



اَوْنُوْا سِيْتِي تَكُوْلُوْا كَيْفِي مَبَادِرَا  
UNIVERSITI  
TEKNOLOGI  
MARA



ALL SEASON SYNERGY SDN BHD  
PRIME LUBRICANT &  
SPECIALTY CHEMICAL MANUFACTURER

## INDUSTRIAL TRAINING FIELD REPORT

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Programme : Diploma of Chemical Engineering

ID : 2018295026

LI Duration : 15<sup>th</sup> March 2021 – 15<sup>th</sup> July 2021

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## 1.0 INTRODUCTION

Industrial training is an important component in engineering curriculum. Theories learnt in all the core and non-core courses will have to be applied into the real working environment in chemical industries. Prior to the actual training in industries, students are trained to make job applications before stepping into the real working environment. Duration for the industrial training is 14 weeks with 7 credit hours.

The purpose of this industrial training is to identify the types of work that chemical engineers do in real engineering world and appreciate the theoretical knowledge learnt.

Besides, students need to perform basic engineering practices, including technical writing report, communication with colleagues, handling project and generating proposal for betterment of the industries. Moreover, students will obtain higher level of integrity, ethical and accountability in practicing engineering.

At the end of the industrial training, students will be able to achieve those targeted outcomes hence increasing the students' experience and knowledge.



Figure 1: Location of All Season Synergy Sdn. Bhd. via Google Maps



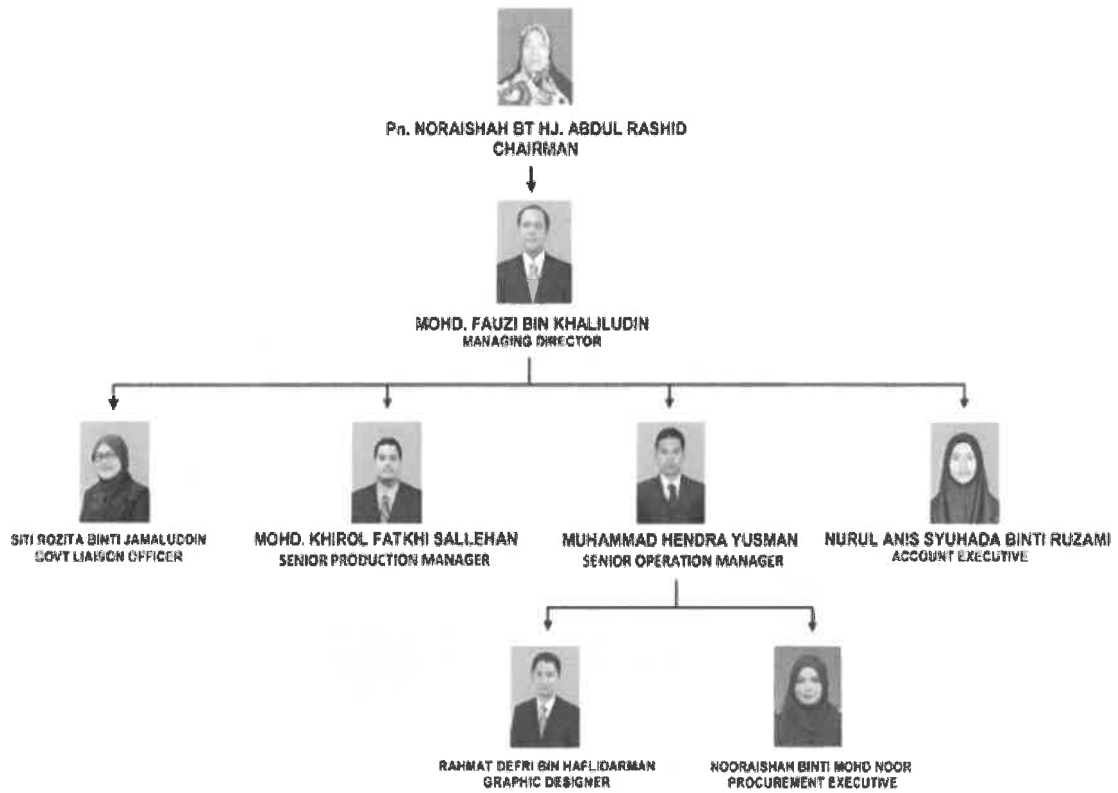
Figure 2: Plan view and main entrance for All Season Synergy Sdn. Bhd.

