



# TIG WELDING

**TIG** welding (Tungsten Inert Gas), also known as GTAW (Gas tungsten arc welding), is where the welding arc is formed between a non-consumable tungsten electrode and the work piece with the weld being protected from atmospheric contamination by an argon, Argon + 2 to 5 per cent H<sub>2</sub> or Helium and helium/argon inert shielding gas.

A filler metal electrode is not necessary in TIG welding as the pieces being welded can be fused by melting them together, but if a filler electrode is used it can be fed separately into the weldpool manually, though some welds, known as autogenous welds, do not require it.

The small intense arc provided by the tungsten electrode is ideal for high quality, precision welding.

Because the electrode is not consumed during the welding process, the welder does not have to balance the heat input from the arc as the metal is deposited from the melting filler electrode.

TIG welding is mainly used to weld thin sections of stainless steel and other non-ferrous metals such as aluminium, magnesium, and copper alloys and is used in all industrial sectors especially for high quality welding with the small arc and low deposition rate being ideal for thin sheet material or controlled penetration (i.e. in the root run of pipe welds).

It can also be used in mechanised systems either autogenously or with filler wire. ■