



INDUSTRY

LASER N₂ POWER

GAS GENERATORS FOR LASER APPLICATIONS

CATALOG 2020
ENG

Isolcell 60
YEARS
CONTROLLED ATMOSPHERE SINCE 1958



MORE THAN 60 YEARS OF EXPERIENCE

ISOLCELL: FROM PIONEERS TO INTERNATIONAL LEADERS

Since 1958 we have been studying and manufacturing systems that use the technology of the **Generated and Controlled Atmosphere**. We were the first in Europe to develop these technologies and apply them as a method of conservation of foodstuffs, then extending the use of controlled atmospheres as a technology that creates an advantage qualitative and technological in the process to different productive sectors: from the pharmaceutical to the chemical, from the molding of plastics to electromechanical, from oenology to laser cutting, from fire prevention to protection e conservation of artistic assets. We are recognized as world leaders, and we are part of an industrial group headed by the company Finanziaria Unterland Spa. Isolcell is present all over the world with a network of distributors and dealers. We operate according to the highest quality standards such as ISO 9001, ISO 14001, OHSAS 18001 and the range of our products complies with the most rigorous European and international directives. **Our strength is the ability to offer highly customized, reliable solutions** that reflect and sometimes anticipate it state of the art of technology available.

A NATURAL PROPENSION TOWARDS IMPROVEMENT AND EVOLUTION

1950 > 1960 > 1970 > 1980 > 1990 > 2000 > 2017 > 2018 > 2020

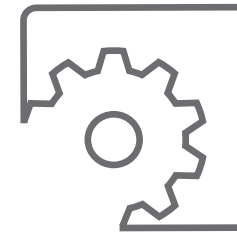
Our history is closely linked to the development of controlled atmosphere technologies. Our creed is constant innovation and the capitalization of the experiences gained in order to introduce innovative technologies in every sector. **Our solutions have often anticipated market demands and sometimes have become the reference point for new quality and technological standards.**





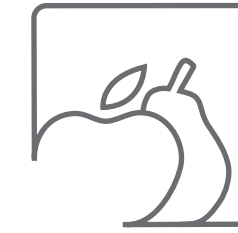
Isolcell ⁶⁰ YEARS

CONTROLLED ATMOSPHERE SINCE 1958



INDUSTRY DIVISION

Studies, designs and manufactures solutions for the market of industrial applications.



STORAGE DIVISION

Studies, designs and manufactures solutions for the market of fruits and vegetables storage.



FIRE PREVENTION DIVISION

Studies, designs and manufactures solutions for the market of fire prevention.



LASERPOWER

N₂ FOR LASER APPLICATIONS

- CUTTING
- WELDING
- 3D LASER PRINT
- ADDITIVE MANUFACTURING

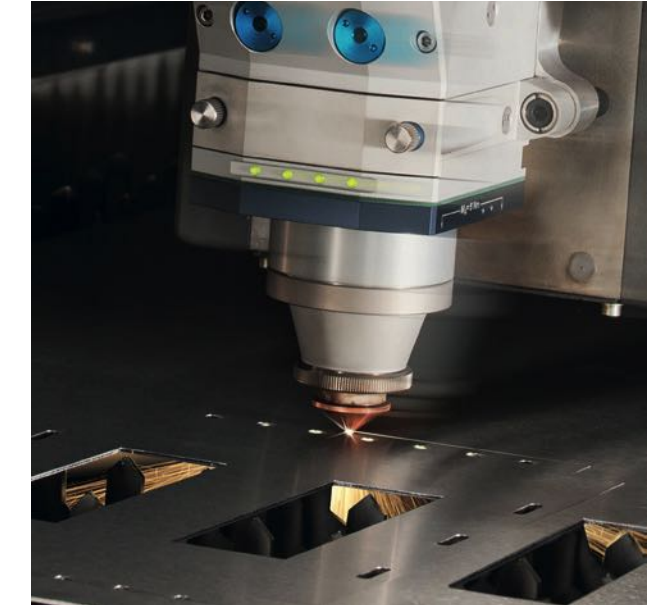
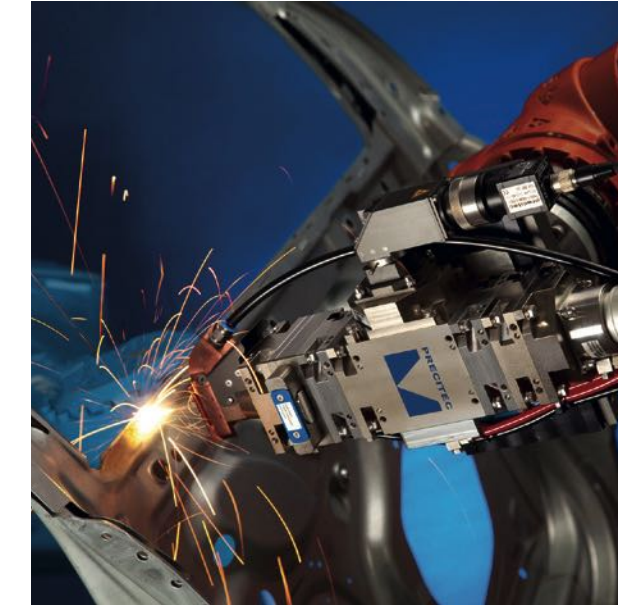
OUR SYSTEM IS TOTALLY:

