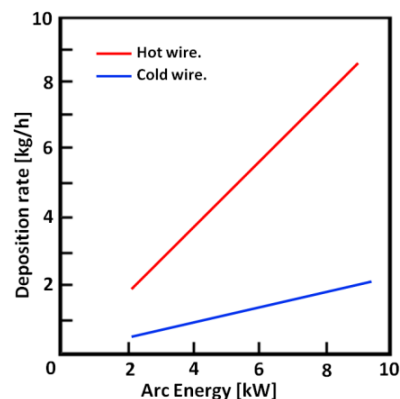


Tig Hot Wire

Description: This variant of the TIG process is a method of forming a deposited metal by passing current through the filler wire which is heated to a temperature near its melting point before being introduced into the weld pool. The wire is heated by a low voltage AC electrical resistance from a welding source at constant potential. The filler wire can be melted independently of the arc heat source which melts the base metal. Thus, the deposition rate increases considerably when compared to the cold wire method (see graph.1)



Graphic 1 – Deposition rates in hot wire and cold wire TIG.

Equipment: The principle of the arrangement of a TIG hot wire welding machine has its schematic sketch shown in fig.1.

Advantages: is an automated process with high levels of productivity, able to make high quality welds on nearly all weldable metals and alloys (with exception made for alloys with very low melting point); no need to remove slag; no spatter; no need to change electrodes; high deposition rate; high welding speeds; reduces the dilution percentage; welding is possible in all positions.

Disadvantages: When done manually, this process requires great skill of the welder. Furthermore it is expensive, particularly when compared to other arc welding processes.

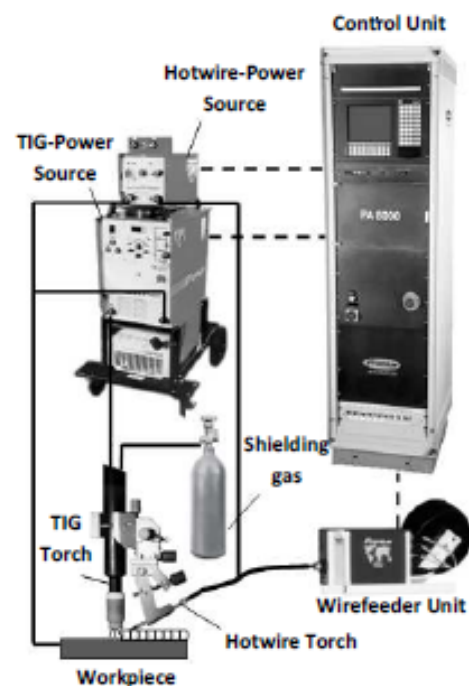


Figure 1 – Schematic sketch.

Applications: This process is used in joint welding and overlay welding. Usage examples: pipeline construction (very high and very low temperature conditions), ship building, off-shore engineering power-station construction, etc. It is also usual to make root-run in important structural elements.

Materials: Carbon steel; Ni based alloys (with 3%, 5% e 9%); Copper based alloys; Low-alloy steel; Stainless steel; High-grade materials. The results are not satisfactory in case of high conductivity material such as Aluminum and Copper.

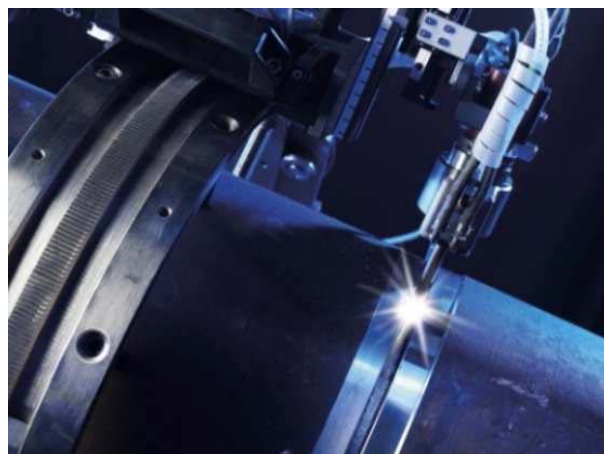


Figure 1 – Usage example.