



INDUSTRIAL TRAINING REPORT OF CHEMICAL ENGINEERING

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1.0 INTRODUCTION

The industrial training of the chemical engineering diploma enables students to recognize the types of work performed by chemical engineers in the world of real engineering and to appreciate the theoretical knowledge they have learned. It also helps students complete basic engineering practices, including writing technical reports, communicating with colleagues, and processing projects and suggestions for improving the industry. Finally, there is a higher level of integrity, ethics, and responsibility in engineering practice. So, by receiving industry training, you help students to expose themselves and gain new knowledge about the type of internship company. For industrial training, the trainee is Arachem (M) Sdn Bhd, whose business nature is the provider of scientific test kits and engineering systems. The industrial training period is from 22 March 2021 to 16 July 2021.

This internship has benefited all parties. Through industry training programs, it provides opportunities for the industry to find and identify potential employees and enhance the company's reputation among graduates. Through this plan, the power of industry-university cooperation can be strengthened. However, the interns must ensure that all tasks assigned by the supervisor are well completed. Interns are also responsible for showing disciplinary actions by complying with company rules and regulations. Most importantly, the program has had the most positive impact on students because they managed to experience a real work culture, demonstrated consistent construction skills, and were exposed to new knowledge with the help of industry professionals.

2.0 CONTENT

2.1 Organization Chart and History of Company

2.1.1 History of the Company Arachem



Arachem (M) Sdn Bhd success lies in its commitment in consistently delivering quality products and services. Since our inception in 1990, we have evolved into a progressive company – renowned and highly respected as the country’s leading provider of the world’s most advanced scientific and engineering systems and equipment. We are also highly sought by the private sectors and government agencies for our up-to-date product knowledge and technical expertise. As the main marketer and service provider of cutting edge scientific and engineering product lines, Arachem continues to attract a diverse portfolio of clients involved in various industries, notably water and wastewater treatment, food and beverage, agriculture, aquaculture, animal health diagnostic, chemical manufacturing as well as pharmaceutical.

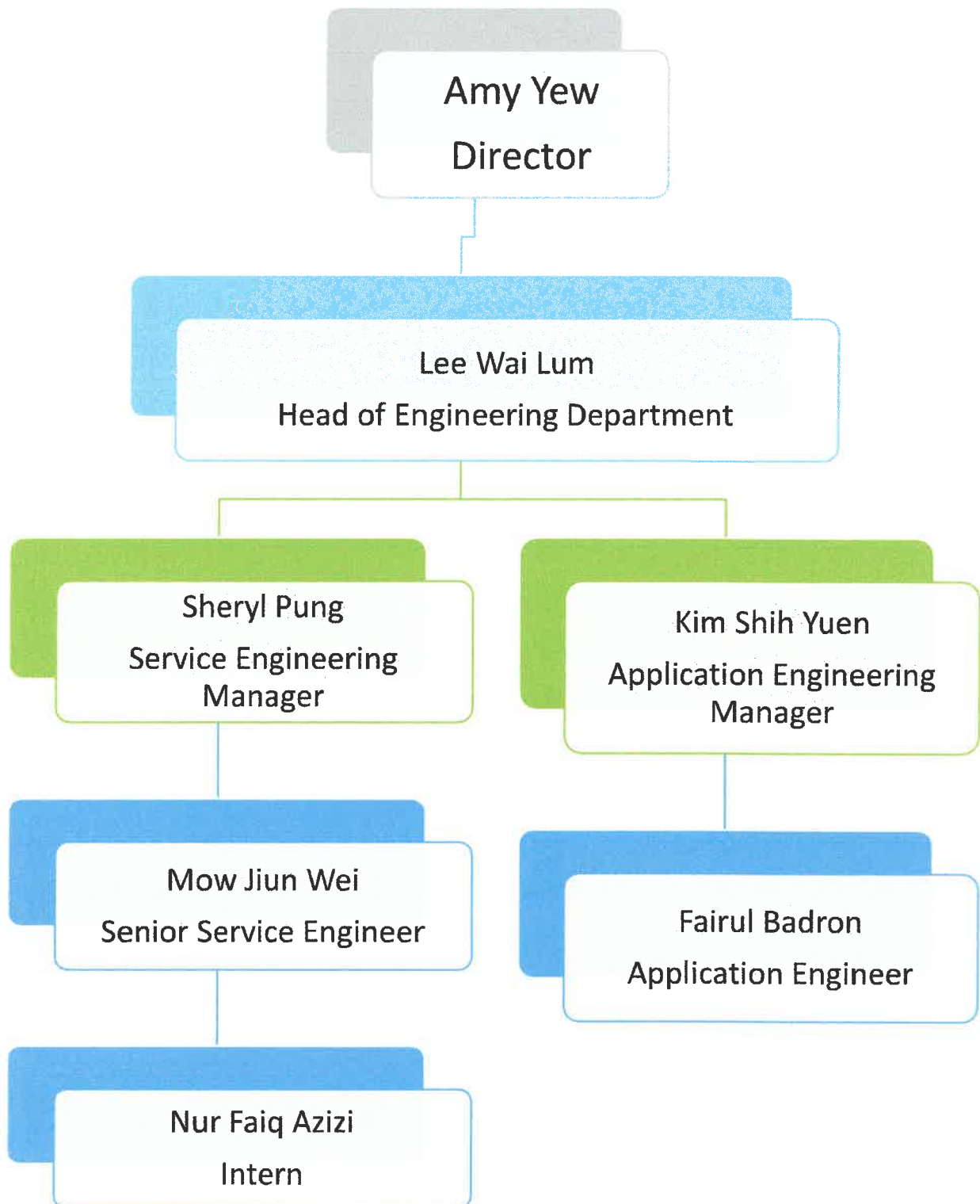
Engineering Division is the leading provider of mixing & processing systems, fluid handling systems, agitators, aerators, separators, vibration sieve, mixers, metering pumps, chemical preparation & dosing systems that are widely used by chemical and food processing plants, petrochemical, pharmaceutical, mining, industrial and wastewater enterprises. This division’s years of experience in the industrial sector would offer you time tested solutions for reliable and trouble-free operation of your plant.