- AUTOMATIC
- MODULAR
- EASY TO EXPAND

AND CUSTOMIZABLE FOR EVERY KIND OF NEED

HUNDREDS OF PLANTS SOLD WORLDWIDE ARE THE
GUARANTEE OF OUR TECHNOLOGICAL LEVEL

PURITY GUARANTEED BY ADVANCED ANALYSIS AND
PROTECTION SYSTEMS.



Thanks to the experience gained in over 60 years of research and development in treatment and atmosphere control technologies, Isolcell has created the LASERPOWER line, developed to produce nitrogen with 3 purity levels, 100, 50, 10 ppm.

the single machine and for big laser job shop with many laser machines. Our nitrogen generators are able to compensate for consumption with large fluctuations in flow through the gas storage in cylinder packs with pressures up to 300 bar.

For example, with 2 cylinder packs, we can store up to 480 m³, a solution that for many laser job shop can cover the entire day of laser cutting.

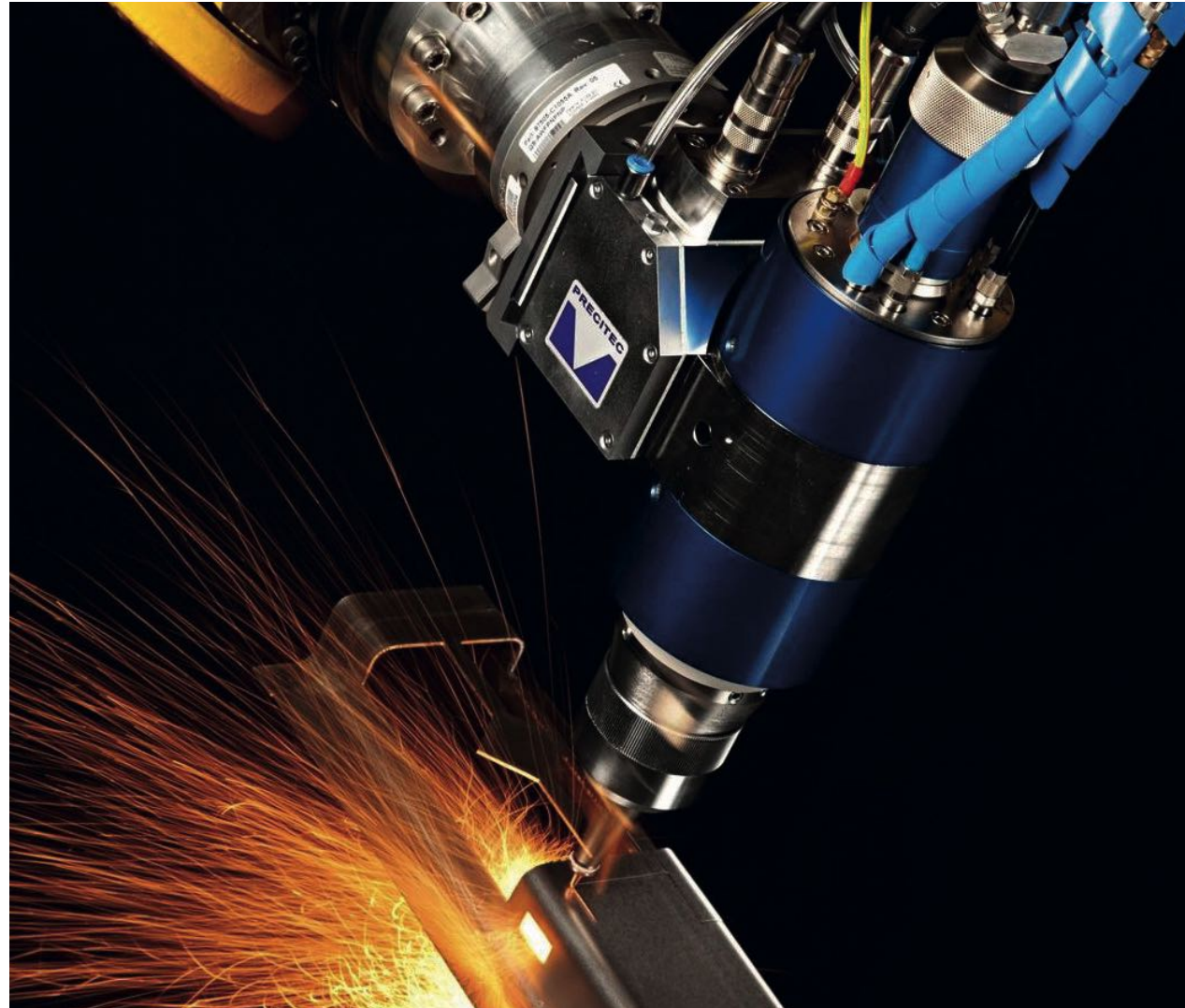
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LASER CUTTING

