Air Liquide SIG | an Air Liquide company

AUTOMOTIVE - METAL FABRICATION -
SHIP BUILDING - AEROSPACE - ELECTRONICS
ADVANCED MANUFACTURING

The Role of Gas in Precision Laser Cutting across Industries

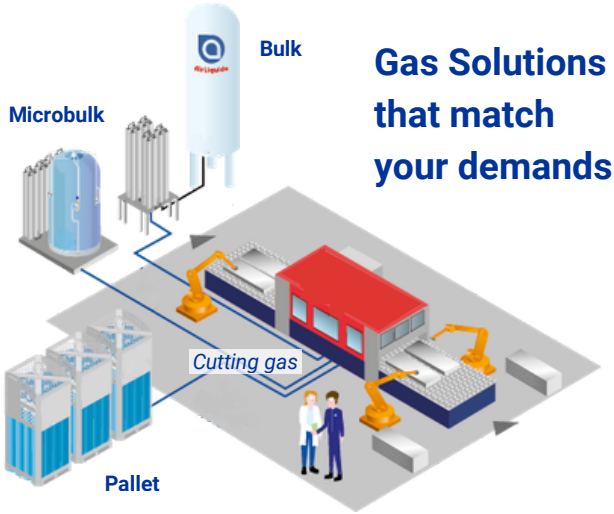
We deliver:

- **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.



Gas Solutions that match your demands

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

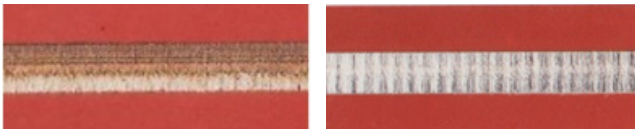
Choosing high purity Nitrogen (N_2) over compressed air gives **superior edge quality and silverish appearance**.

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 N_2 and O_2 Gas purity

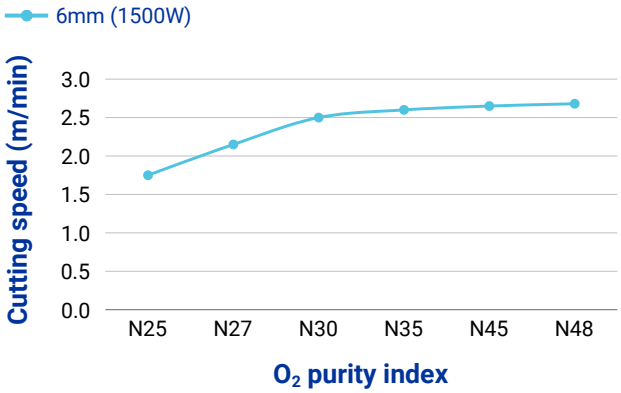
Air Liquide's pure gases delivers precision cuts, minimal oxidation, and maximum machine efficiency.



Industrial N_2 | High Purity N_2

- **Uninterrupted beam quality** with 5N+ (> 99.999%) N_2 gas purity to reduce **oxidation**

Correlation of O_2 Gas Purity vs. Cutting Speed



- Significantly reduced **cost per part with O_2**
- Increased **productivity per hour with O_2**

#3 Edge quality

Mild Steel

0.5X-1X: N_2 produces better cutting finish

10mm CS cut by 12kW laser (0.83X) with **N_2**

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

Stainless Steel

0.5X-2X: Oxidation worsens with thickness

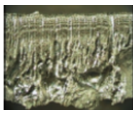
Smooth edge with **N_2**

Oxidised appearance with **Air**

Alluminium Alloy

Compressed air produces more dross

Cut with **N_2**



Cut with **Air**

Our customers value...

High Purity

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

LASAL™ 2001
Quality-controlled N_2 perfect for cutting stainless steel under high pressure.

LASAL™ 2003
Quality-controlled O_2 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 Nm³	≤ 1,000 Nm³	≤ 2,000 Nm³	≤ 3,000 Nm³	≤ 5,000 Nm³	≥ 5,000 Nm³
Pressure Range	150-300 bar	150-300 bar	5-12 bar	1-30 bar	1-30 bar	1-30 bar

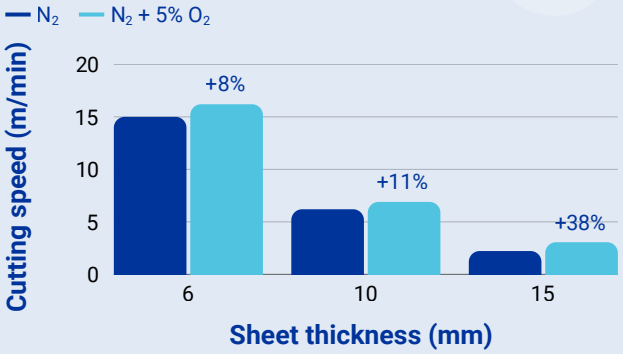
Air Liquide's Onsite Mixer

Aligned with OEM recommendations

Many Machine Manufacturers (OEMs) now specify Nitrogen-Oxygen (N_2-O_2) 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 N_2-O_2



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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