



Cawangan Johor
Kampus Pasir Gudang

INDUSTRIAL TRAINING REPORT

CHE353

UNIVERSITI TEKNOLOGI MALAYSIA

(UTM)

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POSITION : SENIOR LECTURE OF CHEMICAL ENGINEERING

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Contents

1.0 INTRODUCTION	3
2.0 CONTENT	4
2.1 ORGANIZATION CHART AND HISTORY OF THE COMPANY	4
2.1.1 HISTORY OF THE COMPANY	4
2.1.2 PROCESS FLOW	6
3.0 BRIEF ON DAILY ACTIVITIES AND WEEKLY ACTIVITIES	7
3.1 DAILY ACTIVITIES	7
3.1.1 PROBLEM ENCOUNTERED	7
3.1.2 Summary all activities during internship	8
4.0 DESCRIPTION OF TASK ASSIGNED	10
4.1 Rain Harvester Project	10
4.2 Bio floc project	11
4.3 Azolla breeding project	12
5.0 CONCLUSION	13

2.0CONTENT

2.1ORGANIZATION CHART AND HISTORY OF THE COMPANY

2.1.1 HISTORY OF THE COMPANY

Before Universiti Teknologi Malaysia was born it was known as Treacher Technical School predate 1904. It was known that technical education in this country has been a century old. This kind of school usually teach the students to become Technical Assistants for the Federated Malay States Departments of Railways, Survey and Public Works. During the reign of His Majesty Almarhum Sultan Ismail Ibni Almarhum Sultan Ibrahim, then Sultan of Johor, planned on building UTM Skudai with the price of RM 1 billion. The construction work begins in 1978 and officially the university was open on 16 September 1985. Nowadays, UTM expand to have more faculties then ever as such in 1991 the faculty of human and resource was established. Now, even UTM Space also establish for part time students. Clearly, through inheritance, the history of education in UTM has surpassed its one-hundredth year, UTM will surely be a powerful learning institute in Malaysia.

ECO Park UTM was an integrated park developed under High Impact Research Grant (HIR). It consists of four projects which are:

1. Aquaponic /Hydroponic system
2. Biogas from food waste
3. Compost See Less

My workplace was researching on aquaponic and hydronic system. My supervisor Dr Johari Kamaruddin is the leader on aquaponic and hydronic system. There were many projects that were planned. One of the objectives of the project was to be more sustainable for the environment. This will surely create a better environment for our earth. One of the examples of sustainable project was by converting azolla plant to become biofuel. Overall, the existence of ECO Park is to develop innovative technology that can be use in the future for people convenience. Also, various innovation technology is use on the aquaculture system to promote sustainability and finding new ways in treating aquaculture. This shows how wide chemical engineering on subject as it can be use in aquaculture in many ways. This gives me more opportunity in learning more on impact in chemical engineering.

3.1.2 Summary all activities during internship

On the first day an introduction on my workplace on the first day and briefing on my activities during our internship in UTM. The next day I already start working at the worksite. During these two week I was working on developing the worksite from scratch. The plan was to create a new workplace on azolla plant project and bio floc system. First, I make sure any sharp projectile or unwanted material thrown out of the worksite. Next, I make sure the land in the worksite is all even so we can easily place our project on the soil. Between on those two weeks, I was also task landscaping one of the ponds since it was unstable due to the uneven land. After all the work is finish, I proceed in placing weed mattress on the soil covering the whole workplace area. Each work was supervised and guide by my supervisor.

After, finishing landscaping the area, my supervisor brief on creating azolla pond and give some reference to study. Azolla is one of natural ways in treating aquaculture wastewater and can be used as fish food. Azolla is very sustainable for our aquaculture project. In these weeks I work on azolla pond using c section metal. The scale of the pond is about 10 by 10 feet. We build the pond from scratch; the process takes a lot of skills and hard work. As always safety is very important during working with machinery especially when doing with grinder. The whole process is hard but in the end me and my supervisor manage to finish two of them by the end of 1 week and half. Also, we started on working bio floc system which is sustainable for aquaculture. Before working on bio floc my supervisor would want me to research and understanding it chemicals composition. Making bio floc to reuse the fish waste to become their food. This way we can save a lot of cost and become more sustainable. About two half week is used to complete making the bio floc system and its piping system.

