



**DEPARTMENT OF BUILDING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA
(PERAK)**

**PRACTICAL REPORT TITLE:
BUILDING SERVICES AND MAINTENANCE FOR AIR
CONDITIONER**

**Prepared by:
MUHAMMAD FIRDAUS BIN A HAMID FAIZ
2019232662**

DEPARTMENT OF BUILDING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA
(PERAK)

FEBRUARY 2022

It is recommended that the report of this practical training provided

By

MUHAMMAD FIRDAUS BIN A HAMID FAIZ

2019232662

BUILDING SERVICES AND MAINTENANCE FOR AIR CONDITIONER

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

Report Supervisor : Ir. Raja NurulHaiza Binti Raja Nhari

Practical Training Coordinator : Dr. Nor Asma Hafizah Binti Hadzaman

Programme Coordinator : Dr. Dzulkarnaen Bin Ismail.

DEPARTMENT OF BUILDING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA
(PERAK)

SEPTEMBER 2021

STUDENT'S DECLARATION

I hereby declare that this report is my own work, except for extract and summaries for which the original references stated herein, prepared during a practical training session that I underwent at A&A Megah Sdn Bhd for duration of 20 weeks starting from 1 September 2021 and ended on 14 January 2021. 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.

.....
Name : MUHAMMAD FIRDAUS BIN A HAMID FAIZ
UiTM ID No : 2019232662
Date :10/01/2021

ACKNOWLEDGEMENT

Alhamdulillah, praise to Allah, the Most Merciful, the Most Graceful.

I would like to extend my heartfelt gratitude for the guidance, advice and help rendered throughout the period of training by the following group of amazing individuals. First and foremost, I would like to thank Encik Mohd Azlan Mohd Jubli for the opportunity given, to conduct my training in his esteemed company. His team of professionals consisted of En Zaim Zamaludin, En Mohd Firdaus Bin Mohd Jubli, Pn. Nurul Asmidar Binti Mustafa and Pn. Nurul Juraida Binti Mohd Jubli, has enabled me to learn and develop my understanding, knowledge and feel of real time projects, and the theory involved in building services, building and civil works. They are also responsible towards streamlining and assessing my training. It is an honour for me to be given the opportunity to ‘work’ with all of you.

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. To Cik Nor Azizah Binti Talkis, Supervising Lecturer, Puan Ir. Raja Nurulhaiza, Evaluation Lecturer, Dr. Nor Asma Hafizah Binti Hadzaman, Practical Training Coordinator and Dr. Dzulkarnaean Bin Ismail, Programme Coordinator, 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

To complete this diploma course, we are required to undergo industrial training for 20 weeks as it is included in our course outline and need to be completed in our 5th semester of our diploma. This industrial training started from 23rd August 2021 until 7th January 2022 and during the industrial training we are monitored and supervised by the nominated supervisor.

For my industrial training, this study at A&A MEGAH SDN. BHD. where it is located at Kuantan, Pahang. It is a contractor company doing building services maintenance and repair and other services. This company was established on 20th June 2020 by Encik Mohd Azlan Bin Mohd Jubli, the owner of this company. This company is expert in air conditioning installation, electrical work and building services such as housekeeping, painting, and laundering.

The project that in this research is an installation and maintenance for the air conditioner at all Telekom Malaysia Berhad's buildings. This study was assisted by my managing director who is the owner of the company to manage all the company organization such as office work and tender/quotation preparation including finishing all of the things that have been pending like example registration with the vendor and supplier. This research was also helped by my team doing this task as the company was a new fifth company from the founder.

The conclusion is doing maintenance work for air conditioning to prevent any failure or system doesn't working as required. My hope for this research will be useful for me as a reference in future.

TABLE OF CONTENTS

CONTENTS	PAGE NO
Acknowledgement	i
Abstract	ii
Contents	iii
List of Tables	iv
List of Figures	v
CHAPTER 1.0 INTRODUCTION	1
1.1 Background of Study	4
1.2 Objectives	4
1.3 Scope of Study	5
1.4 Method of Study	
CHAPTER 2.0 COMPANY BACKGROUND	
2.1 Introduction of Company	6
2.2 Company Profile	7
2.3 Organization Chart	9
2.4 List of Project	10
2.4.1 Completed Projects	11
2.4.2 Project in Progress	
CHAPTER 3.0 CASE STUDY	
3.1 Introduction to Case Study	12
3.2 To Identify the Type of Building Services and Maintenance	13 15
3.3 To Study the Method of Installation for Air Conditioning System	18
3.4 To Identify the Problems and Solutions	
CHAPTER 4.0 CONCLUSION	21
4.1 Conclusion	