NITROGEN FOR LASER APPLICATION

Fiber optic technology has completely changed the laser industry, making nitrogen the primary assist gas in laser cutting processes.

Oxygen has therefore been overshadowed, today it is only used for laser cutting copper and high thickness mild steel.



The fiber laser technology, has introduced on the market high powers laser sources, 8-10-12 kw, are now on the catalog of almost all the manufacturers, and 20 kw laser sources are already in the testing phase, the prediction is to see them on the market within a few years. The high power, allows laser machines to achieve incredible performance, very high cutting speeds are reached, in some cases even 7/8 times higher than CO2 lasers, however, this is only possible by cutting with high pressure nitrogen.

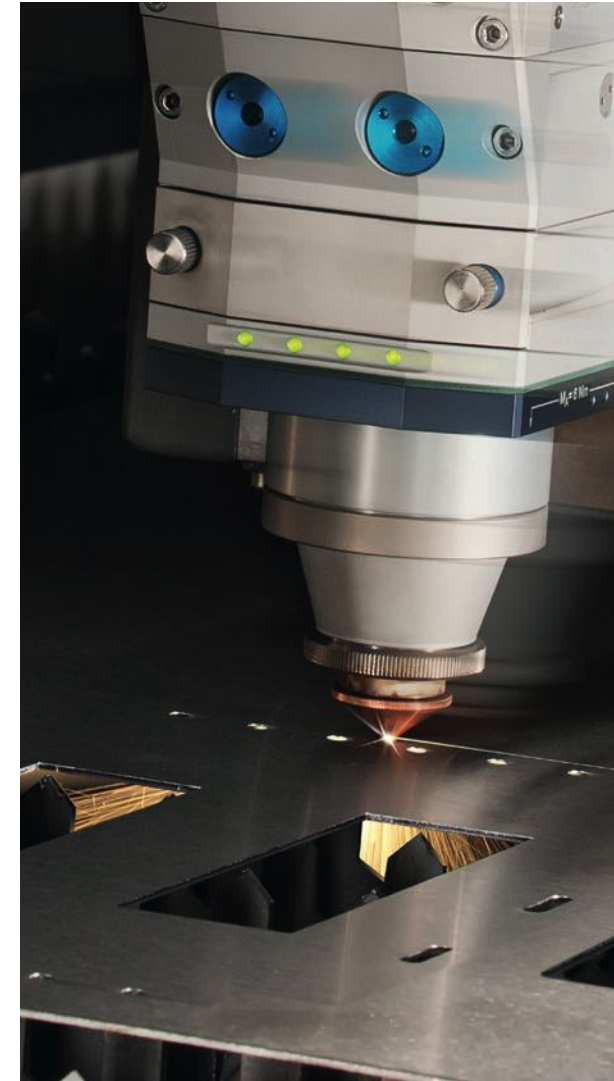
In the field of laser cutting is in progress then a total revolution, excluding the high carbon steel thicknesses, all other materials are cut using the nitrogen as the process gas. Where yesterday carbon steel was cut using oxygen low pressure, from 0.5 to 2 bar, today it is cut using nitrogen from 8.5 to 18 bar, we are faced with an obvious need to keep the cost of cutting gas supply under control .

By cutting carbon steel with nitrogen, you get a white cutting and totally eliminates the blue color film on cutting edge, which gave very bothersome to welding and painting.