Next, the finished azolla pond can be cultivated. To plant azolla there are some chemical ratios needed to mix with the water. The chemical used were phosphate, magnesium salt and others. After that, the azolla pond is covered with white net to avoid eaten by insects. Also, during this week my supervisor making innovation on the bio floc system by making the lid of the bio floc tank has a good placement so we can see inside the bio floc tank clearly. Next, an air blower is used to circulate the air at the bio floc tank. During, working on the air blower piping there were several trial and error happened. In the end the best piping system was to use bigger pipes rather than small ones so the heat from air blower could be reduce. By week 8th, my supervisor had given me a mini project on making a rain harvester. This project required technical skill and creativity since my supervisor will only observe me and my friend. By the end of the week 8th we finish making the rain

harvester. Unfortunately, MCO 3.0 was announced, and we had to work from home. Our first assignment was to create a presentation video to our supervisor on our work during our work in the ECO Park. Then we continue in making literature review on azolla cultivation and as livestock feed. The studies are transfer as video presentation and submit to my supervisor. Lastly, the final assignment is literature review of bio floc system on aquaculture and video presentation until the last day of internship which was end on 22nd of July. All the literature review is submitting to my supervisor for correction and any improvement. It helps me a lot in term of presentation finding articles in depth and critical thinking to understand how it can help the environment as well as human. On 22nd July my internship is finish and I'm sure that this internship opens my eyes on variety of chemical engineering field.

4.0 DESCRIPTION OF TASK ASSIGNED

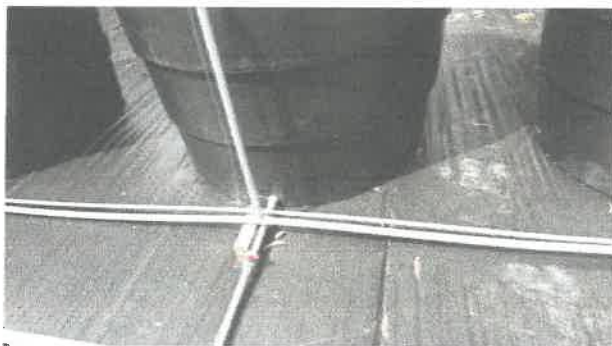
4.1 Rain Harvester Project

At ECO Park, we aim to develop the place become sustainable and more ecofriendly. For instance, the solid waste of the fish that derive from mechanical filter is used as fertilizer for corps that we plant. By having a rain harvester, we can lower the usage of water that been supply by SAJ thus lower the cost and implement reuse skill on ourselves. Making the rain harvester is also a challenge. Since, our supervisor limited his guidance I need to manage working the project mostly with my friend. Creativity is one of the importance in this project. Knowing on designing is important since a good design could lead to a better performance of the project. Before we start doing the project, we would prepare all the materials needed to use. If there were not any enough material, we would request to our supervisor or used any unuse material at the greenhouse for the first day. After carefully planning me and my friend started working on the project. Firstly, we would arrange the rain harvester and create the foundation of the piping system. Next, we continue in making the piping system using 55mm pipe. During our work in making the piping system we encounter one problem which is our grinder machine need maintenance which prove that we had to utilize our skill in cutting the edge of the pipe. A slight curve or mistake could be the downfall of the project since we have not a lot of materials to be spared. Fortunately, we manage to safely craft the piping system. By the end of the day, we manage to finish the whole project. We never see it was able to properly to collect any rain since it was MCO 3.0. However, I am sure that the project is already in good condition and the duration on working the rain harvester only took about two days.



