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UNIVERSITI
TEKNOLOGI
MARA



INDUSTRIAL TRAINING FIELD REPORT

TEI INDUSTRIES SDN BHD

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LI Duration : **5th MAY 2021 – 29th JULY 2021**

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ACKNOWLEDGEMENT

Assalamualaikum w.b.t, in the name of Allah SWT, I'd like to convey my thankfulness to Almighty Allah for permitting me to complete my industrial training and accomplish this industrial technical field report on TEI Industries Sdn Bhd.

First of all, I would like to express my gratitude to my supervisor, Mr. Tang Wing Hang. My industrial training will be challenging without his kind direction and competent assistance. Also, special thanks to Human Resources Executive, Miss Samantha Lim for accepting me to do my internship at the company especially when our country still in pandemic.

Secondly, I want to applaud the employees of TEI Industries Sdn Bhd and also, my fellow friends for assisting me in seeking new knowledge and skills. Their opinions and assistance had made a significant contribution to the completion of this internship especially when I was facing difficulties.

Last but not least, I would like to wish TEI Industries Sdn Bhd, the best of luck in future. I will not forget the experience and knowledge that I obtained during my internship.

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INTRODUCTION



Figure 1: Logo of TEI Industries Sdn Bhd

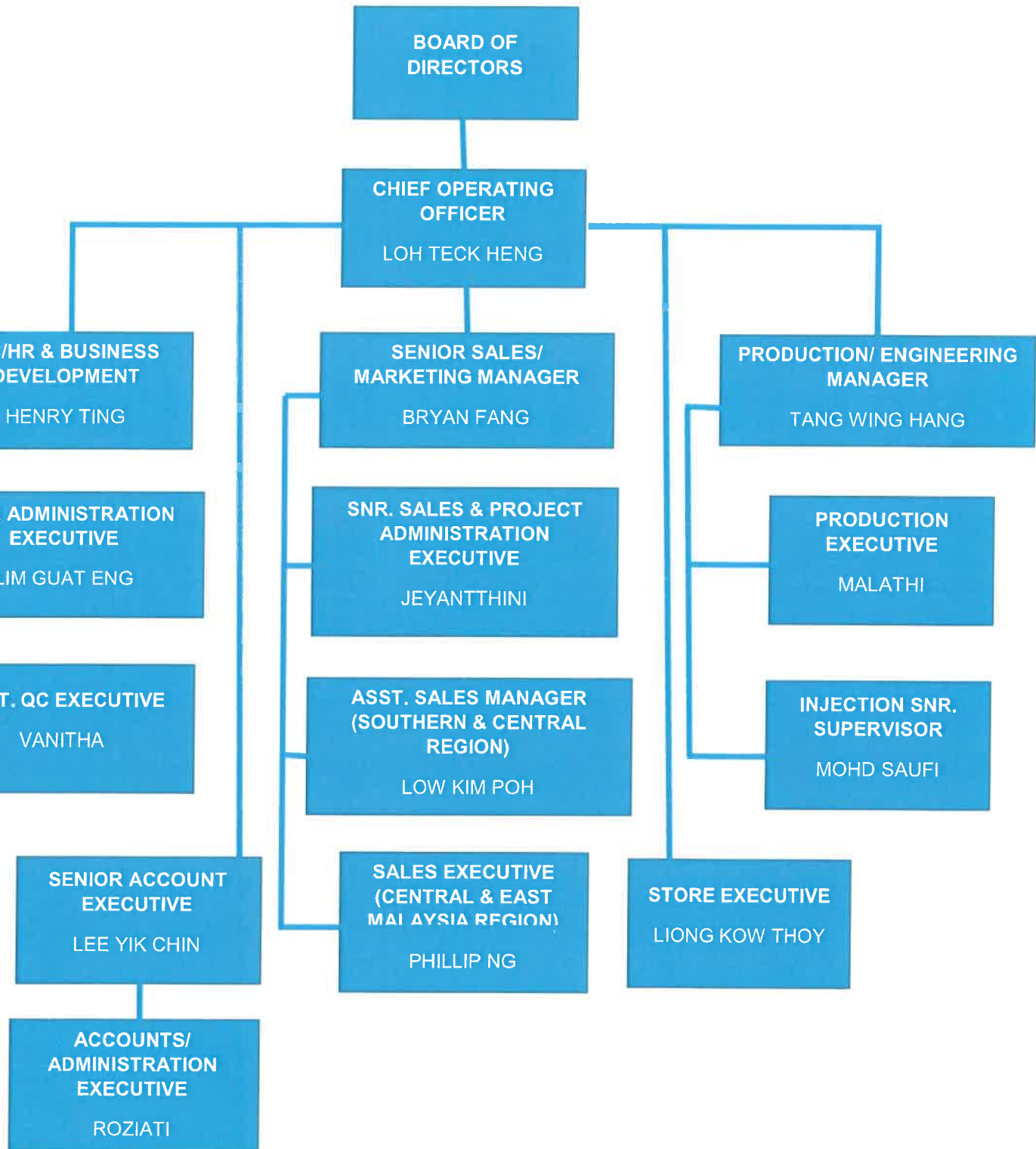
TEI Industries Sdn Bhd, originally known as Time Era Industries Sdn Bhd, is a manufacturer that involves in the production of low voltage switchgears such as enclosed isolators, switches, sockets, fireman switches, and many others since 1989. They changed their name to TEI Industries Sdn Bhd after cooperating with another company which is Pacific Engineering Sdn Bhd (Pecol) in 2020.

