DEPARTMENT OF BUILDING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

STORAGE TANK ERECTION

Prepared by:

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2017208804

DEPARTMENT OF BUILDING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

DECEMBER 2019

It is recommended that the report of this practical training provided

by

MUHAMMAD HAIKAL HAZIQ BIN ABDUL HALIM

2017208804

entitled

STORAGE TANK ERECTION

be accepted in partial fulfillment of the requirement for obtaining the Diploma In Building.

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STUDENT'S DECLARATION

I hereby declare that this report is my own work, except for extract and summaries for which the original references are stated herein, prepared during a practical training session that I underwent at A.K.K Engineering Sdn Bhd for a duration of 20 weeks starting from 5 August 2019 and ended on 20 December 2019. It is submitted as one of the prerequisite requirements of BGN310 and accepted as a partial fulfillment of the requirements for obtaining the Diploma in Building.

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Date :20 DECEMBER 2019

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I would also like to thank all the UiTM lecturers that have taught and nurtured me in becoming a better student and person. I would also like to extend my deepest appreciation to the lecturers who are directly involved during my training stint. Thank you to Dr. Azamuddin Bin Husin, Supervising Lecturer, for helping me during my practical training with a lot of information and helpful feedbacks to ease my working journey. Thank you to Encik Muhammad Naim Bin Mahyuddin, Practical Training Coordinator, for explaining and preparing the guidelines for completing practical training report. Thank you to Puan Nor Rizallinda Binti Ishak, Academic Advisor, for advising and support me on choosing places for this industry training. I value the time, effort, encouragement and ideas that they have contributed towards the successful completion of my training, this report and the valuable knowledge that have been shared over the last few semesters.

Last but not least, my special thanks to my beloved parents for their sacrifices over the years.

Thank you so much.

ABSTRACT

Buildings are among the most important thing in human life. Buildings are used in a variety of activities including to protect oneself. This report will discuss about proposed 3000 tons tank for Messrs Bunge Loders Croklaan Oils Sdn Bhd. The objective of this report is to study the method of installation and erection of storage tank. This report will also look at the daily progress in preparing a tank to store oil. This factory is processing oil for export to overseas.

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CHAPTER 1.0

INTRODUCTION

People use building as shelter to prevent from weather and other dangerous situation to protect themselves. Building is a structure with walls and a roof, such as a house or factory. A factory, manufacturing plant or a production plant is an industrial site, usually consisting of buildings and machinery, or more commonly a complex having several buildings, where workers manufacture goods or operate machines processing one product into another.

A palm oil production plant consist of a lot of buildings and machinery to process the palm oil. Example of building and machinery that include are boiler and storage tank. The boiler is used to heat the palm oil to maintain the viscosity of the palm oil and the storage tank is used to store the palm oil before undergoing to the other process. Storage tanks are containers that hold liquids, compressed gases or mediums used for the short- or long-term storage of heat or cold.

1.1 Background and Scope of Study

This study was carried out at Messrs Bunge Loders Croklaan Oils Sdn Bhd, PLO 8 & 9, Jalan Timah, 81700 Pasir Gudang, Johor. This study focuses on the method of installation and erection of storage tank. This study also focuses on the machineries and materials that has been used in preparing a storage tank.

1.2 Objectives

- To investigate the method of installation and erection of storage tank.
- To investigate the machineries, equipment, and materials that have been used in preparing a storage tank.

CHAPTER 2.0

COMPANY BACKGROUND

2.1 Introduction of Company

A.K.K. Engineering Sdn. Bhd. was founded by the late Mr. Ang Kan Kiong in year 1996 and we have been actively participating in Malaysia's construction business since then. It is led by a group of experienced professionals with proven partnership network to deliver construction and engineering solutions to its clients. We are registered as a G7 contractor with CIDB (Construction Industry Development Board) and ISO9001:2015 certified.

A.K.K. Engineering has been involved in palm oil, oleochemical, biofuel, oil and gas, chemical and other industries throughout the whole country. Since 2007, we have started our international venture by securing our first oversea job in Middle East, followed by several more jobs in Papua New Guinea. In recent years, we have successfully completed more than RM 300 millions of projects.

