

# What are the right questions to ask when purchasing a CO2 laser cutting & Engraving machine?

There are many brands of laser to choose from. Not all lasers are the same. From cheap hobby machines to well-engineered professional systems there are many points of difference to consider. What are the right questions to ask to find which laser is right for your business? Of equal importance is how you choose a laser supplier.

## LASER TUBE

**What style of laser tube does the machine use?**

- Glass tube - Developed in the 60's this is the original style of CO2 laser made from a glass cylinder with glue or rubber seals.
- Ceramic tube - Developed in the 70's the ceramic tube was the next technological step in CO2 laser development, made from a ceramic cylinder coated with aluminium oxide and using glue or rubber seals.
- Metal core tube - Developed by the US department of Defence in the 80's the aluminium core tube is the latest development in CO2 laser tube technology made from an aluminium cylinder with a welded seal.

**How do they compare?**

	Glass	Ceramic	Metal
Purchase Price	\$	\$\$\$\$\$	\$\$\$
Stability in cutting	✓	✓	✓
Stability in engraving	x	✓	✓
Expected life span	6 mths	5 yrs +	5 yrs
Replacement cost	100%	100%	50%
Technician time to replace	2 hrs	2hrs	1min*

\*with patented ULS laser cartridge system

## MOTION SYSTEM

**How is the beam delivered from the tube to the material?**

- Galvo mirrors - High speed scanning galvanometer mirrors steer the beam around the table. They are not capable of cutting but provide extremely fast engraving speeds in a limited work area.
- Gantry or Flying Optics
  - Stepper motors - Uses motors with predefined steps to position the gantry in XY. Low cost to replace and less maintenance required. Less likely to fail in harsh conditions.
  - Servo motors - Uses motors and an encoder to position the gantry in XY. Potentially faster and smoother curves. Expensive to replace and encoders require constant maintenance.

## AIR FLOW

**Does the machine have good airflow across the engraving bed?** Good airflow removes smoke and debris from the engraving area. Without good airflow you require air assist technology driven by an air compressor. This adds to the running cost of the system.

## SAFETY

**Does the machine comply with Australian, US or EN laser safety standards? What class does the laser run in?** Tamper proof interlocks should prevent intentional and unintentional operation of the laser when any door is open. If you can fire the laser when a door is open, you must comply with stringent laser safety regulations and are liable for injury caused.

**What fire protection features does the machine have? Is the lid made from safety glass or acrylic?**

If a small fire does start in the machine will it shut down and sound an alarm or will it continue to operate. Safety glass will help contain the flames and smoke whilst acrylic or polycarbonate lid will add fuel to the flames, accelerating the spread of the fire.

## SOFTWARE DRIVER

**Can the driver accept files from any software in any format?** Most professional laser systems will accept files from any software in any format. Some low-cost hobby machines will only accept certain formats from certain applications limiting what can be achieved with the system.

**Does the driver have an advanced database of settings for a wide range of materials?**

## OPERATING COST

**What is the initial purchase price? What is the expected operating cost?**

- Running costs - Consumables, power
- Maintenance costs - Technical support, on-site visit by technician

**Considering the answers to the above questions, is a lower purchase price offset by higher operating costs?**

LST Group have over 30 years' experience in CO2 lasers. We support over 800 lasers across Australia. The modular design of ULS lasers keeps you up and running. Contact us on 1800 806 252 to speak with our experts about your lasering needs.