LIST OF TABLES

Table 2.1:	Completed Projects.....	10
Table 2.2:	In Progress Projects.....	11

LIST OF FIGURES

Figure 2.1:	Location of the company Based on The Satellite Image	7
Figure 2.2:	The logo of the company	8
Figure 2.3:	The company's organization chart	9
Figure 3.1:	Components in AHU	14

CHAPTER 1.0

INTRODUCTION

1.1. Background Of Study

In building services, air condition (also known as AC, A/C, or air con) is a system that is used to cool down the temperature in an interior area by removing the existing heat and moisture from the environment.

They function essentially by drawing warm air into a system and dispersing cold air, but there is much more to this process.

The evaporation of another fluid, known as the refrigerant, cools a fluid (often water or air) during the home air conditioning process. Using chemicals, your air conditioner swiftly transforms gas into a liquid and back again, removing the heated air from inside your home. It is then disposed of outside. In a nutshell, an air conditioning system regulates the temperature, humidity, and air quality in enclosed rooms.

While the core notion of air conditioning dates back to ancient Egypt, the first modern air conditioning unit was built in 1902 by Willis Carrier in response to a New York publishing company's air quality concern.

The technology not only manages the temperature of a place, but also the humidity, by chilling the air by passing it through cold coils, allowing them to control the moisture in the air. Soon after, air conditioning was applied to automobiles as well as to increase household comfort. As a consequence of customer demand, sales of air conditioning equipment have skyrocketed throughout the years.

Manual air conditioning allows you to switch your unit on and off whenever you like. There is no waiting for the air conditioning to start because it is not regulated by a thermostat.

You'll need an automated air conditioning system if you want your air conditioning system to be automatic with little input from you. This ensures that your system will turn on when you set it to, so you won't have to go back to the controls every day.

Air conditioning systems, like any other item, can vary in price. A low-cost air conditioning unit can cost between RM900 and RM2000, with more costly ones costing roughly RM5000 or more. Use our 'Find An A/C System' feature to get a more accurate, personalized quotation on which air conditioning system is best for your house. It's simple to use and will provide recommendations in under two minutes.

There are many various types of air conditioning units, and the one you pick will be largely dependent on your personal requirements. For example, the size of the area, the amount of heat generated in that region, and the sort of controls required. It is important to have the proper type for your needs in order to keep your energy usage under control and your area at a reasonable temperature. The following are the primary types:

i. Wall-mounted, split unit air conditioning system

The split system air conditioner is made up of two units: one outdoors and one inside. The compressor, condenser coil, and expansion coil are housed in the outside unit, which is mounted on or near the outer wall of the area to be cooled. The cooling coil and an air filter are housed in the interior unit, which is mounted on the wall. Both devices are linked by cables and tubes.

Split systems are a fantastic alternative for households since the compressor and fan are situated in the outside unit and enable for several interior units to be linked to a single exterior box.

ii. Packaged air conditioner

Unlike a standard air conditioning system, which consists of two pieces: an outdoor condenser and an inside air handler, a packaged air conditioner unit encloses all of the parts in a single box, which is commonly situated on the outer wall or roof of a structure.

Packaged air conditioning systems provide a greater capacity for cooling or heating, making them excellent for usage in bigger homes or commercial buildings. They operate by installing a single component and connecting it to ducts installed across multiple rooms. The machine circulates the refrigerant through the coils by using electricity as its power source. A fan then draws warm air in and circulates it over the chilly evaporator coil, cooling it. The cold air is then forced into the building via the ducts.

iii. Central air conditioning system

Central air conditioning systems are commonly utilised to cool big houses or buildings like gyms or offices. Because they are rapid and effective at cooling bigger areas, central systems are the most prevalent form of air conditioning system.

iv. Air Handling Unit (AHU)

The required ventilation needs for purifying, air-conditioning, or replenishing the interior air in a building or premises are housed in an air handling unit, also known as an AHU, which is made up of elements installed in big, accessible box-shaped units called modules. They are commonly put on the roofs of buildings, and the air is circulated through ducts to each of the rooms within the structure.

The system is powered by an outside-located cooling compressor. A coil loaded with refrigerant, similar to conventional air conditioners, is used to chill the air, which is then pushed out by a fan and distributed throughout the building via ducts mounted on the walls or floors. If there is warm air in a room, the ducts will detect it and convey the air back to the air conditioner to be pushed outside.

v. Window air conditioner

These window air conditioners are used to cool a single room or space and are mounted at a window. They're great for households where individuals only live in one room at a time. A window air conditioning system is a self-contained appliance with all of its components enclosed within a single box.