A.K.K. Engineering has received ASME (American Society of Mechanical Engineers) U-Stamp & S-Stamp Certification as Authorised Pressure Vessel Manufacturer, and NB (National Board) R-Stamp Certification as Authorised Pressure Vessel Repairer. We are also registered with DOSH / JKKP Malaysia as an Approved Un-fired Pressure Vessel Manufacturer and Boiler Repairer. It strengthens our company's competitiveness in providing complete industrial solution.

In 2015, A.K.K Engineering set-up new subsidiaries in Borneo and Singapore to expand our business into new markets. We have also invested in forwarding and haulage businesses to further develop ourselves into a highly competitive company.

2.2 Company Profile

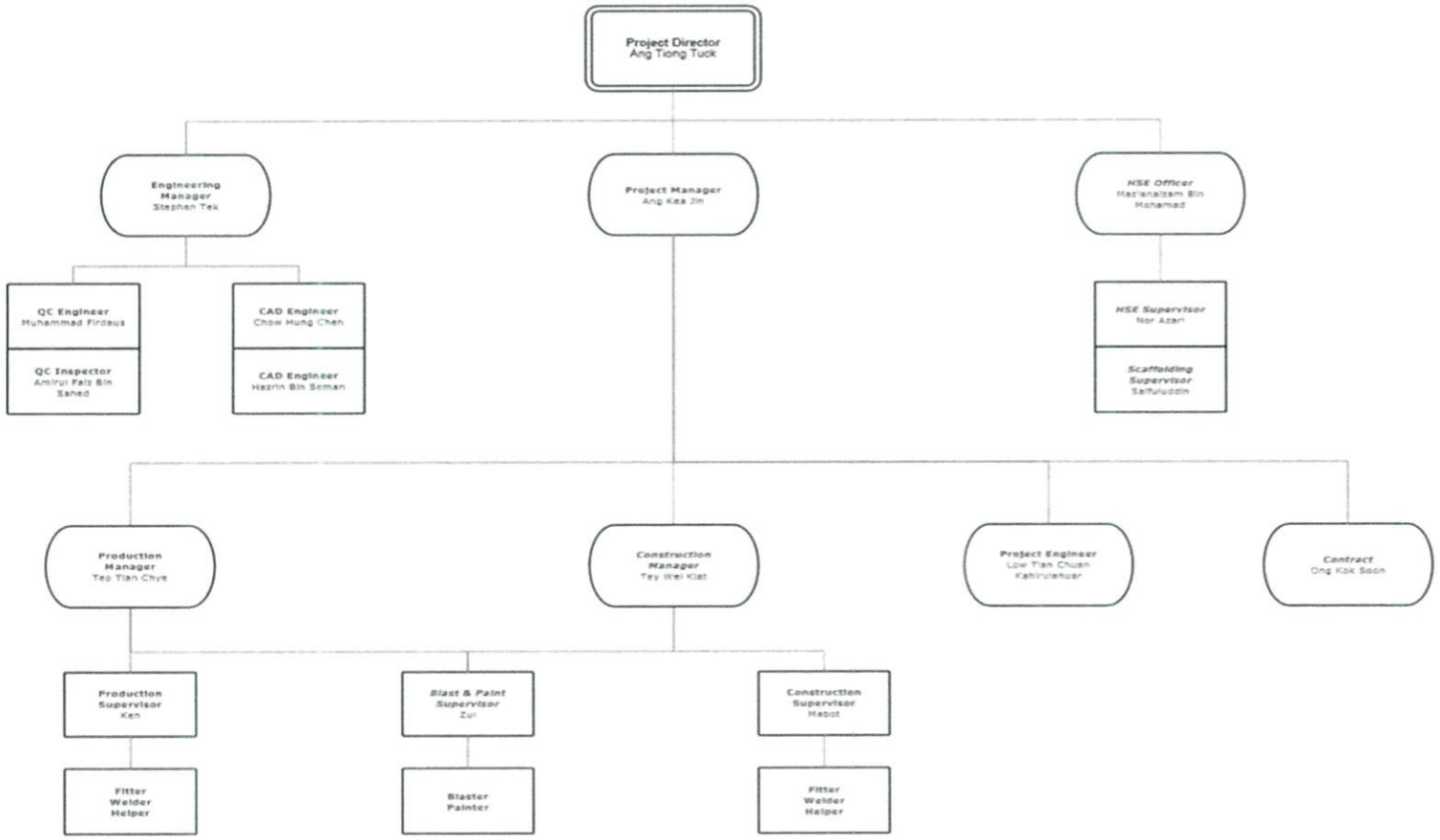
First of all, the company's name is A.K.K. Engineering Sdn. Bhd and the company's registration number is 410184-H. Secondly, the company type is private limited and the company is establish on 1996. Thirdly, the directors of the company are Ir. Ang Tiong Tuck and Mr. Ang Kea Jin. A.K.K. Engineering have four registration which are CIDB Registration, FGV Vendor Registration, SPAN Registration, and MSSA Registration. This company have three license which are DOSH Pressure Vessel License, ASME Pressure Vessel License, and National Board's Pressure Vessel License.