* Images on page 9 by kind permission of Warcom Srl

NITROGEN AS PRIMARY GAS IN METAL LASER CUTTING

With much more powerful fiber laser sources, today it has also become strategic to cut mild steel with nitrogen.



N₂ ADVANTAGES OF CARBON STEEL LASER CUTTING

- Elimination of blue film on the cutting edge
- Cutting edge suitable for painting
- Less thermal stress of the material
- Increase cutting speed by 300% on average
- Piercing time lower up to 400%
- Total absence of contamination on the cutting edge

MATERIALS SUITABLE FOR LASER CUTTING WITH NITROGEN

Stainless steel -Duplex - Carbon Steel

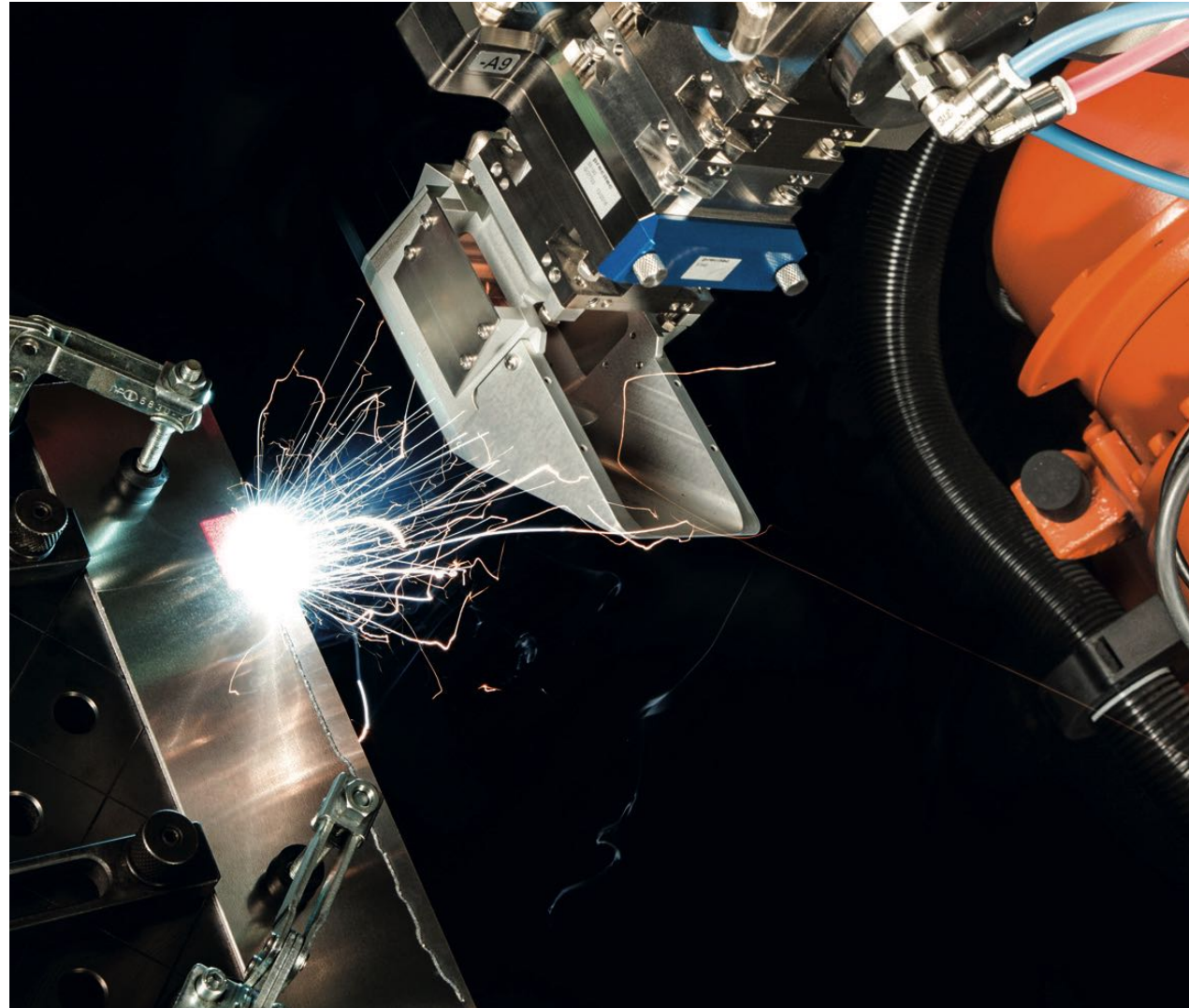
Galvanized and Prepainted Steel Sheet

Aluminium - Titanium - Brass

LASER WELDING

Nitrogen is an inert gas used in many laser welding applications as it offers both economic savings and technological advantages.