Its specialized product line is applicable for household, commercial, and industrial applications both locally and internationally. Major European, Southeast Asian, and Middle Eastern markets are among the export markets covered by TEI Industries Sdn Bhd. The company has produced a lot of brands such as Era, Waco, Eaton and many more. The location to export the product is determined by the product's brand. For example, products from Waco are exported to Dubai. They also have various types of products that have been produced such as weatherproof switch socket outlet and fireman switch.

With quality as its greatest strength, TEI Industries Sdn Bhd continually complies with high quality control requirements. In 1997, TEI Industries Sdn Bhd was given the Industry Excellence Award for Export Category by Malaysia's MITI (Ministry of International Trade and Industry) and the prestigious Quality System MS ISO 9001 by SIRIM QAS (Standard & Industrial Research Institute of Malaysia) in 1999 as acknowledgment of the quality and excellence of its goods.

1.0 CONTENT

2.1 ORGANIZATION CHART



2.2 PROCESS FLOW

TEI Industries Sdn Bhd manufactures a wide range of items. During my internship, I worked in the production department and learned about the weatherproof switch socket outlet and enclosed isolator process flow. They go through various steps before they become the final product and export to the customers.

2.2.1 PROCESS FLOW OF ENCLOSED ISOLATOR

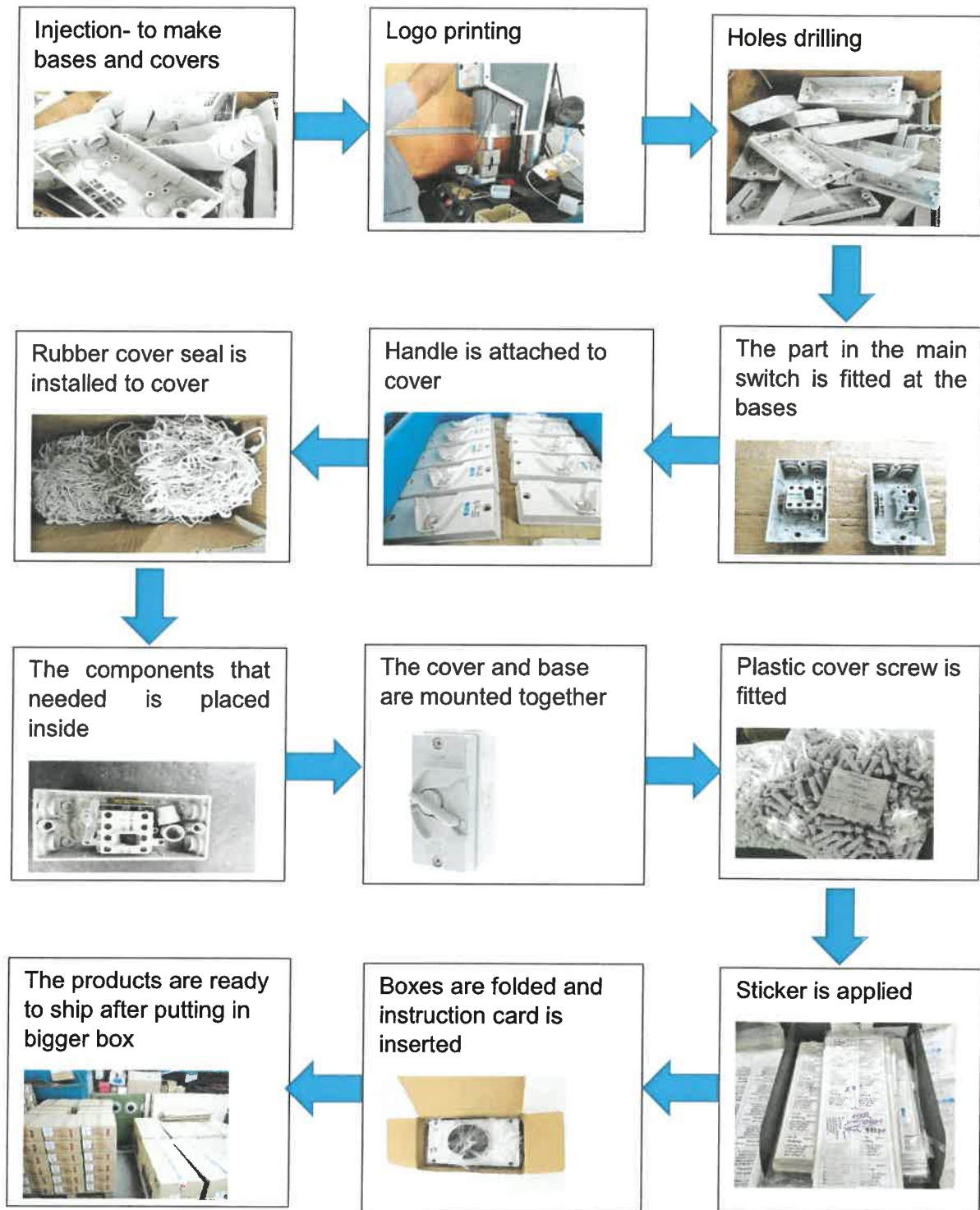
For the production of enclosed isolator, it begins with the injection part to develop the bases and covers made of polycarbonate. Following that, they will be sent to the production department to print the logo of the in-demand item. The covers and bases are then drilled to create holes on them. The part in the main switch is fitted at the bases for the assembly procedures. The number of isolator pole and ampere that will be used are determined by the requirements of the customers. Next, the handle is attached to the cover, followed by the rubber cover seal.

