



**DEPARTMENT OF BUILDING
UNIVERSITI TEKNOLOGI MARA
(PERAK)**

MAINTENANCE OF ELECTRICAL WORK

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It is recommended that the report of this practical training provided

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entitled

Maintenance of Electrical Work

be accepted in partial fulfillment of requirement has for obtaining 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 stated herein, prepared during a practical training session that I underwent at Dekad Wangsa Sdn Bhd for duration of 20 weeks starting from 23rd August 2021 and ended on 7th January 2022. 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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ABSTRACT

The care and preservation of equipment and systems that deliver electricity to a residential, industrial, or commercial facility is referred to as electrical maintenance. It might be done by the site's owner or management, or by an outside contractor. The work is often conducted on an as-needed basis or on a timetable dependent on the age of the building or the complexity of the electrical system. The objective of this report is to carry out electrical works using various type of cables. It will focus on Understanding basic wiring terminology and recognizing the most common types of wire and cable can aid in the investigation of wiring problems and the selection of wiring for new installation and renovation projects. This report will also look at provide solutions to various challenges of electrical works and to utilize the skill of repairing on electrical works.

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CHAPTER 1.0

INTRODUCTION

1.1 Background and Scope of Study

Electrical maintenance is a component of building operations that no commercial structure should be without. While larger enterprises may have their own on-staff electricians, smaller facilities may find it more cost effective to contract with a qualified expert for planned electrical maintenance and servicing. It includes all parts of testing, monitoring, repairing, and replacing electrical system components. Electrical maintenance is often conducted by a qualified expert who is well-versed in the National Electric Code and local requirements. It includes tasks such as lighting systems, transformers and electrical machines. Electrical maintenance is often carried out by electrical engineers and electricians with extensive expertise and understanding.

For this study, it will focus on maintenance of electrical appliances such as air- conditioner, and lighting. The majority of electrical maintenance is focused on monitoring the state of the equipment, doing condition-based maintenance, and, on rare occasions, predictive maintenance. Electrical generators, switches, and circuit breakers are inspected on a regular basis to ensure firm connections and unbroken wiring. When problems are detected, electricians often remedy them. Repairs are often accomplished by splicing wires together, depending on the state of the wiring. To protect them from wear, they are sometimes wrapped in metal tubing known as conduit. Maintaining the wiring guarantees a steady supply of electricity to the heating, ventilation, and air conditioning systems.

To understand how all of the electrical system parts interrelate, the testing methodologies often need a solid grasp of switchgears and interface design. If a building's electrical system has specific areas of concern, the maintenance staff may employ specialist testing methods and equipment to isolate the problem. Power

transformers, as well as substation components and the design of the site's transformers, are frequently examined.

1.2 Objectives

There are a few goals that must be met in order to provide this Practical Training Report.

The objectives are following:

1. To carry out electrical works using various type of cables.

Understanding basic wiring terminology and identifying the most common types of wire and cable.

2. To provide solutions to various challenges of electrical works.

Identifying common electrical accidents whilst equipment is being maintained.

1.3 Methods of Study

The following data gathering approaches were utilized to fulfil the objectives of this report:

1. Observation

Due to the exposure to real work, this strategy is used immediately while doing a project site visit. An observation was done in order to examine the installation technique. The process of installation may be readily recognized by observing. Throughout the observation procedure, photographs and films were made to document the findings. Written notes are also necessary during the observation to ensure that no critical information is overlooked.



Figure 1.1 An observation of the site plan

Source: Dekad Wangsa Sdn. Bhd.

2. Interviews

The interview can be used to get enough information. Unstructured interviewing occurs when questions may be asked directly and responses can be obtained on the spot. During the educational site visit, professionals with expertise in the electrical business such as electrical technician, technician, maintenance electrician, electrical engineer, and electrical project manager are interviewed. As various people have

varied abilities and experiences, it will be beneficial to understand more when conducting the observation.

3. Document reviews

This strategy entails systematic data collecting using existing documents obtained from the firm, such as the company profile, monthly progress report, and photographs taken by staff. The majority of the relevant and secret data about the organization or project may be obtained and used to achieve the goals of this report.