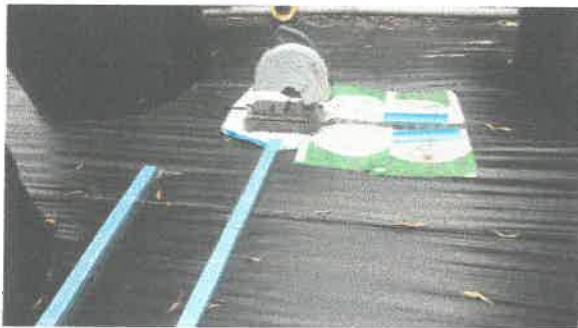
4.2 Biofloc project

Bio floc project is a one of the projects my friend and I work partially. The project is guided by our supervisor. Bio floc is one of the sustainable projects because it could produce fish feed from their own dung. This way we can reduce the upkeep of fish feed and save a lot of money. However, the process is not that simple. First, we would clean the site and clean the area surrounding. Next, we the weed mattress is used to ensure the area is covered. Then we brought ten water tanks as the bio floc tank to the work site. However, for the nutrient and chemical preparation a UTM student would handle it, but our supervisor tells us to make some research on the bio floc so that we would understand how it operates. By having bio floc project, it could change the environment and the aquaculture itself. This project surely could be developed for larger scale. Biofloc is use for making food from wastewater of fish and can reduce the upkeep cost of feed fish. It is one of the innovative ways in aquaculture. The preparation is quite complex but if its success it can give a lot of benefits to the aquaculture system. The fish tank and pipe need about two weeks in preparing them. The cover lid of fish tank is modified for the purpose of biofloc tank and can sure cover the tank from any sunlight. Also, one air pump is used to generate air on the fish tank. By the final days the biofloc is deemed to complete but was not use because of MCO 3.0.



4.3 Azolla breeding project

Azolla breeding project is one of project in helping the aquaculture wastewater management and helps in feeding the fish itself. Azolla is known to have a lot of benefits to the aquaculture and environment. It can be a biofuel, fish food, and aquaculture wastewater. In the project the azolla pond was create by us with only using YouTube as guidance. The task proves to be difficult. The pond is made from 'C section' steel with the length of 20 X 20 feet. About half a week needed to finish the tanks. Then, we started cultivating azolla by using calculated nutrients and chemicals. However, its hard to take care the plant from pest since most of the pesticide is ineffective. In the end the project needs to redo due to the pest breach. During the process of assembling the pond, safety is very important aspect due to use of many sharp objects. Also, for the nutrient composition of the azolla breeding project, my supervisor gives me the numbers and still need to research any others potential ways in breeding the azolla plant. In the end, its azolla is very fragile and need constant observation to get a lot of growth and yields.



5.0 CONCLUSION

Industrial training is very important for students. These past 17 weeks will surely give a lot of knowledge and experience to the student. Even though, I was able to complete my industrial training at UTM, Skudai I learned a lot of new knowledge on aquaculture wastewater. I learn how to have a good working ethics doing activities that I never try which fun and interesting. Researching at the same time working from scratch is best feeling that prove working at the UTM is beyond my expectation. Also, safety is very important aspect when working. I was lucky to have minor injuries. It is very important to listen to the safety protocol to value our own lives and avoid any unnecessary problem. Making our own mini project enhance our productivity and creativity as we apply the knowledge to our life. This challenging project is very good for students as it prepared the in the future where they will work life. It is important to develop our social skills as communication is one of the key important factors when working.

In the end, industrial training helps student understanding a worker life. Being a worker is different than being a student. It can affect the student mindset and develop a new ethics in their life. It clearly shows how important industrial training effect on students. Students will surely try to improve themselves in any ways to have good quality after this since working is not easy by any necessary means. In the nutshell, industrial training proves to be important in developing students to adjust their lives towards work life. This will surely ensure the student to self-grow to a better person and continue to pursue a better life in the future.