The base and cover are then ready to be assembled. Before the main switch is mounted into the base, the components required for the isolator are placed inside. A plastic cover screw is bored into the hole, and a plastic cover cap is placed on top of the screw to conceal it. Before applying the labeling sticker, the isolators are wiped to remove any excess oil on the body. For the packaging part, the boxes were folded and an instruction card was inserted inside each package. Finally, the box will be placed in the larger box before being shipped. The number of boxes in the larger boxes is determined by the preference of the buyers.



Figure 3: Enclosed isolator

2.2.2 PROCESS FLOW CHART OF ENCLOSED ISOLATOR



2.2.3 PROCESS FLOW OF WEATHERPROOF SWITCH SOCKET OUTLET

For the weatherproof switch socket outlet, the earlier process is same as enclosed isolator which is injection of bases and covers, logo printing and holes drilling. Next, the label stickers which is N1, N2, L1 and L2 are patched on the switch to make it easier to attach the wires. The switch is then hit with a hammer at its base. After that, the handle is then attached to the cover. The wires are installed at the socket in order to connect to the switch. The switch is then fitted in the handle so that when someone pulls the handle to turn on the switch, the socket is accessible for use. Because this product is typically used in the bathroom, a glass is positioned in front of the socket to prevent any electrical accidents such as electric shock.

