



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Everyone's Smart University

Project (Spring 2021)

Student Name	Ali Hussain Alromiah	اسم الطالب
Students I.D	2021202236	الرقم الجامعي

Section	Course	Code	Date
Master		Thursday	18 / 03 / 2021.
(PMG506)			

Advanced project Management

Instructions:

- اخر موعد للتسليم هو يوم الخميس 2021-05-20 في تمام الساعة 9 مساءً.
- الإجابة متاحة باللغة الإنجليزية أو اللغة العربية مع مراعاة أن تكون المصطلحات العلمية باللغة الانجليزية.
- يتم تسليم المشروع في صيغة ملف . pdf مع الالتزام نموذج الجامعة ولن تقبل أي مستندات أخرى.
- يجب مراعاة أقسام البحث الرئيسية (مقدمة Introduction، دراسات علمية سابقة Literature Review، طريقة البحث Methodology، النتائج والمناقشة Results and Discussion ، وأخيراً المراجع References . وان كان هناك ملحقات Appendices يتم إضافتها)
- يجب الالتزام بـ Theme موحد كما يلي:
- حجم الخط 12.
- نوع الخط Arial.
- لون الخط أسود.
- المسافة بين الأسطر 1.5 line spacing

• عدد صفحات البحث (لا يقل عن ثلاث صفحات ولا يزيد عن ست صفحات).

Instructor's Name: ~~Eng. Amaal Aburumman~~ **Eng. Dr. Akram M. S. Ali**

Project:

You are required to document your role in administering a project. The project may be set in a business, social, sporting, or family environment but must be of a significant size and scale. If you do not have an actual project to write about you may complete the project hypothetically.

This report will be between three to six pages in length. This is a significant research project.

Your report must address ~~each~~ **ONE** of the following issues:

1. Identify and describe the purpose, scope, and objectives of the project. **Display this information using an appropriate tool.**
2. Describe how the team is given an outline of the project.
3. Describe the strategies that are going to be set up to maintain communication with the team members.
4. Describe the tools that are going to be used to monitor the goals, time frames or milestones.
5. Identify project milestones and activities. **Display this information using an appropriate tool.**
6. Create a budget and link the costs to the key milestones for a project.
7. Describe how you are going to divide tasks and resources amongst a project team. **Display this information using an appropriate tool.**
8. Briefly describe how the progress will be monitored.
9. How are current project records maintained? Who has responsibility for this? provide some recommendations on how this process could be improved.
10. Describe the current procedure for finalizing projects. Create your own procedure and identify how you will evaluate the success of the project.
11. Legislation that may affect the project including health and safety, and anti-discrimination legislation.

Best of luck...

Advanced Project Management research Project

PMG-506

Liquid Filling Machine Controlled By Programmable Logic Controller (PLC)

Prepared BY:

Ali Hussain Alromiah

Instructor Name:

Eng. Dr. Akram M. S. Ali

Due Date: 05/17/2021

Introduction:

The filling machine drives products from a container into a cylinder using a piston. The stroke of the piston is variable to complete the exact portion desired. Accessible independently or combined with a fully automatic filling, the piston filling allows the operator **limitless** volume adjustment to reach exact weights, depending on the product size being filled. The piston filling machine is a project that runs on filling bottles and cans with several liquids such as sauces, water, oils, juices and liquid medicines (Fillers, 2015).

Literature Review:

The machine carries a measured capacity of product to each bottle. According to Accutek SVF, piston fillers accurately deliver a measured volume of product to each container. The piston machines are very flexible systems allowing them to adapt to a wide variety of products ranging from water to thick caulking compounds. They can also be used for lightweight containers that may be distorted by the forces of a vacuum or pressure filler. **The piston** fillers can also be fitted with an optional chunky product valve allowing them to fill products that include particulates. **The** water comes directly from the piston, travels through the drum draw kit (Optional hopper available), and can be set up, tested, and fill water bottles for production in a matter of minutes. The piston fillers can be used as the center of a company's filling operation. The piston filling machine could be an inexpensive back up machine or an alternative to using contract packagers, which could eliminate the cost of labor and cut down the time to fill the bottles. The ease of operation makes it affordable and easy to use (Accutek SVF, 2015).