The window air conditioner is inexpensive to buy and operate, and it is also quite small. These devices, which are put along the bottom half of the window, draw hot air from the room and push it outside, while forcing cold air into the area to cool it down.

vi. Portable air conditioning unit

This little air conditioner performs exactly what it says on the package. It's a movable unit that doesn't need to be permanently installed. They're simple to install and function by extracting heat from the air in your room via a little exhaust. This device may be moved from room to room to focus on the areas that require the greatest care.

There are many types of air conditioning system in theoretically. However, the aim of this report is to discover how the installation and services process are done in building services.

1.2. Objectives

There are several objectives have been developed from this construction as follow:

- i. To identify the type of building services and maintenance
- ii. To study the method of installation for air conditioning system
- iii. To identify the problems & solutions during installation of air conditioning system

1.3. Scope of Study

The scope of study has been carried out at all of Telekom Malaysia Berhad's buildings and facilities in east coast which is Terengganu, Pahang and Kelantan. The project started on 19 July 2020 and will be completed on 19 July 2021. The project is about installing new air conditioners, replacing the old air conditioners, and maintaining the air conditioners in all of Telekom Malaysia Berhad's buildings and facilities and it costs One Million and Two Hundred Thousand Ringgit Malaysia (RM 1,200,000.00). The project is currently ongoing. Therefore, the focus of the study is to determine how air conditioners will be installed, replaced, and maintained. This process especially for AHU type is undertaken because most of Telekom Malaysia Berhad's buildings use AHU. Hence, the study will be explained not only about the method of installation, replacement, and maintenance process but including the advantages of replacing the old air conditioners and maintaining it. Furthermore, the problems and solutions are also included in this study. Even so, the study does not concentrate on the quantity of manpower or labours, the costs and the duration matters. In order to fulfil the data, there were three methods that needed to be carried out which are observation, interview, and document reviews. In conclusion, all further explanations relating to the above method were explained as below.

1.4. Methods of Study

i. Observation

The data was collected based on observation before the project started until the project has started and ongoing about replacing the old air conditioners and installing new air conditioners at certain places. Besides, observation has been done with attending discussion meetings about how to choose the suitable air conditioners for some places that need a big number of air conditioners horsepower to keep some places down such as at TM Stesen Kabel Dasar Laut Cherating. The discussion meeting was recorded using voice records and written notes.

ii. Interview

The interview is one of the methods to collect the data by doing the structured or semi structured interview with the trusted person for the project. It has been done while doing the observation and while doing the work at the site. The interview was conducted with the company manager, the contractor who is responsible for handling the project while at the site. This interview was also done to the workers who were at the site while maintaining air conditioners. Semi-structured interviews were also conducted with the contractor responsible for conducting the project each week in the office and usually carried out around 10 – 15 minutes. The semi-structured interview was recorded through short notes.

iii. Document review

This method involves systematic data collection from the existing records that can be derived from the company such as company profile, monthly progress report and pictures taken by the workers. Most of the important and confidential data about the company or project can be acquired and beneficial to accomplish the objectives of this report.

CHAPTER 2.0

COMPANY BACKGROUND

2.1. Introduction Of Company

A&A Megah Sdn. Bhd. is a company registered under the Malaysian Construction Industry Development Board (CIDB). This company is registered in grade G4 in category B (building construction) for specialization B04, CE (civil engineering construction) for CE21 and ME (mechanical and electrical) for M15 specialization under CIDB. Apart from being registered under CIDB, this company has SSM Business Registration certificate (1371743-K), Ministry of Finance Malaysia Company (K10113067222867635) and Bumiputera Company Ministry of Finance Malaysia (BP10113067222911645). A&A Megah has collaborated with several professional panel companies to meet client demands as well as facilitate all construction matters. The professional panel involved consists of a panel of architects, panel of surveyors, a panel of engineers and a panel of contractors. There are also some general workers and skilled workers who have skills and experience in the fields of wiring, electricity, irrigation, and construction. With the recognition from the Malaysian Construction Industry Board (CIDB) as a bumiputera contractor, A&A Megah is able to expand the scope of work to manage and carry out road construction, piping, sewerage and other civil engineering work too.

