CUTTING METAL WITH A ROUTER?

STOP

THERE IS A BETTER WAY

Are you constantly looking for better, cleaner, more accurate, and more affordable methods that enhance productivity and profitability? Look no further. We will show you a way that is better and faster.

If you are in the sign business, you'll want to read through this article in its entirety. We will breakdown the costs and processes of both the CNC Router and CNC Laser cutting as it pertains to aluminum cutting for metal signs.

LET'S GET STARTED!

Advantages of Laser Cutting

Laser cutting, as opposed to traditional CNC router cutting, carries a whole host of advantages that, when compared side-by-side, make it the clear winner. Let's look at those advantages now.

Quality of Cut

Lasers have a tighter kerf provides more detailed work.

Speed

Lasers operate at 3x's the speed of Routers.

Efficient

Lasers use less electricity than routers.

Cost Efficient

Lasers save material,time, and money.

Material Savings

One of the standout features of laser cutting is its ability to **reduce material wastage.**

For instance, when cutting 6" tall aluminum letters, a laser uses about half the material required by a CNC router. This not only cuts down the material cost by nearly **50%** but also reduces the environmental footprint of production. The lower material requirements are due to the laser's ability to cut with greater precision and smaller kerf widths compared to routers.

Less Labor Required

Laser systems significantly streamline the manufacturing process. The automation and precision of laser technology minimizes the need for manual adjustments and corrections, which are often necessary with CNC routers.

From file preparation to the actual cutting, laser systems can simplify operations, thereby reducing labor costs and allowing employees to concentrate on other productive tasks.

Faster Throughput

The operational speed of laser cutting machines is a major advantage. These machines can complete tasks much faster than CNC routers.

For example, a job that takes a CNC router approximately **1.5 hours** can be completed in about **20 minutes with a laser cutter.** This speed enhancement not only boosts a company's production capacity but also allows for more orders to be processed in the same amount of time, significantly increasing potential revenue.

Here's the Proof!

While it might be a more costly upfront equipment cost, it will quickly pay for itself, given the amount of increased productivity and speed it can render.

The Laser cutting process dramatically reduced labor, machine time, and material costs, resulting in overall cost savings from start to finish!

Real-Life Scenario

Let's consider the real-life scenario of one of our customers, a sign company, tasked with producing a set of 12 aluminum letters using Times New Roman font, each 6" tall and ¼" thick, using both a CNC router and a laser for comparison.

Here's how the costs and processes differed:

Using a CNC Router

Material Costs:

Using a 3/16" carbide, we will need to add a 1/2" web around each letter to account for the width of the tool. So this project will use 4.4 sq ft of material. Aluminum weighs 3.5lbs per sq/ft. and with current prices around $4.00/pd. this project will use $61 of material.

Labor Costs:

We estimate that this project will take about 3 hours to process, this includes time to prepare the file, add hold tabs, change inside corner radius and run the job. After routing, we need remove the tabs, cleanup the edges and polish the letters. Using a labor rate of $35/hour the labor cost would be $105.

Machine Time & Costs:

We estimate this project will take 1.5 hours, including fixturing for material hold down, tool setting and then operation. Add in time for cleanup, chip/scrap removal. Using a burden rate for the router of $60/hour, the overall machine cost for this job is about $90.

Tooling Costs:

We will add to the cost one 3/16" carbide tool and use an average cost of $30 each. However, it a letter kicks during routing and a tool breaks, we may require a second tool, but we won't add that now.

Miscellaneous Costs:

Costs include tooling, waste removal, electricity, rent, deprecation, etc are estimated to be $15 for the length of this project.

Using a CNC Laser

Material Costs:

Using a 1/8" web around each letter the project will require 2.3 sq ft of material. Aluminum at 3.5lbs per sq/ft. and $4.00/pd. the material used will be nearly 1/2 as much as the router with a total material cost of just $32.

Labor Costs:

The labor estimate to prepare the file and process it including cleanup is about 35 minutes. With the laser there is minimal file prep, we do not need to change the inside corners so most files can be processed as is. With the laser operating at almost 3X the speed of a router, the time to process and the labor required is drastically reduced. Using the same labor rate of $35/hour, the labor cost for this project would be just $20.