Representing innovative and advanced Rapid Diagnostic solutions in Food, Feed, Aquaculture, Pharmaceutical, Cosmetics & Toiletries is Biotechnology Division. We provide solutions in laboratory design, set-up and establishment of protocol related to Hygiene Monitoring, Quality Assurance, Pathogen Testing, Bioavailability, Bioequivalence & Toxicological studies for Pharmaceutical, Cosmetic & Toiletry products. This division is also responsible for the quantification and screening of biohazards such as toxins, bacteria, anabolic and meat speciation. In Food & Food Related Industries, this division also offer the most complete range of culture media according to ISO Standard and harmonization Pharmacopoeia for the pharmaceutical product analysis. This division also assist clients in improving the health conditions of domestic and farm animals with the introduction of the latest animal research and laboratory diagnostics.

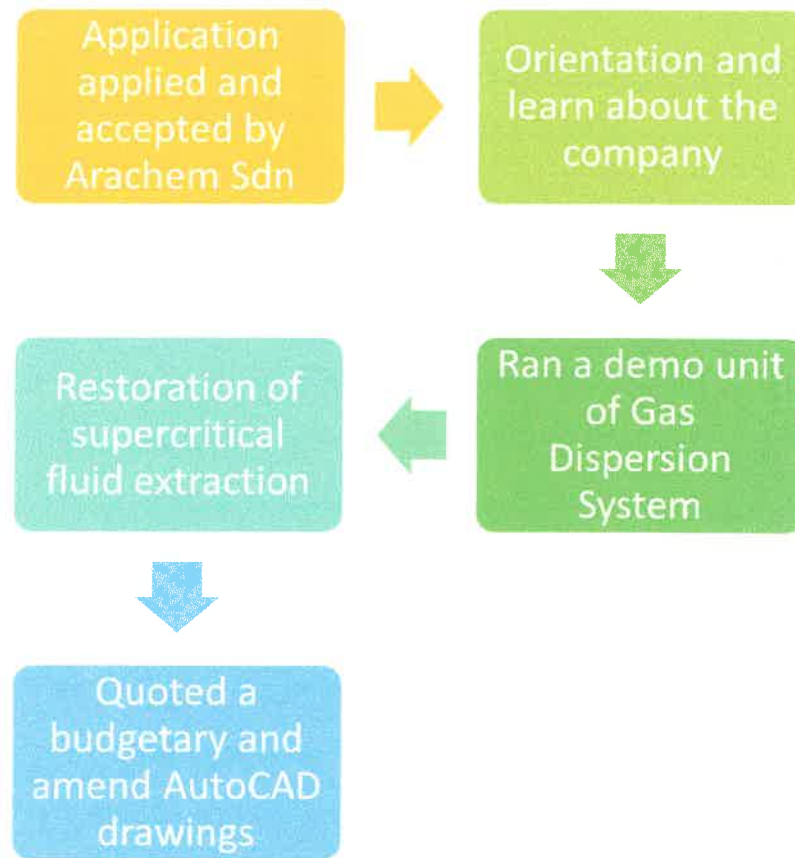
At Arachem, there should be no compromises when it comes to providing veterinary care to furry companions. Animal Diagnostics Division offers technology and services to help vet doctors' practice better medicine. This division carries a comprehensive range of in-house diagnostic analysers that measures blood cell counts as well as levels of certain enzymes in blood or urine of our companion animals. These analysers are equipped with proprietary technologies for the purpose of monitoring health conditions.

