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TEKNOLOGI
MARA



INDUSTRIAL TRAINING REPORT CAREGLOVE GLOBAL SDN BHD

Name : Muhammad Afifi Bin Kamarudzaman

Programme : EH110 Faculty of Chemical Engineering

ID : 2018444164

LI Duration : 22nd September 2021 to 13th January 2022

Supervisor : Noorshuzilin binti Ishak (Production Executive)

: Mohd Hishafi bin Husin (Process Engineer)

Company Address : Lot 17479, Lorong Senawang 3/2, Off Jalan
Senawang 3, Senawang Industrial Estate, 70450
Seremban, Negeri Sembilan, Malaysia.

Evaluating Lecturer : Siti Hajar Anaziah Muhammad

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1.0 Introduction

The world today is more connected than ever, we have gone through several revolutions that bring people together. As a civilized people, we know that our days today will need us to connect to a lot of people. It doesn't matter for what purposes, politically, economically, and socially. We must connect with a lot of people throughout the entire world for us to survive and grow. A thing that is most important when it comes to connecting with people is our safety, and to make it more detail, it is our health.

We have already seen the outcome of living in the global pandemic. The pandemic has affected almost everyone in the world, doesn't matter the position and possession that the person has in the world. So, how do we as a human being overcome the problem? One way of doing so is to adapt and reflect. As the world keeps growing and we are living in an innovative world. There are lots of products rising globally to fulfil the needs of the human being.

One of the products that are much needed in the world right now is gloves. Therefore, Careglove Global Sdn Bhd is one of the glove manufacturing companies. Based in Negeri Sembilan, the company is a rising company and they are breaking through the global market. There are three types of gloves that the company is currently making, latex examination gloves, nitrile examination gloves and surgical gloves. All the three gloves are much needed in the world right now.

As an internship student, it is an honour for me to get to work in the glove manufacturing company. It is an experience to be a part of the company and fulfilling the needs of the world going through the global pandemic. For about 17 weeks, I have learnt a lot from the company. It is very important for the workers to work at a fast rate in this company because we are manufacturing products that could help in overcoming the global pandemic.

I would like to give the honour to everyone that helped me along the way going through the internship program in the production department including the stripping area and the dipping area. My supervisors and other colleagues were my helping hand to make me understand about the process at a fast rate they always encouraged me to learn and to do the work.

2.0 Organization chart and history of the company

2.1 Background and history of the company

Careplus Group Berhad was listed on the ACE Market of Bursa Securities on 6 December 2010. It has been in the glove business for over 20 years and is expanding its capacity to meet growing demands. We were incorporated in Malaysia on 30 March 2010 under the Companies Act 1965 of Malaysia as a private limited company under the name Careplus Group Sdn Bhd. Subsequently, on 5 April 2010, we converted our status from a private limited company to a public limited company to facilitate our listing on the ACE Market of Bursa Securities. We are principally an investment holding company whilst our wholly-owned subsidiaries are involved in the manufacturing, processing and trading of gloves.

Careglove Global is one of the members of Careplus Group Berhad. Careglove Global was incorporated in Malaysia under the Companies Act 1965 on 24 February 2011 as a private limited company. Its principal activity is to carry on the business as manufacturer of rubber gloves. Careglove Global was a joint venture company between Careplus Group and Descarpack Descartaveis do Brasil Ltda, a company incorporated under the laws of Brazil.

Vision

Becoming a branded and a preferred global provider of trusted quality barrier protection products.

Mission

To apply the healthcare industry best practices and technology to manufacture products of superior standards, employing a well-trained and motivated workforce and collaborating with vendors who share our business philosophy, bearing in mind our focus on providing a safe workplace, preserving our environment and optimizing our financial returns to investors.

2.2 Organization chart of the company

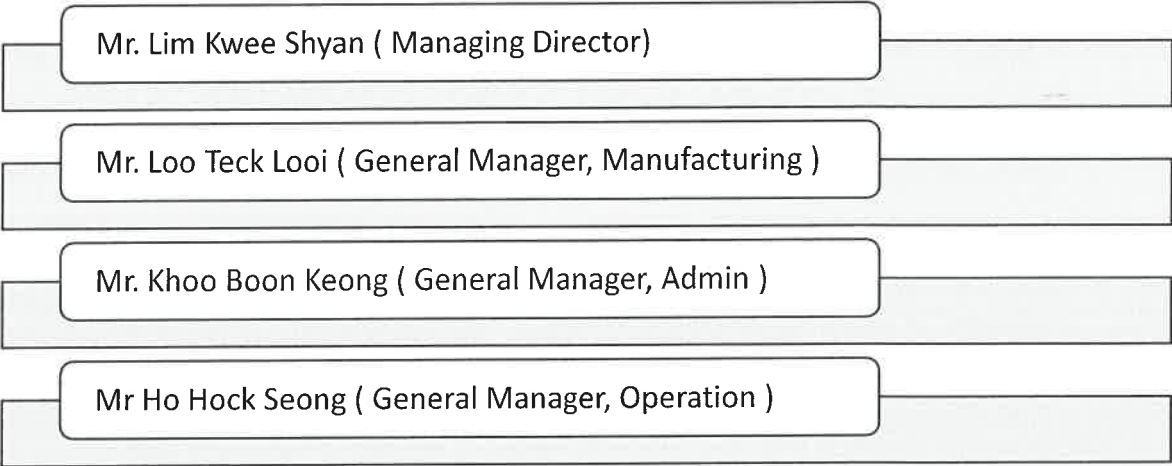
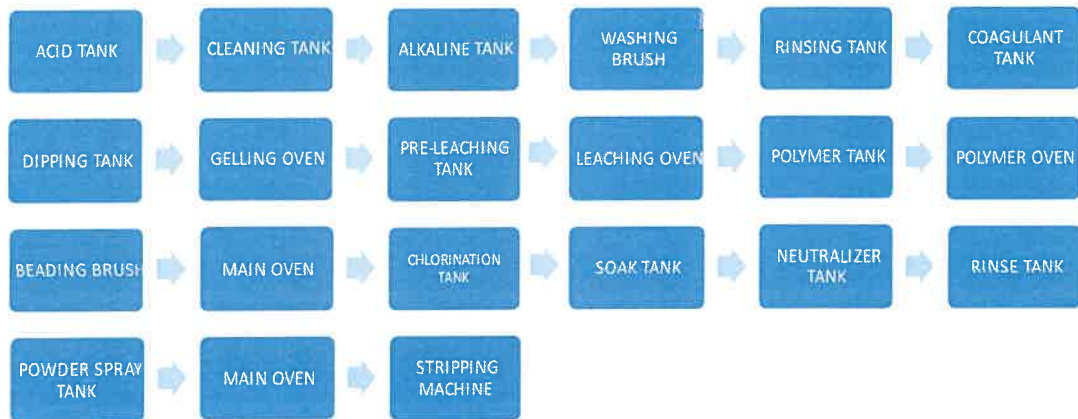


Figure 1: Main Entrance of Careglove Global Sdn Bhd

3.0 Process Flow

Process flow of making a glove



Acid Tank – alkaline Tank: For cleaning purposes.

Washing Brush: To remove excessive liquid from the former.

Coagulant Tank – Dipping Tank: Formation of glove.

Oven: To dry the glove.

Leaching Tank: Process of removal of hydrophilic materials from latex dipped products by washing them in water.

Polymer Tank: Treatment that smoothens the surface of the gloves.

Beading Brush: To roll the end part of the gloves.

Chlorination Tank: Removes powder and breaks down latex protein as well as chemical residue on or near the glove surface.

Soak Tank and Rinse Tank: To rinse off chlorine residue from gloves.

Neutralizer Tank: To neutralize the PH value of the gloves.

Powder Spray Tank: To spray powder on gloves.

Stripping Machine: To strip out the glove from former.

4.0 Weekly Activities

WEEK 1

During the first orientation day, I have been introduced to the company's background and also their rules and regulations which includes its safety and health measures. I have also gained an understanding about the report of process, production control, traceability and inspections for semi-finished product through reading the written reports. On the following day, I was given a task on the stripping process. I have learnt about the traceability, product code, production lot number, printing of glove, flow of glove, tumbler settings, and also the inspection process.

Types of skill obtained: Been introduced to the background of company, safety measures, rules and regulations, and also learnt the basic process of glove manufacturing.

WEEK 2

I have been given a project to carry out an observation on OPI and IPI inspectors. I have learned on how to carry out the observation and the pre-observation. I started carrying out my observation on the first inspector and also wrote down report on what they did in a day. My observation took place from 9.30am to 12.30pm and further continued from 3pm to 6.30pm. I have continued the project in the following day by observing the next inspector (Kyaw Kyaw Hlaing). I have observed the inspector from 9am to 12.30pm and further continued observing from 3pm to 6.30pm. I continued this observation project for the whole week with constant time frame but with different inspectors.

Types of skill obtained: Learned the type of inspection of the product quality, and also learned about the types of defect on gloves.

WEEK 3 – WEEK 4

Quarantined (tested positive for Covid-19)

WEEK 5

Continued my observation on the inspector (Sujon Ali) from 9am to 12.30pm and further continued from 3pm to 6.30pm. I then prepared the full report of the data collected from my observation. I went into the dipping process with the care of the person in charge which I have then learned further knowledge about the process. I have learned on how to measure the flow rate during the dipping process as I was doing the process on hands practically. The task was given to me to measure the flowrate for every 30 minutes from 9am to 6pm. I then prepared an excel for the flowrate taken. I did some changes on my power point and presented it to the supervisor.