CHAPTER 2.0

COMPANY BACKGROUND

2.1 Introduction of Company

DEKAD WANGSA SDN BHD is a private business founded on July 16, 2001 under the Companies Act 1965. Dekad Wangsa were founded by the director who managed this company is Dato' Dzulhelmi bin Halib. The major goal for which the firm was founded is to provide maintenance services, repair of air conditioners, construction, manufacture, and installation of electrical wiring. Almost the whole workforce has prior expertise in this field. This company is located at No. 23A-GF, Jalan Medan Batu Caves, Batu Caves, 68100, Selangor.

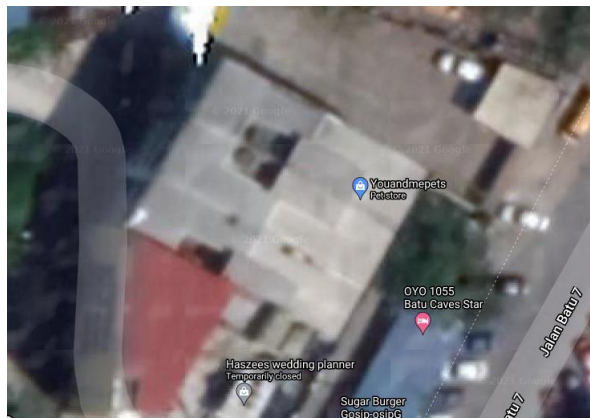


Figure 2.1: Radar image of Dekad Wangsa's office.

Source: Google Maps (2022)

2.2 Company Profile



Figure 2.2: Logo of Dekad Wangsa Sdn. Bhd.

Source: Facebook

Dekad Wangsa was founded to investigate the market for cabinet, construction, electrical, and product design. Furthermore, this organisation places a high value on product quality while doing remodelling, installation, and repair services. It was registered with the Construction Industry Development Board (CIDB) of Malaysia as a Grade G3 contractor.



Figure 2.3: Performing one of the services provided by the company.

Source: Dekad Wangsa Sdn. Bhd.

The organisation places a high value on product quality so that it appears nice and attracts customers. We will make certain that every product is of good quality so that

clients may have confidence in and be happy with every service supplied by our organisation.

When they are hired to execute the client's tasks, the goal is to present them with a "I am assured" experience. They place a premium on clear communication and follow-up procedures to guarantee that the client's goals are prioritized in the design and implementation of all our activities. Managed and supported by a group of highly skilled, experienced, and devoted individuals that are enthusiastic about their job.

