KWARA STATE POLYTECHNIC, ILORIN

DEPARTMENT OF METALLURGICAL ENGINEERING
INSTITUTE OF TECHNOLOGY (10T)

A TECHNICAL REPORT ON THE STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

UNDERTAKEN AT

IDI-ORO, OYO ROAD, NEAR CALIFONIA HOTEL, OGBOMOSO, OYO STATE.

BY

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ACKNOWLEDGEMENT

I acknowledge with sincerity GOD the most merciful, He has been always providing, caring, sustaining, guarding and just so good to me. Glory honor and adoration be unto the Lord.

My thanks and appreciation goes to my parent MR & MRS OLADIRAN for the support that has been divining me throughout the duration of my training.

I also acknowledge my colleagues in the same department, and others that are too numerous to mention. Also the effort of my family, brothers and sisters.

I am also indebted to the entire staff of MONJOLA JESU NIGERIA LIMITED, most importantly the engineers for their contribution and support during the training, may the lord reward you abundantly (AMEN).

I also acknowledge the entire staffs and lecturers of Metallurgical Engineering Department, most important my H.O.D, moral and academic impaction of knowledge, may the good God bless you all.

PREFACE

This is a report of four months industrial training which was done as part of the requirement needed for the award of national diploma certificate which was embarked upon by the technical student after their first year of stay in school.

It is also done to enable the student's to be exposed to practical aspect of their course of study and write down what he/she has gained during the training.

TABLE OF CONTENT

CHAPTER 1

1.1 BACKGROUND OF SIWES

SIWES (Student Industrial Work Experience Scheme) was established by the Industrial Training Fund (1TF) in 1973 to address the issue of inadequate practical skills among Nigerian graduates from tertiary institutions. The scheme aims to prepare students from universities, polytechnics, and colleges of education for the industrial work environment they will encounter after graduation. SIWES is a scheme that lasts sixteen weeks (4 months), It is done after the first year in polytechnics (ND 1), and after the second or third year in universities, depending on your specific institution.

1.3 OBJECTIVES OF SIWES

- SIWES was created in response to the growing concern that graduates lacked sufficient practical experience for employment.
- SIWES provides students with the opportunity to acquaint themselves with industrial work situations.
- It helps students develop practical skills necessary for a smooth transition from the classroom to the world of work.
- Students gain experience in handling machinery and equipment not typically available within their educational institutions.

CHAPTER 2

2.1 LOCATION AND BRIEF HISTORY OF ESTABLISHMENT

The location of the establishment is located at idi-oro, Oyo road, near California hotel, Ogbomoso, Oyo state.

MO NJOLA JESU Nigeria limited has spent more than 30 years in Nigeria and it has been in existence since 1990.

2.2 OBJECTIVES OF ESTABLISHMENT

MO NJOLA JESU Nigeria limited is a company that responsible for various welding work like constructions, Gates, Burglarys, Doors, Roofs, The company base on steel works alone for different kinds of things that made with iron . The company has only welding works department.