Types of skill obtained: I've learned on how to measure flowrate and also prepare power point reports.

WEEK 6

I improved my report on the observation of inspectors. I was given help by my supervisor on how to improve it by referring to other internships reports. I also helped the production assistant with the filings for auditing purposes. I also helped the production assistant with documentation which includes me doing some minor correction on the filing of March 2021 and April 2021.

Types of skill obtained: Gained new knowledge about the power point features. Learned on how to do proper filing and documentation.

WEEK 7

I continued doing the filing and documentation for auditing purposes. I've been given briefing on the new project, went into the stripping area which is line 7 to diagnose the issue. The aim is to make modification on the machinery to cover all area that could avoid the gloves from falling. I started the sketch out some modification to gain better idea on the project as a whole. I went back to line 7 to obtain more images for my sketches. Once I've completed my sketches, I proceed to 2D drawings. Then, I figured out the dimension for the area of modification. I then chose the suitable type of 3D drawing (isometric drawing) and started drawing the first area of modification.

Types of skill obtained: Enhanced my engineering drawing skills and also learned on how to take measurements.

WEEK 8

I continued with the second area of modification. I figured out the suitable modification to be added to the area. I went back to line 7 to get a better image before continuing my 3D sketches. I then continued finishing my 3D drawings. After satisfied with the second drawing, I continued with the third one.

Types of skill obtained: Enhanced my 2D and 3D drawing skills and also learned on how to improvise the stripping area.

WEEK 9

I continued with the fourth area of modification. I went back to the line to get a better insight. I started my 2D sketches. I improvised my area of modification due to some changes. I then continued doing my 2D drawing. Made some changes from the initial idea. Finished the 3D drawings too. Went back to the line the following day, to get the idea of the fifth area of modification (mid-section). It took me awhile to get detail insight of the idea. Started sketching and made several changes before proceeding the 2D drawings.

Types of skill obtained: Enhanced my 2D and 3D drawing skills and also learned on how to improvise the stripping area.

WEEK 10

Continued my fifth drawing to 3D drawing and made some changes based on the suitability of the modification. Started taking measurements of all the drawings from line 7. Finishing, the changes of measurement and did final review on the drawings before starting power point. After finished doing amendments, completed the power point slide for the drawing presentation. I then did my practices on my presentation. The following days, I helped the production assistant with documentation filing of October 2021 for auditing purposes.

Types of skill obtained: Enhance my 2D and 3D drawing skills, also learned how to take measurements in line 7 and its safety measures.

WEEK 11

Helped the production assistant with documentation filing of August and September 2021 for auditing purposes. I was then assigned to prepare an excel for auditing which includes auditing before cuffing brush, audit before stacking machine, and spot check dispense gloves. The following day, I corrected the drawings to show to my supervisor. I went back to line 7 to obtain pictures for reference purposes. Completed my first sketch.

Types of skill obtained: Learned on documentation for auditing and enhance skill of using excel.

WEEK 12

Continued correcting the first and second drawings. Went back to line 7 to get the measurements for new changes. Updated the power point slides based on the latest measurement taken. Then practiced my presentation with the slides. I helped the production assistant with documentation for auditing purposes. I also helped the maintenance team with painting that was done in control box of line 1 and line 2.

Types of skill obtained: Learned on improving the drawings and the importance of machinery in the stripping area.

WEEK 13

Helping the process engineer on preparing excel for pass/fail gloves. Continue on painting label box in lane 1 and 2. Did labelling and completed the painting. Continue painting task on 2 control box in line 3. Removed all the labelling. Covered all the important parts with tape and start painting on panel boxes in line 3. Painted some part in line 4. Removed the labelling and painted the important parts in line 4. Started painting on line 5 panel box.

Type of skills obtained: Learn on how do refurbishing in production area. Learn on how to prepare excel for B-grade and fail glove and sharpen the skills of using excel.

WEEK 14

Continued removing the labels, started painting the panel boxes and also re-labelled the important parts from line 5 to line 8. Continued painting on line 9 and also did the detailing as the labels had collapsed on the ground.

Type of skills obtained: Learn on how to do refurbishing in production area

WEEK 15

Check labelling from line 1 to line 9. Collect all the data for all labels. Went to maintenance area to get the labels. Prepare an excel on the types of labels and the quantity. Submit the excel to process engineer to place the order. Learned about former oiling with technician. Check the condition of former oil on plant 2. Did oiling in oven on line 16. Learned on types of pumps and the function (coagulant pump, chemical pump and latex pump). Adjust overflow on pre-leaching tank 1, line 16. Flew out the water, did the adjustments, add water back to the desired level. Did verification of metering pump online 10,11,13,15,17 of plant 2 and line 1,2,5,6,7,8,9 on plant 1. Did labelling for chemical drum on plant 2. Learned on type of chemical used in every line. Labelling was done on all chemical drums on plant 2. Learned on type of chemical used, the preparation and dilution of acid and alkaline. Learned on the pH value and the time for chemical to top up. Prepare a sheet protector to be put on chemical drums on plant 1. Inserted oil sheet protectors on chemical drums of plant 1. Collected data of chemical process, new preparations of chemical and chemical top up on chemical tanks of line 1,2,3. Did flushing on oil palms for all stop line. Change flow of normal water to hot water on plant 1. Took the pump from line 18 and install it on line 17. Do verification of metering pump on plant 1 and 2 and check the pump. Checked the tubing of the pump, do flushing on the pumps of the stop line.

Type of skill obtained: Learned the type of chemical used, the level of concentration, and learn the labelling of chemicals.

WEEK 16

Check JBA flowrate of pump 1. Help fixed the pump. Check chemical drums on line 3 and 4. Serviced the acid pump on line 4. Check pre-leaching tank used in line 5 and 9. Check the coagulant flow rate in line 3 and 4. Check chemical flowrate of plant 2. Check flowrate of line 1,2,3,4. Check the coagulant pump on line 3,4. Check temperature rinsing tank line 3 and 4. Check the non-functioning pump in plant 1. Check chemical in drums of plant 2. Recheck the acid pump of line 10,11,13,14,15.

Type of skill obtained: Learned how to take JBA flowrate and measuring the flowrate of chemical pump.

WEEK 17

Check labelling and cover on all drums. Take sampling of acid tank 1,2 and alkaline tank of line 17 and sent to wet lab. Changed the tubing of the pump. Check the condition of the pump. Install magnet holder on line 7 and took it off when finished. Check chemical flowrate of plant 2. Prepared gaskets for pump. Remove magnet on line 13. Install magnet again on line 13. Collect data from the magnet.

Type of skill obtained: learn on how to take sample of liquid from the tank and prepare the sample for laboratory process, learn on how to service the chemical pump.

5.0 Task Assigned

There are four major tasks assigned along the way of going through my internship program at Careglove Global Sdn Bhd. The four major tasks are:

- 1) Inspection on operator
- 2) Preparing design of modification at stripping area
- 3) Refurbishing the panel boxes on Plant 1
- 4) Working in the chemical area

5.1 Inspection On Operator

Objective: To reduce manpower by viewing the workload of the inspection operator on inspecting the sample size and its frequency.

Method: Observing the operator and collecting all data of their workload, observe the total free time and calculate the percentage of the workload.

Table of Activity

28 September 2021

9am-12:30pm

Activity	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	Average (min)
Collecting glove	3	3	2	2	5	3	3	-	3
Check glove	13	8	13	8	8	9	13	-	10.3
Fill in report	3	4	3	5	4	4	-	-	3.8
Data key-in	4	6	4	5	4	4	-	-	4.5
Put back glove	2	3	3	2	3	3	-	-	2.7

3pm-6:30pm

Activity	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	Average (min)
Collecting glove	3	2	3	2	2	2	-	-	2.3
Check glove	9	11	9	8	14	8	-	-	9.8
Fill in report	4	3	4	4	3	3	-	-	3.5
Data key-in	4	4	4	4	4	4	-	-	4
Put back glove	3	2	2	3	2	3	-	-	2.5

29 September 2021

9am-12.30pm

Activity	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	Average (min)
Collecting glove	3	3	2	3	3	3	2	-	2.7
Check glove	13	12	10	13	13	12	11	-	12
Fill in report	5	3	3	3	3	3	-	-	3.3
Data key-in	5	4	4	3	4	4	-	-	4
Put back glove	2	1	1	2	1	2	-	-	1.6

3pm-6:30pm

Activity	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	Average (min)
Collecting glove	2	2	3	2	2	2	1	1	1.6
Check glove	14	8	9	10	8	13	9	-	10.1
Fill in report	4	4	4	4	3	5	4	-	4
Data key-in	3	4	5	5	4	4	3	-	4
Put back glove	1	2	1	2	2	2	1	-	1.6

30 September 2021

9am-12:30pm

Activity	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	Average (min)
Collecting glove	2	4	2	2	2	-	-	-	2.4
Check glove	10	11	8	13	8	-	-	-	10
Fill in report	4	2	4	3	3	-	-	-	3.2
Data key-in	4	4	4	3	3	-	-	-	3.6
Put back glove	3	-	3	-	2	-	-	-	2.7

3pm-6:30pm

Activity	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	Average (min)
Collecting glove	-	3	3	2	3	2	2	-	2.5
Check glove	-	13	8	9	9	8	-	-	9.4
Fill in report	3	5	3	6	4	5	-	-	4.3
Data key-in	3	4	4	4	5	6	-	-	4.5
Put back glove	4	2	2	2	2	4	-	-	2.7