Applications on austenitic stainless steels, ferritic stainless steels and duplex steels, are preferring nitrogen instead of Argon, as it reduces or eliminates the formation of porosity in welding.



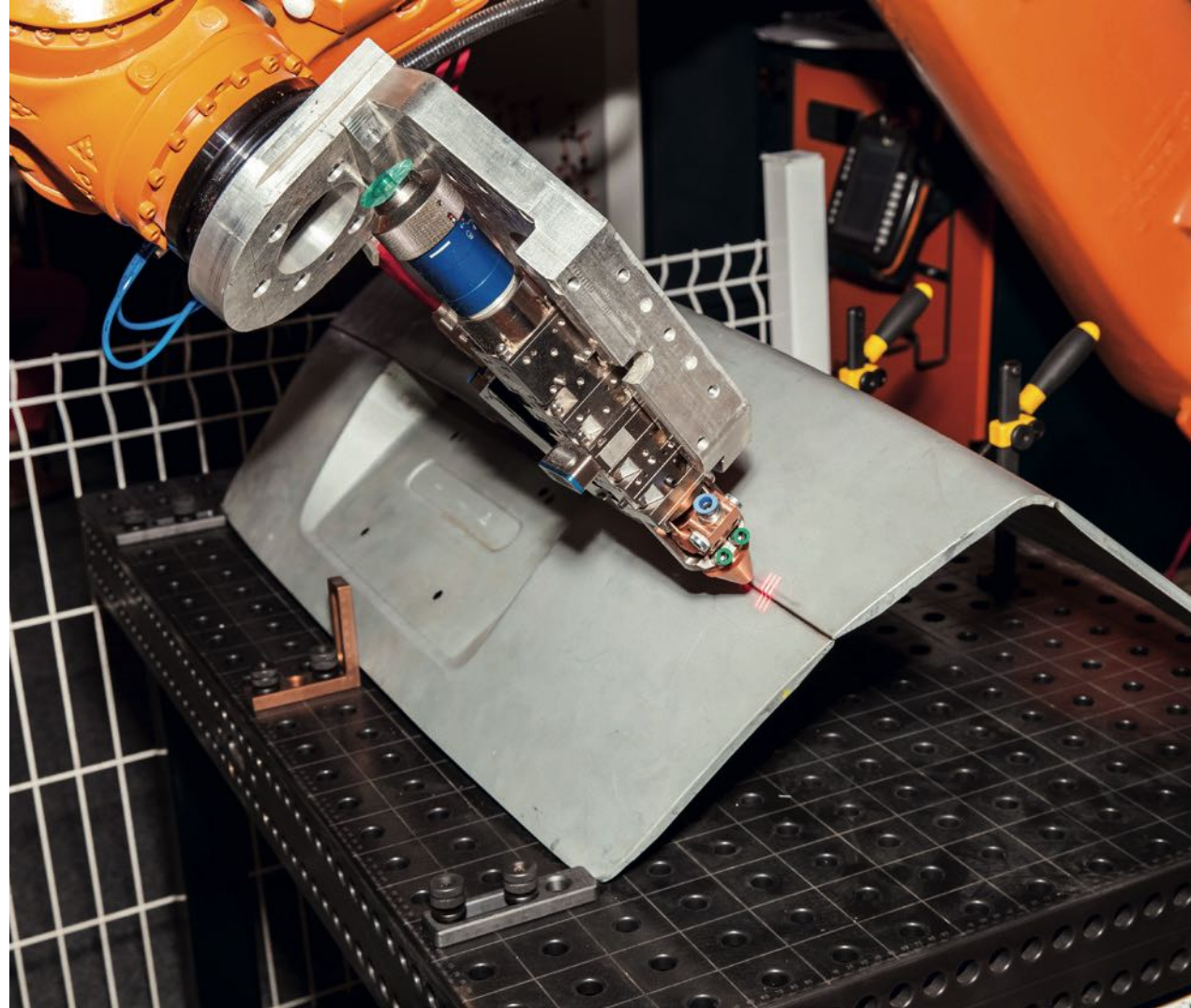
The laser welding is performed on many types of material, sometimes using pure argon or mixed, and in many other cases, using nitrogen. Nitrogen plays a very important role in laser welding applications on noble materials, among these are austenitic stainless steels, ferritic stainless steels and austenitic-ferritic steels (Duplex).