2.2. Company Profile

A&A Megah Sdn. Bhd. was established on 20th June 2020 and began right after all registrations have been approved with the main business core of building, engineering, housekeeping, electrical, air conditioners supply and maintenance and infrastructure construction. It was registered as G4 under the Malaysian Construction Industry Development Board, various government bodies with several established developers in Malaysia and wholly owned bumiputera company. This company is located at Lot A1, Tingkat Atas Medan Niaga PKNP, Jalan Kempadang Perdana 1, 25150 Kuantan, Pahang.



Figure 2.1: Location of the company based on the satellite map.

Figure 2.1 shows where the company is located based on the satellite map. The building has a lot of shop lots, and the company is located at the upstairs of the building as shown with the arrow. This stable company is led by the founder, Encik Mohd Azlan Bin Mohd Jubli, an electrical engineer by profession whose wide experience and expertise in the field of electrical and assisted by the civil engineer director, Nurul Asmidar Binti Mustafa and project director, Juraida Binti Mohd Jubli. With the company's mission to be one of the bumiputera construction companies that are able to provide the best, high quality and transparent services to all customers, this company is ready to achieve the company's vision of being a bumiputera company that actively contributes to national and international development. The company has 7 employees and has collaborated with several construction-related companies. A&A Megah can be contacted via company email at aa.megah.sdnbhd@gmail.com, or directly contact through company number (019- 4424241).



Figure 2.2: The logo of the company

Figure 2.2 shows the logo of the company. As seen, it has double-A in the logo, and it represents the name of the founder and his wife (Azlan&Asmidar). The double-A logo designed to look like a roof with a chimney and that shows that this company is related to a construction industry.

Name of company : A&A MEGAH SDN. BHD.

Registered office : LOT A1, TINGKAT ATAS MEDAN NIAGA PKNP,
JALAN KEMPADANG PERDANA 1,
25150 KUANTAN, PAHANG.

Handphone no. : 019-4424241

Registered date : 20 JUNE 2020

Company registration no. : 1371743-K

Bankers : MAYBANK ISLAMIC KUANTAN BRANCH

Director : MOHD AZLAN BIN MOHD JUBLI

Registered with :1. Kementerian Kewangan Malaysia
Government bodies (K10113067222867635)
2. CIDB (0120210504-PH073874)
3. SPKK (0120210504-PH073874)

2.3. Company Organisation Chart

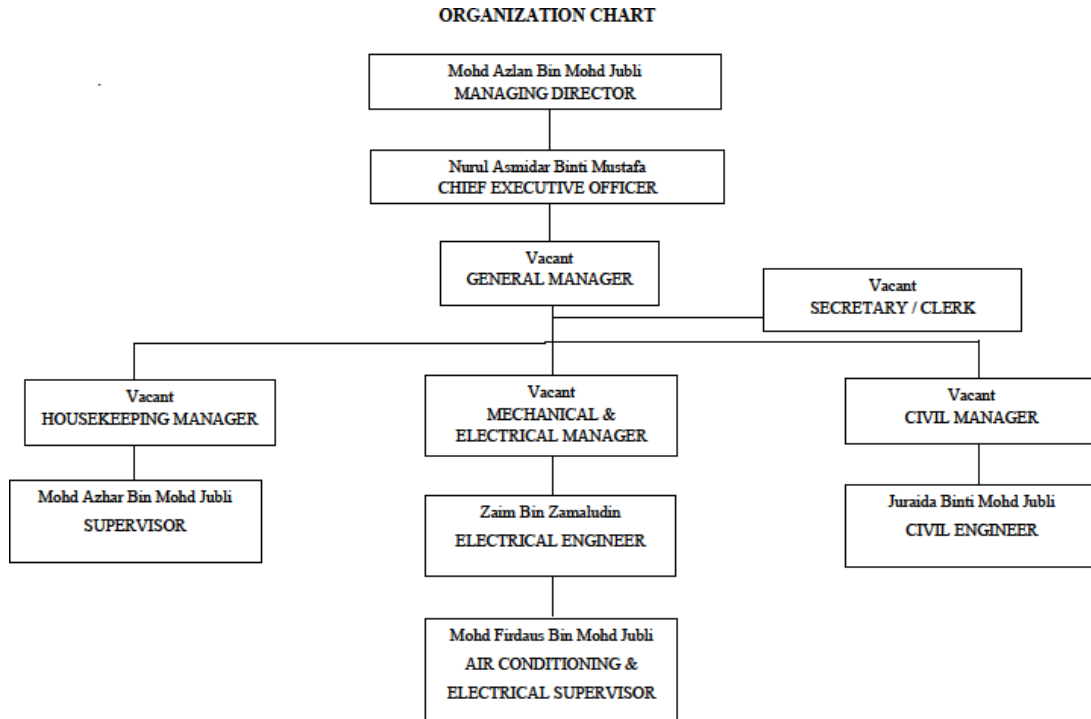


Figure 2.3: The company's organization chart.

