

SHEET METAL CUTTING (LASER, PLASMA, OXY-FLUOEL)

SHEET METAL LASER CUTTING

The laser is definitely the most advanced technology currently on the market in the sheet metal cutting field. Compared to so-called "traditional methods, it offers the following advantages:

- 1. SPEED AND PRECISION :** The technology resolves the most particular profiling and perforation needs and at the same time reduces thermal and mechanical deformation of the material to a minimum.
- 2. HIGH LEVEL FINISH:** The product piece is free of burrs and the working tolerances can be contained within tenths of a millimetre

USES:

- Thin sheets cut. High precision needed (more or less 0.1mm)
- Particularly elaborated cutting profiles.
- Finished piece required without further processing.
- Reduced piece dimensions (less than 200mm)
- Perforated pieces with minimum size of holes not under 0.8 times the thickness.



PLASMA CUTTING

Plasma cutting is a process which, using a nozzle with a particular opening, compresses ionised gas at a high temperature to fuse and cut sections of electrically conductive metals.

The plasma arc fuses the metal and the metal and the gas, at high speed, and removes the molten material. The plasma gas is also called cutting gas. It firstly undergoes an ionisation process, then it is expelled from the nozzle opening. The screen gas is the second gas used in the plasma cutting process. It surrounds the arc, helps compress and cool the torch and creates the right cutting environment that influences the quality of the edges. The combined use of "cutting gas" and the "screen gas" is the basis for the functioning principle, the so-called "high definition plasma cut" and composes the most advanced system of plasma cutting on the market.

USI:

- For thicknesses between 10 and 40 mm
- For thicknesses between 3 and 10mm where laser precision is not required
- For pieces over 200mm
- For pieces with hole diameters 1.5 times the thickness for carbon steel and twice the thickness for stainless steel .
- metal whose surface is imperfect (oxidized) or pieces obtained from sheet metal that was not flat (e.g. embossed or checker sheet metal) or sheets set or scratched)



SHEET METAL CUTTING (LASER, PLASMA, OXY-FUEL)

OXY-FUEL CUTTING

Oxy-fuel or thermal cutting is an operation that makes it possible to cut sheet and other metals using an oxygen jet.

The principles of Oxy-flame cutting: if we consider a piece of standard sheet steel, kept in an oven at above 1350° C, blowing a fast, fine jet of oxygen against the sheet and making it move will cut it by means of progressive combustion. It is possible to avoid the oven by heating just the metal areas to above 1350°C, as they are reached by the jet of oxygen. All this requires is an oxy acetylene flame that needs to move along the cutting line, immediately followed by the jet of oxygen.

Or even more simply, this operation can be carried out with the oxy-fuel cutting pipe, with a central opening for the oxygen jet (thermal cutting jet) and a series of holes set out in a circle around it and through which oxy acetylene flame, known as heating flames, come out. Whatever the pipe's direction of travel, there is always a flame to precede the thermal cutting flame.

USI:

- Thickneses over 35 e 40 mm
- Need to obtain cutting surfaces with sharp edges
- Need to obtain vertical cuts.