The arrival of fiber-optic technology in the market has prompted manufacturers of laser sources and welding systems to develop new applications where Argon and Helium are replaced by nitrogen, thus achieving considerable cost savings and in some cases even technological advantages.

Applications of great technological value, have been realized in the welding of steel pipes, some pipe manufacturers have decided to adopt this technology, to increase productivity and reduce energy consumption. Nitrogen was chosen for its ability to reduce or even zero the formation of porosity in the welded area, effectively creating a technological innovation.

NITROGEN AS INERT GAS IN LASER WELDING

Increasingly welding applications,
are developed to work with
nitrogen



NITROGEN ADVANTAGES IN IN LASER WELDING OF STEEL

- Porosity and defect reduction
- Low cost gas
- Less oxidation of the weld
- Higher welding speed

MATERIALS SUITABLE FOR LASER WELDING WITH NITROGEN

Austenitic stainless steels

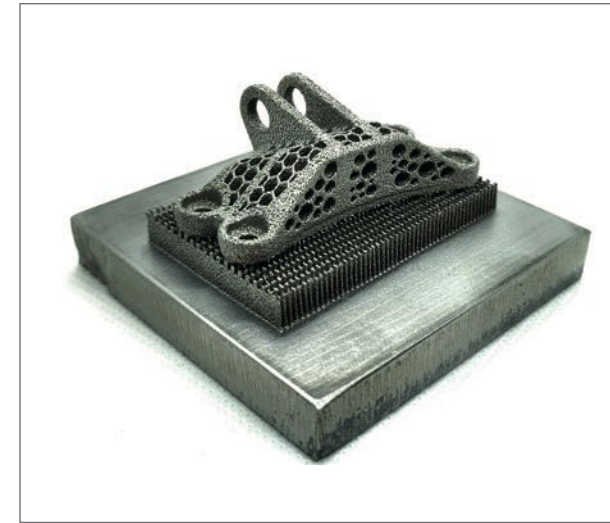
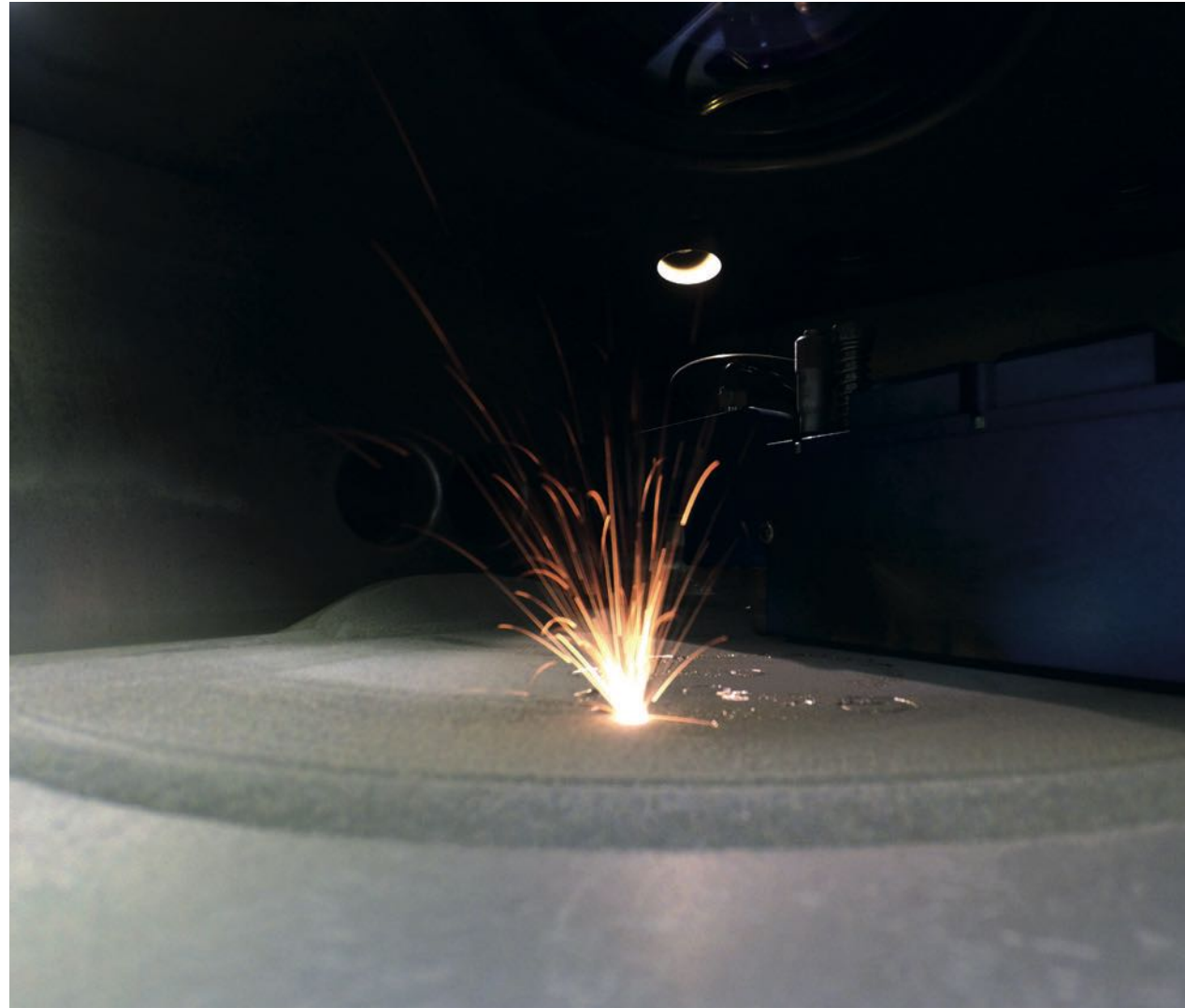
Ferritic stainless steels - Duplex steel