Figure 2.3 shows the company's organization chart. The organizational chart help to illustrate the data management for employee in workplace. It shows the task that need to be performed and easily make people understand the design of organizational chart. Based on the number of levels and the position of each employee.

The director, Mr. Mohd Azlan, plays an important role of this organizational chart. Where he acts to monitor all works done by following specification.

2.4. List of Projects

2.4.1. Completed Projects

Table 2.1: List of Completed Projects

No.	Project Title	Project Value	Start Date	Completion Date	Project Duration	Client
1.	Kerja – Kerja Membersih Dan Mencuci Bangunan Mahkota Square Untuk Tetuan JMB of Mahkota Square.	Sixty-Nine Thousand Malaysian Ringgit (RM 69,000)	30 June 2020	29 May 2021	11 Months	Joint Management: Body of Mahkota Square
2.	Kerja – Kejra Mengecat Bangunan Mahkota Square Kuantan Untuk “Joint Management Body of Mahkota Square” dan Lain – Lain Kerja yang Berkaitan.	Thirty-Nine Thousand Malaysian Ringgit (RM 39, 000)	15 July 2020	17 October 2020	5 Months	Joint Management: Body of Mahkota Square

3.	Kerja – Kerja Membekal dan Memasang Perabot Pejabat, Penyelenggaraan Paip di Stesen Minyak Petronas Pekan.	Fifteen Thousand and Sixty Malaysian Ringgit (RM 15,060.00)	7 August 2020	10 October 2020	3 Months	Mohd Warikh Bin Hj Ishad Ali
----	------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------	---------------	--------------------	----------	---------------------------------------

2.4.2. Project In Progress

Table 2.2: List of Project in Progress

No.	Project Title	Project Value	Start Date	Completion Date	Project Duration	Client
1.	Kerja – Kerja Membekal, Memasang, dan Menyelenggara Penghawa Dingin Di Seluruh Fasiliti Telekom Malaysia Berhad Pantai Timur.	One Million and Two Hundred Thousand Malaysian Ringgit (RM 1,200,000)	20 Septe mber 2021	5 November 2024	3 Years and 2 Months	Telekom Malaysia Berhad

CHAPTER 3.0

BUILDING SERVICES AND MAINTENANCE FOR AIRCONDITIONER

3.1. Introduction to Case Study

Telekom Malaysia Berhad (TM) is Malaysia's leading integrated telco and the country's national connectivity and digital infrastructure provider. It aims to enable Digital Malaysia by providing a comprehensive suite of communication services and solutions in fixed (telephony and broadband), mobility, content, WiFi, Cloud, Data Center, cybersecurity, IoT, and smart services. Telekom Malaysia Berhad has a lot of facilities that use air conditioners to keep the room temperature to stay cool depending on certain situations. For example, at Stesen Kabel Dasar Laut Cherating TM uses up to 60 horsepower of air conditioners to keep the room that contains batteries cool. Most of the TM's buildings use AHU to keep the temperature down. It is important to use the suitable air conditioner to keep the room stay chilled as some rooms are used to store batteries that are high temperature and most likely to cause overheating. As mentioned, the air conditioner that is used in the room that stored the batteries are used to keep the batteries temperature down too. However, after the suitable air conditioner has been chosen it is also important to keep maintaining it to keep it running at its peak performance and to avoid any loss in future.

The problems of installing, replacing and maintaining the process will be determined throughout the process. The solutions of the problems also will be stated after determining the problem of the process. This chapter will be focused on the method of installing and maintaining, the time that has been used for maintaining the process and the problem and solution.

3.2.To Identify the Type of Building Services and Maintenance

The systems that have been installed in buildings to make them comfortable, functional, efficient, and safe are known as building services. Fire safety, HVAC (heating, ventilation, and air conditioning), lighting, plumbing, and ICT (information and communications technology) are just a few examples. For this case study, the type of building services that has been chosen is an air conditioner which is Air Handling Units (AHU).

