Welding Lab Under Mechanics Training Institute(MTI)

NATRiP has established Welding Lab under Mechanics Training Institute (MTI) at NIAIMT-Silchar, to train the youth of northeast on all welding related technologies. The welding lab is capable in provide training in all aspect of GAS, Spot, and Arch welding.

Infrastructure and Facilities:

The institute has word class infrastructure. The labs is equipped with different type of welding machines which can cover all the aspect of welding technology and able to provide world class training in this technology. The details features and capabilities of welding lab is as follows:

1. **Spot Welding:** **Spot Welding** is the process in which metal surfaces are joined by the heat obtained from resistance to electric current. In this process work pieces are held together under pressure exerted by electrodes, in it two shaped copper alloy electrodes used to concentrate welding current in to a small spot and simultaneously clamp the sheet together. The Spot welding is useful to join sheet of o.5 to 3 mm and used in sheet metal, wire mesh welding. The spot welding is typically used in preparation of sheet metal goods, Aluminum alloy and widely used in automobile manufacturing industries.

Spot Welding Machine

2. **MIG / MAG Welding:** The **Metal Inert Gas (MIG) or Metal Active Gas (MAG)** welding is also called **Gas Metal Arc Welding (GMAW)**. In this process of welding an electric arc forms between a consumable wire electrode and the metal work-piece which heats the metal work-piece causing them to melt and join. In this process a shielding gas is also feed through the welding gun, which shields the process from contamination in the air, due to this process is rarely used in open area. This is the most common industrial welding process, initially used for welding aluminum and other non-ferrous material but due to faster welding process soon it was applied in steels and ferrous metal welding.

MIG / MAG Welding Machine

3. **GTAW / TIG Welding:** The **Gas Tungsten arc Welding (GTAW) or Tungsten Inert Gas welding (TIG)** is a arc welding process which used non consumable tungsten electrodes to produce weld and the welding area is protected from atmospheric contamination by an inert shielding gas such as Organ or helium and the filler metal is used. The GTAW is mostly used in welding of thin stainless steel sections and non ferrous metals such as aluminum, magnesium and copper alloy. The process is complex and difficult but used for higher quality weldings. The process is widely used in Space industries, thin wall tubing, piping of various size.

GTAW / TIG Welding Machines

4. **ARC Welding:** The process used welding power supply to create an electric arc between electrodes and base welding material which melts the metals at the welding points and joint the metals. The process is widely used in fabrication of steel structures and vehicles.

ARC Welding Machine

5. **GAS Welding / Cutting:** The process is also called Oxy-Fule welding. The process used fuel gases and oxygen to weld and cut metals. In this process pure oxygen is used instead of air to increase the temperature to allow the localize melting of work sheet metal. In the **welding process** torch is used to weld metals to heat two piece of metal up to temperature that produced a shared pool of molten metal and molten pool is supplied with additional filler material, where as in **cutting process** a torch is used to heat the metal to its kindling temperature and storme of oxygen is then trained on the metal burning it in to the metal oxide which flow out the kerf as slag.

GAS Welding Machine