LASER CUTTING.

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Laser Cutting.

Laser cutting is a thermal process in which a focused laser beam is used to melt material in a localised area. A continuous cut is produced by moving the laser beam under CNC control. There are three main kinds of laser cutting. **Fusion**, **Flame** and **Remote** Laser Cutting.

Fibre laser cutters are becoming more widely used as a more accurate and cost effective replacement for oxy/acetelene and plasma profile cutting. The laser is extremely accurate and provides excellent edge quality. A real advantage is the narrow cut width with saves on material but more importantly reduces the heat absorbtion in the parent material - this reduces distortion in problematic materials like stainless steel.

The Processes.

1 Fusion Laser Cutting.

Fusion Laser Cutting uses reaction-inhibiting nitrogen or argon as the cutting gas. The nitrogen or argon is driven into the cutting joint at pressures of up to 20 bar. The specific properties of this gas cool the material and prevent any oxidation at the cutting edge.

This process is suitable for thin sheets and in situations where the workpieces must fulfill high visual requirements without requiring further processing. For challenging applications that require high precision, Fusion Laser Cutting has the advantage of producing a virtually oxide-free cutting edge.

2 Flame Laser Cutting.

Flame Laser Cutting, also known as Reactive Cutting, involves oxidation triggered by gas to cut through metal or materials. It's similar to welding via an oxygen torch, with the only difference being that a laser is used as the heating source instead of an oxygen-fed flame.

Flame Laser Cutting is effective because it leverages the oxidative power of a reactive gas like oxygen. The metal or material is first exposed to a reactive gas, after which a laser is applied to it. The presence of this laser triggers a chemical reaction in the gas, allowing for easier and quicker cutting.

3 Remote Laser Cutting.

Remote Laser Cutting technology applies a well focused laser beam, which is positioned along the cutting contour of the component's surface. The laser spot speed is about several meters a second. Due to low interaction times between beam and component, the material is partially evaporated and desorbed. The process doesn't require the use of any gas, except clean/dry compressed air to aid in cooling and smoke expulsion. The outstanding advantage of this technique is the processing speed of up to 150m/min.