The appropriate ventilation requirements for purifying, air-conditioning, or replenishing the interior air in a building or premises are housed in an air handling unit, also known as an AHU, which is made up of elements mounted in big, accessible box-shaped units called modules. They are commonly put on the roofs of buildings, and the air is circulated through ducts to each of the rooms within the structure.

Air handling unit's main function is to ensure that the inside is properly ventilated with outside air. The AHU also performs the other function which is, filtration and control of the quality of the air that will reach the interior, thanks to air purification filters, and depending on the retention of these filters, the air will be clean; and control of the air temperature, which regulates the air conditioning system in cold or hot, so that the desired thermal sensation in the interior is achieved. Other than that, AHU also functions as a monitor relative humidity for improved interior comfort.

How air handling systems operate is by collecting outside air, which is treated and circulated throughout the rooms, as well as "recycled" domestic air. The filter applied will have a higher or lesser particle, virus, bacterium, odours, and other air pollutants retention depending on the air purity needs. Aside from that, a fan is an electromechanical system that propels air from the AHU to the ducts, where it is distributed throughout the rooms. Heat exchangers, on the other hand, are devices that transfer temperature between two fluids separated by a solid barrier, in this example coolant and air. Moreover, the air travelling through this module is cooled by a cooling coil. Water droplets can be formed during this process, and the built-in droplet separator collects them in a condensate tray. Silencers are coatings that significantly reduce the installation's sound level and plenums are empty places where the air flow is uniform.

This type of air conditioning is suitable because the main goal of an air handling unit is energy efficiency, which has been required by European Ecodesign Regulation 1235/2014 since 2016. Heat recovery systems reduce the amount of energy required for air conditioning because the internal and outdoor air are mixed in the exchanger, resulting in a lesser temperature contrast when the air reaches the coil, lowering the climatic contribution and lowering energy consumption. Similarly, because the equipment is variable regulated, the fans may function according to the flow rate requirements, lowering their consumption.

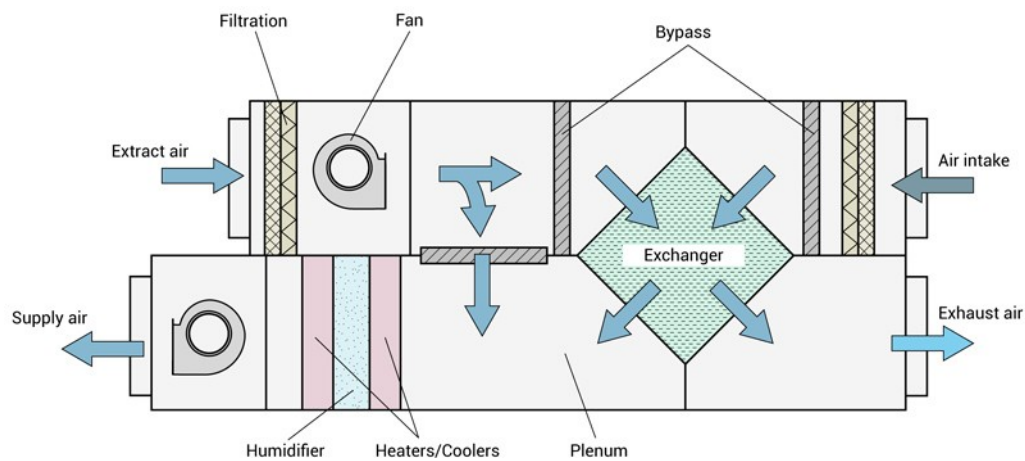


Figure 3.1: Components in AHU

3.3.To Study the Method of Installation for Air Conditioning System

Method of Air Handling Units (AHU) Installation

The AHU installation will be based on observations made at the AHU installation site. First, prior to the start of the job, a site study must be conducted to identify safety precautions and measures. Following such an investigation, appropriate sign boards will be placed, and barricades will be erected as needed, including but not consist of the following:

- i. As needed, relevant information, advanced signs, warning signs, and mandated signs will be posted.
- ii. When regular communication is difficult, a radio communication method is used.
- iii. After the work is completed, the safety cones and barricades must be removed.

Required Tools for AHU Installation

- i. Grinding/ Cutting Machine
- ii. Mechanical Toolkit
- iii. Drill Machine
- iv. Crane/ Chane Block
- v. Supports, Anti-Vibration Rubber Pads
- vi. Nuts, Bolts, Gaskets
- vii. Valves

Preparation and AHU Pre-Installation Requirement

- i. The air handling unit's location and reference must be double-checked on the equipment schedule.
- ii. Check the area around the foundation and make sure that the AHUs/FAHUs have access from all sides, if applicable.
- iii. Check the air handling unit's foundation to make sure it's in accordance with the approved drawing.

