

# Choose a cutting process

Every cutting process has particular benefits and shortcomings that you should take into account before deciding on a cutting method. Also keep in mind that a combination of processes may be best for a particular application.



	X-DEFINITION & HIGH DEFINITION PLASMA	OXY FUEL
MATERIALS	Most electrically conductive metals; stainless steel and aluminum	Carbon Steel Only
THICKNESS	Up to 80mm (3.2") Mild Steel Up to 160 mm (6.25") Stainless Steel	Best cuts from gauge to 152 mm (6") or more, quality cuts from 6 mm (1/4") through 51 mm (2")
CUT QUALITY	Extremely good quality, virtually dross free, good fine feature capability  New processes optimize non-ferrous cutting	Range from poor to very good quality depending on the operator's skill
	The correct choice of process and gases will produce minimal edge hardening, allowing excellent weldability  Relatively smooth edges with smooth torch motion  Reduces overburn and kerf on holes resulting in better quality and accuracy	Edges typically are rough; however with a skilled operator, edges can be as clean as plasma and with better angularity  Dross removal required, unless the operator is very skilled increasing the manufacturing time of parts exponentially
PRODUCTIVITY	Medium to high, depending on material thickness Faster than laser on 6mm (1/4") and thicker Faster than oxyfuel up through 50 mm (2")	Low, though can be improved by running multiple torches simultaneously  Process is slower than plasma when cutting thinner (less than 3/4") material Preheating is required at the cut starting point

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<b>SPEED</b>	High cut speeds	Slow cut speeds, multiple torches can help increase productivity
<b>SECONDARY OPERATIONS</b>	Occasional dross removal needed	Grinding and surface oxidation removal almost always needed
<b>OPERATION COST</b>	Low cost per part on all materials Low service and maintenance requirements	Operating cost becomes more competitive with plasma when cutting thicker material Low service and maintenance requirements
<b>CAPITAL EQUIPMENT COST</b>	Medium, higher than oxyfuel, lower than laser and waterjet	Medium, less than plasma
<b>PORTABILITY</b>	Highly portable, lightweight inverter designs on the air plasma systems	Medium portability Not dependent on a primary power source, but fuel and oxygen canisters are required
<b>BOTTOMLINE</b>	Faster, more productive process than oxyfuel cutting when doing mechanized cutting of metal greater than 6 mm (1/4") but less than 50 mm (2")	Consider oxyfuel if you need to cut carbon steel 152 mm (2") or more in thickness.