2.3 Organization Chart

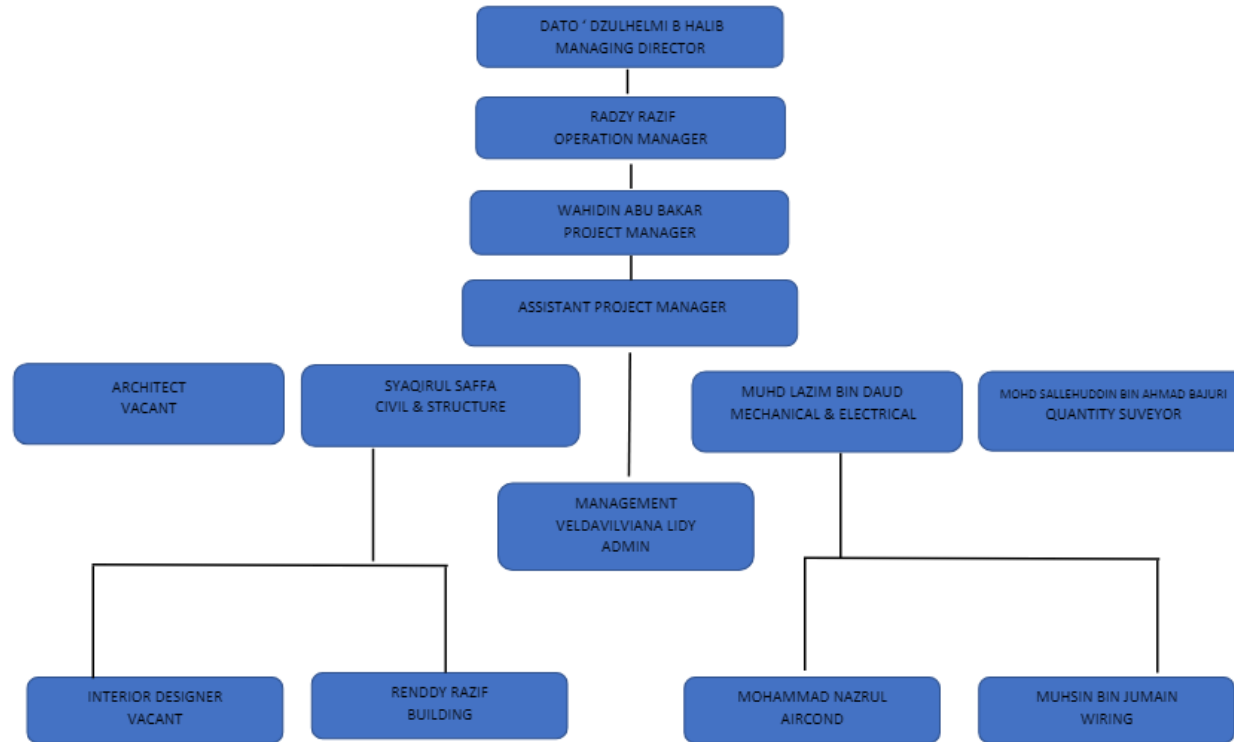


Chart 2.1: Organization Chart of Dekad Wangsa

Source: Dekad Wangsa Sdn. Bhd.

2.4 List of Projects

2.4.1 Completed Projects

No.	Project Title	Project Value	Start Date	Completion Date	Project Duration	Client
1.	Repaint works at PPR Sg. Putat, Batu Berendam Melaka	RM50,000.00	20/09/2021	2/12/2021	2 months 13 days	KPKT Malaysia
2.	Renovation works at Subang	RM75,000.00	29/09/21	11/12/21	2 months 13 days	Pesona Jaya Entreprise
3.	Supply, and install cabinet and partition wall at CGC Kelana Jaya	RM110,000.00	2/12/21	31/12/21	30 days	CGC Malaysia Berhad
4.	Wiring works at Bandar Gamuda Garden	RM5000.00	6/12/21	25/12/21	20 days	En. Hamid

Table 2.1 List of Complete Projects

Source: Dekad Wangsa Sdn. Bhd.

2.4.2 Ongoing Project

No.	Project Title	Project Value	Start Date	Completion Date	Client
1.	Construction works a public hall in Jalan Sri Intan, Kampung Baru, Ampang	RM1,354,930.00	25/10/2021	15/02/2022	Majlis Perbandaran Ampang Jaya
2.	Construction works a public hall in Jalan Kempas, Kampung Baru, Ampang	RM1,179,345.00	25/10/2021	15/02/2022	Majlis Perbandaran Ampang Jaya

Table 2.2 List of Ongoing Projects

Source: Dekad Wangsa Sdn. Bhd.

CHAPTER 3.0

CASE STUDY: MAINTENANCE OF ELECTRICAL WORKS

3.1 Introduction to Case Study

This report contains a project called Maintenance of Electrical Work, as the title suggests. Essentially, this job entails mostly installing electrical items such as lights at the house as well as repairing and maintaining air conditioning. The total contract value is RM 22,500.00, and the project is scheduled to be finished in December 2021. Furthermore, the site is spread across several locations, including Taman Bidara Selayang, Batu Caves, USJ 3, and PV18 Residence Setapak.

3.2 Construction Method of Installation Lighting in Plaster Ceiling.

Installed lighting in plaster ceiling is the first task in the project. Technicians arrived at the premises with their equipment. Before doing any electrical work, switch off the electricity at the circuit breaker. Next, disconnect the wire connections and remove any supporting hardware from the current light fixture. Mark the placement of the light on the plaster side of the ceiling. Determine the size of the aperture required to allow the light to pass through the ceiling. Draw a large enough circle to work with the light. Depending on the type of light the client wishes to utilise, this is likely to be a little hole smaller than 4 inches in diameter.

After that, with a utility knife, score along the circular line. Continue slicing the plaster until the circle's centre falls out. Using a jigsaw, cut through the lath. Continue in the same circle as the plaster. This should provide access to the electrical wiring for the light fixture in the ceiling. The power to the light has been switched

off at the breaker box. Climb into the attic to gain access to the wiring. Feed the lighting wires through a hole in the side of the electrical box of the light fixture. Remove one of the hole covers by inserting a screwdriver into the middle of the cover and, if required, hitting it with a hammer. Screw the electrical box into position by placing it over the hole and fastening it to the lath. Screws should be at least 2 inches away from the lath's cut edges. If feasible, secure the side of the electrical box to a joist.