Machine Time & Costs:

We estimate this project will take 1.5 hours, including fixturing, material hold down, tool setting, and time to run the job. Add in time for cleanup, chip, and scrap removal. Using a burden rate for the router of $60/hour, the overall machine for this job is about $90.

Air Assist Costs:

Nitrogen is the assist gas we will use for this example. However, when the volume of cutting aluminum exceeds 6 hrs/day then using high-pressure air as an alternative becomes an option, lowering costs to less than a dollar in this example.

Miscellaneous Costs:

Costs include tooling, waste removal, electricity, rent, deprecation, etc. for this project using a laser is only $5.

SEE THE DIFFERENCE? YOU ARE LEAVING THOUSANDS ON THE TABLE WHEN USING A ROUTER INSTEAD OF A LASER.

195 Industrial Rd, Fitchburg, MA 01420 | p: 978.342.9800 | e: sales@vytek.com

Cost Comparison

Let's assume that we sell the signs for $600 each, you can see the substantial difference in profitability per job per employee.

	Router	Laser
Revenues		
Signs Sold (1)	$600.00	$600.00
Total Revenues	***$600.00***	***$600.00***
Expenses		
Material Costs	$ 61.00	$32.00
Labor Costs	105.00	20.00
Machine Time & Cost	90.00	27.00
Machine Tooling Cost	30.00	-
Air Assist Cost	-	10.00
Miscellaneous Costs	15.00	5.00
Total Costs	***$301.00***	***$94.00***
PROFIT (Revenues – Costs)	***$299.00***	***$506.00***

The increased throughput drastically raises productivity and revenue potential. What happens when you extend it to the whole day per employee with the same data? Let's find out.

Considering setup, cutting, and post-processing times, the output using a CNC Router is limited to 2 batches of signs in a standard 7.5-hour workday. We could process only 2 batches as each batch takes almost 4 hours to complete.

On the other hand, a CNC Laser can process the same job in significantly less time—about 20 minutes. This efficiency allows for potentially 13 batches of similar jobs within the same 7.5-hour workday.

Now, let's continue with the sale of each sign at $600 each.

Profits are left on the table.

Here is the breakdown per day based on the employee using the router producing only 2 signs versus the employee using the laser to cut out 13 signs.

	Router		***Laser***	
Revenues				
Signs Sold	600 x 2 =	***$1,200.00***	600 x 13 =	**$7,800.00**
Total Revenues		***$1,200.00***		***$7,800.00***
Expenses				
Material Costs	61 x 2 =	$122.00	32 x 13 =	$416.00
Labor Costs	105 x 2 =	210.00	20 x 13 =	260.00
Machine Time & Cost	90 x 2 =	180.00	27 x 13 =	351.00
Machine Tooling Cost	30 x 2 =	60.00	-	-
Air Assist Cost	-	-	10 x 13 =	130.00
Miscellaneous Costs	15 x 2 =	30.00	5 x 13 =	65.00
Total Costs		***$602.00***		***$1,222.00***
PROFIT (Revenues – Costs)		***$598.00***		***$6,578.00***

Last Comments on Laser Cutting as an Alternative to CNC Routers

Switching from CNC routers to laser cutting systems is a strategic move for companies, especially those in the sign industry, aiming to optimize their production processes. It's the next-gen solution for any business looking for ways to save on process costs, scale their business, and win more business.

Not to mention, it also creates a really solid impression when customers learn you're using cutting-edge tech (no pun intended) in your process. It can increase their trust in your brand and lead to a happier customer experience overall.

About Us

Vytek is a family business with the original founding in 1968 by Curt Burrowes. We manufacture our products with the same spirit our founder created the business through commitment and an innovative and pragmatic approach to solutions. The team at Vytek are some of the most experienced and knowledgeable people in the industry and work closely with the best suppliers worldwide from our headquarters in Fitchburg Massachusetts.

Let Vytek prove to your company we have the best laser-based solutions!

FC510LT Cutting

LST Series

Compact Marking

FCL Cutting

Speed & Delivery

The operational speed of laser is much faster than CNC routers.

For example, a job that takes a CNC router approximately **1.5 hours** can be completed in about **20 minutes with a laser system.**

Standards

Laser cutting is a better, cleaner, more accurate, and more affordable method of cutting. It enhances productivity and profitability.

195 Industrial Rd, Fitchburg, MA 01420 | p: 978.342.9800 | e: sales@vytek.com