Introduction To Welding Processes

Objective:

To study and observe the welding technique through demonstration and practice of ARC welding and a prepared lap joint by use of Arc welding.

Welding Processes:

Welding is a process in which 2 materials, usually metals, and is permanently joined together by coalescence, resulting from temperature, pressure and metallurgical conditions. Welding can be achieved under a wide variety of conditions and numerous welding processes have been developed and are routinely used in manufacturi

To obtain coalescence between 2 metals

following

(1) perfectly smooth, flat or matching surfaces

(2) clean surfaces, free from oxides, grease and other contamina

(3) metals with no internal impurities.

Here, a joint is established by fusing the material near the region of the joint by means of an electric arc struck between the material to be joined and an electrode.

Arc Welding:

Aim: To prepare a butt joint with mild steel strip using MAG and MMAW technique

Materials: Welding machine, consumable mild steel wire, mild flats (100×25×5mm), wire brush, tongs, etc.

Process:

Arc welding is a process of joining 2 mixable solids by using an arc. This arc is generated by either a cathod or anode when AC/DC current flow is passed. The arc is obtained by electric discharge between the electrodes.

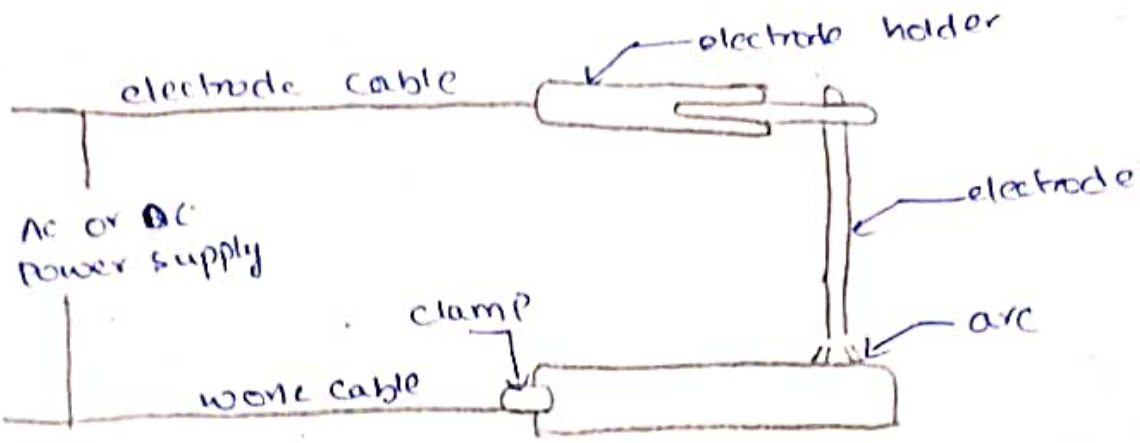
Cathod is preferred for large/strong metal welding (straight polarity) while anode is used for welding thinner metal surfaces (reverse polarity).

Procedure:

Before doing welding, the ~~thi~~-thin metal sheet is cut into 2 pieces of length nearly 7 cm. which are later welded together.

After welding, join the 2 metal sheets by lap joint technique by using straight polarity.

The basic circuit for arc welding



Precautions:

1. wear gloves (safety gloves) to protect skin from direct contact with the freshly welded joint which is at a very high temperature.

(2) Make sure the cathode is used (straight polarity) when heavy metals are welded as they can withstand high temperatures. likewise since small sheets (< 1mm) must be welded using reverse polarity to prevent excess heating. (the electrode has high temp than soft sheet).

(3) Make sure you wear protected eye wear masks to prevent heavy / bright flame