



# Investing in a Laser Cutter

A Guide for First Time Buyers

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**The decision to invest in a laser cutter is not one to be taken lightly. Laser manufacturers do an excellent job of explaining the advantages of using laser cutters for fabrication – but there are many other factors to consider before making such a large capital expenditure.<sup>1</sup>**

At Air Products, we're experts in all things gas-related. As a result, we've been working with new laser installations for years, servicing a range of industries that make use of laser equipment. We've observed that as the capability of lasers improves and their availability increases, many small- and medium-sized fabricators are investing in laser cutting equipment to augment their manufacturing capabilities.

All too often in these cases, considerations regarding gas supply for lasers are overlooked or forgotten completely! This is where Air Products is typically called in to provide advice and supply the optimal gases for a given application.

It's important to think about gas as early as possible, but a number of additional costs and considerations such as training, logistics and futureproofing can make adoption of laser cutting a confusing process. We've written this comprehensive guide so that manufacturers can make the best decision possible when considering purchasing their first laser machine



## Financing

We'll start with the most obvious one: Laser machines are significant investments and determining whether it's worth it requires a thorough cost/benefit analysis. If a company is changing a current internal process to laser, then any increase in output and other benefits must be weighed against the cost of the laser cutter and its upkeep.<sup>2</sup> If a manufacturer currently sub-contracts laser cutting and wishes to bring it in-house; there may be significant benefits in terms of administrative load and time savings - it's important to factor these in.

The cost of auxiliary equipment and expendables can significantly increase the cost of ownership: make sure to consider things like material handling equipment, software requirements, and gas supply.

## Process Changes

Changing processes to incorporate laser cutting can be complicated. As well as changes to material handling, delivery modes, and storage; the introduction of a laser machine may require changes to in-line tracking metrics.

## Logistics

Most industrial laser cutters have a significant footprint. In terms of physical space, having enough room on the factory floor is only part of the equation: it's also crucial to properly consider the position of the laser cutter in relation to other processes and the space required for its installation. Placement relative to other processes is also important – consider the optimal placement for the machine as part of a production line.

## Maintenance

As with all machinery, lasers must be regularly maintained. Scheduling regular preventive maintenance can prevent unnecessary downtime, increase equipment lifetime and improve workplace safety.<sup>3</sup> Think about how best to incorporate this into your business.

## Training

The new equipment will only perform as advertised if it's operated competently. Who will operate the new laser cutter? Think about the financial and time costs of upskilling – it may be worth training multiple operators to prevent possible downtime.



## Futureproofing

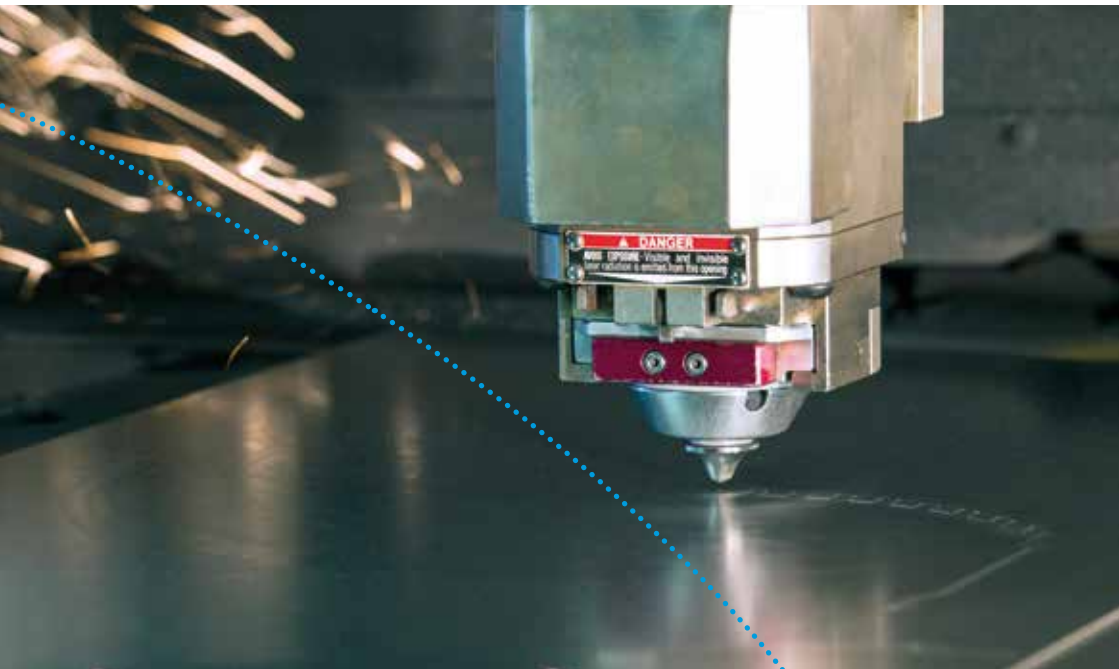
Think about the short-, medium- and long-term outlooks for your business. It's possible that making a larger investment in a more capable machine today might save a company money in the long run if the catalogue of products is likely to change. It's important to make sure that any decision on machine size won't hinder or prevent upgrades or changes to other equipment.

## Gas

The gas requirement is possibly the most overlooked requirement of laser cutter ownership and is required for both CO<sub>2</sub> lasers and more modern fiber lasers. High-purity carbon dioxide is needed as a lasing medium (or resonating gas) in CO<sub>2</sub> lasers; and both CO<sub>2</sub> and fiber lasers often make use of high-pressure nitrogen, oxygen, or another gas which functions as an assist gas.<sup>4</sup>

Choosing a good gas supplier is crucial: consider opting for a supplier with expertise in this area who is able to offer advice as your business evolves. Air Products work closely with all major laser manufacturers and provide a complete range of gas products to the fabrication industry.<sup>5</sup>

We understand the requirements of fabricators and can advise on optimal supply modes to suit your business as it grows, helping to maximise return on investment. Even if you haven't ordered your laser machine yet we can assist you and recommend the optimum gas for your applications.



## References and Further Reading

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(Accessed: 3rd February 2020)

### 2. Pricing and Costs of Laser Cutting Machines - business.com

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### 3. The Importance of Preventive Maintenance

Available at: <https://www.micromain.com/importance-of-preventive-maintenance/>(Accessed: 3rd February 2020)

### 4. Gas gives the big assist in laser cutting

Available at: <https://www.thefabricator.com/thefabricator/article/lasercutting/gas-gives-the-big-assist-in-laser-cutting>  
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### 5. Laser Gas Solutions: Air Products

Available at: <https://www.airproducts.expert/uk/laser-gas-solution/>  
(Accessed: 3rd February 2020)



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