## 2.0 CONTENT

### 2.1 Organization Chart and History of the Company.

#### 2.1.1 Organization Chart

## COMPANY ORGANISATION CHART



### 2.1.2 History of the Company

ALL SEASON SYNERGY SDN BHD was established on the 26th of December 2002. The company is currently involved in the manufacturing and distribution of automotive and industrial lubricants products as well as chemicals for various applications for the Malaysian market. The lubricant requirements of today vary extensively depending on engine make, design, operating conditions and service classifications. The wide diversity in functions led to the development of many different types of Synergy lubricating products as offered to the customers.

ALL SEASON SYNERGY SDN BHD is a 100% Bumiputera owned Company. We are dedicated to incorporate the international bodies of manufacturing and distributing high quality and environmentally safe products, as well as maintaining a strong relationship with all of our customers.

As a Malaysian entity with a global outlook, All Season Synergy is increasingly looking to the international market-place as its playing field. From a position of strength, All Season Synergy faces the future with confidence.

### 2.1.3 Mission, Vision and Objectives

#### Mission

ALL SEASON SYNERGY SDN BHD is to provide a high quality service to all its clients through supplying products of excellence, on time delivery, competitively priced as well as good after sales services. All Season Synergy's product range is diverse and so are its clients. However, All Season Synergy realizes that each customer requires individual attention and expert advice. To meet this challenge, All Season Synergy will provide specially trained staff at its customer's disposal

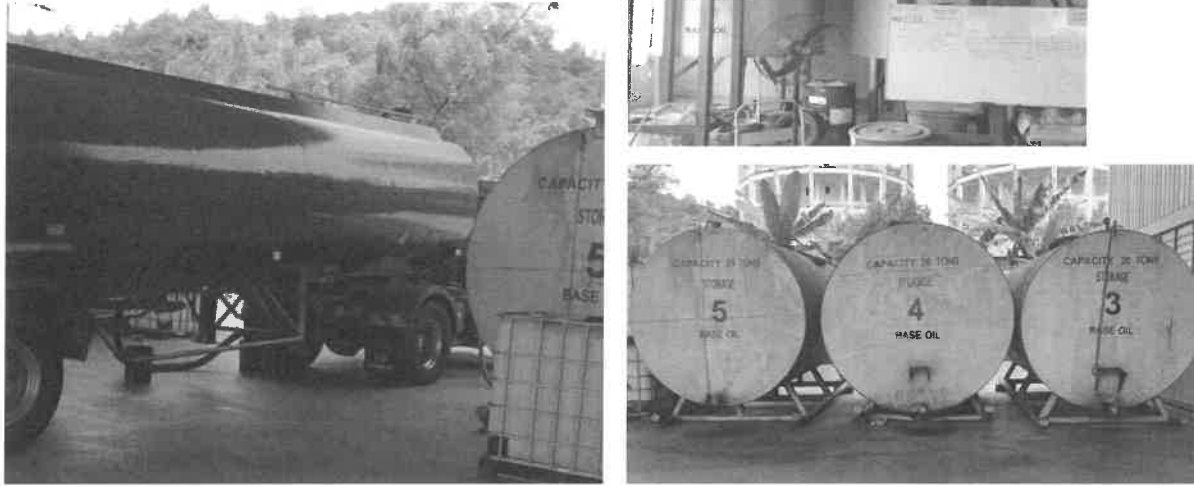
#### Vision

Our vision is to grow into a major manufacturer and distributor of specialist product in the South East Asian region through maintaining a strong customer base. All Season Synergy believes in establishing a long-term relationship with both its customers and its suppliers.