- iv. Ascertain that the drainpipe has a sufficient slope for convenient condensate draining.
- v. Place the necessary thickness anti-vibration ribbed rubber pads as per authorized drawings/submittals.
- vi. When using numerous rubber pads, the ribs should be at a right angle to each other, and the pads should be stacked one on top of the other.
- vii. Prior to the beginning of any work, the access and installation sites will be inspected to ensure that they are in good working order.
- viii. Temporary cover for the openings must be provided during installation and until the final connections to the Air Handling Units are made.

The offloading of units from containers must be done with extreme caution. The aluminum framework and double-skin panels might be damaged by rough handling. Slings or a forklift can be used to lift the parts. The structural foundation frame must be wrapped in slings, preferably nylon. If everything checks out, the section can be lifted and removed. When using a lifting tube, it must first be inserted into the appropriate hole, and then the sling, which has a specified loop, must be connected to the tube. After that, the part can be raised. It is strongly advised that offloading and installation operations be performed by professionals who have the relevant equipment and tools.

Step for Air Handling Unit Installation.

- i. Move the AHU's/ FAHU's to the installation site in a safe way, using a forklift and crane as needed and ensure that the correct AHU is moved to the installation location.
- ii. The orientation of the air inlet, outflow, fresh air connection, and chilled water connection is as per the authorized drawings.
- iii. If the air handling units are delivered in numerous portions, the AHUs will be constructed according to the manufacturer's instructions, with the following factors associated:
 - The AHUs/FAHUs are correctly installed on the foundation, with vibration isolator side panels in the proper locations, and the correct sections are identified and fastened together.

- iv. Install gaskets at any bolted connections that must be joined and place the fan section on the cleaning pad. Carefully place the next component to be linked on the housekeeping pad, then align the two sections.
- v. Externally, jointing brackets will be used to connect the parts. However, during hosting/shifting, the air handling unit will be inspected again to avoid from any damage.
- vi. After the AHUs/FAHUs have been appropriately positioned, any open air/water outputs of the AHUs/FAHUs must be completely covered and the area cleaned, providing total protection in areas where other trades are working.
- vii. Using blocks and shims, the units will be properly plumbed and aligned before being fully bolted and securely attached to the 'Housekeeping' pad.

Following alignment, the supervisor in charge will confirm that the vibration isolators have the proper deflection, and final, calibration will indeed be performed at the pre-commissioning stage

3.4.To Identify the Problems and Solutions During Installation of Air Conditioning System

PROBLEM AND SOLUTION

Problem by Installing air conditioner

When rooms are closed off and air flow throughout the building is disturbed, common central air conditioning problems emerge. If the building has a room air conditioner, however, the opposite is true. And there's a problem with the operation. Close any building ventilation, such as windows and outside doors, to isolate the room or a group of related rooms from the rest of the building as much as feasible.

Other common issues with current air conditioners include improper installation, service techniques, and servicing. A central air conditioner installed incorrectly can result in leaky ductwork and inadequate airflow. The refrigerant charge (the amount of refrigerant in the system) does not always correspond to the manufacturer's standards. The performance and efficiency of the unit will be harmed if sufficient refrigerant charging is not conducted during installation. Unqualified service professionals frequently fail to detect refrigerant charge issues and, in some cases, exacerbate existing issues by adding refrigerant to an already full system.

Manufacturers of air conditioners are known for producing tough, high-quality equipment that last for years. Check any fuses or circuit breakers first if the air conditioner fails. Allow for a five-minute cooling period before resetting any fuses. On a hot day, the high-pressure limit switch in a central air conditioner's compressor may have occurred; you may be able to reset it by pressing the button in the compressor's access panel.

Solution for the problem

i. Refrigerant Leak

If the air conditioner is low on coolant, it was either installed incorrectly or has a leak. If it leaks, merely adding more refrigerant will not solve the problem. Any leaks should be repaired by a trained technician, who should then test the repair and charge the system with the proper amount of refrigerant. Keep in mind that the air conditioner's performance and efficiency are best when the refrigerant charge fits the manufacturer's specifications and is neither undercharged nor overcharged. Leaks of refrigerant can potentially be environmentally damaging.

