



**KWARA STATE POLYTECHNIC, ILORIN
INSTITUTE OF TECHNOLOGY (IOT)
DEPARTMENT OF ELECTRICAL ELECTRONIC ENGINEERING**

**TECHNICAL REPORT ON STUDENT INDUSTRIAL
WORK EXPERIENCE SCHEME (S.I.W.E.S)**

AT
**MUSTY ELECTRICAL WORK
CHALLENGE AREA, ILORIN, KWARA STATE.**

BY
BABA MUHAMMED
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**IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR
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DEDICATION

I wish to dedicate this report to my beloved parents for their support and caring.

ACKNOWLEDGEMENTS

All glory and adoration to the Almighty Allah for His Grace and Infinite mercy in all endeavours. I am very grateful to the Almighty God for granting me sound health throughout the training.

My special appreciation also goes to the Industrial Training officers and my SIWES supervisor for his effortless supervising during my training programme.

I also appreciate the support of the Mustiy Electrical Work, Ilorin and the entire staffs for their contribution towards the success of my programme.

May Almighty God bless you all (Amen).

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CHAPTER ONE

INTRODUCTION

1.0 BACKGROUND

The Students Industrial Work Experience Scheme (SIWES) for the 2018/2019 kicked off in the month of August 2019 and was to be concluded six months later, January 2020. The Industrial Attachment program is solely aimed at improving the working skills of students in tertiary institutions as well as effecting learning, participation and observation of the actual implementation of theories put in practice in various fields with respect to programs and courses being studied in school. This scheme serves as an opportunity for students to grasp very useful practical knowledge which not only makes them employable but also in the perfect understanding of theories and operations in their different majors. The program is of very high importance considering the lack of adequate practical materials for learning in most Nigerian tertiary institutions and is self-proven as it has been part and parcel of the country's system of education for over 25 years.

1.1 THE HISTORY OF SIWES

SIWES was set up by the Federal Government of Nigeria to close the gap between theoretical laws taught in the classroom and actual practice for students in tertiary institutions. It was first kicked off and funded by the Industrial Training Fund (ITF) between 1973 and 1974. Since its introduction by the ITF in 1973 the scheme has gone through series of reforms. Its management has changed hands from the ITF in 1978 to various regulatory agencies such as National Universities Commission (NUC) and National Board for Technical Education (NBTE) in 1979, National Commission for College of Education (NCCE) and now back to the ITF again in 1985. These are the major stakeholders in (SIWES). Consequently, SIWES Program introduced into the curriculum of tertiary institutions in the country as far back as 1974 with 748 students from 11 institutions of higher learning and the scheme has over the years contributed immensely to the personal development and motivation of students to be able to understand the important

connection between the taught and learnt content of their academic programs and what knowledge and skill will be expected of them on professional practice after graduation.

1.2 OBJECTIVES OF SIWES

The Industrial training funds policy document no. 1 of 1973, which established SIWES outline the objectives of the scheme. The objectives are to:

1. Provide an avenue for students in institution of higher learning to acquire industrial skills and experience during the course of study.
2. Prepare students for industrial work situation that they are likely to meet after graduation.
3. Expose students to work methods and techniques in handling equipment and machinery that may not be available in their institutions.
4. Make the transition from school to the world of work carrier and enhances students contacts for later job placements.
5. Provide students with the opportunities to apply their educational knowledge in real work situations, thereby bridging the gap between theory and practical.
6. Enlist and strengthen employer's involvement in the entire educational process of preparing university graduates for employment in industry.

1.3 MISSION AND VISION OF SIWES

The vision of SIWES is to prepare students to contribute to the productivity of their nation. Students Industrial Work Experience Scheme has the potential of increasing the scope and variety of technical skills in the common pool or general stock available for the industrial development of Nigeria. Therefore, harnessing the potentials of SIWES for Industrial, Technological and Economic development however demands that the three major SIWES stakeholders or actors (Students, Institutions, Employers) be empowered to fully participate and cooperate with one another in implementing the scheme.

1.3.1 BENEFITS OF INDUSTRIAL TRAINING TO STUDENTS

The major benefits accruing to students who participate conscientiously in industrial training are the skills and competencies they acquire. This is because the knowledge and

skill acquired through training by students are internalized, and it becomes relevant, during job performances or functions. Several other benefits include:

1. Opportunity for students to blend theoretical knowledge acquired in the classroom with practical hand-on application of knowledge required to perform work in industry.
2. Exposes students to the working environment, i.e. to enable them see how their professions are organized in practice.
3. Prepare students to contribute to the productivity of their employers and nation's economy.
4. Provision of an enabling environment where students can develop and enhance personal attributes such as critical thinking, creativity, initiative, resourcefulness leadership, time management, presentation of skills and interpersonal skills.
5. Prepares students for employment and makes transition from school to the work environment easier after graduation.
6. Enables Student Bridge the gap between the acquired skills in the institution and the relevant production skill required in the work organization.
7. Enables students contact with potential while on training.