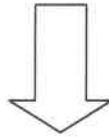
#### Objectives

All Season Synergy's main objective is to be the No 1 producer and distributor of petroleum products and specialty chemicals for the automotive and industrial applications to institutions around Malaysia and the region.

## 2.2 Process Flow



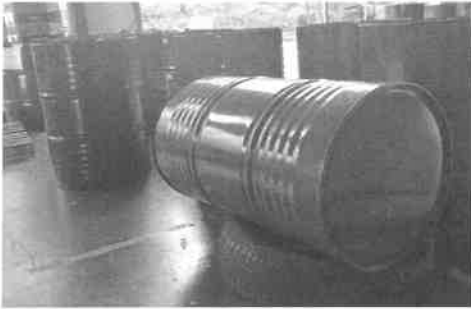
1. Base oil (SN500, M500 or ETRO 6) arrived from supplier will be transferred to storage tank after double checking its kinematic viscosity.



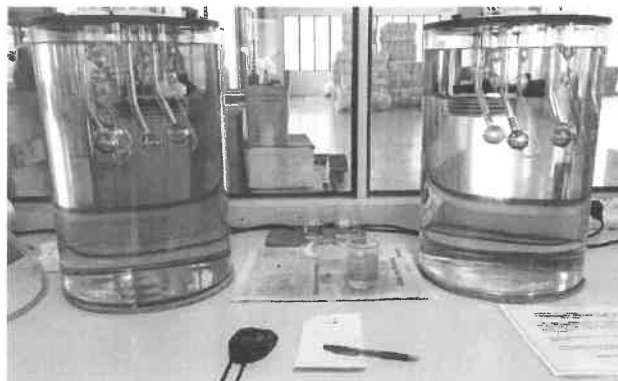
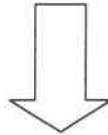
2. Some of the base oil will be kept in IBC (Intermediate Bulk Container).

The purpose:

- So the base oil can be portable  
Distance of storage and mixing tank quite far is using pipe.
- Easy to estimate how base oil being use in one reaction.  
Every production of oil had its own quantity of oil that need to be used, with IBC one can estimate how much they use and how much does the base oil left by looking at the markers at the IBC.

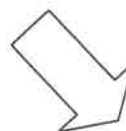


3. Base oil (ETRO 6, M500 or SN500) transferred from IBC to mixing tank. Additives (engine oil, hydraulic oil or gear oil), VII (Viscosity Index Improver) and colouring (if necessary) added to mixing tank according to the quantity required. The mixture is then let to blend for about 30 minutes.



4. Sample is then taken from the mixing tank to be tested. Viscosity specification may vary according to the type of oil (Gear oil, Engine oil, Hydraulic oil or Automatic Transmission Fluid oil) and the grade of oil (SAE 0W-20, SAE 5W-30, SAE 15W-40).

YES



NO

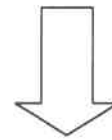


5. If the viscosity of the oil matched with the viscosity of the desired oil, the oil is then flowed to filling machine in order to pack the oil into drum, pail or bottle.



6. If the viscosity lower than desired, more VII will be added to mixing tank.

If the viscosity higher than desired, more ETRO 6 (diluted base oil) will be added to mixing tank.



**REPEAT STEP 4 ONWARDS**

### 2.3 Brief Daily / Weekly Activity

On my first day of industrial training, I checked in at ALL SEASON SYNERGY SDN. BHD. I met the Miss Siti Rozita binti Jamaluddin of the Administration and Human Resource Department. I also met Mr. Khirol Fatkhi bin Sallehan, the operation manager for ALL SEASON SYNERGY SDN. BHD. I was briefed about the work schedule, basic safety and company rules that are need to be followed. Since my supervisor only work half-day during that day, I had to be under Miss Siti Rozita supervision before my actual supervisor came. I offered my help to some of the colleagues if there are anything I can help them with.

Later that evening, I was introduced to my supervisor, Mr. Raja Muhd. Asnawi bin Raja Ibrahim, lab assistant and production supervisor. I was taken to visit the production site, laboratory and briefing of the normal work etiquettes in ALL SEASON SYNERGY SDN. BHD. especially related to laboratory and production sites.