The logo for SPX, with 'SP' in grey and 'X' in green.The logo for STATiflo, with 'STAT' in blue and 'iflo' in a lighter blue script font. Below it is the tagline 'Dynamic Leaders in Static Mixing' in blue.The logo for HACH, featuring the word 'HACH' in white bold letters inside a blue oval with a white border.

2.1.2 ARACHEM (M) SDN BHD



2.2. PROCESS FLOW



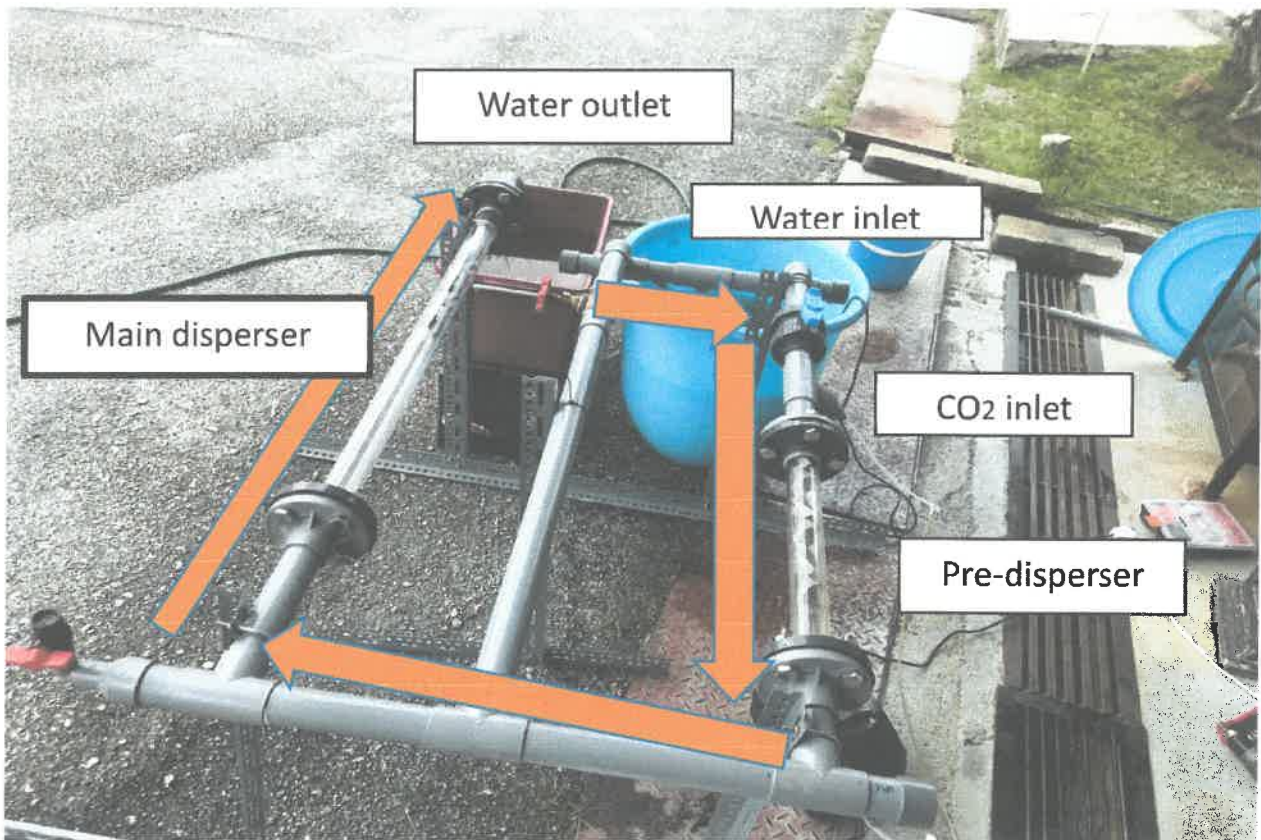
2.3. BRIEF DAILY/WEEK ACTIVITY

1st week - 2nd week

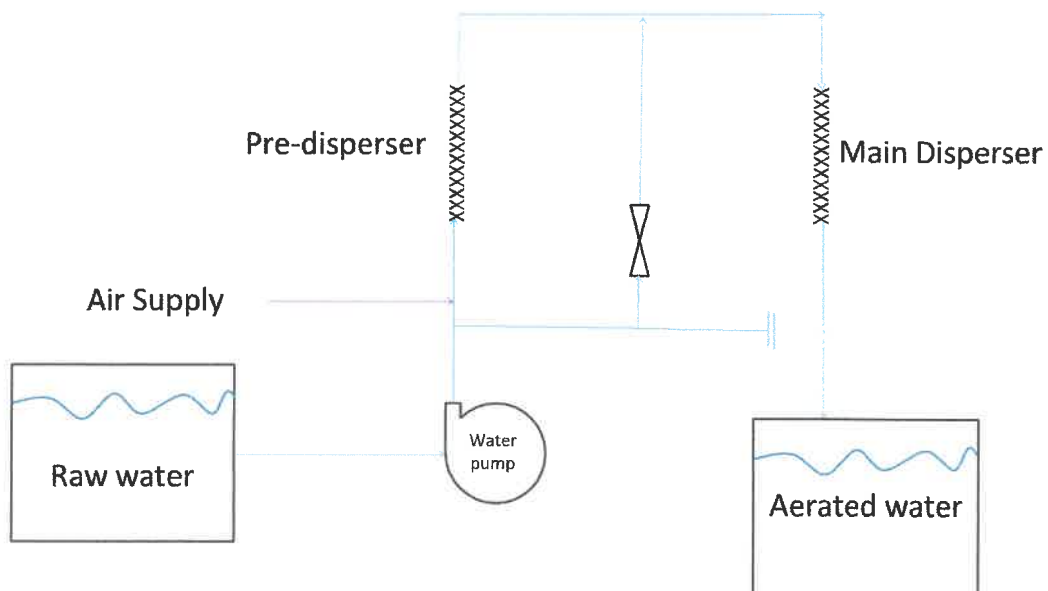
On the first week, the students being exposed with the orientation about the company background and introduction to every department in the Arachem (M) Sdn Bhd by the Human Resources. The introduction of gas dispersion system (GDS) was to expose student for site visit.