Methodology:

This project is to construct a liquid filling machine controlled by the PLC to fill out 5 oz. bottles of liquid. The filling machine will have two pistons, one of which is an air cylinder and one of which is stainless steel to inject liquid. The air cylinder will be connected mechanically to the liquid piston in order to control the opening and closing action of the filling. The filling machine includes a Tee pipe connection, which controls

the liquid, and is connected to the liquid piston. In addition, there are two valves connected to the Tee pipe connection; one of the valves is connected between the tank and the Tee pipe connection. The other valve are connected between the Tee pipe connection and the nozzle. The control valves are transferring the air in and out of the cylinder. All of the components are controlled by Programming Logic Control (PLC). The other part of project is a conveyor, which runs the 5 oz. bottles and there is a detector sensor to stop and run the conveyor. Once the sensor detects a bottle is going to stop running, the conveyor and the nozzle is filling the bottle with liquid.

Results & Discussion:

This project was built based on the Design Option Diameter formula, also known as DOD. After researching the equation to calculate the exact amount of liquid to fill the water bottles, the original diameter closely corresponded to the DOD formula's. The project has met all the specifications that have been determined before making improvements to the filler machine. The specifications were using water for filling, utilizing a 5 FL oz. bottle, and the time takes to fill one bottle could not take longer than ten seconds. Finally, improvements were made to the machine by programming the PLC to control the loading time and made the filling process extremely swift and accurate.

Timing Schedule:

The timing schedule shows the start date and the end day for each activity, it is also showing the duration of all the activities.

Activity	Start Date	Duration	End Day
A. Design	10 Jan 2021	30	7 Feb 2021
B. Calculations	24 Jan 2021	30	21 Feb 2021
C. Purchasing	28 Feb 2021	35	3 Apr 2021
D. Constructing	24 Jan 2021	14	10 Apr 2021

E. Risk Assessment	28 Feb 2021	7	6 Mar 2021
F. Testing	11 Mar 2021	19	25 Mar 2021
I. Operating after testing	3 Apr 2016	7	10 Apr 2016

The budget (Cost):

This table shows most of the components needed to build the project included the name of the parts, quantity, parts number, manufactures, store, cost of each part and the total costs of all the parts.

Part`s Name	Quantity	Part`s Number	Manufacture	Store	Cost
Piston	2	V4000	Arias pistons	eBay	100\$
Nozzle	1	SLA-RL	Filling equipment	eBay	99\$
Air Cylinder	1	AEVHF100	Direct industry	Teresahy	150\$
Check Valves	2	101105004	SMC	Pvcfittings online	7.45\$
Needle Valve	1	ARO 104104	SMC	eBay	15.48\$
Air Compressor	1				Donated
Control Valve	1	D6P9C2N	Direct industry	eBay	47\$
Piping	1	161 017 104	GF Piping System	GE Piping System	10\$
Framing	1	250S125-68	The steel stud manufactures association	The steel stud manufactures association	20\$

PLC	1	C0-00DD1-D	CLICK	Automation Direct	69\$
Sensor	1	X-ray 0256	Sensor vender	eBay	50\$
Switch	3	B008LT31S0	Amicco	Amazon	17.14\$
Power Supply	1	PSB240060P	CLICK	Automation Direct	28\$
Wire For PLC	1	EA-MG- PGM-CBL	CLICK	Automation Direct	43\$
Plumbing Tape	2	G2820623	ANTI-SEIZE	Zoro	1\$
Total cost = 657.07\$					

References List

- Apacks. (2015). *Benchtop Piston Filling Machine for Viscous Liquids*. Retrieved from <http://www.apacks.com/filling-machines/piston-fillers/benchtop-piston-filling-machine-for-viscous-liquids>
- Accutek Packaging. (2015). "SVF Series." Retrieved, from <https://www.accutekpackaging.com/filling-machines/piston-filling-machines/semi-automatic/svf-series>
- Accutek Packaging. (2015). "Filling Machine." Retrieved from <https://www.accutekpackaging.com/piston-volumetric-2>