KWARA STATE POLYTECHNIC, ILORIN, NIGERIA

FOUR MONTHS INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

UNDERTAKEN AT

HMA MEDICAL LIMITED

PLOT 9, BLOCK 4 TRANSIT CAMP ROAD, ILORIN, KWARA STATE

A PRESENTATION BY:

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MATRIC NO:

ND/23/ EEE/ FT/0019

DEPARTMENT:

ELECTRICAL ELECTRONIC ENGINEERING

FROM:

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To

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ACKNOWLEDGEMENT

I sincerely express my gratitude to the management and staff of HMA Medical Limited for providing me with the opportunity to undergo my SIWES program in their reputable organization. I am especially grateful to my Industry Supervisor, Engr. Temidayo Salami whose guidance and encouragement made my learning experience rewarded my appreciation also extends to my Lectures at Kwara State Polytechnics for their continuous support which prepared me for the practical training.

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Abstract

This report present my industrial training experience at HMA Medical Ltd a leading manufacturer of Syringe and Needles the purpose of the training was provide practical exposure to electrical and electronics engineering application in a real-world manufacturing environment. I also primarily involved in electrical maintenance, troubleshooting automated production line, and understanding how electrical system power syringe and needle manufacturing processes. The report highlights tasks performed, such as PLC programming, sensor calibration, motor control system maintenance and the challenge faces.

CHAPTER ONE

INTRODUCTION

The student industrial work experience scheme (SIWES) is designed to expose student to industrial practice relevant to their field of study. It serves as a bridge between theoretical knowledge and practical application allowing student to gain hand-on- experience.

As an electrical and electronic engineering student, my SIWES placement at HMA Medical Ltd provided me with a deeper understanding of how electrical system and automation technologies drive syringe and needle production. The experience was vital in developing skill in electrical maintenance control systems and troubleshooting industrial equipment.

CHAPTER TWO

DESCRIPTION OF TASK AND RESPONSIBILITIES

During my SIWES training I was assigned to the electrical maintenance and automation department, where I participated in the following activities

(1) Electrical panel maintenance

(2) PLC programming and troubleshooting

(3) Motor control system maintenance

(4) Sensor calibration

(5) Safety compliance

CHAPTER THREE

COMPANY OVERVIEW

HMA Medical Ltd located in Ilorin at Gaa Odota beside Lubcon Company, Kwara State. Specialize in the production of medical syringe and needles for healthcare institutions. The factory employs automated manufacturing processes, ensuring high-quality and sterile products.

The factory's production process includes:-

- **Injection molding section:** for molding of barrels, plungers, cap and Hub.
- **Needle assembly section:** Automated systems align.
- **Printing Section:** Printing of number to the barrel
- **Syringe assemble section:** Assemble of plunger and barrel for form syringe
- **Blistering section:** Packing of a syringe and needle into sterile, sealed blister pack
- **Packaging section:** Packing of sealed Blister packs into inner carton and inner carton to shipper carton
- **Sterilization Unit:** High –temperature sterilization units. They make the use of Ethylene Oxide ((E.O) to ensure product safety.

  The electrical department plays a crucial role in maintaining power system, ensuring uninterrupted production and troubleshooting automate systems.

Technical skills and knowledge acquired.

- The training provides me with practical exposure to various aspect of electrical and electronic engineering.
- I developed troubleshooting skills by diagnosing electrical fault in control panels and resolving issues related to circuit breaker tripping.
- I gained practical knowledge at three phase motors, direct –on-line (DOL) starter, ad overload protection system essential for maintaining conveyor operation.
- I learned safety procedure and proper grounding techniques to prevent electrical accident.

CHAPTER FOUR

CHALLENGES FACED AND SOLUTIONS

We faced a lot of challenges during my SIWES program these are some of the challenges we faced and the solution to it

Malfunctioning of the forming lamp due to bad solid state relay (SSR). The (SSR) was replaced with new one

We also replaced some Amor cable from the change over switch some of the cable was burn due to overloading.

And also at needle assembly section transmission belt between Silicon and capping station was stopped. We noticed that his relay was not working again the replaced and start working.

And also the circuit break supplying power to the syringe assembly machine frequently tripped. We notice that moisture accumulation in the control panel reduced insulation resistance, causing short circuits. So we dried and resealed the control panel.

CHAPTER FIVE

CONCLUSION

My SIWES experience at HMA Medical Limited significantly enhanced my understanding of electrical and electronic systems in an industrial environment. I gained hand-on experience in electrical maintenance, PLC programming, motor control system and sensor calibration. This training has strengthened my technical skills and depend my interest in industrial automation, preparing me for future engineering challenges.

RECOMMENDATION

1. **Implement prediction maintenance tools:** Use thermal cameral and alarm sensors to detect potential equipment failures
2. **Upgrade control system:** Adopt advanced PLC. models with faster processing speed for munificent automation
3. **Regular staff training:** Conduct workshops on advanced motor control system and PLC. Programming
4. **Enhanced safety procedures:** Introduced advanced safety protocols like flash protection and emergency stop system.