3rd week - 4th week, 14th week – 15th week

The site visit is conducted by SAJ Ranhill with the cooperation of Arachem. The purpose of the site visit is to demonstrate GDS, a demo unit for Statiflo static inline mixer.

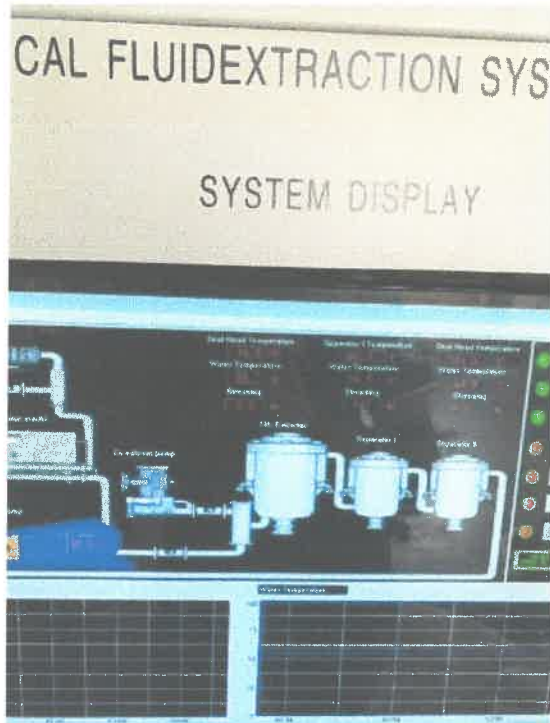


Water flow →



12th week – 13th week

The restoration of supercritical fluid extraction machine is done by an engineer and the student. The problem of the machine is observed by running it and a conclusion is made from the running machine. The air compressor is worn out of the refrigerant and a technician is called to repair the problem. The cleaning of the machine is done by the student and the water tank contained along with the chemicals is flushed out.