18 October 2021

9am-12.30pm

Activity	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	Average (min)
Collecting glove	2	5	2	4	2	-	-	-	3
Check glove	8	8	17	8	14	-	-	-	11
Fill in report	-	5	6	-	6	-	-	-	5.7
Data key-in	-	4	-	-	4	-	-	-	4
Put back glove	-	-	-	-	-	-	-	-	-

3pm-6:30pm

Activity	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	Average (min)
Collecting glove	2	-	2	2	-	-	-	-	2
Check glove	14	17	17	8	13	13	-	-	13.7
Fill in report	5	3	4	5	3	3	-	-	3.8
Data key-in	4	-	-	4	4	-	-	-	4
Put back glove	3	-	-	2	2	-	-	-	2.3

Table of Time

28 October 2021

Observation time	Activity	Frequency	Total Time (min)	Average Time (min)	Percentage (%)
9am-12:30pm	Collecting glove	7	21	3	88.3
	Check glove	7	72	10.3	
	Fill in report	6	23	3.8	
	Data key-in	6	27	4.5	
	Put back glove	6	16	2.7	
	Total	32	159	24.3	

Observation time	Activity	Frequency	Total Time (min)	Average Time (min)	Percentage (%)
3pm-6:30pm	Collecting glove	6	14	2.3	
	Check glove	6	59	9.8	
	Fill in report	6	21	3.5	
	Data key-in	6	24	4	
	Put back glove	6	15	2.5	
	Total	30	133	22.1	73.9

29 September 2021

Observation time	Activity	Frequency	Total Time (min)	Average Time (min)	Percentage (%)
9am-12:30pm	Collecting glove	7	19	2.7	
	Check glove	7	84	12	
	Fill in report	6	20	3.3	
	Data key-in	6	24	4	
	Put back glove	6	10	1.6	
	Total	32	157	23.6	87.2

Observation time	Activity	Frequency	Total Time (min)	Average Time (min)	Percentage (%)
3pm-6:30pm	Collecting glove	8	13	1.6	
	Check glove	7	71	10.1	
	Fill in report	7	28	4	
	Data key-in	7	28	4	
	Put back glove	7	11	1.6	
	Total	36	151	21.3	

30 September 2021

Observation time	Activity	Frequency	Total Time (min)	Average Time (min)	Percentage (%)
9am-12:30pm	Collecting glove	5	12	2.4	
	Check glove	5	50	10	
	Fill in report	5	16	3.2	
	Data key-in	5	19	3.6	
	Put back glove	5	8	2.7	
	Total	25	105	21.9	

Observation time	Activity	Frequency	Total Time (min)	Average Time (min)	Percentage (%)
3pm-6:30pm	Collecting glove	7	15	2.5	72.8
	Check glove	6	47	9.4	
	Fill in report	6	26	4.3	
	Data key-in	6	27	4.5	
	Put back glove	6	16	2.7	
	Total	31	131	23.4	

18 October 2021

Observation time	Activity	Frequency	Total Time (min)	Average Time (min)	Percentage (%)
9am-12:30pm	Collecting glove	5	15	3	53.3
	Check glove	5	55	11	
	Fill in report	3	17	5.7	
	Data key-in	2	8	4	
	Put back glove	-	-	-	
	Total	15	96	23.7	

Observation time	Activity	Frequency	Total Time (min)	Average Time (min)	Percentage (%)
3pm-6:30pm	Collecting glove	3	6	2	72.2
	Check glove	6	82	13.7	
	Fill in report	6	23	3.8	
	Data key-in	3	12	4	
	Put back glove	3	7	2.3	
	Total	21	130	25.8	

Table of Percentage

Date	28 September 2021	29 September 2021	30 September 2021	18 October 2021
Time	9am-12:30pm			
Observation Hour	3 hours			
Activity	5 activities			
Total Frequency	32	32	25	15
Total time (min)	159	157	105	96
Percentage	88.3	87.2	58.3	53.3
Average Percentage	71.78			

Date	28 September 2021	29 September 2021	30 September 2021	18 October 2021
Time	3pm-6:30pm			
Observation Hour	3 hours			
Activity	5 activities			
Total Frequency	30	36	31	21
Total time (min)	133	151	131	130
Percentage	73.9	83.9	72.8	72.2
Average Percentage	75.7			

Conclusion

TOTAL AVERAGE (%)
73.74
OPERATOR LINE (ACTUAL)
1 OPERATOR / 1.4 LINE
OPERATOR LINE (RECOMMENDED)
2 OPERATORS / 3 LINE

5.2 Preparing Design of Modification at Stripping Area

The second task was assigned to prepare several drawings for the innovation at stripping area. The problem was when the air jet that blow out the glove from the former need to run on high pressure, the outcome of it was the glove keep flying away from the collector and fall on the ground. The company were trying to overcome this problem because all gloves that fall onto the ground is graded as B-grade or reject glove. I was assigned to prepare several drawings to overcome the problem by closing all the possible area that could make the glove fly escaping the collector. The main materials to be used are metal plate and metal net.

Before I started the job, my supervisor brought me to the area of development that were needed. I was given my own time to be there and collected all the information needed from the area before starting to draw. My main idea was to draw by reviewing the sample pictures that I was going to collect. I stucked to the plan and started to collect pictures from the area. After collecting all the pictures, I went straight to the drawing. I used the engineering drawing skills that I learnt back in school and university during the second semester. The problem occurred when the company didn't have the auto cad for me to prepare my drawing. After discussing with my supervisor, he stated that I could do the drawing with any method that would be easy for me to prepare. So, I pursued with hand-drawing. It took me about 2 weeks to prepare all the design initially but after my first presentation, I was assigned to make several changes on the design and I came out with two more designs that were well calculated and it took me about one and a half week to prepare for that and the presentation as well.

Objective: To install modifications on line 7 in decreasing the amount of reject and B-grade gloves.

