



PROJECT REPORT

*Demand-Driven Innovation Project by Public-Private Research
Network (PPRN)*

AUTOMATED INGREDIENTS DISPENSER MACHINE

Firdaus Ali
Siti Rahaida Abdullah

(1) Researcher Background

1.	Lead Researcher	FIRDAUS BIN ALI
2.	Address Research Institute	Politeknik Ibrahim Sultan Km10 Jalan Kong Kong, 81700 Pasir Gudang, Johor
3.	Team Members	Siti Rahaida Binti Abdullah
4.	Field of Research Expertise	Mechanical System Material Properties And Selection Electronic System Automation And Control System
5.	Contact Information (phone/email)	072612488 / 0177290002 firdaus@pis.edu.my

(2) Project Summary

1.	Project Title	AUTOMATED INGREDIENTS DISPENSER MACHINE
2.	Name of Company	Madina Food Industries
3.	Project Duration	5 Months
4.	Project Start	01 November 2016
5.	Project End	01 April 2017
6.	Estimated Cost	RM50,000.00

PROJECT REPORT

Demand-Driven Innovation Project by Public-Private Research Network (PPRN)

AUTOMATED INGREDIENTS DISPENSER MACHINE

Content:

(i) Background of the project

MADINA FOOD INDUSTRIES is a drink powder processing company which majority of the processing operation were done manually by the workers. Due to the overwhelming demand from the consumer, the industry would like to convert the manual operation to a fully automated system in order to increase the production quantity and to reduce the workers load during the coffee bean process operation.

(ii) Problem statement

The industry needs an automation system that capable to , spread and chill 32kg of coffee bean which currently operated manually by the workers. There are machines available in the market but only capable to pour the coffee bean on a plate using hydraulic system and the cost is too high and do not meet the industry requirement.

(iii) Project Objective

AUTOMATED INGREDIENTS DISPENSER MACHINE would solve the problem by achieving the objectives of:

1. Design and fabricate a fully automated machine that capable to automatically dispense exact preset weight of ingredients based on the user preferences with less effort and less time consumption.
2. Installing automated machine complete with an industrial controller and Human-Machine Interface touch panel for easy and user-friendly fully customizable operation.

(iv) Proposed solution

We would like to propose a solution to convert drink powder mixture process from manual operation to fully automated operation. The solution called AUTOMATED INGREDIENTS DISPENSER MACHINE. The AUTOMATED INGREDIENTS DISPENSER MACHINE is consists of a hopper, bucket, weighing device, controller and control panel. The AUTOMATED INGREDIENTS DISPENSER MACHINE is to provide correct quantity of ingredients based on the user preference by automatically dispense several ingredients using a hopper and valve controlled by a weighing device. The type and weight of the ingredients (maximum number of 7 ingredients) can be adjusted and set by the operator using HMI touch panel for a fully customizable mixing process to meet various needs of final products. The worker will not need to manually weigh and pour the ingredients to the mixture bowl with the invention of AUTOMATED INGREDIENTS DISPENSER MACHINE. Figure 1 and 2 as per attachment was the general outlook of the proposed fully automated machine.

(v) Scopes of project

The scope is to design, fabricating, installing and testing the AUTOMATED INGREDIENTS DISPENSER MACHINE.

(vi) Milestone

AUTOMATED INGREDIENTS DISPENSER MACHINE can be completed within 5 months period of time starting from 1 NOVEMBER 2016 until 1 APRIL 2017.

Table 1: Gantt Chart of the development of AUTOMATED INGREDIENTS DISPENSER MACHINE.

Task Time	Duration	Start	Finish	Nov 2016	Dec 2016	Jan 2017	Feb 2017	Mar 2017
Design	2 weeks	01.11.2016	14.11.2016					
Fabrication	16 weeks	15.11.2016	15.03.2017					
Installation	1 weeks	16.03.2017	23.03.2017					
Testing	1 weeks	24.03.2017	31.03.2017					

(vii) Deliverable

Tangible outcome of operation of AUTOMATED INGREDIENTS DISPENSER MACHINE can be evidence as follows;

- a. Workers load reduction due to fully automatic AUTOMATED INGREDIENTS DISPENSER MACHINE which will eliminate the needs of worker to manually weigh and pour the ingredients to the mixing bowl for mixing process.
- b. The type and weight of the ingredients could be preset by the worker to comply with the need of operation using HMI touch panel for faster and better operation.
- c. Constant taste of product due to the automatically weighing of ingredients.

Intangible outcome of operation of AUTOMATED INGREDIENTS DISPENSER MACHINE can be evidence as follows;

- a. Workers turnover can be reduced due to the introduction of AUTOMATED INGREDIENTS DISPENSER MACHINE which it will overcome the problem faced by the industry.

(viii) Budget Proposal

Total overall cost is RM50,000.00. The cost is divided into three parts as per following Table 2.

Table 2: Cost Schedule of Design, Fabrication, Installation and Testing of AUTOMATED INGREDIENTS DISPENSER MACHINE, researchers and institution.

NO	ITEMS	COST (RM)
1	Cost for Design, Fabrication, Installation and Testing of AUTOMATED INGREDIENTS DISPENSER MACHINE. (70 percent)	RM35,000.00
2	Researchers (25 percent)	RM12,500.00
3	Institution - Politeknik Ibrahim Sultan (5 percent)	RM 2,500.00
	TOTAL COST	RM50,000.00

ATTACHMENTS





SKETCH DRAWING IDEAS

