitoring system is upgraded by developing Internet of Things (IoT) for MAP-201. An application is develop to able the user to monitor the quality control of the production.

DEDICATION

To my beloved parents who always supporting me during my up and down throughout my studies in Universiti Teknikal Malaysia Melaka. To my beloved siblings that helps me moving forwards and never give up in life. To my beloved friends that have become parts of my life and make me stronger each day

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LIST OF SYMBOLS

LIST OF ABBREVIATIONS

PLC	Programmable Logic Controller
HMI	Human Machine Interface
SCADA	Supervisory Control and Data Acquisition
SVG	Scalable Vectorial Graphics
QC	Quality Control
QA	Quality Assurance
IoT	Internet of Things

LIST OF PUBLICATIONS

CHAPTER 1

INTRODUCTION

This chapter will discuss the introduction of MAP-201 : Part feeder with detector and ejector for incorrect parts and describing the technique used to develop Internet of Things (IoT) for the machine.

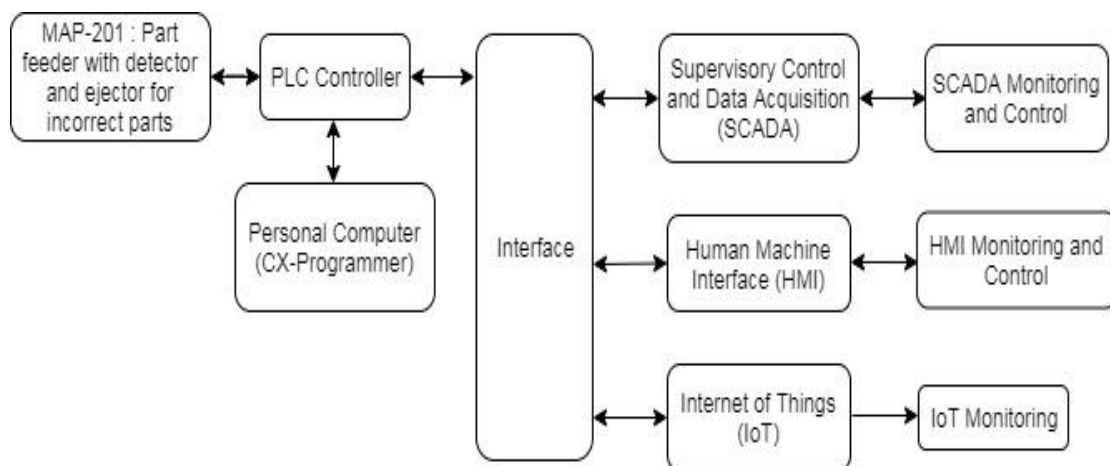


Figure 1.0 Block Diagram of the project

1.1 Introduction to MAP-200 system

The MAP-200 contain of four training system to learn how to handling application used in electro-pneumatic technology. The system of the MAP-200 consists of many industrial technologies such as PLCs, sensors, pneumatics and others. The machine is offered in three different variety which is machine that consists PLC, without PLC and also assembly kit. The training system is :

- i. MAP-201 : Part feeder with detector and ejector for incorrect parts
- ii. MAP-202 : Vacuum-held handling device with two shafts

- iii. MAP-203 : Vertical revolving handling device with internal gripper
- iv. MAP-204 : Horizontal rotolinear handling device with external gripper
- v. MAP-205 : Assembly minicell

1.2 Project Objective

At the end of this project, there are several objectives that need to be achieved.

The objectives are as below:

- i. To upgrade the Human Machine Interface (HMI) with more functions and develop the Supervisory Control and Data Acquisition (SCADA).
- ii. To develop Internet of Things (IoT) for MAP 201.
- iii. To develop application for quality control by using Internet of Things (IoT).

1.3 Problem Statement

The MAP-200 is supervised and the processes are controls from the screen by using Supervisory Control and Data Acquisition (SCADA). Any errors happened to the machine will be notify through the SCADA and view the system data through an HMI. The machine needs full observation for the operator to notify if any errors occur. It is not provided with real-time monitoring system.

At the MAP-201, it contained various systems such as actuator, solenoid valve block and sensors. Any errors or breakdowns could happen anytime and hard for the operator or engineer to monitor the machine all the time. This is mainly due to the lack of control and monitoring system of the machine.

1.4 Scope of Work

The scope of work for this project are as follows:

- i. Upgrade the Human Machine Interface by adding more functions and designs its layout by using NB-designer.
- ii. Develop the Supervisory Control and Data Acquisition (SCADA).
- iii. Develop Internet of Things (IoT) to able the machine to be monitored and communicate through internet and by using mobile phone.
- iv. Develop an application to monitor the total output product, the total reject product and total the machine has shut down for the day.