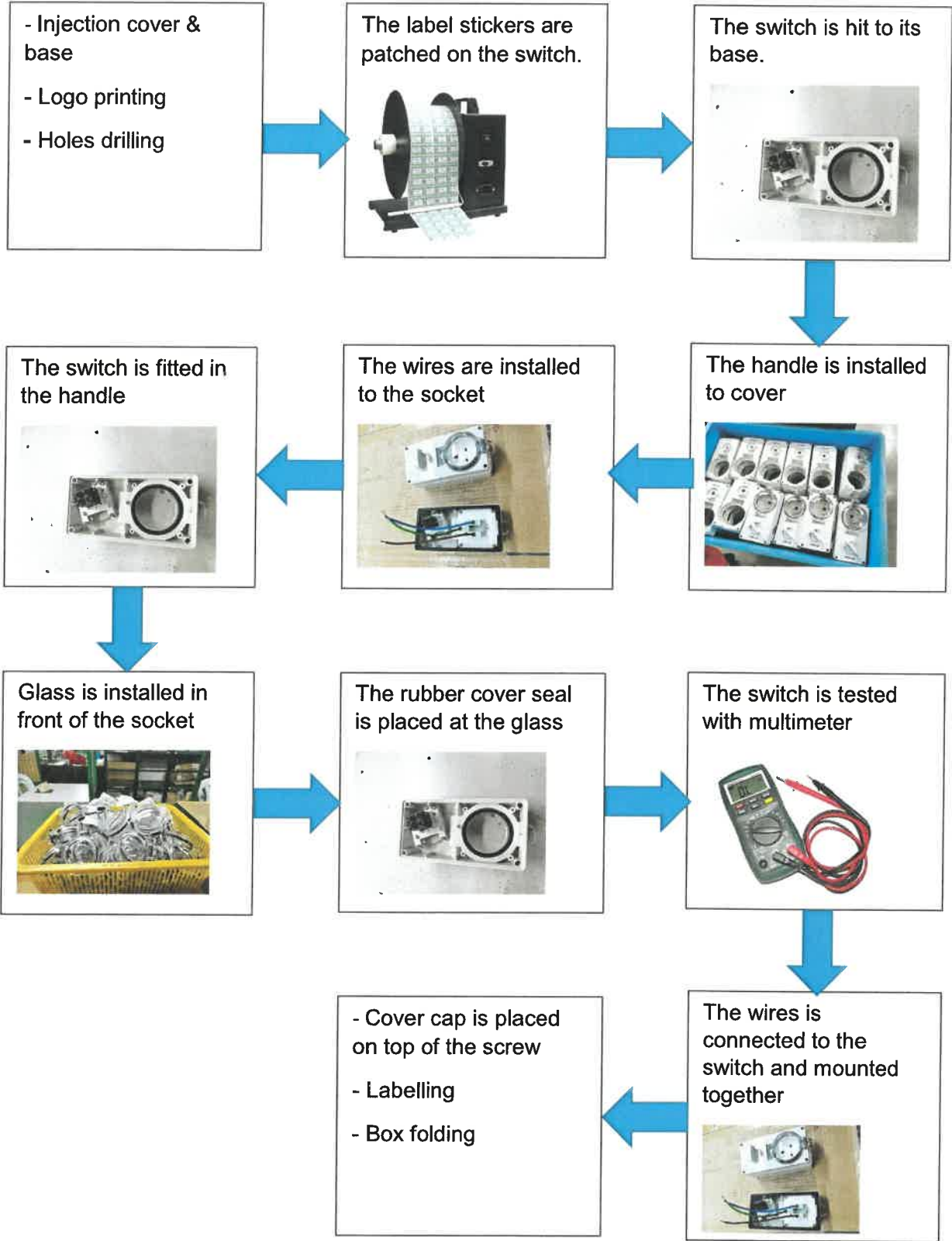
The rubber cover seal is also placed at the glass to keep any leaks away. Before the wires are connected to the switch, the switch is examined with a multimeter to see if it can be operated. When tested, the switch that good to be used will produce sound. Therefore, the wire can be attached to the switch after that. The blue wire, which is the neutral wire, is attached to N2, and the brown wire, which is the live wire, is connected to L2. The earth wire, which is green in color, will be attached to the base to prohibit any faults from arising from the neutral and live wires. Following that, the cover and base are then mounted together.