10L SUPERCRITICAL EXTRACTION EQUIPMENT PROCESS DATA SHEET

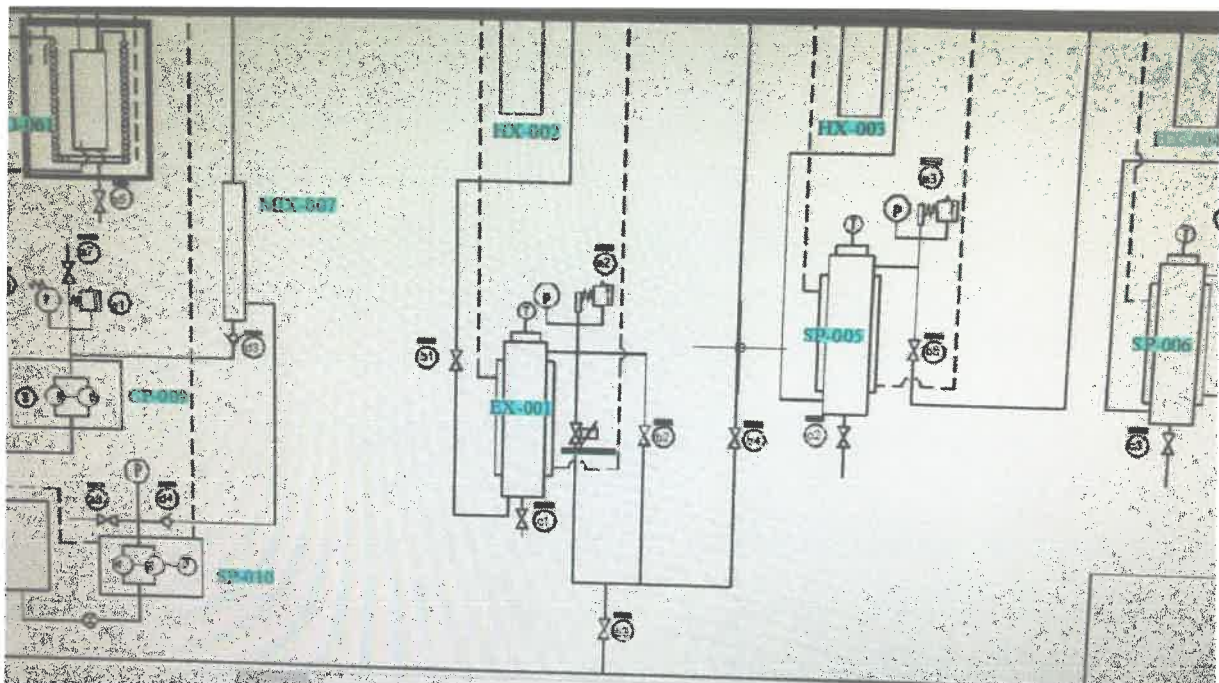
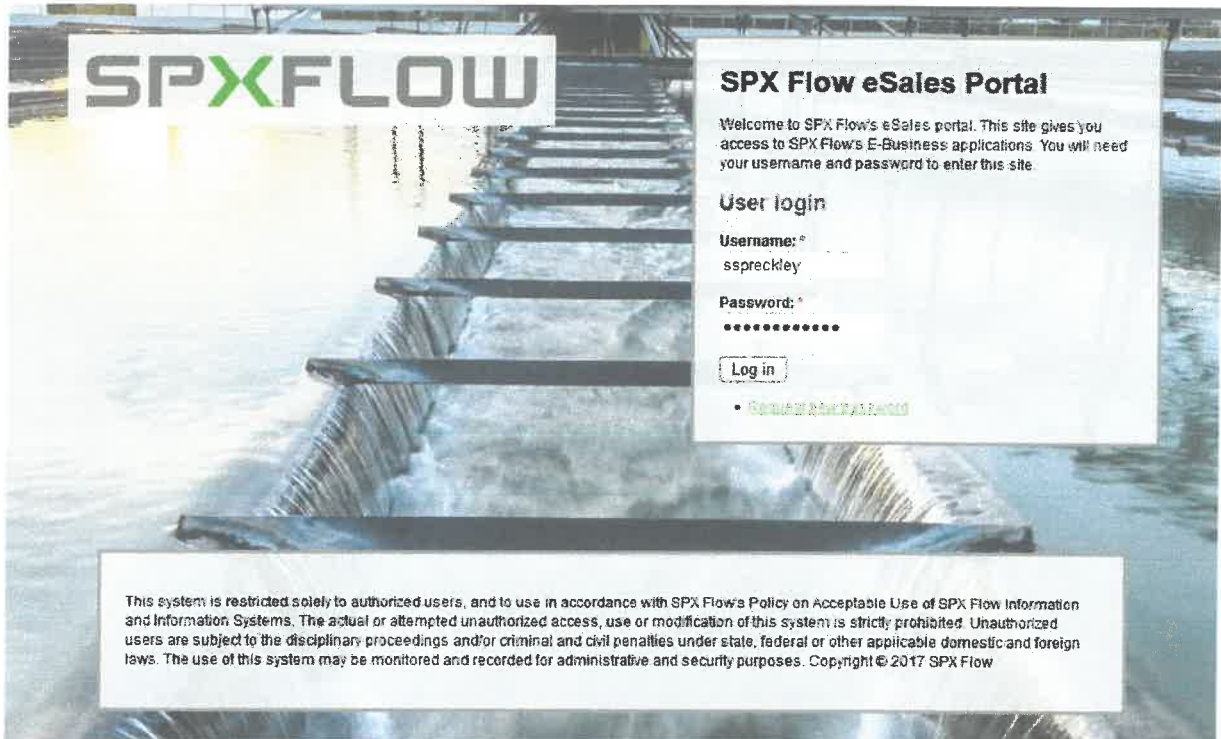
NO	Description	Unit	Data
10L Extractor			
1	Design Pressure	Bar	420
2	Working Pressure	Bar	415
3	Design Temperature	°C	85
4	Working Temperature	°C	80
5	Available Capacity	Litre	10
6	Working Medium (Fluid)		CO2
Separator I			
1	Design Pressure	Bar	130
2	Working Pressure	Bar	100
3	Design Temperature	°C	80
4	Working Temperature	°C	80
5	Available Capacity	Litre	2
6	Working Medium (Fluid)		CO2
Separator II			
1	Design Pressure	Bar	130
2	Working Pressure	Bar	100
3	Design Temperature	°C	80
4	Working Temperature	°C	80
5	Available Capacity	Litre	2
6	Working Medium (Fluid)		CO2
Co-Solvent Pump			
1	Type		3J-4.8/50
2	Transmitting Medium		Co-Solvent
3	Inlet Pressure	Bar	
4	Outlet Pressure	Bar	420
5	Pumpage	L/hr	4.8
6	Heating Unit		
	Power	Kw	0.75
	Voltage	V	380
Hot Water Tank II			
1	Capacity	Litre	28
2	Heating Unit		
	Power	Kw	4
	Voltage	V	220