ii. Inadequate Maintenance

The air conditioner will not work effectively if the filters and air conditioning coils become unclean, and the compressor or fans will likely fail early. The most critical maintenance duty for an air conditioner is to clean or replace air filters every 1-3 months, depending on the type of filter. When airflow is obstructed by filthy filters, the efficiency of an air conditioner is dramatically diminished. Not only will a clogged air filter make it difficult for an air conditioner to function, but debris can also move through the air and rest on evaporator coils, reducing their ability to absorb heat. Clean air filters can reduce the energy consumption of a system by as much as 5% to 15%. Every month, check the air filters in each air conditioner in the building, and if they exhibit excessive debris, either replace or clean them.

iii. Drainage Problem

A poor air conditioning installation is the most likely cause if the air conditioning unit was recently installed and is leaking. This indicates that the air conditioning and drainage pipes are not proportionate. The water flow from the drainage pan to the exit is disrupted because of this. If the water cannot flow forward, it may flow backward or remain at the same level. Ensure that the pipe is at a lower height than the main unit during the air conditioner installation so that the water can flow downwards towards the drainage outlet. If you discover that the problem is the result of poor or incorrect air conditioning installation, users must immediately contact a technician for a thorough inspection and, if necessary, reinstallation.

Other than that, the drainage pipe of an air conditioning unit can become clogged with dirt and debris. The condensate will be unable to flow out through the drainage system as a result of this. The water will overflow into the primary air conditioning unit if it can't flow outwards. Your air conditioner will begin to leak water because of this. Make certain that the air conditioner can be cleaned on a regular basis and if users come across a clogged drainage pipe, then can use a wet or dry pump to thoroughly clear it out. This will clear the obstruction and allow the water to flow freely.

CHAPTER 4.0

CONCLUSION

To summarise, the whole process of testing, inspecting, installing and maintaining air-conditioned systems is a difficult task that necessitates the use of a professional technician or someone who has worked in this sector for more than a year or at least 8 months with the assistance of a professional guide. It's because this job entails electrical wiring, and each wire that connects to the panel system must adhere to the requirement. So that if something goes wrong, like a wire short, the technician can rapidly pinpoint the source of the problem.

Knowing the system's age and maintenance history will aid technicians in determining the activities that must be made to keep it operating. Components in sensing systems that are less than five years old should be easy to repair. In the meanwhile, difficulties with new systems are sometimes caused by minor installation issues like environmental conditions or poor grounding. This system employs a variety of techniques, including testing, determining, and maintaining. At least once a month, air conditioners should be serviced if they are used heavily and frequently.

Air conditioners are important as they are not only used to make people feel comfortable, but they are also used for different purposes. For example, TM has a lot of facilities that use batteries and genset and they are stored in a room. To keep the ventilating safe and to keep the temperature of those machineries to stay cool, they use AHU systems so that those machineries can function properly at any time.

This approach of installing and maintaining is the same as what students learn in class in theory. However, students will learn something practical and tough throughout their internship. Furthermore, a senior or experienced technician will guide students until they are capable of handling or are experts in this subject.

REFERENCES

Master, W. (2013, June 9). *Method Statement for Installation Of Air Handling Unit AHU & FAHU*. Method Statement HQ; MethodstatementHQ.
<https://methodstatementhq.com/installation-testing-air-handling-units-ahu-fahu-method-statement.html> retrieved on 11 October 2021

The importance of building services. (2017). Designingbuildings.co.uk.
https://www.designingbuildings.co.uk/wiki/The_importance_of_building_services
retrieved on 15 October 2021

Maintaining Your Air Conditioner. (2022). Energy.gov.
<https://www.energy.gov/energysaver/maintaining-your-air-conditioner>
retrieved on 15 October 2021

4 Benefits of Upgrading Your Old AC System. (2020, April 30). Warren-Hay Mechanical.
<https://warren-hay.com/article/benefits-upgrading-old-ac-system> retrieved 20
October 2021

Common Air Conditioner Problems. (2022). Energy.gov.
<https://www.energy.gov/energysaver/common-air-conditioner-problems>
retrieved on 30 October 2021

Inadequate of Air Conditioner Maintenance - Air Supply Heating & Cooling. (2017). Air Supply Heating & Cooling. <http://www.airsupplyinlv.com/services/air-conditioning-troubleshooting-guide/inadequate-air-conditioner-maintenance/> retrieved on 11
November 2021

Urban Company Desk. (2021, August 13). *AC Leaking Water? 5 Reasons Why And Their Solutions – The Urban Guide*. Urbancompany.com.
<https://www.urbancompany.com/blog/homecare/appliance-repair/5-common-ac-leakage-problems-fix/> retrieved on 15 December 2021