

The Role of Gas in Precision Laser Cutting across Industries

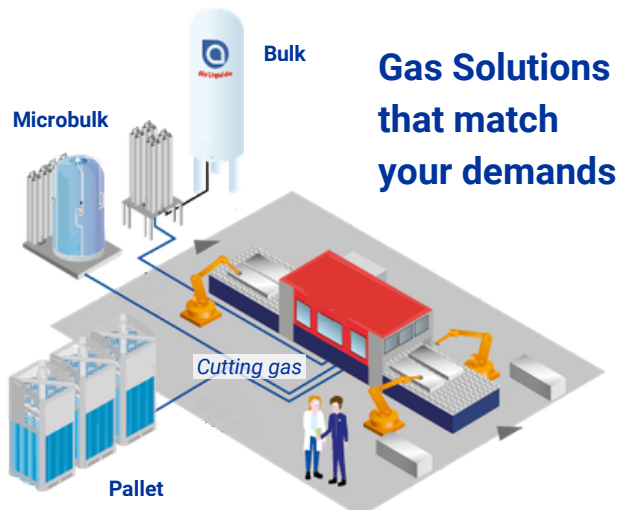
We deliver:

- ✓ Reliability and performance
- ✓ Uninterrupted beam quality
- ✓ Superior edge finish
- ✓ Significant cost and part savings
- ✓ Increased productivity per hour

A Manufacturing Revolution

The precision, speed, and versatility of **fibre laser cutting** is driving innovation. Manufacturers expect gas supply to not only match **machine manufacturer specifications**, but also to flexibly scale with their production demands.

The laser equipment is an **expensive and crucial part** of your metal fabrication process. When optimising input materials and parameters, working with our readily available experts is an effective way to boost your operations.



Considering?

Industrial Manufacturers often raise similar concerns.

How can I improve my quality and productivity?

High-purity lasing and assist gas help achieve less oxidation and smoother cutting. Our LASAL™ gas solutions ensure stable, surge-free flow that allows you to run your machine at **optimal cutting speed**.

How do I protect my laser cutting component?

Gas impurity levels strongly influence **component longevity**. Our LASAL™ range exceeds OEM machine manufacturer standards for moisture and hydrocarbon levels, avoiding internal contamination.

Can I set it and forget it?

Compressed air systems require **regular downtime** during maintenance of dryers, compressors and filters. Air Liquide teams manage maintenance of our gas systems, allowing you to focus on your cutting.

Do I need a lot of CAPEX to upgrade Air Liquide's gas system if I want an extra laser cutting machine?

It actually requires little to no CAPEX. You can either increase the top-up frequency or switch to a larger tank. We have multiple solutions to suit your needs.

The 3 Hot Debates of Assist Gas

#1 Compressed air vs. Nitrogen

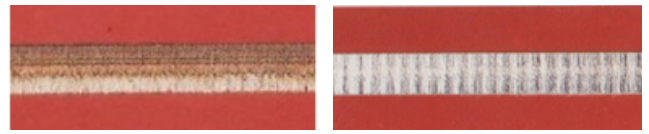
Choosing high purity Nitrogen (N₂) over compressed air gives **superior edge quality and silverish appearance**.

| Features | Compressed Air | High Purity N ₂ |
|---------------------------|----------------|----------------------------|
| Edge Quality (> 5mm) | ++ + + + | + + + + + |
| Cutting Speed | ++ + + + | + + + + + |
| Material Versatility | ++ + + + | + + + + + |
| Laser Component Longevity | ++ + + + | + + + + + |
| Power Savings | + + + + + | + + + + + |
| Maintenance | + + + + + | + + + + + |

Note: + + + + + indicates maximum performance

#2 N₂ and O₂ Gas purity

Air Liquide's pure gases delivers precision cuts, minimal oxidation, and maximum machine efficiency.