CHAPTER TWO

HISTORICAL BACKGROUND OF MUSTY ELECTRICAL WORK

Musty Electrical Work Company (Nigeria) Limited is a one of leading Electrical Engineering Company in Ilorin, Kwara State, Nigeria with a solid reputation acquired over a period of two decades. We are a member of the Electrical Engineering Contractors in Ilorin, Kwara State, Nigeria.

Musty Electrical Work Company (Nigeria) Limited is one of the early entrants in Ilorin Electrical Technology industry having been present since 1995 and incorporated in 2001 as an Electrical work and Engineering Contractor with Head Office at Lagos with is branch and corporate sub head office at Challenge Area, in Ilorin, Kwara State, Nigeria

Musty Electrical Work Company (Nigeria) Limited has maintained a healthy presence in the Ilorin East, Ilorin-South, and other parts of the Kwara, where we have completed and delivered quality projects on schedule and budget.

As we look forward to winning more contracts, we have confidence in our technical and financial ability to meet up with the demands of OUR MAJOR CLIENTS.

OUR SERVICES

1. BUILDINGS

As a building contractor, Musty Electrical Work also undertakes in the construction of buildings of all types commercial, residential, industrial, schools, hospitals, hotels, offices, etc.

The Company has a record of completing numerous building projects across the Country, including many complex, high tech and breath-taking buildings. Some of the buildings were turn-key projects, involving feasibility studies, preliminary and detailed design, construction, procurement, electrical, equipment installation, etc

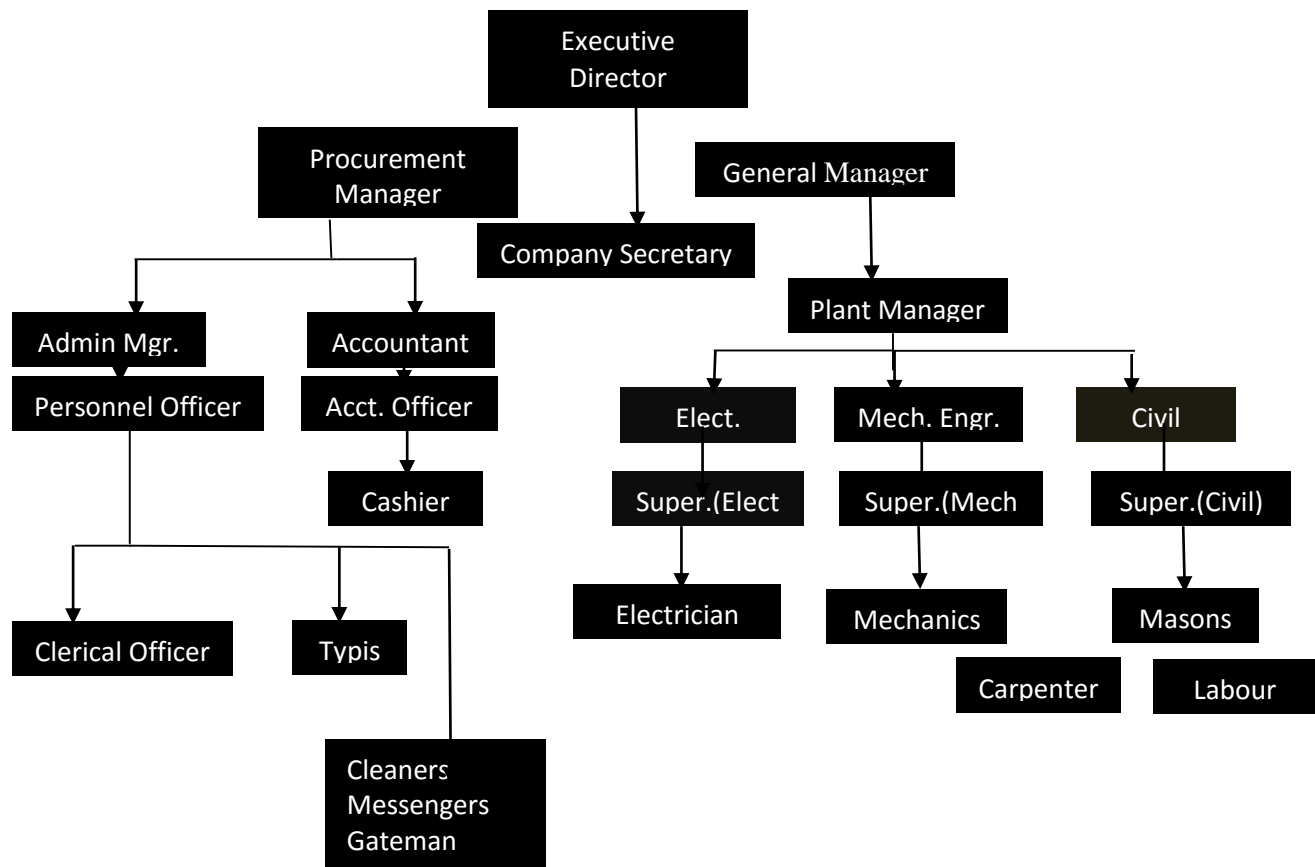
2. WATER

Musty Electrical Work has over the year garnered extensive and intensive expertise in hydro-technical developments.