3D DRAWING



Figure 2: the area of the first design

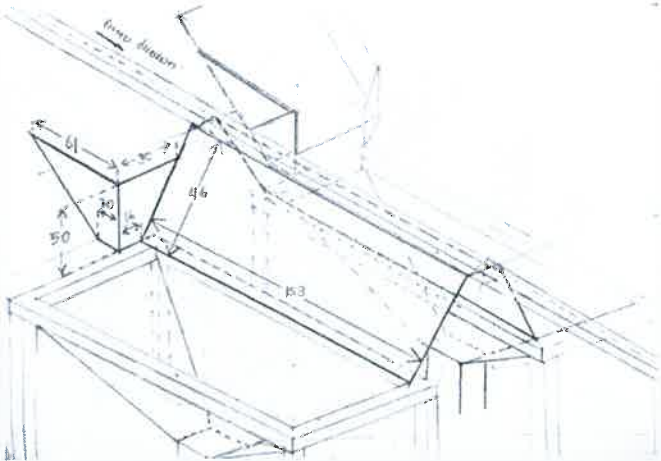


Figure 3: The 3D drawing of the first design

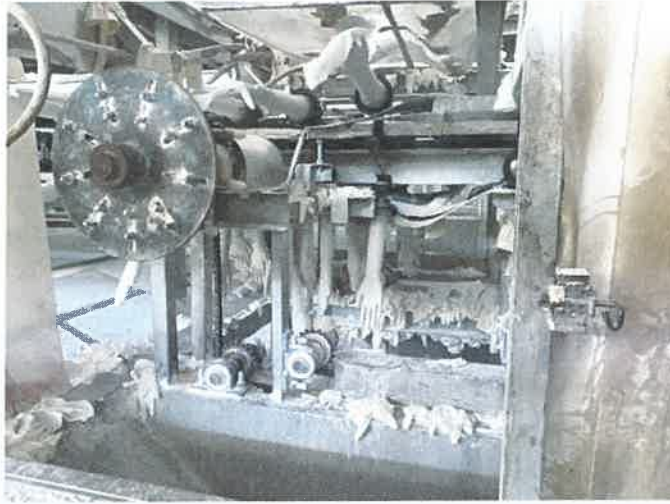


Figure 4: the area of the second design

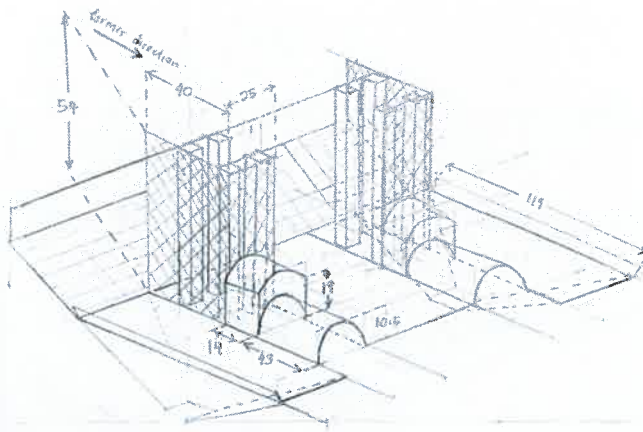


Figure 5: The 3D drawing of the second design

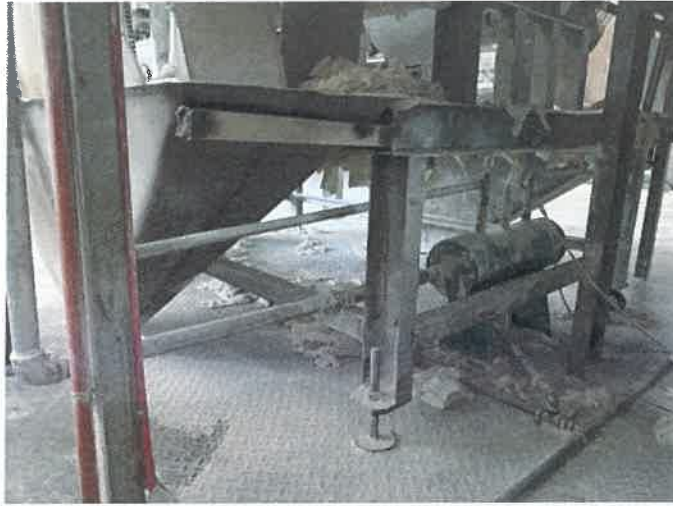


Figure 6: the area of the third design

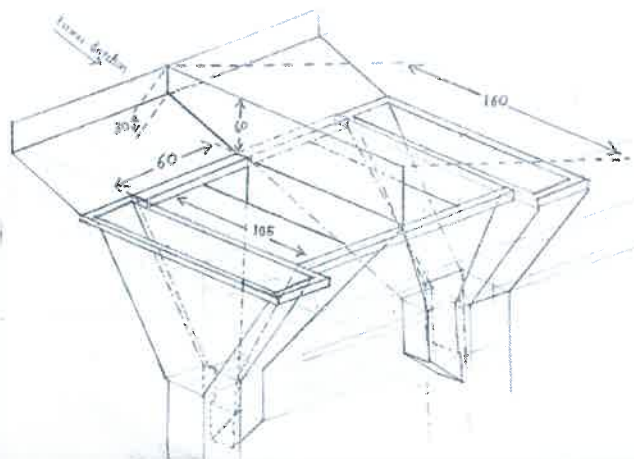


Figure 7: The 3D drawing of the third design



Figure 8: the area of the fourth design

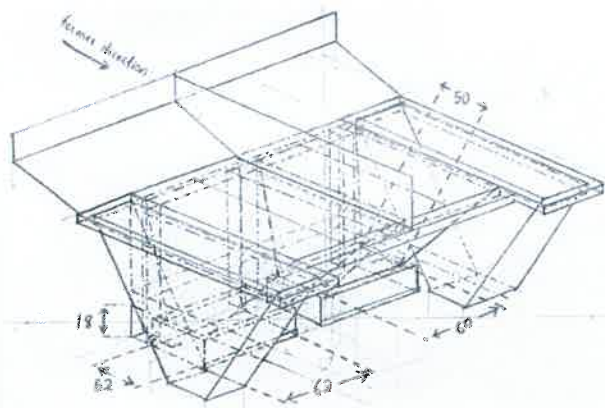


Figure 9: The 3D drawing of the fourth design



Figure 10: the area of the fifth design

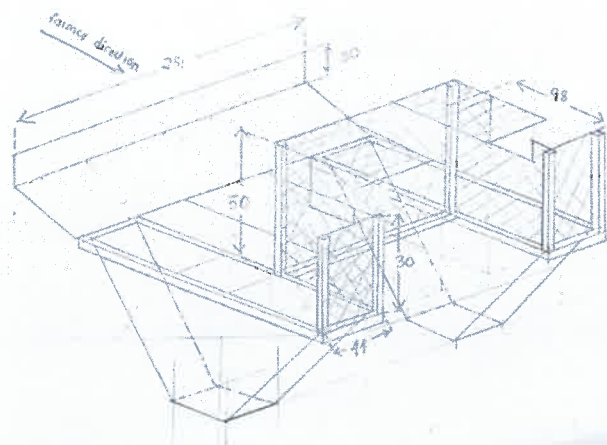


Figure 11: The 3D drawing of the fifth design



Figure 12: the area of the sixth design

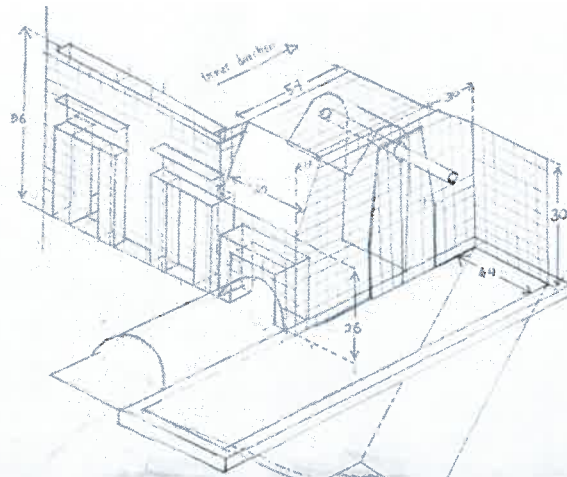


Figure 13: The 3D drawing of the sixth design

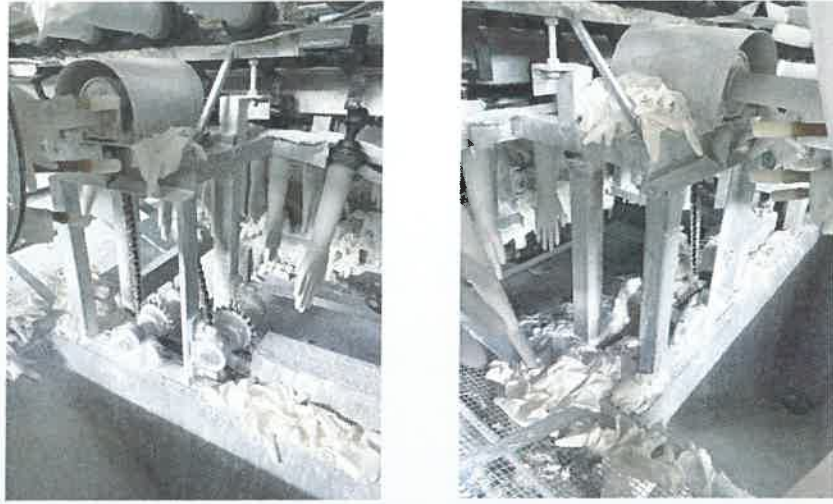


Figure 14: the area of the seventh design

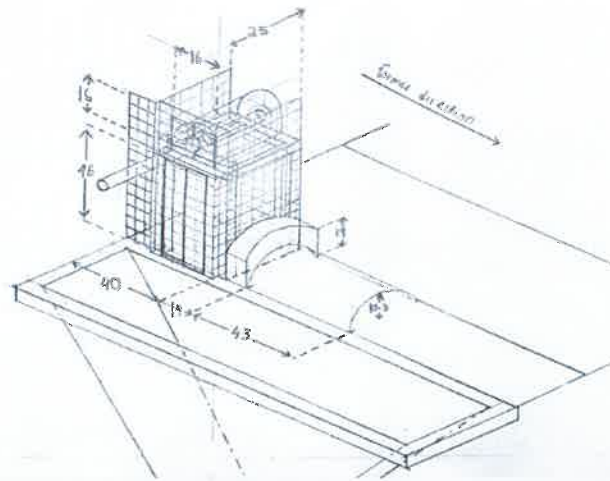


Figure 15: The 3D drawing of the seventh design

Comparison on 5th and 6th drawing

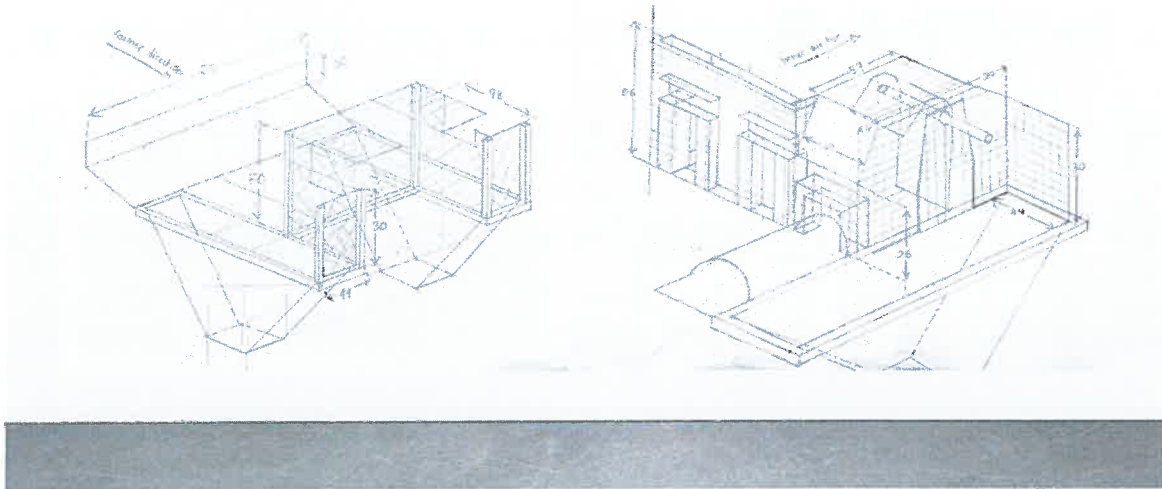


Figure 18: the comparison of fifth and sixth design

2D Drawing

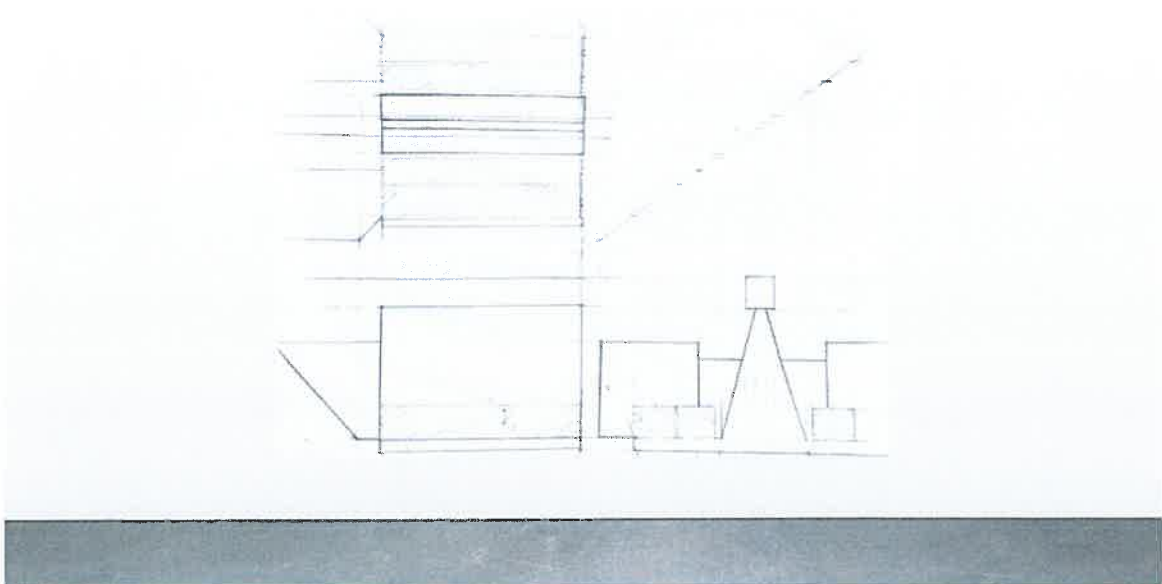


Figure 19: The 2D drawing of the first design