CHAPTER 3

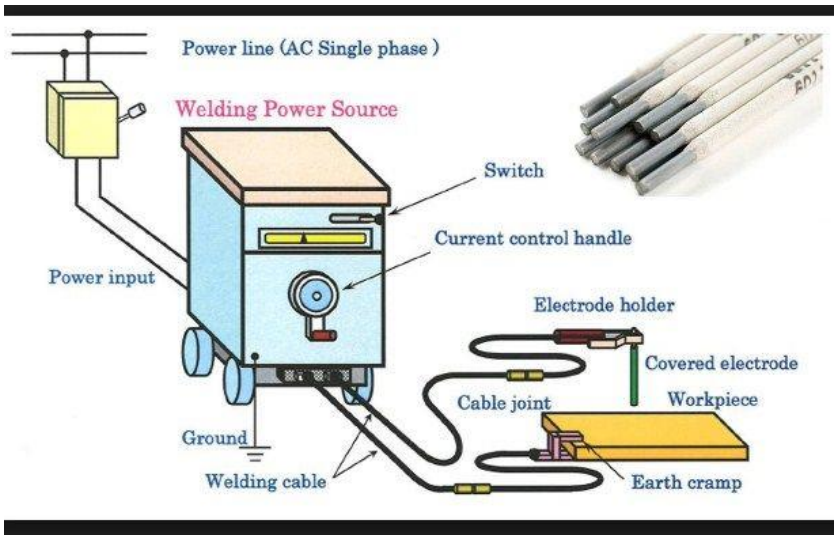
3.1 CLEAR DISCUSSION OF THE ACTUAL WORK CARRIED OUT

1. Assisting other welding personnel in the field.
2. I learnt how to use hack saw to cut various metal like iron rod and iron pipe.
3. I learnt how to use drilling machine to make a hole
4. I learnt how to hold electrode holder and how to weld any kind of metal.
5 .I learnt how to do car back carrier.
6. I learnt how to do water tank scaffold.
7. I did house gates, doors, Burglaries e.t.c.
8. I learnt how to use iron bending machine.
9. I use riveting machine and rivet pin to pin door hinge.
10. I learnt how to use grinding machine to cut and to grind/smooth the surface of work.
11. I learnt how to install door closer.

CHAPTER 4

4.1 EXPERIENCE GAINED

1. WELDING MACHINE



Arc welding is a welding process that uses an electric arc to create enough heat to melt metal, it cools and results in bonding. This fusion welding uses AC or DC power supply as its source of heat. The power supply creates an arc between a consumable or non-consumable electrode, passing either AC or DC current to the base material.

In other words, it is a type of welding process that uses a welding power supply to generate an electric arc between a metal stick (electrode) and the base metal. It melts the metals at the point of contact. There choices and stability for welders to use direct or alternating current and consumable or non-consumable electrode depending on the factors considered.

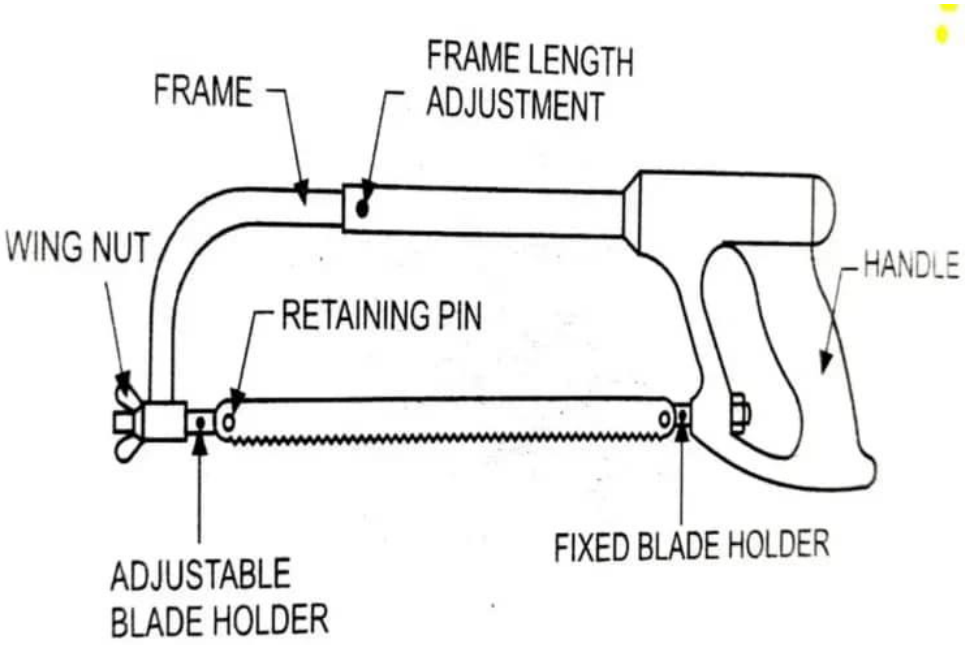
Arc welding was first developed in the late part of the 19th century, used in shipbuilding during the second world war. This process today becomes one of the fastest and common welding processes in fabrication companies.