Climb a ladder and cut roughly 2 inches off the ends of the light wires inside the electrical box for the ceiling lights. Then, using machine screws and a screwdriver, attach the light fixture to the metal crossbar connector. Screw the crossbar into the holes in the bottom of the light box, enabling the light to dangle down from the chain linked to the crossbar. Locate the hot electrical wire in the ceiling and connect it to the hot wire in the light fixture. These are often black or crimson in colour. Wrap the ends together and secure them with a wire connector. Rep with the neutral wires, which are often white. If one is not white, identify it as a neutral wire by its silver tips rather than copper tips or by checking for a wire with lettering on it. Wrap the ground wire from the ceiling around a screw on the crossbar, then connect it to the ground wire from the light fixture with a wire connector.

Lastly, slide the cover plate flat with the ceiling and insert the wires into the light electrical box. Grasp the nut that is keeping the cover plate in place.



Figure 3.1: Finish product of lighting installation

Source: Dekad Wangsa Sdn. Bhd.

3.3 Construction Method of Providing Solutions to Common Problems of Electrical Works.

During maintenance of air conditioner at Taman Bidara Selayang, there are few common problems that encountered that are managed to fix.

3.3.1 The Air Conditioner is Not Blowing Cold Air

The fan and fan motor are to blame for the air conditioner not blowing any air. The fan of a properly functioning air conditioner will pull air over the cool evaporator coils and then re-circulate it back into the room. If the circulating fan is not functioning or is moving too slowly, there will be little or no air movement over the evaporator coils, allowing them to grow excessively cold and frost or ice to develop, further restricting air flow.

To do any checks, the lid must be removed because the fan and motor are placed within the cabinet. Its purpose is to ensure that the fan motor turns freely and that the blades are not damaged. The motor has become seized and must be replaced.

3.3.2 AC Refrigerant Leak

When not correctly repaired, refrigerant leaks are one of the most prevalent AC problems and may be one of the most aggravating.

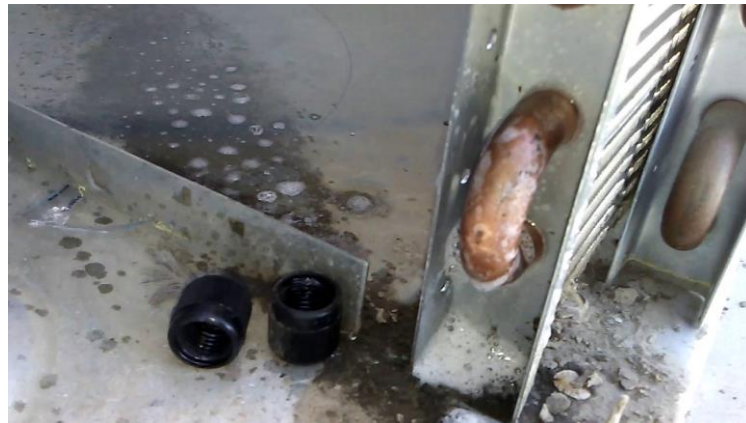


Figure 3.2: AC Refrigerant Leak

Source: Google Image

When an air conditioner's refrigerant leaks, it loses its capacity to achieve the temperature set on the thermostat in a timely and effective manner. This causes the air conditioning system to operate longer than usual in order to attain the appropriate temperature. The role of refrigerant in the cooling process is to collect heat from within the home and release it outside. Because the refrigerant levels are low, cooling will take longer.

A HVAC technician discovers many leaks and replaces the refrigerant coil. This is more expensive than patching holes, but it is the most secure technique to prevent future leaks.



Figure 3.3: Fixing on the leak of AC refrigerant

Source: Dekad Wangsa Sdn. Bhd.

CHAPTER 4.0

CONCLUSION

To sum up, Good maintenance methods are not restricted to the facility's equipment. In reality, when it comes to the electrical element of the company, excellent maintenance procedures are made to be followed. Plan each step carefully, and promote proactive management and thorough reporting. Intelligent construction, correct design, and commissioning are equally important considerations. It is also critical to instruct employees on electrical maintenance. Before using a new piece of equipment, learn everything you can about its electrical safety. Being electrically safe will not only keep your employees safe, but it will also safeguard your property and equipment.

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