Types of Welding Machine

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Welding is the process of joining together two pieces of metal. This is often done by melting the workpieces and adding a filler material to form a pool of molten material called the weld pool. The weld pool cools to become a strong joint, which produces the weld by itself or due to pressure used in conjunction with heat.

There are various types of welding, such as Oxy Acetylene, Lasers, Brazing, Soldering, Plasma, Submerged Arc Welding (SAW), Friction, Plastic, Electron Beam, Explosive, Thermite, Forge, and Ultra Sonic. However, the most popular types of welding are Stick, TIG, MIG, and FCAW welding.

â€¢ Stick welding:

ï‚§ Name: Shielded Metal Arc Welding (SMAW). The name â€˜Stickâ€™ comes from the stick-like electrod that is used in the welding process.

ï‚§ Welding process: It is a manual welding process that uses a consumable electrode coated with a flux to lay the weld. An electric current from a power supply is used to form an arc between the electrode and the metals to be joined. The flux coating on the electrode protects the weld area from the air while the electrode is burning.

ï‚§ Benefits: It is one of the worldâ€™s most popular welding processes because it is cheap, versatile, and simple. It dominates other welding processes in the maintenance and the repair industry.

â€¢ TIG welding:

ï‚§ Name: Tungsten Inert Gas (TIG) welding or Gas Tungsten Arc Welding (GTAW). It is also known as HeliArc.

ï‚§ Welding process: This process uses a non-consumable tungsten electrode to produce the weld. A constant power supply produces energy which is conducted across through the arc through a column of highly ionized gas and metal vapors knows as plasma. Characteristics of tungsten allow arc temperatures to reach more than 10,000 degrees Fahrenheit. The weld area is protected from atmospheric contamination by a shielding gas (usually an inert gas such as argon). After the arc is created, a filler metal is added to the joint. Filler metals come in wire form and are cut to length.

ï‚§ Benefits: TIG welding is used for welding exotic metals, including thin sections of stainless steel and non-ferrous metals such as aluminum, magnesium, and copper alloys. This process grants the operator more control over the weld allowing for stronger, higher quality yields. But it is comparatively more complex and difficult to master. In addition, it is also slower than other welding techniques.

â€¢ MIG welding:

ï‚§ Name: Metal Inert Gas (MIG) welding or Gas Metal Arc Welding (GMAW). The term MIG comes from Inert or Nobel gases, which were used as shielding gases. Today, different gases are used and therefore the name has been changed to GMAW. It is also known as Wire Wheel Welding.

ï‚§ Welding process: It is a semi-automatic or automatic arc welding in which a continuous and consumable wire electrode and a shielding gas are fed through a welding gun. The welding gun has

a trigger that, once squeezed, starts the metal joining process. The wire electrode is connected to a constant power supply.

ï‚§ Benefits: MIG welding is the most common industrial welding process because of its versatility, speed, and the relative ease of adapting the process to robotic automation. It is rarely used outdoors because it does not give good yields in windy conditions.

â€¢ FCAW welding:

ï‚§ Name: Flux Cored Arc Welding (FCAW)

ï‚§ Welding process: It is a semi-automatic or automatic arc welding process. In this process, the electrode or filler wire used in the welding machine is a hollow tube with flux in the center. This allows the electrode to weld without using an external shielding gas. There are two types of electrodes used in FCAW:

o Self shielding electrodes, which do not need any shielding gas. It is similar to Stick welding electrode turned inside out. This electrode allows welding in windy conditions.

o Dual shielding electrodes, which need a shielding gas to work properly. This type of electrode deposits a lot of weld.

ï‚§ Benefits: FCAW welding is used in shipyards or anywhere that needs lot of welding to be done on thick metals.

The above types of welding are the most popular because they produce welds ranging from mass production to x-ray quality.

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