Last but not least, the following step is the same as with the enclosed isolator in that a plastic cover cap is placed on top of the screw and the sockets are wiped. While the boxes are folded, the label sticker is also placed to the body, and an instruction card is inserted inside each box. After being packed inside the larger box, the products are ready for delivery.



Figure 4: Weatherproof switch socket outlet

2.2.4 PROCESS FLOW CHART OF WEATHERPROOF SWITCH SOCKET OUTLET



2.3 WEEKLY ACTIVITY

Working hours at the company begin at 8.30 a.m. and end at 5.30 p.m., for a total of 9 hours per day, including lunch breaks. Lunch hour is from 1 p.m. to 2 p.m. A 15-minute mini-break is also provided from 10.30 a.m. to 10.45 a.m. to take some rest. Prayer time commonly takes about 20 minutes at any time after the lunch break. It will not interrupt the production process because the majority of the employees are not Muslims. During the fasting month, Muslim employees can leave one hour earlier, at 4.30 p.m., to prepare for iftar.

Table 1: Working hour for TEI Industries Sdn Bhd

Entering shift	Mini break	Lunch hour	Exiting shift
8.30 a.m	10.30 a.m – 10.45 a.m	1 p.m – 2 p.m	5.30 p.m 4.30 p.m (Fasting month)

Week 1-2 (5th April 2021 – 16th April 2021)

The internship training was supposed to start on 22nd March 2021, but because I switched to a new company which is TEI Industries Sdn Bhd (current company), I started two weeks later, on 5th April 2021. Because I started late, there was no job briefing week for me, but my friends had already informed me about the job scope. On the first day, they introduced me to the staff and demonstrated my tasks.

They assigned me to the packaging section for the first week. My first task was to fold the boxes for enclosed isolator based on the total amount of product requested by the customers. Enclosed isolator is the most popular product, with orders always up to thousands. I also need to include an instruction card inside each box to illustrate buyers how to set them up. After I finished with the packaging, I was in charge of placing the label sticker on the body of the product, such as the information detail and SIRIM sticker.

For week 2, I inserted the rubber cover seal into the cover. It took until a few days into week 3 because I also installed it for different brands, poles, and amperes. Since this workplace for this task is close to the handle installation, I observed one of my friends conduct the handle installation. I discovered that the handle should not be too tight or too loose when installed. Too tight could cause the handle to be difficult to pull, whereas too loose might well cause the handle to become easily to removable.

Week 3 – 5 (19th April 2021 – 7th May 2021)

I still did the cover seal installation for two days in week 3. I moved to weatherproof socket outlet production on the third day of week 3 because the products were urgent and there were not enough staff. While the staff installed the handle into the cover, she instructed me to apply a label sticker to the switch. After that, I used a hammer to hit the switch to its base. While I was working on my task, I observed the staff attaching wires to the socket in order to connect to the switch later.

On the week 4, I was instructed to attach the switch to the handle. After I finished the installation, I handed it over to the staff so that she could place the glass in front of the socket for the user's safety. She then gave it back to me so I could place the rubber cover seal to the glass. Following that, I inspected the switch with a multimeter to see if it was able to operate or not. If it is not working, I will send it to the staff so that she can figure out how to solve the error. If everything is fine, the staff will connect the wires to the switch, after that, the product will be ready to mount together. On week 4, there was an inspection day. On inspection day, each section's leader must update the stock of their product and its components. After I finished my task, I assisted the staff in calculating some of the components on that day.

