CUTTING TECHNOLOGIES

LASER CUTTING

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Colorado Waterject Co.
What is Laser Cutting?

Basically takes CO2 + He+N2 gas mixed with high voltage electricity to accelerate particles and then they are focused into a beam capable of CNC controlled cutting of steel, plastics, and non-metals.
Standard 2D cutting
6 Axis and Tube cutting
Laser cutting nonmetals
Material cutting capabilities

- Carbon Steel .001”-.750” thick
- Stainless Steel .001”-.500” thick
- Aluminum .001”-.3125” thick
- Exotic materials such as Titanium
- Pipe and tube up to 6.00” OD
- Nonmetals
  - Acrylic, Poly Carb, PETG
  - Gaskets Rubber, Silicone
  - ABS
  - Wood
Red metals such as Copper (some new fiber lasers can cut copper)
Thick metals beyond listed limits
Powdered metals such as Tungsten
Glass
Granite
Laminated materials
- Standard tolerance is +/- .005" on sheet metal, with some exceptions
- Kerf or edge taper is less than 1 degree of angle for standard cut
- No edge quality variables
- Hole size is the size of pin gauge that goes through a hole, holes will all have some degree of taper
- Holes should be material thickness or larger
Setting the job up for success

- Good CAD DXF or DWG files
- Print for each part with details and measurements
- Material specs required for job
- All secondary work such as forming, welding, and finish requirements
- www.draftsight2018.com free CAD software
- Also work from STEP, IGES, and SolidModels
Sample projects
<table>
<thead>
<tr>
<th>Waterjet</th>
<th>Plasma</th>
<th>Laser</th>
<th>EDM</th>
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</thead>
<tbody>
<tr>
<td><strong>Process</strong></td>
<td>Erosion process: high speed liquid sandpaper</td>
<td>Burning / melting process using high temperature ionized gas arc</td>
<td>Melting process using concentrated laser light beam</td>
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<tr>
<td></td>
<td>Z constraint is only limit to thickness.</td>
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<td>Can also cut a variety of other materials.</td>
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<tr>
<td><strong>Thickness</strong></td>
<td>Up to 24 inches, virtually any material.</td>
<td>Up to 2-3 inches, depending on material.</td>
<td>Generally 1 inch or less, depending on materials.</td>
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<tr>
<td><strong>Part Accuracy</strong></td>
<td>Up to .001”</td>
<td>Up to .010”</td>
<td>Up to .001”</td>
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<tr>
<td><strong>Capital Investment</strong></td>
<td>$60k to over $300k</td>
<td>$60k to over $300k</td>
<td>$200K to over $1M</td>
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<tr>
<td><strong>Machine Setup</strong></td>
<td>Same setup for all materials</td>
<td>Different setup for different materials</td>
<td>Different gases and parameters for different jobs</td>
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