Because the company is focused on manufacturing lubricating oil, there were not much variety of task that has been assigned to me. Most of them are either related to Quality Assurance of the manufactured lubricating oil, or recording and documenting data related to the manufactured lubricant. As for example, testing kinematic viscosity of the lubricating oil then recording the value into Certificate of Analysis (COA). There are also Job Order Processing Form, Loading form and Production Schedule form but during the 1<sup>st</sup> week to 6<sup>th</sup> week, those form were filled by Mr. Raja Muhd. Asnawi himself. Other than that, I also were assigned to help production team and at the same time learn how to process lubricating oil from scratch.

Sometimes Mr. Raja Muhd. Asnawi assigned me to do Certificate of Conformity which is types of approval granted to a product that comply with minimum set of regulatory. There were two weeks (week 13 to 15) where my supervisor had to be quarantined as he was the close contact for COVID cases. Since the company lacking of lab workers, he assigned me to do whole process from testing the lubricating oil, documenting process and helping the production team in manufacturing the lubricating oil.

However, these oil manufacturing process does not work on daily basis as they only manufacture the oil when there is demand from the clients. Because of that, there are days where no production of oil. So, ALL SEASON SYNERGY SDN. BHD. managing director, Mr. Mohd. Fauzi sometimes assigned me to pickup document from the company's affiliate all around Selangor. There is a day when the client reported that some of sticker for lubricating oil bottle were defected. I and my supervisor had to supply extra stickers to replace the defects.

I also were assigned to produce COVID-19 sanitation schedule for the company which I assume related to the safety work environment.

In nutshell, I am happy with the task assigned as it mostly related to my study in Chemical Engineering. Though there were some task that are irrelevant to my course, I accept the task and completed it wholeheartedly.



## 2.4 Description of Task Assigned

No.	Task Assigned	Description
1.	Testing Kinematic Viscosity	<ul style="list-style-type: none"> <li>▪ There are 4 types of lubricating oil manufactured:               <ul style="list-style-type: none"> <li>○ Engine oil (most common)</li> <li>○ Hydraulic oil</li> <li>○ Gear oil</li> <li>○ Automatic Transmission Fluid (ATF)</li> </ul> </li> <li>▪ All of them has their respective value of viscosity. For example, engine oil SAE 0W-20 and SAE 20W-50, Gear oil and hydraulic oil are different in viscosity.</li> <li>▪ Gear oil has the highest viscosity among them.</li> <li>▪ Viscosity tested by placing 8ml of oil sample to kinematic viscosity test tube.</li> <li>▪ Time taken for the oil to reach point B from point A is then used to calculate the viscosity by multiplying the time taken with the constant.               <ul style="list-style-type: none"> <li>○ Time taken: 6 minutes (360s)</li> <li>○ The oil sample were tested in 100 C temperature (constant= 0.03551)</li> <li>○ <math>360 \times 0.03551 = 12.78 \text{ cSt}</math></li> </ul> </li> <li>▪ The oil is considered ideal when its viscosity is between their specific ranges.</li> </ul>
2.	Transferring base oil from tanker to storage tank to IBC	<ul style="list-style-type: none"> <li>▪ Transferring base oil from tanker to storage tank often done in early month or middle of the month.</li> <li>▪ This is done by checking each top cover of the tanker if there is any leaking.</li> <li>▪ The base oil was transferred from tanker to storage tank using huge PVC pipe while letting some of top cover of the tanker open.</li> <li>▪ The documents and the viscosity of the base oil were then tested, recorded and kept in a file.</li> <li>▪ Transferring base oil from storage tank to IBC was done so that we can keep in track the quantity of base oil that were needed for certain blending process.</li> <li>▪ It is also done to prevent any shortage of base oil as the results of overflowing base oil to blending tank for manufacturing purpose.</li> </ul>