<u>Applications of Electric Arc Welding</u>
Arc welding is widely used in many areas today as it comes in different types. The following are the applications of arc welding;

Shipbuilding
Construction industries

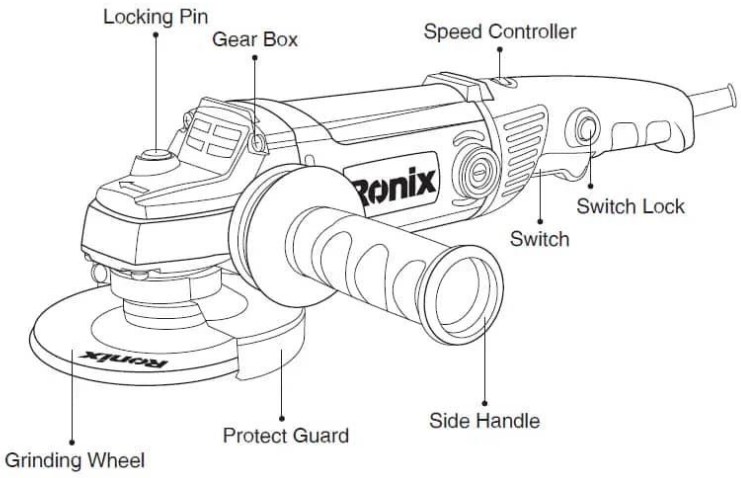
Automotive industries
Mechanical industries.
Arc Welding Tools & Equipment
The arc welding tools and equipment mainly includes AC machine, or DC machine, Electrode, Electrode Holder, Cables, Connectors for cable, Earthing clamps, Chipping hammer, Helmet, Wire brush, Hand gloves, Safety goggles, sleeves, Aprons, etc.

2. HACKSAW



1. A hacksaw is a handheld saw used for cutting through metal pipes, rods, and other metal objects. Here are its main parts:
2. Blade: The cutting edge of the hack saw, typically made of high-carbon steel or bi-metal.
3. Frame: The rigid structure that holds the blade in place.
4. Handle: The grip that allows the user to hold and maneuver the saw.
5. Tensioning mechanism: A screw or lever that tightens or loosens the blade.
6. Blade pins or clips: Small metal pieces that secure the blade to the frame.

3. ANGLE GRINDER MACHINE



An angle grinder is a handheld power tool that can be used for a variety of metal fabrication jobs that include cutting, grinding, finishing and polishing. The most common types of angle grinders are powered by electricity; either corded or battery powered.

As the name suggests, angle grinders have a cutting head at an angled position on the drive shaft. This allows the tool to be used for sharpening, polishing, and cutting. Depending on the model you get, they can come in many sizes or be corded or cordless.

The primary purpose of an angle grinder is to grind metal. It achieves this with the use of abrasive grinding discs that in a range of materials come, like aluminum, carbide, and diamond-tipped discs.

Attach a grinding disc and turn on the grinder to start the disc spinning rapidly. Press the abrasive disc to the target metal to flatten, smooth, or completely remove pieces from the metal, remove paint, rust and lacquer from metal surfaces with the help of an angle grinder. Equip a plastic stripping disc or a metal cleaning wheel to take off chipped and peeling layers without damaging the metal underneath. Plastic stripping discs are a good option for removing paint, lacquer, and similar coatings that aren't fused to the metal. These discs –are made with nylon webbed material and silicon carbide to provide enough abrasion to lift these coatings away from the metal.

4. PLATE ROLLING MACHINE

Plate rolling machine is a machine that will roll different kinds of sheet metal into a round or conical shape. It can be also called a “roll bending machine”, “plate bending machine” or “rolling machine”.