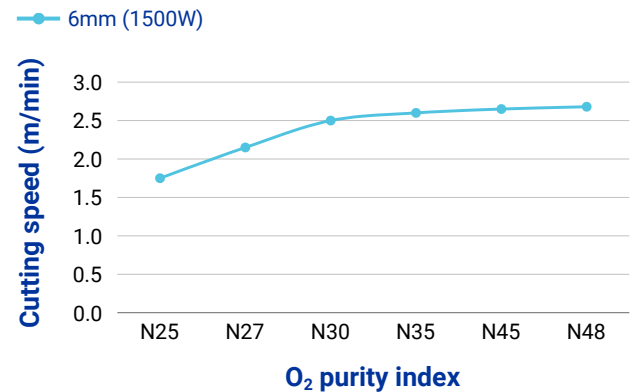


Industrial N₂

High Purity N₂

- **Uninterrupted beam quality** with 5N+ (> 99.999%) N₂ gas purity to reduce **oxidation**

Correlation of O₂ Gas Purity vs. Cutting Speed



- Significantly reduced **cost per part** with O₂
- Increased **productivity per hour** with O₂

#3 Edge quality

Mild Steel

0.5X-1X: N₂ produces better cutting finish



10mm CS cut by 12kW laser (0.83X) with N₂



10mm CS cut by 12kW laser (0.83X) with Air

Stainless Steel

0.5X-2X: Oxidation worsens with thickness



Smooth edge with N₂



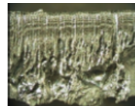
Oxidised appearance with Air

Aluminium Alloy

Compressed air produces more dross



Cut with N₂



Cut with Air

Our customers value...

High Purity

Air Liquide's LASAL™ range covers high purity lasing and process gases.

LASAL™ 2001

Quality-controlled N₂ perfect for cutting stainless steel under high pressure.

LASAL™ 2003

Quality-controlled O₂ dedicated to cutting carbon steels. Improves cutting speed by 10-40% with quality cut edges.

Our LASAL™ branded gases, equipment, and services are based on **worldwide standards** in order to be **acknowledged** by international laser manufacturers.



Supply Modes that Suit Your Operations

| Packaging Types | Cylinder | Pallet | Liquid Gas Cylinder (LGC) | Job Site Skid (JSS) | Microbulk | Bulk |
|------------------------------------|---|---|---|--|---|---|
| |  |  |  |  |  |  |
| Reference Monthly Consumption Rate | ≤ 500 Nm ³ | ≤ 1,000 Nm ³ | ≤ 2,000 Nm ³ | ≤ 3,000 Nm ³ | ≤ 5,000 Nm ³ | ≥ 5,000 Nm ³ |
| Pressure Range | 150-300 bar | 150-300 bar | 5-12 bar | 1-30 bar | 1-30 bar | 1-30 bar |

Air Liquide's Onsite Mixer

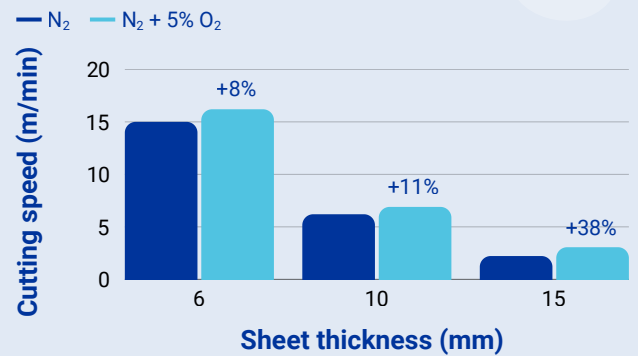


Aligned with OEM recommendations

Many Machine Manufacturers (OEMs) now specify Nitrogen-Oxygen (N₂-O₂) mixes for high-pressure laser cutting to enhance **productivity**.

- ISO 14175 compliant
- No electricity
- No buffer tank
- No Annual Calibration = **No Worries**

Cutting speed of low alloy steel with N₂-O₂



Auto Changeover for Cylinders and Pallets

Maximise your throughput

By ensuring a steady, uninterrupted gas supply pressure, you eliminate production downtime during cylinder swaps. This consistent pressure optimises cutting speed and edge quality, significantly reducing scrap. Achieve peak efficiency with a seamless, high-purity gas delivery system built for 24/7 operations.



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