3.	Preparing Certificate of Analysis (COA)/ Certificate of Conformity (COC)	<ul style="list-style-type: none"> <li>▪ COA and COC are only slightly different as COA has more detail information about the oil manufactured while COC is approval issued by the manufacturer to the client per request.</li> <li>▪ During first month, I was assigned to prepare COA for manufactured oil from year 2020 to present.</li> <li>▪ The latest COA and COC were done per request by Lotus's (previously known as Tesco).</li> </ul>
4.	Preparing Job Order Processing Form (JOP-F)	<ul style="list-style-type: none"> <li>▪ JOP-F is a form where all the information about raw material used, additives used and VII used is kept.</li> <li>▪ JOP-F were prepared every time after manufacturing oil.</li> <li>▪ It also records the packing quantity of the oil.</li> <li>▪ If there any oil balance left after packing process, it need to be record in JOP-F.</li> </ul>
5.	Helping Production Team: a) Manufacturing lubricating oil b) Filling and packing process	<ul style="list-style-type: none"> <li>▪ Manufacturing lubricating oil includes the process of transferring base oil into blending tank, adding VII and engine oil additives.</li> <li>▪ The process of manufacturing lubricating is not fully automatic as we have to add VII and additives manually by pouring the VII and additives from the top of mixing tank.</li> <li>▪ Filling and packing process is the last process of manufacturing lubricating oil.</li> <li>▪ I often help the production with these kind of work if I have already finished my task.</li> </ul>
6.	Doing general start-up/ shut-down on laboratory equipment	<ul style="list-style-type: none"> <li>▪ There are several lab equipment that need to be regularly checked.</li> <li>▪ For example, general start-up / shut-down need to be regularly done on viscosity meter test as the equipment being used whenever manufacturing lubricating oil.</li> <li>▪ Moreover, if no general start-up / shut-down were done for a long time, the quality of oil in viscosity meter test will decrease thus making the viscosity obtained from the test unreliable.</li> </ul>

7.	Preparing Sample	<ul style="list-style-type: none"> <li>▪ In order to determine which formulation is the best for making certain engine oil, series of test must be done using little amount of base oil to make lubricating oil sample.</li> <li>▪ When the sample has been done and the best result were obtained, the formulation sample were then compared to the actual formulation in order to get the ideal characteristic for the lubricating oil.</li> </ul>
8.	Checking the base oil balance	<ul style="list-style-type: none"> <li>▪ Every time after finish producing lubricating oil, balance of the base oil left in the tank must be recorded for future reference.</li> <li>▪ For example, if the base oil left is not sufficient, the company will contact the base oil supplier to supply them with new base oil stock.</li> </ul>
9.	Keeping track of the VII and the additives left	<ul style="list-style-type: none"> <li>▪ Every time after finish producing lubricating oil, balance of the base oil left in the tank must be recorded for future reference.</li> <li>▪ If VII does not enough for the next blending process, the operators will process the VII from the hydrocarbon pellets and melting it to liquid form.</li> <li>▪ Meanwhile for the additives, the company will place order for new additives f necessary.</li> </ul>

### **3.0 CONCLUSION**

Throughout the period of my industrial training at ALL SEASON SYNERGY SDN. BHD., ample of knowledge, experience and exposure that I have learned that might come in handy when I venture into the world of engineering someday. Industrial training is also considered as a complementary towards the course and theory learned during Diploma of Chemical Engineering, where all or if not some of the theories learned will be applied throughout the internship period. In order to grasp as much exposure as possible from the industrial training, one has to give 100% commitment towards their internship. This is because someday they might end up working in the same sector where they undergo industrial training.

What I have learned from this internship is that a good communication between colleagues are crucial so that there would not be any misunderstanding and miscommunication. Furthermore, healthy interaction between colleagues improves my capability of communicating with people and enhancing my confidence level.

Moreover during my internship, I am highly required to precise with my calculation and measurement. For instance, the value of kinematic viscosity of manufactured lubricating oil need to be precise so that when the client test the lubricating oil viscosity, the value will not be far difference compared to the result obtain from the manufacture. In addition, balance of base oil and stock need to be calculate precisely as this will prevent from any shortage of supply in the future.