On week 5, I folded the boxes and inserted the information card inside the box based on the order total, while the staff assembled the cover and base. Afterwards, I put the plastic cover cap on top of the screw and wiped the socket to remove any excess oil before applying the label sticker. The label sticker that used for this socket is more than the label sticker that used for enclosed isolator. Finally, we packed the products inside a larger box, and they were ready for delivery. Finally, we packed the products inside a larger box, and they were ready for delivery.

Week 6 (10th May 2021 – 14th May 2021)

On week 6, the Muslim employees took a week off to make preparation and celebrate Hari Raya Aidilfitri, while the non-Muslim employees had the holiday only on the day of celebration.

Week 7 – 8 (17th May 2021 – 28th May 2021)

As the products were urgent, I resumed to install the cover seal for the enclosed isolator during weeks 7 and 8. After it reached the order's target, I moved on to the packaging section to fold the boxes and place the instruction card. Then I learned how to install the cover seal for the fireman switch. It was a bit tricky because the space was a bit tight but I managed to fit it at the

space. I separated the useful part for the handle from the cover seal. The handle cover seal has four circles, but only the second and fourth are used and the remaining circles are discarded.

Week 9 – 13 (31th May 2021 – 2nd July 2021)

As the case progressed, the government announced that our country would be placed under total lockdown on June 1st. As a result of this mandate, the company directed us to work from home. We were supposed to do a mini project with Pecol to gain experience working with them, but it was adjusted to a task that could be done from home, which is to conduct research on Pecol.

According to my research, Pecol has 5 products which is Solar Water Heater, Hot Water Storage Tank, Electric Storages Water Heater, Commercial Heat Pump and PECOL Mini Heat Pump. I did learn about the pros and cons of each product, as well as the product specifications, from their websites and brochures. Among the products, I was particularly interested in PECOL Mini Heat Pump, so I conducted additional research on the product. Following that, I discovered the process flow and became familiar with its function.

Week 14 – week 17 (5th July 2021 – 29th July 2021)

As the total lockdown continued, so did the work from home. The students' request to complete our logbook and report was approved by the company. As a result, the task assigned is to conduct research on the company and its products. As the total lockdown continued, so did the work from home. The students' request to complete our logbook and report was approved by the company. As a result, the task assigned is to conduct research on the company and its products. This task is extremely beneficial because the research is related to the requirements in the report and presentation.

On the 2nd of July, after receiving approval from HR, I went to the company to obtain the signature of the supervisor and to take some photos for the report, as the company is located in the Tightened Movement Control Order area. After completing the logbook and report, I prepared for the presentation with my panel lecturer, Dr Wan Nur Fazlina.

2.3.1 REFERENCES FROM LOGBOOK

STUDENT WEEKLY PROGRESS REPORT

Effective from 18/1/2021

To 24/1/2021

Day	Description of practical training experience / Details of project(s)
Monday	<ul style="list-style-type: none"> folded the box placed the information card
Tuesday	<ul style="list-style-type: none"> folded the box inserted the information card
Wednesday	<ul style="list-style-type: none"> folded the box inserted the information card
Thursday	<ul style="list-style-type: none"> install cover seal for fireman switch
Friday	<ul style="list-style-type: none"> install cover seal

Type(s) of skills obtained:

.....

Name of mentor/supervisor : Tang Wing Hong

Comment(s) :

Signature of mentor/supervisor : 

STUDENT WEEKLY PROGRESS REPORT

Effective from : 5/12/21

To : 11/12/21

Day	Description of practical training experience / Details of project(s)
Monday	packaging - folded the box and put information card in each box
Tuesday	packaging - folded the box and put information card in each box
Wednesday	packaging - folded the box and put information card in each box
Thursday	packaging - put label sticker to the product
Friday	packaging - put label sticker to the product

Type(s) of skills obtained:

.....