For other materials a technical evaluation is required

3D LASER PRINT ADDITIVE MFG

In the machine tool and laser industry, it has become very popular to talk about applications like 3D Metal Print and Additive Manufacturing.

In these processes, it is mandatory use an inert gas, in some cases Argon and in many other nitrogen, gas inert is necessary to maintain the state unaltered metal surface.



N₂ ADVANTAGES IN 3D METAL PRINT AND ADDITIVE MANUFACTURING

In recent years we are witnessing a real industrial revolution, both in the field of prototyping and in the mechanical processing sector.

Through a process of laser metal sintering, performed by a sophisticated 3D laser printer, metal elements of extreme complexity are reproduced, which often cannot be achieved even with CNC machine tools. This industrial process allows to pass from the drawing to the finished piece in a very short time, hours for simple pieces and a couple of days for the more complex ones.

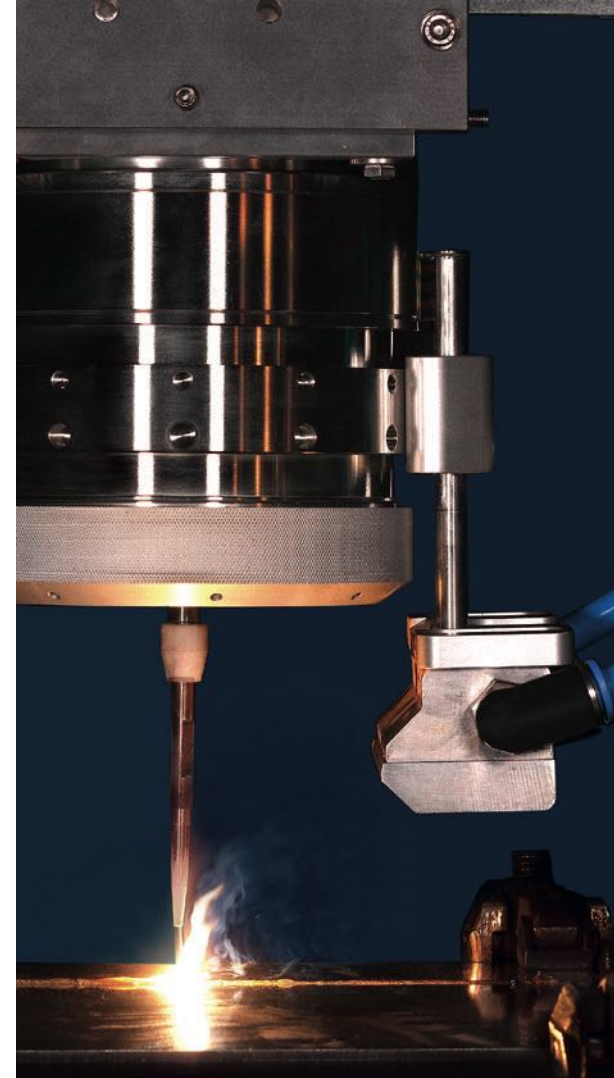
The components manufactured have mechanical strengths comparable to forged and machined elements, they are not experimental materials or laboratory tests, they are industrial productions that fully satisfy the needs of the spare parts, pharmaceuticals, medical prostheses, automotive, aerospace components, sports competitions, etc ...