2.3 Organization Chart

Organization chart for A.K.K. Engineering Sdn. Bhd. is led by Project Director which is Mr. Ang Tiong Tuck. Next, followed by Mr. Ang Kea Jin, Project Manager, Mr. Stephen Tek, Engineering Manager, and Encik Mazlanaizam Bin Mohamad, HSE Officer. Under the Engineering Manager, there are four people which are Cik Muhammad Firdaus as the QC Engineer, Cik Amirul Faiz as the QC Inspector, Mr. Chow Hung Chen and Cik Hazrin as the CAD Engineer. Next, under the Project Manager, there are four parties which are Production Manager, Construction Manager, Project Engineer, and Contract. Lastly, under the HSE Officer, there are two people which are Encik Nor Azari as the HSE Supervisor and Encik Saifuluddin as the Scaffolding Supervisor.

Project Organizational Chart

AKK engineering



2.4 List of Project

Client	Scope of Works	Completed
Sime Darby Plantation Berhad	Design and Build (Turnkey/EPCC) of 300 MTPD semi-continuous palm oil refinery P26 plant, tank farm and ancillary works at Sime Darby Plantation (Jomalina Refinery), Teluk Panglima Garang, Selangor.	On-going Early 2020
CTCI Engineering & Construction Sdn. Bhd.	Track 4A 1440MW CCGT Power Plant Project – EPC of Field Tank Fabrication and Erection Works (Total 37,000MT Capacity)	2019
YTY Industry Sdn. Bhd.	Block A Acheh Project – 1600 Tons of Steel Structure & 80,000 dia inch of piping works for Glove Dipping Line	2019
MSM Sugar Refinery (Johor) Sdn. Bhd.	Package 1 (P1) of MSM Sugar Refinery (Johor) For The Construction And Installation of Process House, Purification House and other Ancillary Buildings and Associated Works	2018
Borneo Edible Oils Sdn. Bhd.	Supply, Fabrication, Delivery to Site, Installation, Testing, Commissioning and Guarantee of Auxiliary Mechanical, Piping, Insulation and Ancillary Works for Borneo Edible Oils Sdn Bhd on Lot 635 & 1934, Block 20, Kemena Land District, Kidurong Industrial Area, Bintulu, Sarawak.	2017
MSM Sugar Refinery (Johor) Sdn. Bhd.	Proposed Construction and Completion of New 3000tpd RSO Sugar Refinery Plant Complete with Power Generation at Johor, Malaysia. Piling Works	2017

Table 2.4: Completed and ongoing projects

CHAPTER 3.0

CASE STUDY OF INSTALLATION AND ERECTION OF 3000 TONS STORAGE TANK

3.1 Method of Installation and Erection of Storage Tank

The first steps, was arranged the annular plate as per drawing plate by plate. The arrangement of plate was lifted by a crane. The second step, was placed the sump tank to it place and arranged the bottom plate as per drawing plate by plate.