The company has accumulated vast experience in irrigation, land preservation, drainage, flood control, borehole sinking, water supply and sewage disposal.

It brings in rich technical expertise to bear on the building of hydro-technical structures, dams, weirs, reservoirs, elevated water tanks, main pipe lines and distribution networks, as well as drainage and sewage systems, treatment of plants and pumping installations.

ORGANIZATION STRUCTURE OF THE MUSTY ELECTRICAL WORK COMPANY (NIGERIA) LIMITED



MUSTY ELECTRICAL WORK COMPANY (MEW) DEPARTMENTS

The various departments in MEW and their functions with respect to project executions are:

NON TECHNICAL DEPARTMENTS

- **Administration and Personnel:**
Harnesses human and material resources and set out ways of utilizing them in order to maximize profit.
- **Business Development:**
Sourcing for business via bids or otherwise to ensure company growth.
- **Finances and Accounts:**
Treasury management, billings, accounting and financial management.
- **Cost Control:**
Carries out the task of cutting short cost during project execution.
- **Wages:**
Carries out the task of paying worker salaries, wages, pensions, IOU's and other benefits.
- **Sick Bay:**
Treats minor injuries gotten by workers while working on site.
- **Security**
- **Store Keeper**
Keeps stocks of machines and parts of all equipment's used for repairs in the company.

TECHNICAL DEPARTMENT

This department is subdivided into sections which I would elaborate on since most of my working activities was with this department.

The technical department is headed by a Workshop Manager, whose duty is to regulate the workshop activities of each section with the primary aim of meeting the management specifications. He relates management ideas to the section heads which in turn relates to their subjects etc.

The various sections in the technical department include;

Light Car Mechanics

This section repair faulty cars used by workers for company purpose. They usually specialize in the engines of light cars, inclusive in this section is a panel beater whose duty is to repair body work of vehicles(cars, buses, pickup .etc.) using skills such as metalworking techniques, welding, use of putty fillers, and other skills etc

Auto-Electrical Section

This section work on all vehicle electrical systems and components, including ignition, fuel injection and engine management systems, anti-lock braking, battery, wiring and charging systems, heating and air conditioning systems, lighting and indicators etc.

Industrial Electrical Section

This section is headed by an Electrical Engineer. Their duty is to install, maintain, test, troubleshoot and repair industrial electrical equipment and associated electrical and electronic controls. They maintain the electrical facilities of the company. They also play a huge role in the building of Batching Plant and Asphalt Plant since it's a construction company.

CHAPTER THREE

INVOLVEMENT, WORK DONE AND EXPERIENCE GAINED

It was truly a great experience working for three months at MEW. The system permitted me to alternate between different engineering working departments after some weeks. This has greatly improved my general perception of what Engineering and quite particularly Electrical Engineering is all about. My involvement and participation are detailed below.

- Industrial Installations and Wiring.
- Maintenance and Repairs of Work Tools and Electrical Machines.

INDUSTRIAL INSTALLATIONS AND WIRING

This is the networking system or arrangement of cables for the free flow of current in a circuit.

Types of Wiring Includes:

1. **Conduit Wiring:** This is the process where electric cables are arranged systematically in a wall through the use of PVC pipe in order to transfer energy from one point to another in a circuit.
2. **Cleat Wiring:** This is a system of wiring done in an industry with the help of a cleat chip made of different types of groove.

INTEGRITY TEST: This is the process of testing completed electrical installations to verify that the system will operate efficiently and safely. The tests are extensive, as defined in the institution of Electrical Engineers regulations. They can only be carried out by a competent person, i.e. a qualified electrician or Electrical Engineer. These tests are undertaken by visual inspection and the use of a multi-meter to measure the resistance.

The following tests are an essential part of the processing:

1. **Dead Test:** This is the process of testing completed installations without power supply. The aim is to test the continuity to ensure integrity of the live, neutral and the earth conductors without bridging (short circuit). Testing the insulation to ensure that there is a high resistance between live, neutral and earth conductors. Testing polarity to ensure all switches and breakers are connected to phase, live conductors.

2. **Live Test:** This is the process of testing completed installation with power supply. The aim is to know the load that is connected to each circuit, each phase and entire 415V that is supplied. During this test for earth loop to know the effectiveness of the installation earthing system.