The Isolcell nitrogen generators, meet the needs of this sector, making the user independent from gas suppliers.

*Page 17 Images courtesy of Sharebot Srl

NITROGEN AS ALLIED GAS IN ADDITIVE MANUFACTURING

In additive manufacturing processes and in the 3D laser printing with sintered materials, nitrogen is one of the primary gas.



NITROGEN ADVANTAGES IN ADDITIVE MANUFACTURING AND 3D PRINTING

- Porosity and defect reduction
- Laser process stabilization
- Low cost gas

MATERIALS SUITABLE FOR ADDITIVE MFG E 3D PRINT

Austenitic stainless steels

Ferritic stainless steels - Duplex steel

For other materials a technical evaluation is required

NITROGEN GENERATORS FOR LASER APPLICATIONS

THE IMPORTANCE AND ADVANTAGE OF SELF-PRODUCED NITROGEN ALWAYS AVAILABLE

LaserPower is a system for the production of inert gas used in laser processes. It is an economic and safe choice that can be modulated according to the customer's needs.

- FULL AVAILABILITY OF NITROGEN WHEN NEEDED
- HIGH PURITY GAS ADJUSTABLE
- LOW RUNNING COSTS

TAILOR-MADE SOLUTIONS

SERIES LP 300
Storage in cylinder packs up to 300 bar

SERIES LP 40
Storage in tanks up to 40 bar



LONG-LIFE
High energy efficiency, low degradation and maintenance

SERIES LP 300

The LP 300 series was created for laser cutting, the application for which the availability of high pressure nitrogen is always required. The cylinder packs, filled up to 300 bar, guarantee high autonomy, even over 1000 m³, in this case it is possible to cover variable consumption during the entire working day.

LP 300 is an expandable series that allows the system to be configured with multiple nitrogen generators in parallel and with multiple cylinder packs depending on the customer's needs.



FOR HIGH-PRESSURE LASER CUTTING AND VARIABLE CONSUMPTION



COMPRESSED AIR SYSTEM



NITROGEN GENERATOR SKID
LASERPOWER SERIES LP 300



CYLINDER PACKS

SERIE LP 40

The LP 40 series was created for laser cutting applications with constant consumption, or with moderate peaks.

With this configuration, the nitrogen is stored in tanks up to 5000 lt and maximum pressure 40 bar

LP 40 is an expandable series that allows the system to be configured with multiple nitrogen generators in parallel and with multiple tanks depending on the customer's needs.



FOR LASER CUTTING WITH REGULAR CONSUMPTION



COMPRESSED AIR SYSTEM



NITROGEN GENERATOR
SKID LASERPOWER
SERIES LP 40



NITROGEN TANK



CONTROL SYSTEM AND ACCESSORIES

LaserPower systems are supplied in two different configurations, LP300 and LP40. Both series can be equipped with optimized drying and filtration systems. We are able to design and supply containerized plug and play nitrogen generators, including the air compression unit.

OXYGEN ANALYZER

All of our nitrogen generators have a gas analyzer. The analyzer, with a zirconium oxide sensor, continuously measures the residual oxygen and ensures the production of nitrogen according to the purity set by the customer. The control system is modular and can be equipped with multiple communication interfaces (4-20mA current transmission, MODBUS, CAN). The optional modules allow to interface the nitrogen generator with the most various remote monitoring and control systems available on the market.

IWS REMOTE MONITORING - INDUSTRY 4.0 Our answer to the fourth industrial revolution.

Nitrogen auto production systems connected in an intelligent way, reliable in providing, remotely, the control of the parameters related to the operation of the entire generation system, from the compressed air supply to the final storage of the inert gas. Management and analysis of historical data. Possibility of receiving notifications of alarms via email.



CHOOSE ALL THE ADVANTAGES OF THE OPERATING LEASE



QUICK AND EASY



ACCESSIBLE TO ALL



SMALL INSTALLMENTS



IMMEDIATELY AVAILABLE

1

Choose the right **LaserPower** suitable for your company

2

Ask us for the **operating lease** instead of buying the nitrogen generator

3

Get a **quick authorization** without complicated practices.

4

Pay with **customized installments**

Isolcell 60 YEARS

CONTROLLED ATMOSPHERE SINCE 1958

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A company from
südtirol

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