Final Report

COMPSYS 704: Advanced Embedded Systems

Project 1

Group 7

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# 1. Introduction

Advantech Ltd., a company for manufacturing and delivery of sensitive and high value bottled liquids, have decided to build a new manufacturing facility that will automate the manufacturing process within the existing facility, provide advanced system for monitoring and controlling environmental conditions and access and security control.

This project is to develop this solution leveraging IoT concepts, synchronous programming and system-level designing. This is a milestone report documenting the progress and decisions made for this project.

# 2. Brief

The solution is facility wide. Incorporated in multiple parts of the physical facility as well as in the purpose of the facility, it has the following requirements:

* A developed Automated Bottling System, as this is facility’s purpose, to output orders of bottled goods
* Be able to monitor who is within the facility as well as specifically where they are
* Be able to provide security in the form of only allowing selected personnel in general and specific areas of the facility (e.g. restricted access to the main office)
* Continuously monitor and adjust the facility's climate factors such as humidity and heat to desired conditions. Even able to adjust the climate of specific areas differently within the facility
* Receive and process orders from registered customers for bottling

These are the high-level requirements from which more detailed and specific requirements stem from.

# 3.Design

The following section explores the design of the solution developed. Beginning by showing the overall design, each sub-system is further explained in subsections to provide a full explanation of the different components and subsystems

## Overall Design

As shows by the below <<Figure 1>>, the overall design is a collection of sub-systems running independently yet working with each other to fulfill the entire brief. A decentralized approach was chosen to allow for sake of modularity, ease of task allocation, and to reduce the chances of harmful coupling.

## ABS

### Conveyor Belt

### Filler

### Rotary Table

## ACS

## ECS

## POS

# 5.Conclusion