MAINTENANCE AND REPAIRS OF MACHINES

During my industrial training at MCC, I was involved in many maintenance and routine checks.

Some of the work maintenance I was involved in was:

- **Electric Concrete Vibrators**

A concrete vibrator is a mechanical device to generate vibrations. The vibration is often generated by an electric motor with an unbalanced mass on its driveshaft. Concrete vibrator consolidate freshly poured concrete so that trapped air and excess water released and the concrete settles firmly in place in the formwork. Improper consolidation of concrete can cause product defects, compromise the concrete strength, and produce surface blemishes such as bug holes and honeycombing. An internal concrete vibrator is a steel cylinder about the size of the handle of a baseball bat, with a hose or electrical cord attached to one end. The vibrator head is immersed in the wet concrete.



Figure 1: Maintenance of a Concrete Vibrator

- **Three-Phase Electric Motor**

A three phase motor has two main parts: the rotor, which turns, and the stator that turns it. The rotor is often called a squirrel cage because it consists of a circular network of bars and rings that look a bit like a cage connected to an axle. The stator consists of a ring with three pairs of coils, evenly spaced around the rotor.

Each pair of coils is attached to one phase of power. Because they are all out of phase with each other, they set up a rotating magnetic field that spins around the stator at a continuous rate. The moving magnetic field creates a continuing moving current inside the rotor. This current always lags slightly behind the field in the stator.

Three-phase motors are designed to run on the three-phase alternating current(AC) power in many industrial applications such as Batching Plants.



Figure 2: Rewinding completed for a 3-phase. 6HP, 415V, 50Hz Electric Motor.



Figure 3: Connection of the 3-phase, 4mm cable to test run the Motor.

CHAPTER FOUR

PROBLEMS ENCOUNTERED AND POSSIBLE SOLUTIONS

Problems Encountered

- Unavailability of Project design and Analysis of already started projects.
- Unavailability of companies own Computer system and software for design practice.
- Lack of proper orientation to the staff about my being in the company for SIWES, as some staffs sends me on unnecessary errands.
- Compatibility issues of software version and operating system.

POSSIBLE SOLUTIONS

FOR PROSPECTIVE INTERNS

1. Prospective interns should begin early in search of companies where they can secure IT placements. This will help them get a place on time.
2. Prospective interns should not secure placements based on amount the company will pay. But should secure placements based on the experience to be gained.

FOR THE COMPANIES

1. MCC should try to increase stipends of students on training in their organization to help them ease the burden of transportation and feeding.
2. The company should endeavor to provide materials on theoretical aspects or manuals for students so as to study fully the work that is being done.
3. Constant supervision should be made available for students so as to minimize errors and mistakes.
4. Companies should communicate to staff on the roles of IT students which is to learn and not to be sent on menial errands.

FOR THE INSTITUTION

1. The school should assist students in getting IT placements.
2. The institution should endeavor to communicate to the companies on the roles and responsibilities of the IT students.

CHAPTER FIVE

SUMMARY & CONCLUSION

SUMMARY

The purpose of the SIWES program is to bridge the gap between classroom and the industries so that the student will be prepared for the task ahead after their schooling. So these six (6) months SIWES program has exposed me to real installation and maintenance works, it has also helped in bridging the gap between the classroom and real life practical engineering situations. This industrial training has really given me an insight to the task that lie ahead of me in my chosen career “Electrical/Electronic Engineering”. This Industrial Training Report has been aimed to picture the various task that is being carried out in the industry in the field of Electrical/Electronic Engineering, the skill acquired and the challenges on the aspect of Innovation and Creation in order to make the world a comfortable place.

RECOMMENDATION

- I will recommend that more Electrical Engineering students be posted to the organization for their SIWES.
- Students should ensure to be posted in time so as to get enough knowledge of what they should learn at their respective workplace.
- The ITF should ensure frequent visit if supervisors to the companies where students are posted so as to ensure students are serious during the duration of their Industrial Training.

- The main essence of the scheme should be made known to the companies, so that students are not assigned to tasks that are not of benefit to his/her career development.

CONCLUSION

The SIWES has positively contributed to my training as a future Electrical/Electronics Engineer. At SIWES workplace i.e., Musty Electrical Work Company, I was able to reconcile theoretical principles learnt in school with real Electrical/Electronic Engineering design practice.

I also learnt about the proper maintenance of electrical power tools, participated in the rewinding and installation of 3-phase Electric Motors, installation of a new Batching Plant. Equipment sizing, preparation of material take-off and bill of quantities.

SIWES gave me the opportunity to learn about good work ethics, good interpersonal and communication skills.

REFERENCES

- “Guide to successful participation in SIWES” by Engr. Olusegun A. T Mafe, 2009
- Student Industrial Work Experienced Scheme 2019 handbook.