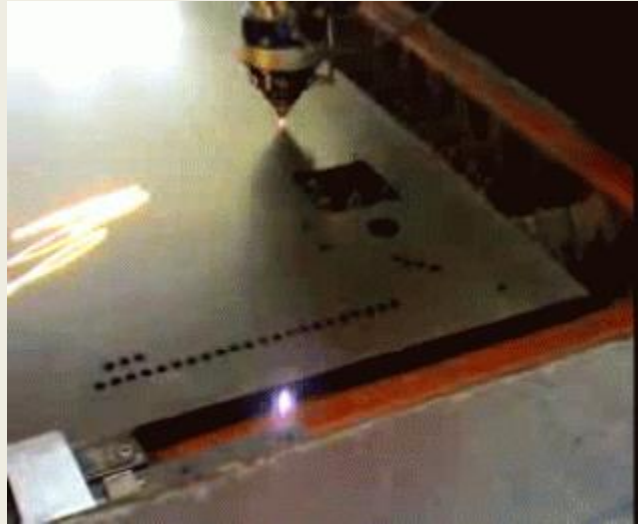


Laser Cutting



What is Laser Cutting?

- Traditional machining process
- Simply uses high powered laser to cut through things!

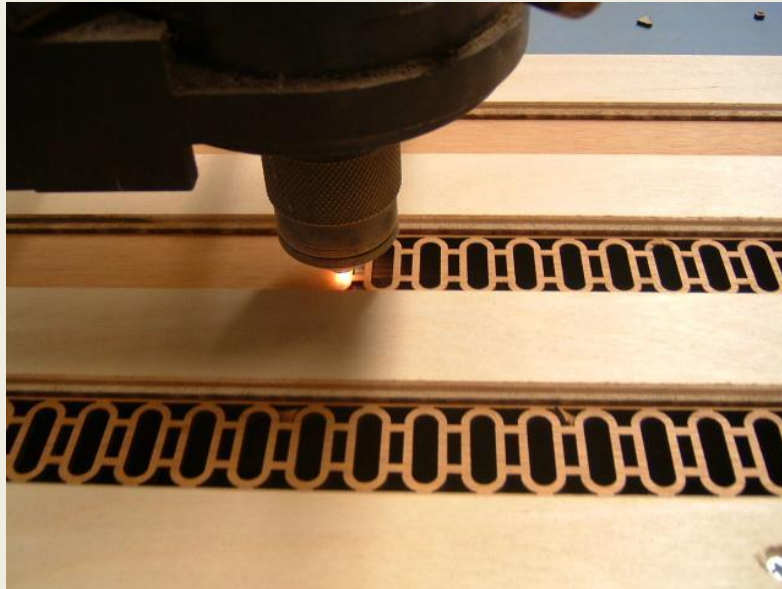


History

- First laser cutters were utilized in diamond tooling
- Mainly used in industrial manufacturing, but the trend is to implement them at schools, small businesses, and hobby shops

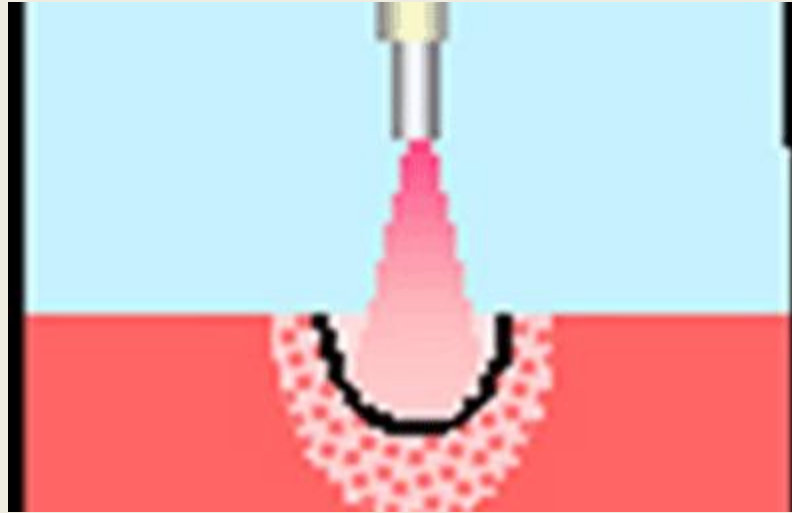
Types of Cutting Machines

- Many methods of Laser Cutting but all share the same basic principal...
 - High powered laser cuts through material



Vaporization Cutting

- Brings material to a boiling point and erodes away the surface



Melt and Blow

- A high pressure gas is used to blow away the molten material. It is usually used for metals.



“Consumer” Level

- \$5000+
- “Desktop” size
- Educational labs and Makerspaces



Applications

- Art
- Tools
- Manufacturing
- The “impossible”
- Education

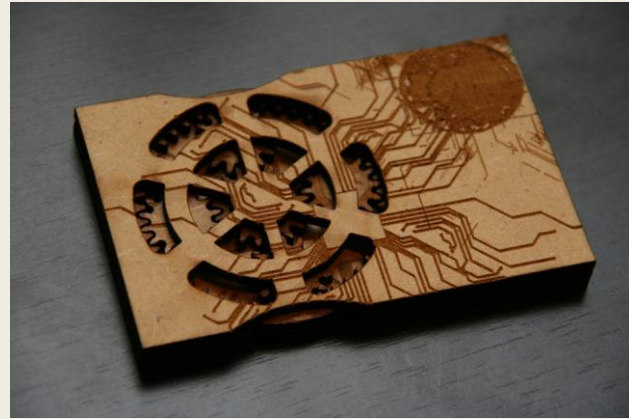
Tech Limitations

- Two dimensional
 - 3D products require assembly
 - Assembly requires pre-planned joint design
- Size
 - Size is limited by the working area of the machine
- Tolerances
- Ventilation and Safety
 - All laser cutters require ventilation for safety



Materials

- Plastics
 - Many many kinds
 - ABS, Acrylic, PETG, etc
- Very thin metals
 - Stainless or spring steel
- Wood
 - Easy to burn and scorch!
- Others
 - Leather
 - Foam
 - and many more



Design Challenge

Bridge Design

- Design the strongest and most creative balsa wood that can carry a load

Restrictions

- Must fit on the existing template
- Must be designed on Inkscape

Inkscape Template

- Search “Makerspace Workshop Bridge Template”

Prepare for Cutting

- The design must fit in the work plane
 - Software can be used to check for any errors
 - It's just like printing paper!
- The laser must be focused (at the correct distance) from the material
- 3 common laser settings
 - Power
 - Speed
 - Frequency
 - They will depend on the material. Consult your laser cutter manual!