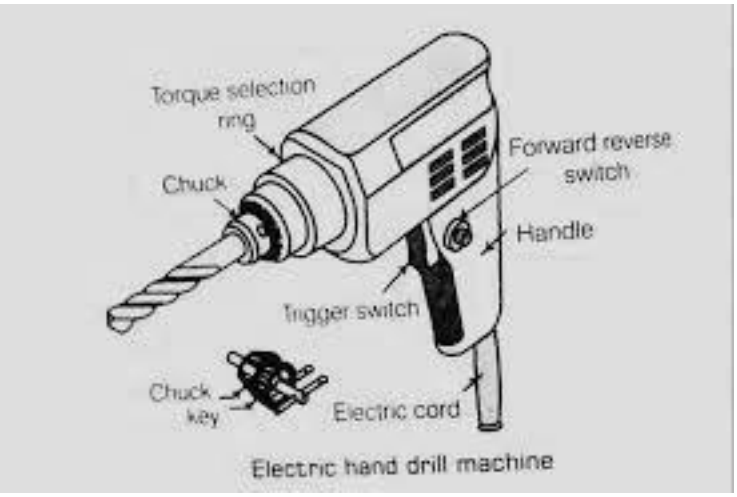
There are different kinds of technology to roll the metal plate:
Four-roller machines have a top roll, the pinching roll, and two side rolls.
The flat metal plate is placed in the machine on either side and "pre-bent" on the same side. The side rolls do the work of bending. The pinching roll holds the plate.

Three-roller machines (variable pitch aka variable geometry) have one pressing top roll and two pressing side rolls.
The three-roll variable pitch works by having all three rolls able to move and tilt. The top roll moves in the vertical plane and the side rolls move on the horizontal plane. When rolling, the top roll presses the metal plate between the two side rolls. The advantage of having the variable three roll is the ability to roll many thicknesses and diameters of cylinders.

For example; The side-rolls are what produce the mechanical advantage. With the side rolls all the way open, one has the maximum mechanical advantage. With the side rolls all the way in, you have the least mechanical advantage. So, a machine has the capability of rolling 2-inch-thick material with the maximum mechanical advantage, but a job is only 1/2 inch thick. Reduce the mechanical advantage and one has a machine that can roll from 1/2 to 2 inches thick.

Plate rollers can be powered and controlled in multiple ways. Older plate mills are driven by electric motors and newer ones are directed by programs that are loaded into the CNC controller. When thinking about plate roll acquisition, industrial machinery companies like Provetco Technology will ask about the working length of the roller, the maximum thickness of the material, top roll diameter size as well as the minimum thickness of the material. Furthermore, the material yield is another critical component to disclose to machinery companies when looking for a plate roller.

5. DRILLING MACHINE



Drill is a tool used for making round holes or driving fasteners. It is fitted with a bit, either a drill or driver chuck. with hand-operated types dramatically decreasing in popularity and cordless battery-powered ones proliferating.

A drilling machine, also called a drill press, is a powerful tool used to cut a round hole into or through metal, plastic, wood, or other solid materials by turning and advancing rotary drill bits into a work piece.

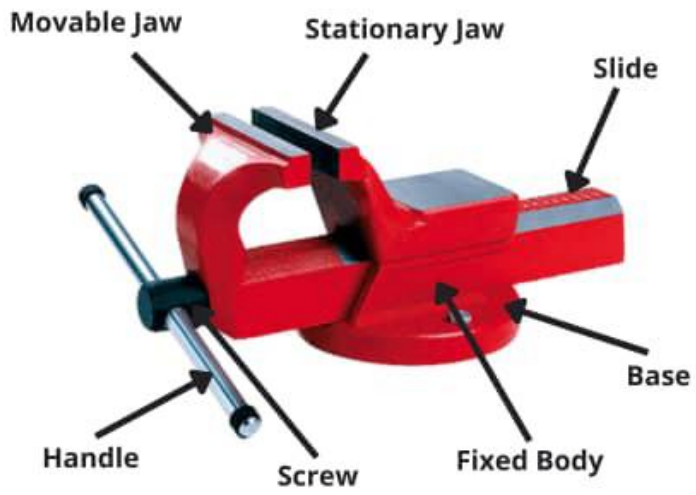
This drilling cutting tool (Drill Bit) is held in the drill press by a chuck and fed into the work at variable speeds. The speed and feed should be set properly and coolant needs to be provided for the desired finished part. The drilling machine can not only be applied in the drilling process but is also useful for many other machining operations.