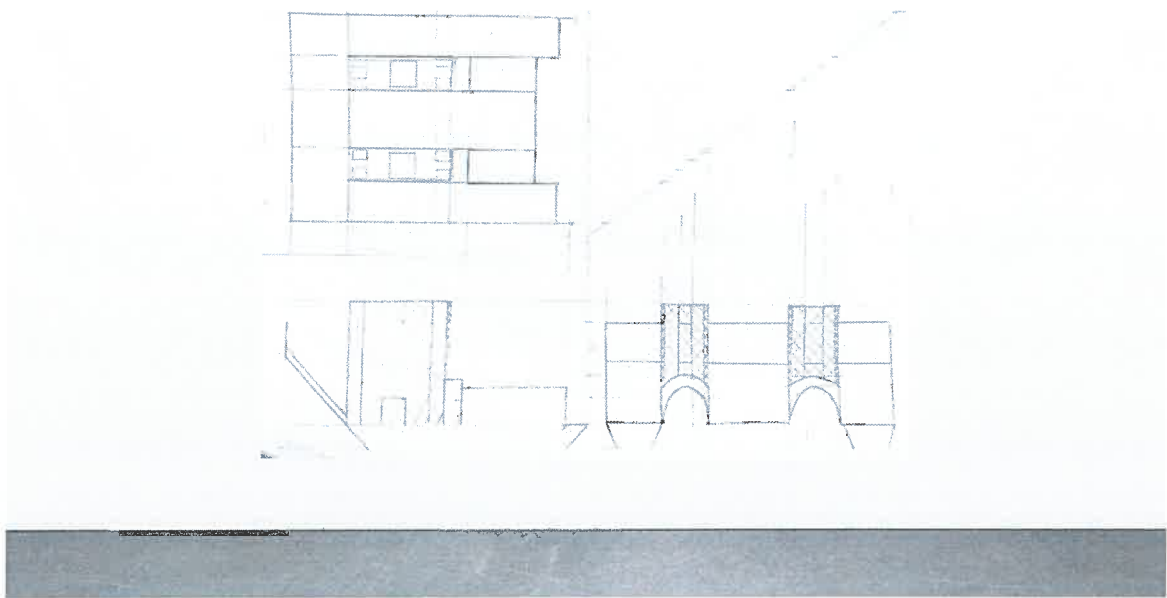


Figure 20: The 2D drawing of the second design

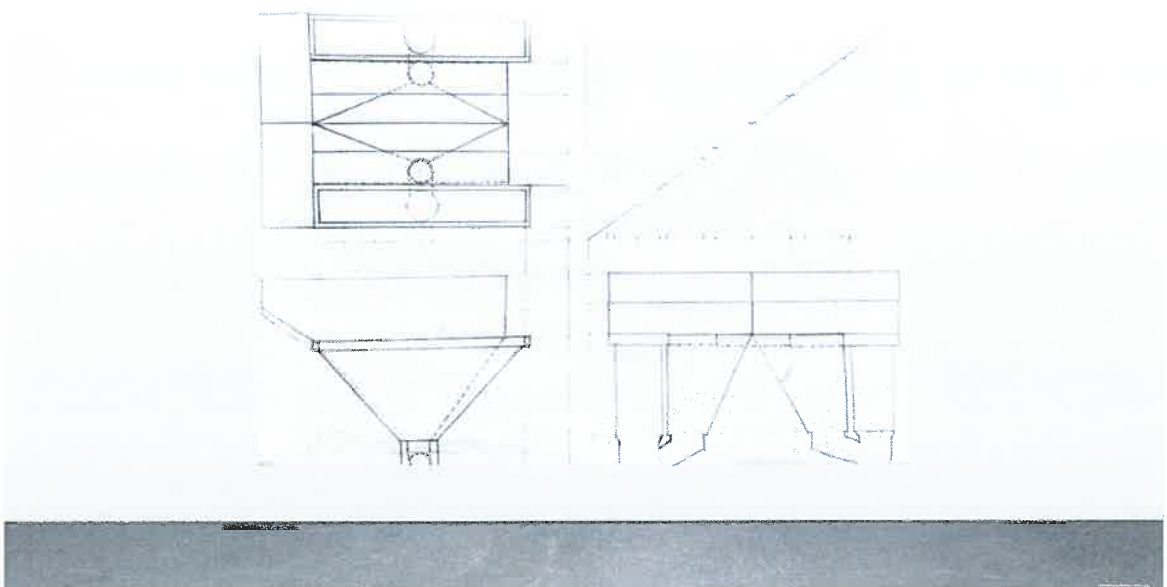


Figure 21: The 2D drawing of the third design

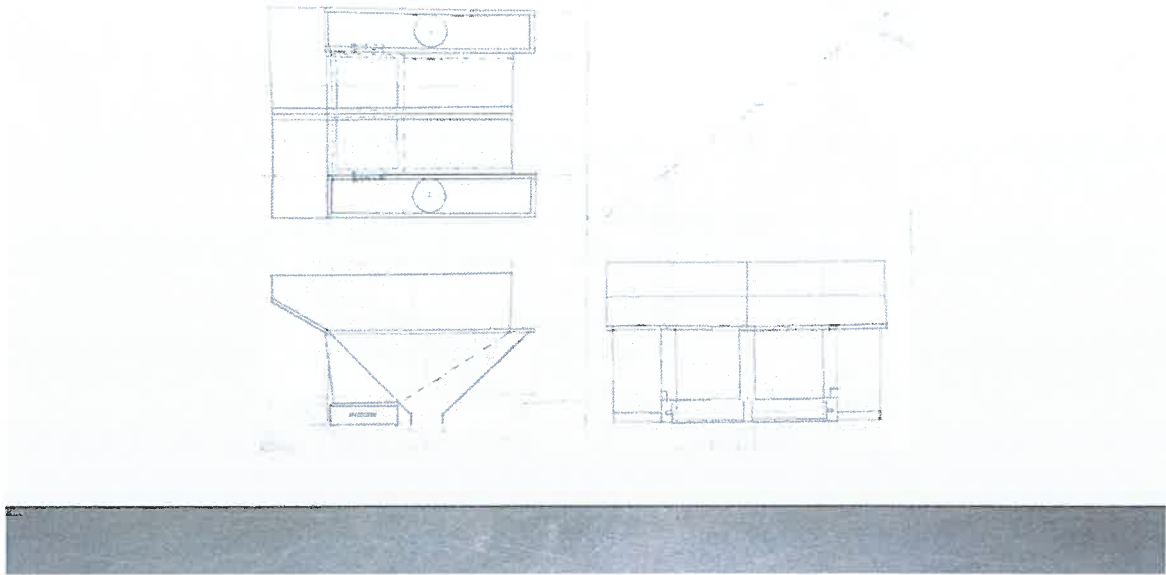


Figure 22: The 2D drawing of the fourth design

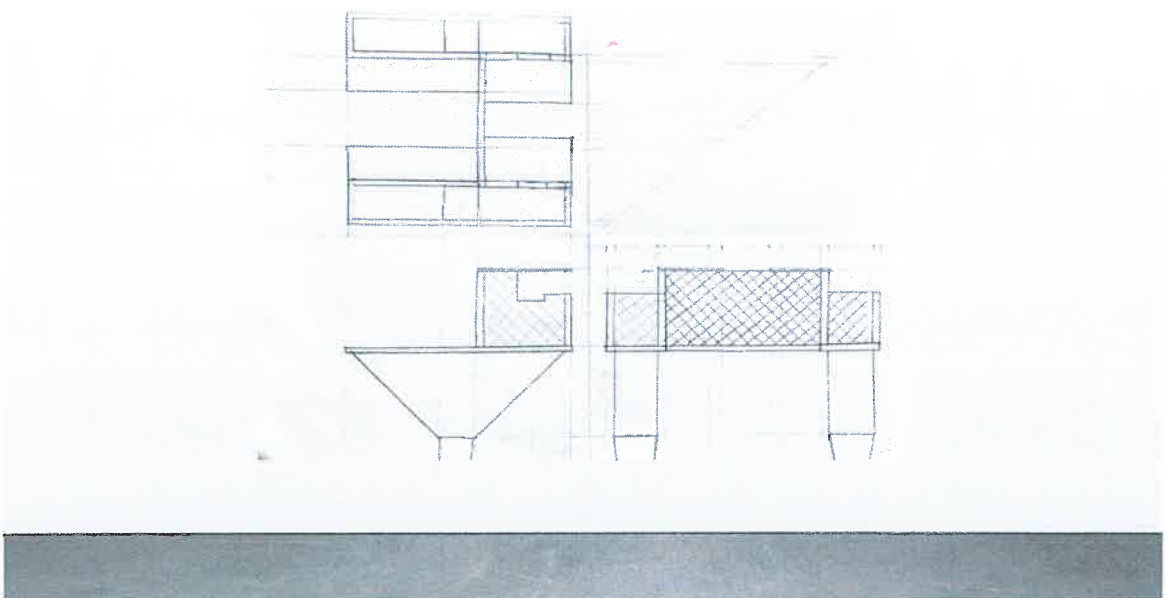


Figure 23: The 2D drawing of the fifth design

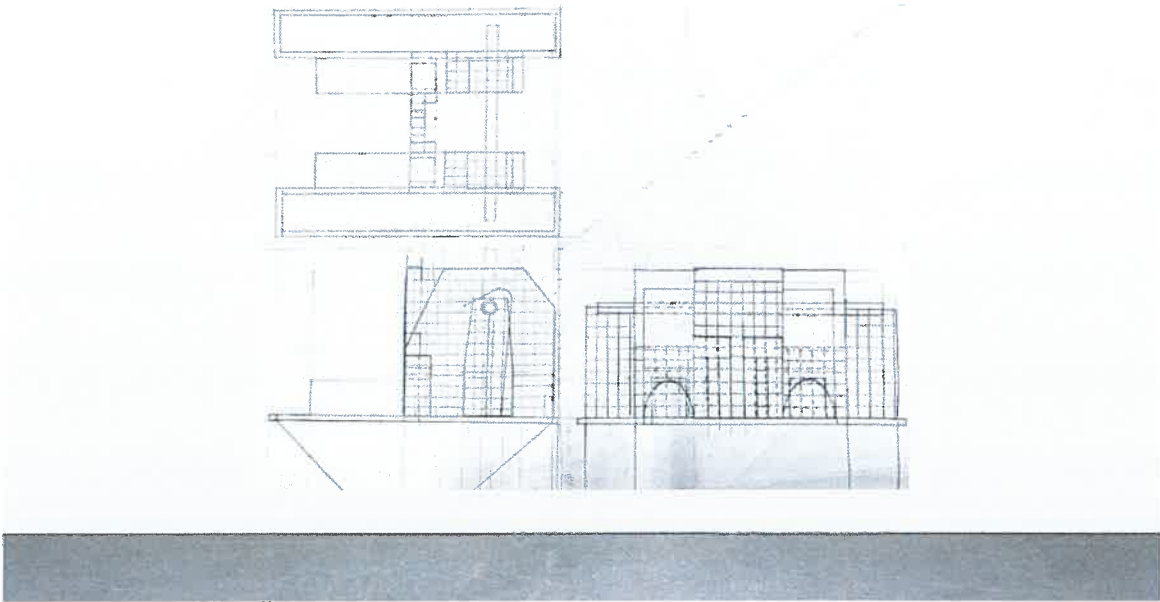


Figure 24: The 2D drawing of the sixth design

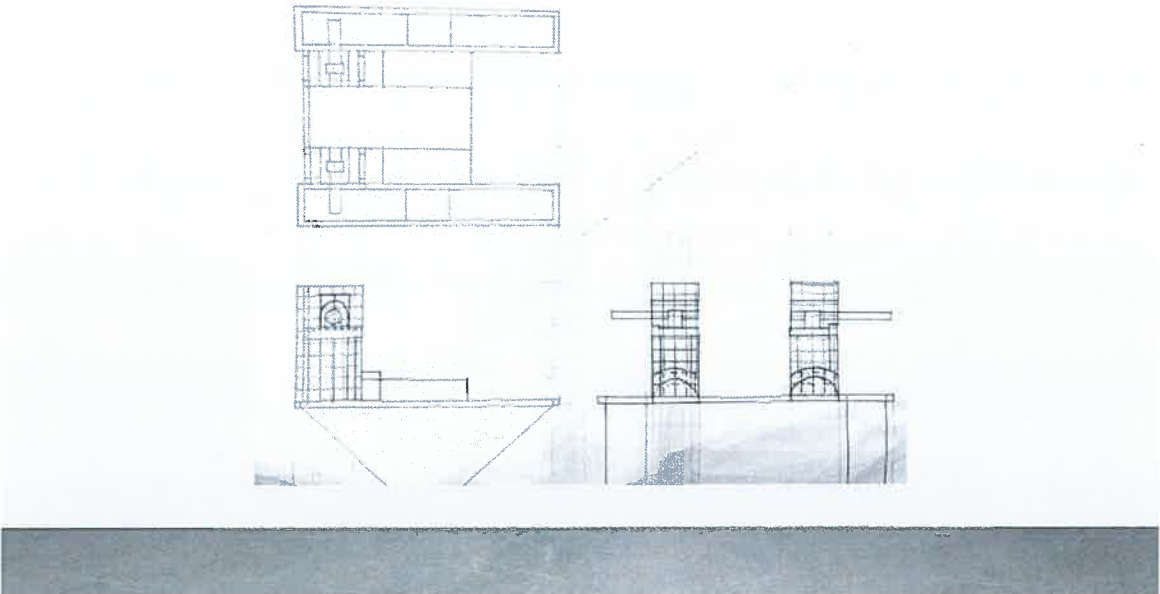


Figure 25: The 2D drawing of the seventh design

5.3 Refurbishing the Panel Box in Plant 1

The third major task I was assigned to do was to refurbish the panel box at plant 1. Basically, there are two plants in Careglove Global Sdn Bhd. As the company has been running for more than 10 years, some of the machines and stuff in the production plant were getting rotten. I, as an internship student, was assigned to do several refurbishment on the machinery and stuff. Other operators were assigned to make the refurbishment in several areas but for me, I was assigned to do so at the panel box. The function of the panel box are to control everything in the line, it is where the start and stop button of all tanks are placed. The panel box is also used to detect any trip in any area of the line. It is very important to take care of the panel box as the panel box is the source of electricity for all areas in the production line.

In plant 1, there are nine production lines running to make the glove. For line 1 to line 9 except for the third and fourth lines, there is one panel box for each line and for line 3 and 4, there are two panel boxes for each line. This is because line 3 and 4 were running the production of surgical glove and the system was a bit different. There are 4 phases on refurbishing the panel boxes. The 4 phases are:

- 1) Removing the old labelling on the panel box
- 2) Cleaning the panel box
- 3) Painting the panel box
- 4) Preparing an excel of new labels to be ordered from supplier.

Objective: To refurbish all panel boxes on Plant 1 to make sure the panel boxes run in perfect condition and avoiding defect on glove manufacturing.

Removing the Old Labelling on the Panel Box

The first work to do was removing all of the old labelling on all panel boxes. The method I used was by capturing pictures of all labelling from panel box of line to line 9. It is very important to capture the labelling perfectly because the new labels will be needed to follow the initial labels. So, all labels were captured and sorted accordingly and the photos were kept in a file.