Name of mentor/supervisor : Tong Wing Hong

Comment(s) :

Signature of mentor/supervisor : 

STUDENT WEEKLY PROGRESS REPORT

Effective from : 26/4/2021

To : 30/4/2021

Day	Description of practical training experience / Details of project(s)
Monday	<ul style="list-style-type: none"> • attached the switch to handle • put the cover seal
Tuesday	<ul style="list-style-type: none"> • attached the switch to handle • put the cover seal
Wednesday	<ul style="list-style-type: none"> • put the cover seal • assist in calculating components for inspection day
Thursday	Public holiday - Hari Nuzul Quran
Friday	<ul style="list-style-type: none"> • tested the switch using multimeter

Type(s) of skills obtained:

.....

Name of mentor/supervisor : Tong Wing Hang

Comment(s) :

.....

Signature of mentor/supervisor :



Effective from : 31/5/2021

WEEKLY PROGRESS REPORT

To : 7/6/2021

Day	Description of practical training experience / Details of project(s)
Monday	<ul style="list-style-type: none">• folded the box• inserted information card
Tuesday	<ul style="list-style-type: none">• folded the box• inserted information card
Wednesday	<ul style="list-style-type: none">• put the plastic cover on top of screw• wiped the socket• put label sticker
Thursday	<ul style="list-style-type: none">• put the plastic cover on top of screw• wiped the socket• put label sticker
Friday	<ul style="list-style-type: none">• packed the product inside a bigger box

Type(s) of skills obtained:

.....
.....

Name of mentor/supervisor : Tong Wing Hang

Comment(s) :

Signature of mentor/supervisor : 

STUDENT WEEKLY PROGRESS REPORT

Effective from : 21/6/2021

To : 25/6/2021

Day	Description of practical training experience / Details of project(s)
Monday	mini project - mini heat pump
Tuesday	mini project - mini heat pump
Wednesday	mini project - mini heat pump
Thursday	mini project - mini heat pump
Friday	mini project - mini heat pump

Type(s) of skills obtained:

.....
.....

Name of mentor/supervisor : Tang Wing Hong

Comment(s) :

Signature of mentor/supervisor : 

2.4 MINI PROJECT



Figure 5: Logo of Pacific Engineering Sdn Bhd (Pecol)

The mini project has been postponed due to pandemic Covid-19, since we were compelled to work from home during the Movement Control Order (MCO) enforcement. We were supposed to have experience working under Pecol and discovering some new knowledge from them. Because of the MCO, the mini project was modified to conduct some research about the company and its products in order to make it compatible for a work-from-home activity.

Pacific Engineering Sdn Bhd was founded in 1968 as a Malaysian-Australian joint venture. They expertise in the production of water heaters of various shapes and sizes, from the household 3 gallon unit to the 1,000 gallon industrial-sized heater. They are the founders in the production of water heaters in Malaysia under the registered name PECOL, and The Malaysia Industrial Development Authority (MIDA) has granted them "pioneer status". Pacific Engineering Sdn Bhd was the first South East Asian organization to design and manufacture Energy Saving Heat Pumps for hot water heating in 1980.

Aside from a good selection of water heaters, PECOL product line has widened to include products for commercial and industrial applications such as Heat Pumps, Solar Heaters and Coffeematic Machines. Among of their products, PECOL Mini Heat Pump is one of the products that have piqued my interest because of its interesting features. The Mini Heat Pump can efficiently save up to 80% of your water heating bills and is useful for producing hot water to your entire house 24 hours a day. We can also benefit from cold air generated as a byproduct of the MHP technology.



Figure 6: PECOL Mini Heat Pump

There are 3 models for this product which is MHP 30, MHP 50 and MHP 80. They have different specification. From the table 1, it reveals that the specification of these models.

Table 3: Specification of the models

	MHP 30	MHP 50	MHP 80
Maximum water outlet temperature (°C)	60	60	60
Tank capacity (litres)	136	227	363
Unit diameter (mm)	510	610	740
Unit height (overall) (mm)	1650	1775	1828
Unit weight (empty) (kg)	71.2	83.1	120.6
Unit weight (full) (kg)	207.2	310.1	483.6

This mini heat pump can prolong the water temperature as it is included a soft-flow water spreader to prohibit make-up cold water from easily blending with warm water. Pecol crystal clear low iron tempered glass is precisely engineered to allow maximum sunlight transmission with minimal heat emission directly onto the ultra-black chromatic collector for additional energy

savings. They are using a UV-treated air-light seal that extends all the way around the side of the solar hot water tank to avoid rain water and other harmful particles in the air from leaking through. This will provide stronger protection for the mini heat pump. They also use pressure-injected high density polyurethane foam for the greatest insulation, limiting heat loss to the surrounding atmosphere even at extreme temperature differences.