Various operations can be performed on a drilling machine, such as plane drilling, step drilling, core drilling, boring, counter boring, reaming, countersinking, spot facing, tapping, and trepanning.

Parts of Drilling Machine
A drilling machine is usually composed of several or all of the following parts.

Base: generally bolted with the ground to support the weight of the drilling machine.
Column: located on one side of the base, can carry the load of the arm and drill head, with a sliding table mounted on it.
Arm: at the top of the column, carries the drill head and the housing of the driving mechanism.
Drill head: mounted on one side of the arm, consists of feed and driving mechanism. It can slide up and down.
Worktable: mounted on the column, can move vertically and horizontally.
Feed mechanism: hand and automatic feed by an electrical motor.
Spindle: holds the drill or cutting tool and revolves in a fixed position in a sleeve.
Chuck: situated on the spindle, holds the drill jig.
Electric Motor

6. BENCH VICE



A bench vice, also known as a workshop vice, is a mechanical device designed to hold workpieces firmly in place while performing tasks such as cutting, drilling, filing, or soldering. Typically mounted on a workbench or table, bench vices consist of two jaws – one fixed and one movable – operated by a screw mechanism. This design allows users to adjust the vice to accommodate different workpiece sizes and shapes securely

Movable Jaw: The part of the vice that can be adjusted using the screw mechanism to hold the workpiece.
Stationary Jaw: The stationary part of the vice that remains in a fixed position.
Slide: The slide is the mechanism that allows the movable jaw to move back and forth along the length of the bench vice.
Handle: Used to rotate the screw mechanism for opening and closing the vice jaws.
Screw: Allows for the movement of the movable jaw, tightening or releasing the grip on the work piece.
Fixed Body: The fixed body is the main structural component of the bench vice. It provides support and rigidity to the entire assembly, ensuring stability and durability during use.
Base: The base is the bottom part of the bench vice that attaches it to the workbench or another suitable surface

Applications and Uses of Bench Vice
Holding work pieces securely during cutting, drilling, filing, and sanding operations.

Assisting in assembly and disassembly tasks by providing a stable platform for work pieces.
Supporting materials during welding, soldering, and fabrication processes.
Clamping irregularly shaped objects or materials that may be difficult to hold by hand.
Acting as a makeshift press for bending or straightening metal

4.2 IMPACT ON CURRENT STUDY

My four months experience at MO NJOLA JESU Nigeria limited gave me a practical knowledge about the industrial machine such as Welding Machine, Plate Rolling Machine, Angle Grinder Machine, Drilling Machine e.t.c it allow me to apply theoretical knowledge to real word situations.

CHAPTER 5

5.1 SUMMARY OF ATTACHMENT ACTIVITIES

During my (SIWES) I actively engaged in all welding work done in the workshop, and I was allowed to operate the machine under a supervisor/guidance.

This has allowed me to know more about the operation of certain machine, such as Welding Machine, Angle Grinder Machine, Drilling Machine, Bench Vice, Hack Saw, Rolling Machine e.t.c.

5.2 PROBLEM ENCOUNTERED DURING THE PROGRAM

The main problem I experience is that I was not given safety equipment and there is no stable financial support I used to trek from my house to the company every morning and in the evening I will take a commercial automobile when going home. It was not easy that time, I faced so many challenges about getting fare but I needed to endure till I ended my program.

5.3 SUGGESTION FOR THE IMPROVEMENT OF THE SCHEME

Student should be given more time to look out for where they want to undergo their four months industrial training.