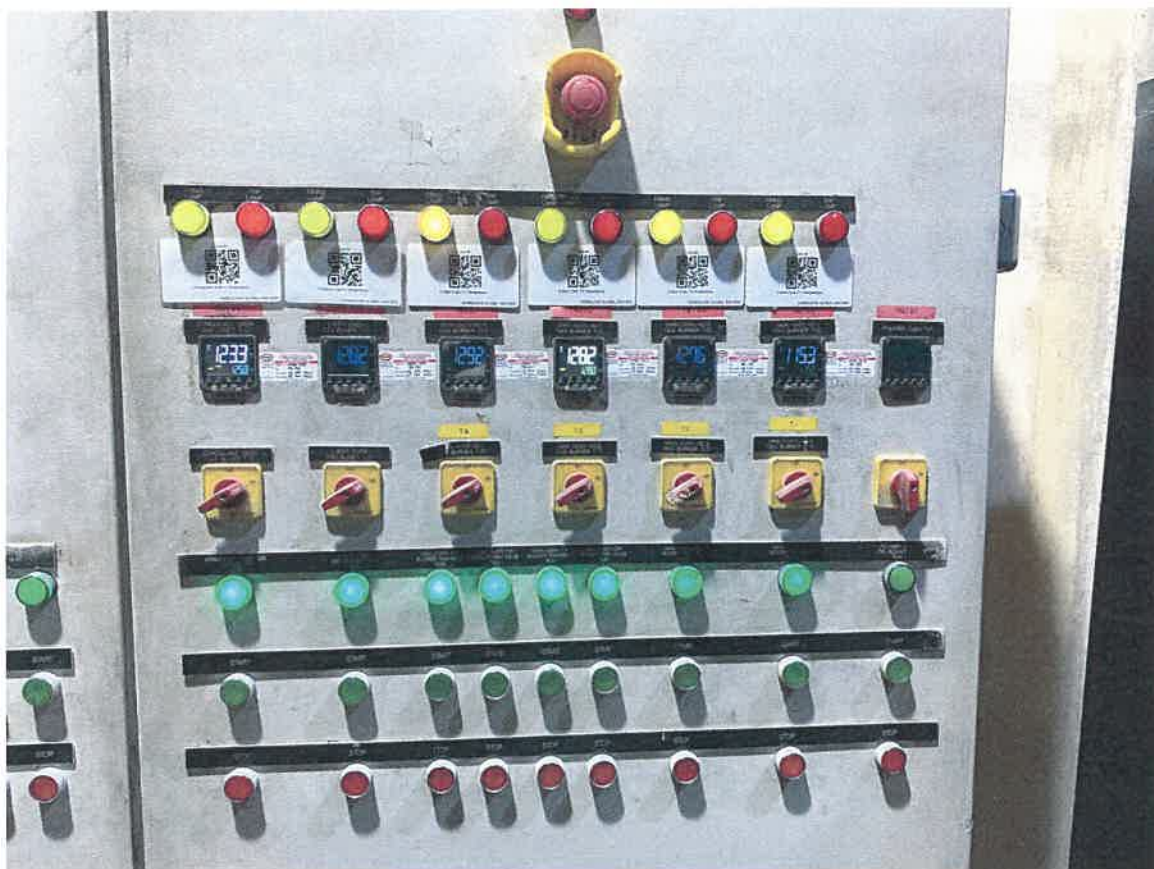


Figure 26: sample of labels on the panel box

Cleaning the Panel Box

Before I started on painting, I cleaned the panel box with clothes to make sure there are no stain or dust on the surface area of the panel box. This is an important part as the panel box was covered with thick dust and oil stain. The panel box runs along with the cooler fan on it so it is important to clean everything up for an optimum performance.

Painting the Panel Box

After finished with cleaning, I started on the painting, the painting took about one and a half week for all nine lines including 11 panel boxes. Before I started, I had to cover every panel button with tape because I need to make sure that the paint wouldn't ruin the button on the panel box as all the buttons are important. Then, I started to paint with a roller on the major part of the panel box. After finished the major area, I started on doing the detailing on the area of the buttons with brush. The work needed to be done with high level of patience as every button must not be covered with paint.

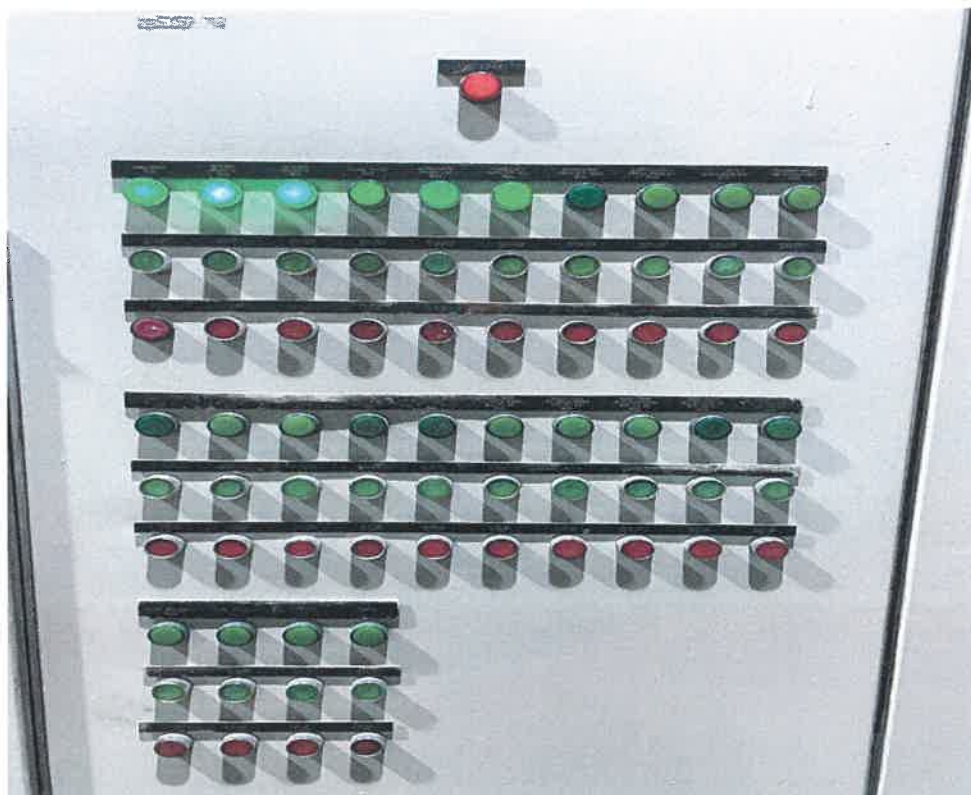


Figure 27: the panel box after the painting was done

Preparing an excel of new labels to be ordered from supplier

After finished with the painting, I had to put all the labels back accordingly. After I have finished with labelling, the production executive of Plant 1 decided to change the labels. This is due to the old labels that weren't following the standard procedure, for example, the words on the labels are washed away and that didn't come up to the standard of safety procedure. I was assigned to prepare an excel containing all labels from line 1 to line 9 to submit the order to the supplier.

Type	Plant 1 Panel Box Label										Remark (extra)	total Quantity	
	Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9	Line 10			
START		23	23	35	33	25	25	25	25	25		11	250
STOP		23	23	35	33	25	25	25	25	25		11	250
TRIP		23	23	17	17	1	1	1	1	1		6	95
RUN				17	17							6	40
INCREASE SPEED		1	1										2
DECREASE SPEED		1	1										2
MAIN DRIVE		1	1										2
HORIZONTAL BRUSHING (1)		1	1										2
HORIZONTAL BRUSHING (2)		1	1										2
BEADING 1		1	1										2
BEADING 2		1	1										2
HEATING BLOWER (1)		1	1										2
POLYMER TANK PUMP		1	1										2
HEATING BLOWER (2)		1	1										2
HEATING BLOWER (3)		1	1										2
BLOWER 1		1	1										2
BLOWER 2		1	1										2
BLOWER 3		1	1										2
BLOWER 4		1	1										2
ROTATION BRUSH (1)		1	1										2
ROTATION BRUSH (2)		1	1										2
LATEX TANK (1)		1	1										2
LATEX TANK (2)		1	1										2
SLURRY TANK PUMP (1)		1	1										2
SLURRY TANK PUMP (2)		1	1										2
COAGULANT PUMP (1)		1	1										2
COAGULANT PUMP (2)		1	1										2
INKJET PRINTER (1)		1	1										2
INKJET PRINTER (2)		1	1										2
R-PHASE		1	1										2
Y-PHASE		1	1										2
B-PHASE		1	1										2
AMMETER		1	1										2
VOLTMETER		1	1										2
R				1	1	1	1	1	1	1			7
Y				1	1	1	1	1	1	1			7
B				1	1	1	1	1	1	1			7
PHASE INDICATING LIGHT				1	1	1	1	1	1	1			7
EMERGENCY LAMP				1	1	1	1	1	1	1			7
EMERGENCY STOP				1	1	1	1	1	1	1			7
EMERGENCY TRIP				1	1	1	1	1	1	1			7
TRIP LAMP				2	1								2
COAGULANT OVEN 1A T/C				1									1
COAGULANT OVEN 1B T/C				1									1
LATEX OVEN 1 T/C				1	1								2
LATEX OVEN 2 T/C				1	1								2
MAIN OVEN 1 T/C				1	1								2
MAIN OVEN 2 T/C				1	1								2
MAIN OVEN 3 T/C				1	1								2
MAIN OVEN 4 T/C				1	1								2
MAIN OVEN 5 T/C				1	1								2
MAIN DRIVE RUN				1	1	1	1	1	1	1			7
BEADING BRUSH-L RUN				1	1								2
BEADING BRUSH-R RUN				1	1								2
ROUND BRUSH RUN				1	1								2
HORIZONTAL BRUSH-L&R RUN				1	1								2
COAGULANT OVEN B/F NO. 1 RUN				1	1								2
COAGULANT OVEN B/F NO. 2 RUN				1	1								2
LATEX OVEN 1 CIRCULATION B/F RUN				1	1								2
LATEX OVEN 2 CIRCULATION B/F RUN				1	1								2
POLYMER OVEN BIFURCATED FAN RUN				1	1								2
MAIN OVEN Z1 CIRCULATION B/F NO. 1A RUN				1	1								2
MAIN OVEN Z1 CIRCULATION B/F NO. 1B RUN				1	1								2
MAIN OVEN Z1 CIRCULATION B/F NO. 2A RUN				1	1								2
MAIN OVEN Z1 CIRCULATION B/F NO. 2B RUN				1	1								2
MAIN OVEN Z1 CIRCULATION B/F NO. 3A RUN				1	1								2
MAIN OVEN Z1 CIRCULATION B/F NO. 3B RUN				1	1								2
MAIN OVEN Z1 CIRCULATION B/F NO. 4A RUN				1	1								2
MAIN OVEN Z1 CIRCULATION B/F NO. 4B RUN				1	1								2
MAIN OVEN Z1 CIRCULATION B/F NO. 5A RUN				1	1								2
MAIN OVEN Z1 CIRCULATION B/F NO. 5B RUN				1	1								2
CUFF BRUSH-R RUN				1	1								2
CUFF BRUSH-L RUN				1	1								2
POLYMER STIRRER RUN				1	1								2
SPARE				1	1								1
ISOLATOR OFF				1	1								2
COAGULANT OVEN				2	2								4
LATEX OVEN 1				2	2								4
LATEX OVEN 2				2	2								4
MAIN OVEN 1				2	2								4
MAIN OVEN 2				2	2								4
MAIN OVEN 3				2	2								4
MAIN OVEN 4				2	2								4
BLOWER COAGULANT OVEN				2	2								4
BLOWER LATEX OVEN 1				1	1								2
BLOWER LATEX OVEN 2				1	1								2
BLOWER MAIN OVEN 1				1	1								2
BLOWER MAIN OVEN 2				1	1								2
BLOWER MAIN OVEN 3				1	1								2
BLOWER MAIN OVEN 4				1	1								2
COAGULANT OVEN T/C					2								2
FIRING LAMP						6	6	6	6	6			30
TRIP LAMP						6	6	6	6	6			30
COAGULANT OVEN GAS BURNER T/C						2	2	2	2	2			10
LATEX OVEN GAS BURNER T/C						2	2	2	2	2			10
MAIN OVEN NO. 1 GAS BURNER T/C						2	2	2	2	2			10
MAIN OVEN NO. 2 GAS BURNER T/C						2	2	2	2	2			10
MAIN OVEN NO. 3 GAS BURNER T/C						2	2	2	2	2			10
MAIN OVEN NO. 4 GAS BURNER T/C						2	2	2	2	2			10
POLYMER OVEN T/C						1	1	1	1	1			5
COAGULANT OVEN CIR. BLOWER FAN RUN						1	1	1	1	1			5
LATEX OVEN CIR. BLOWER FAN RUN						1	1	1	1	1			5
MAIN OVEN CIR. BLOWER FAN NO. 1A RUN						1	1	1	1	1			5
MAIN OVEN CIR. BLOWER FAN NO. 1B RUN						1	1	1	1	1			5
MAIN OVEN CIR. BLOWER FAN NO. 2A RUN						1	1	1	1	1			5
MAIN OVEN CIR. BLOWER FAN NO. 2B RUN						1	1	1	1	1			5
MAIN OVEN CIR. BLOWER FAN NO. 3 RUN						1	1	1	1	1			5
MAIN OVEN CIR. BLOWER FAN NO. 4 RUN						1	1	1	1	1			5
POLYMER OVEN CIR. BLOWER FAN RUN						1	1	1	1	1			5
BEADING BRUSH - 1L RUN						1	1	1	1	1			5
BEADING BRUSH - 1R RUN						1	1	1	1	1			5
BEADING BRUSH - 2L RUN						1	1	1	1	1			5
BEADING BRUSH - 2R RUN						1	1	1	1	1			5
HOR. BRUSH 1L RUN						1	1	1	1	1			5
HOR. BRUSH 1R RUN						1	1	1	1	1			5
HOR. BRUSH 2L RUN						1	1	1	1	1			5
HOR. BRUSH 2R RUN						1	1	1	1	1			5
HOR. BRUSH 3L RUN						1	1	1	1	1			5
HOR. BRUSH 3R RUN						1	1	1	1	1			5
HOR. BRUSH 4L RUN						1	1	1	1	1			5
HOR. BRUSH 4R RUN						1	1	1	1	1			5
CIR. BRUSH RUN						1	1	1	1	1			5
SPARE 1 RUN						1	1	1	1	1			5
SPARE 2 RUN						1	1	1	1	1			5