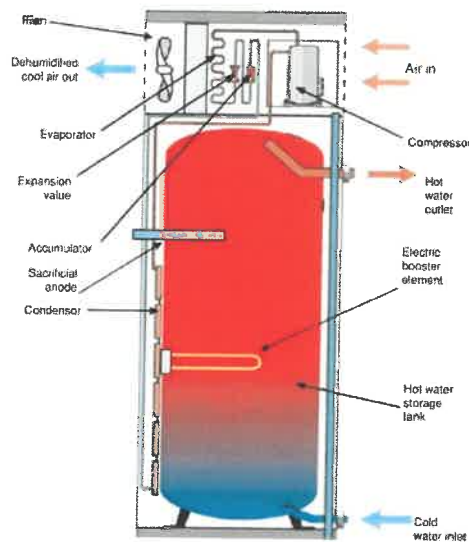


Figure 7: Process flow of the Mini Heat Pump

This product operates on the same concept as a reverse cycle air conditioner. The compressor compresses the refrigerant vapor and transfers the hot compressed vapor refrigerant to the copper pipe heat exchanger attached to the water storage tank, causing the coil to function as the condenser and emit heat energy that is transmitted to the water in the storage tank. The cooled liquid refrigerant is then transferred via the liquid receiver, which separates the liquid from the refrigerant vapor.

The filtered refrigerant is expanded by an expansion valve and routed through an evaporator within or outside the unit, where heat from the surrounding environment is absorbed into the vapor and cool air is vented out. To complete one cycle of the operation, the refrigerant flows back to the compressor. This heating process will continue until the water temperature reaches 60 degrees Celsius. A temperature and pressure relief valve is used to guarantee that the pressure and temperature of the stored water do not surpass the predetermined limits.

In the nutshell, I had gain some knowledge from my research about Pecol as I learn about the process flow of the product that relatable to the courses that I had taken before.

2.0 CONCLUSION

In a nutshell, this internship was a fantastic and worthwhile experience. I can conclude that my work at TEI Industries Sdn Bhd has taught me a great deal. I had been exposed to an industrial life after completing my industrial training. Throughout my internship, I was able to learn more about the concept of an industrial worker and prepare myself to be a responsible and inventive individual in the future.

The internship was also helpful in determining my weaknesses and strengths. This enabled me in determining which skills and knowledge I need to improve in the future. When I communicate with others, my communication skills keep improving. When I made mistakes during my training, I received advice and guidance from the employees. Those suggestions, however, are helpful in guiding me to change and prevent this from happening again. Apart from that, when working in the industry, safety is of the greatest priority. A safe and secure environment not only protects employees from injury and illness, but it can also reduce injury/illness costs, increase performance and efficiency, and boost employee morale.

Throughout my industrial training, I discovered that critical and analytical thinking, as well as time management, are crucial. Firstly, for critical and analytical thinking, to organize our tasks and assignments, we must first analyze our problems and assignments and come up with a good solution. We would need to construct a solution backup plan so that we are well prepared for unpredicted circumstances. For example, there was a time when the overtime staff accidentally placed the label sticker incorrectly, but the product was already packed. Since they did not want to deliver the defective product to the customer, the production manager devised a solution to overcome it.

Secondly, because employees are constantly pressed for time and have a full schedule, proper time management will help them avoid missing deadlines. We can complete our assignments more efficiently and on time if we use effective time management. Scheduling saves time by allowing us to prepare properly and obtain more as an outcome. For example, because the products must be shipped by a certain date, the production executive created a schedule to ensure that the product is packed before the dateline.

In conclusion, I learned a lot of new information in my industrial training that I did not learn in class. Maybe I will be able to apply this knowledge in the future when I work in industry.

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