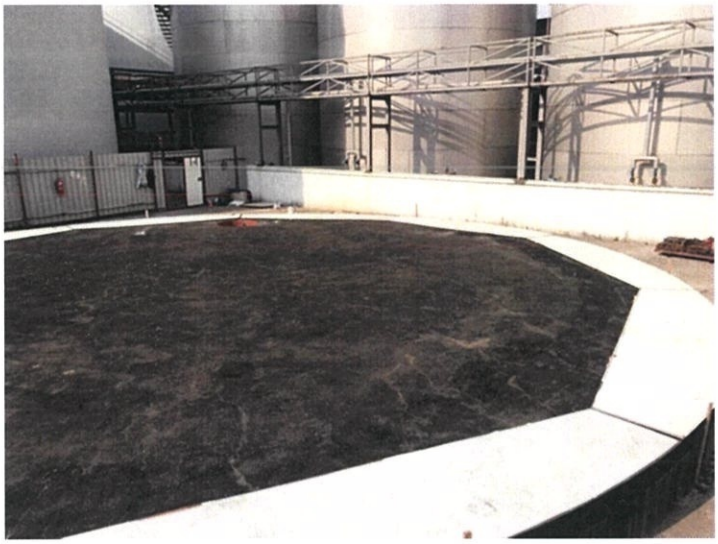


Figure 3.1: Arrangement of annular plate

Figure 3.2: Arrangement of sump tank

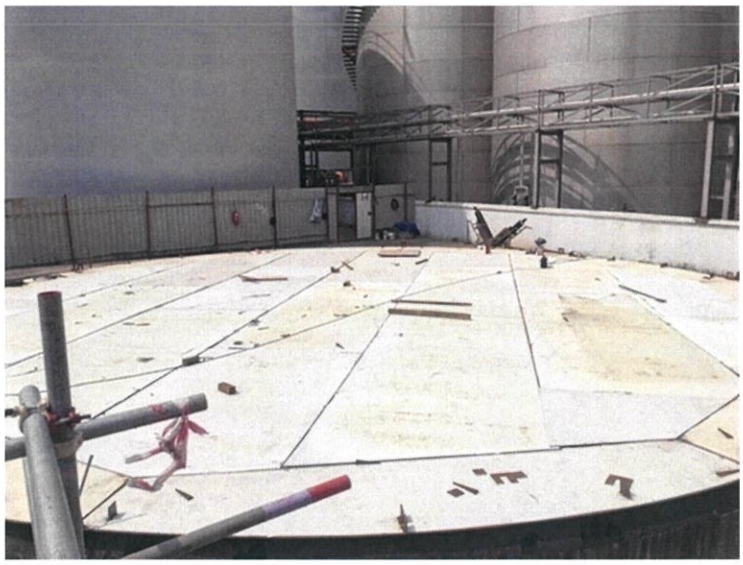


Figure 3.3: Arrangement of bottom plate

The third steps, was arranged the shell plate as per drawing plate by plate, level by level. The arrangement of shell plate also was lifted by a crane. The next step, was welding the annular plate and the bottom plate to make it stay in position during the installation of the next level of shell plate. The welding works was run using welding set which is powered by generator.

Figure 3.4: Installing the shell plate level by level

Figure 3.5: Welding the bottom plate

Once finished welding the bottom plate, the next step was welding the inner and the outer of shell plate level by level. After the welding works, the next step was grinding the place that have been welded to make it stay smooth and neat.

Figure 3.6: Welding the outer of shell plate

Figure 3.7: Welding and grinding the inner of shell plate

The next steps, was arranged the roof ring as per drawing and then welding the roof ring. The final steps, was arranged and installed the roof structure and then welding it.

Figure 3.8: Installing the roof ring

Figure 3.9: Welding the roof ring

Figure 3.10: Arranging and installing the roof structures

3.2 Machineries, equipment, and materials that have been used in preparing a storage tank

The machineries including in this project are cranes, lorries, generator set and compressor set while the equipment that have been used during this project was ongoing are welding set, grinder, extension cables, and spotlight. There are a lot of material that have been used in this project. For example, bottom plates, annular plates, shell plates, roof rings, roof structures, and roof ring.

Figure: Crane

Figure: Lorry

CHAPTER 4.0

CONCLUSION

4.1 Conclusion

Based on the discovery, this investigation was conducted at Messrs Bunge Loders Croklaan Oils Sdn Bhd, PLO 8 & 9, Jalan Timah, 81700 Pasir Gudang, Johor. The investigation is to study the method of installation and erection of storage tank. The method of installation and erection of storage tank is installing plate by plate, and level by level from the bottom. The installation and erection of tank is intended for storing palm oil before and after processing work.

The investigation is also to study the machineries, equipment, and materials that have been used in preparing a storage tank. These things are very important in installing and erecting of storage tank and needed for the project to be done.

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