Figure 28: An excel of the labels to be ordered

5.4 Working in the Chemical Area

The last major task I was assigned to do is to work in the chemical area. During working in the chemical area, I learnt a lot about dealing with chemical including the machinery of chemical and safety as well. As a chemical engineering student, I was taught on the basic of chemical usage on glove manufacturing. Several works that I have done in the chemical area are:

- 1) Take flowrate of the chemical pumped into tank
- 2) Working on chemical pump
- 3) Take the water flowrate flowing into the tank
- 4) Prepare signage for chemical drums
- 5) Learn the chemical and other substances used in each tank
- 6) Prepare the sample of chemical tank for laboratory inspection

Take flowrate of the chemical pumped into tank

I was assigned to work with the chemical pump when I first when to the dipping area. The work done was so simple. Every day, I had to take the flowrate of the chemical pump of all chemical tank involving acid and alkaline. The function of chemical pump is where the chemical will be automatically top up into the tank with the desired flowrate. So, my job was to make sure that the flowrate of the chemical pumped into the tank is at the desired level. The working principal is very simple. I used cylinder to take the flowrate of the chemical with the desired time in second, then I converted it into per hour to get the flowrate of the chemical per hour. There are about 2 acid tanks and 3 alkaline tank on every production line and every day, I would help the technician to take the flowrate and making sure that the all pump run at optimum level.

Working on chemical pump

When I was working in the chemical area, I also learnt how to take care of the pump so that the pump will last long. There are few things that we must know about the pump. First, we have to regularly check the inner part of the pump to make sure all the components are working perfectly. This is because, if there is air lock throughout the pump, it will affect the

pump as the pump will be running without pumping anything and the worst case is that the pumped could get broken. So, after checking all the components of the inner part of the pump, I had also checked the tubing of the pump because this could also be the reason for the pump to be broken. As we are working with high concentration of chemical, the tubing somehow will get shrink and this wouldn't allow the chemical to get pumped into the tank. It is very important to make sure hat the flow of the chemical runs perfectly to maintain the chemical level in the tank. Third, when the pump was not being used, I had to take the tubing out of the chemical drum because putting the tubing in a non-functioning pump could make the tubing to shrink. Not just that, if the production line stopped for a longer time, I also had to do flushing on the pump to clean up the chemical in the pump so that it would not corrode the inner part of the pump.

Take the water flowrate flowing into the tank

Water flowrate is as important as the chemical flowrate. In the tank, there is a mixture of water and chemical and it is important to make sure that the level of water and chemical are following the standard. We need to maintain the PH level and the concentration of the chemical in the tank. So, I had to take the flowrate of the water with the same method I was using to take the flowrate of the chemical, but the difference is that water flowrate is much higher than chemical, so it is not possible to use cylinder and a jar were needed to be used to take the flowrate of the water or we call it as JBA. I had to collect the flowrate of water in all chemical tank and sent the report to the technician. If there is any wrong on the flowrate, I had to adjust the flowrate back to the standard.

Prepare signage for chemical drums

Safety is one of the important parts when dealing with chemical. Following the SOPs and wearing the PPEs are very important and same goes with chemical signage and labelling. So, about once or twice a week, I had to check all labelling and chemical signage on all drums on Plant 1 and Plant 2 involving 21 production lines. It is important to do so as the label and signage are compulsory following the safety standard. I had to prepare the signage where I had to put the name of the chemical in the tank and the danger level of the chemical.

Learn on the chemical and other substances used in each tank

As a chemical engineering student, I had to learnt on the type of chemical the company is using for every tank in the manufacturing of the glove. There about there type of gloves the company are making, surgical glove, latex examination glove and nitrile examination glove. So, here are the type of chemical the company was using in each tank.

Acid – Nitric acid, AC24, A100

Alkaline – C-MAX, KOH, FC5

Antifoam – coagulant tank: Freesil P2, AFE 0600

Antifoam – dipping tank: Octosol, Freesil N.

Coagulant tank – CN, Antitack, surfactant, (Antitack: NR 328-2, CTF Nobel), (Surfactant: Teric 10%)

Polymer – Ayclaron, Maxcide, Ammonia

Chlorine – used in nitrile line to strip out the gloves.

Total Solid Content (TSC) in Plant 1 and Plant 2

Plant 1		Plant 2	
AFC	20%	Nitric Acid	68%
Nitric Acid	68%	Cyclaron-349	50%
CN Liquid	55%	CN Liquid	55%
Ammonia	25%	Ammonia	25%
Ayclaron	20%	Aquamats	25%
NR 328-2	40%	Ayclaron-991	20%
CN crystal	68%	AFC	25%
CTF	40%	Ayclaron-603	20%
Nobel	40%		

Prepare the sample of chemical tank for laboratory inspection

The laboratory will verify the level of content in every chemical tank. So, I had to prepare the sample of the liquid from each tank and send it to the laboratory for verification. This is very important because the laboratory could measure the concentration of the substances in the tank accurately. If the laboratory is not satisfied with the result, I will have to re-take the sample and send it again to the lab.



Figure 29: The sample taken from acid and alkaline tanks of line 17

6.0 Conclusion

Caglove Global Sdn Bhd has given me a lot of opportunities to learn on how to work in the real field. Throughout my internship program for 17 weeks, I have already adapted to the real working environment. I have learnt a lot from my supervisor and other colleagues on how to run the daily work in the stripping and dipping area. I am thankful for all the knowledges that I have gained throughout my internship program.

As a student, it is important for us to learn and have the real working environment and experience so that it would be easy for us to work in the field in the future. Working in the real field is not just about applying the knowledge that we learnt in university, but it is also about learning on how to adapt with the real situation. In my opinion, we as a person must have the ability to learn to be a fast worker and to adapt with the task and job assigned for us.

To conclude, my internship has been excellent for various reasons and the best part is I had the opportunity on working a field related to my course, Diploma in Chemical Engineering. It was a wonderful journey I had with the job that I have been assigned with and it was a great memory for me to get to know everyone in the company that has helped me in numerous ways.