However, there are several deficit during this internship in which this company does not involve with research and development activities. If only the company provide R&D activities, student who undergoes internship there might have a chance to improve their R&D abilities and might as well found new discoveries for the lubricating oil product.

In nutshell, I has been an exquisite experience for to undergo internship under petrochemical sector at ALL SEASON SYNERGY SDN. BHD. I also hoping that all of the skills that I have obtained throughout the internship will be put into good use in the future.

#### 4.0 APPENDICES



Figure 3: Several oil samples from engine oil to ATF



Figure 4: Granular form of VII before being melted

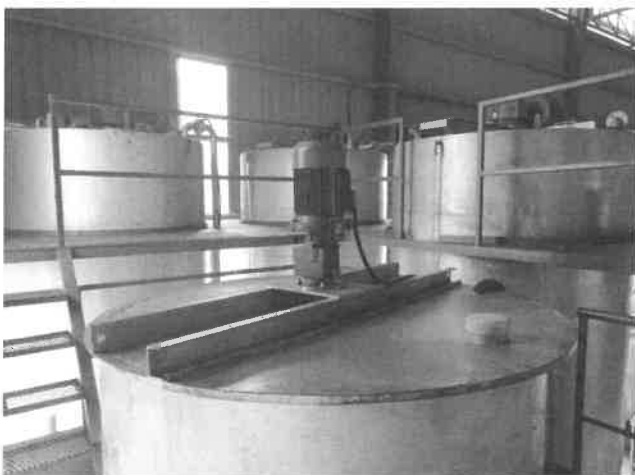


Figure 5: The section of mixing tank where the VII and additives were added



**Figure 6: PVC pipe that were used to transfer the base oil from storage tank to IBC, from IBC to mixing tank**



**Figure 7: Sections for additives**



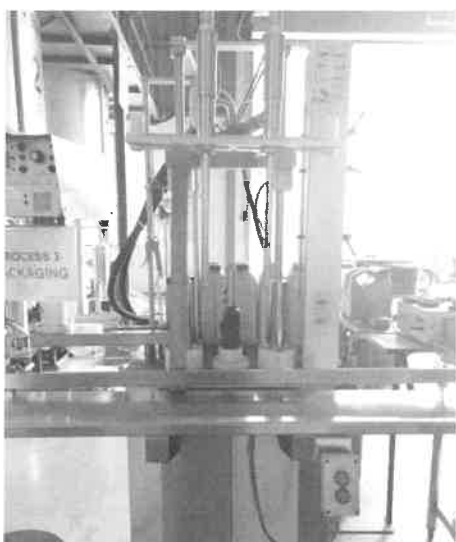
**Figure 8: Sections for Viscosity Index Improver (VII)**



**Figure 9: Several end product of the lubricating oil in form of bottle packing**



**Figure 9: Besides making lubricating oil for stock, ALLSEASON SYNERGY ALSO blends for third party (e.g. FELCRA)**



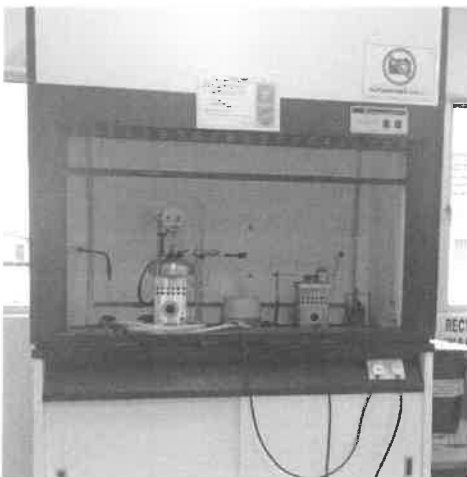
**Figure 10: Filling machine used to pack lubricating oil**



**Figure 11: Tanker carrying base oil (M500) arrived from the supplier**



**Figure 12: Sometimes when the leftover oil from previous blending will be here temporarily until further use.**



**Figure 13: Equipment used to test flash point of lubricating oil**