NO	Description	Unit	Data
Dry Filter			
1	Design Pressure	Bar	100
2	Working Pressure	Bar	98
3	Design Temperature	°C	80
4	Working Temperature	°C	0-80
5	Working Medium (Fluid)		CO2
6	Heating Unit		
	Power	Kw	0.2
	Voltage	V	220
Liquid CO2 Tank			
1	Design Pressure	Bar	98
2	Working Pressure	Bar	85
3	Design Temperature	°C	50
4	Working Temperature	°C	-10
5	Available Capacity	Litre	13.7
CO2 Pump			
1	Type		3DT-100/50-3.5
2	Transmitting Medium		CO2
3	Inlet Pressure	Bar	35
4	Outlet Pressure	Bar	500
5	Pumpage	L/hr	100
6	Heating Unit		
	Power	Kw	4
	Voltage	V	380
Hot Water Tank I			
1	Capacity	Litre	15
2	Heating Unit		
	Power	Kw	3.5
	Voltage	V	220

40

Other weeks

The student learned to amend AutoCAD drawings and how to quote a budgetary. These activities are given by application engineer.



3. CONCLUSION

During the student's 17 weeks of industrial training, the students were able to gain fresh information and valuable experience. Student has the opportunity to complete practical training at Arachem Sdn. Bhd, a good and well-maintained company, suitable for interns to start learning the work culture. The students managed to acquire extensive knowledge about the world's most advanced scientific and engineering systems and equipment and had the opportunity to experience practical work firsthand, not just theoretically. The students also gained a lot of knowledge about safety precautions and hazards to make sure they are taken seriously in any task operation.

The lives of students and employees are completely different. The career transition from student to worker has affected many changes in life. This is because the work culture cannot be studied theoretically. It can only be understood through practice and real-time experience. The internship program helps students understand professional ethics, work culture, and adapt to a new environment. It also contributes to personal growth, including building confidence, strengthening basic skills, and improving character. In summary, the quality and quantity of experience in the host country, especially for interns,