Automatic welding and cutting

Global solutions to enhance your productivity

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Summary

Global automatic welding and cutting solutions

Automatic welding

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Air Liquide Welding proposes you global automatic welding and cutting solutions including the analysis of your needs and the proposal of standard or personalised solutions. These solutions include equipment, consumables and services in the respect of the safety and the environment of the operators.

### Processes
Air Liquide Welding provides its mastery and knowledge for all processes used for welding and cutting: MIG-MAG, Submerged Arc, TIG, plasma, TOPTIG welding or oxyflame and plasma cutting.

### Environment and protection
All the proposed equipment offer to the operators an answer including safety, protection, quality and comfort whatever is the welding or cutting application. They have innovative solutions to insure the use and the maintenance in the respect of legislations and existing standards to guarantee the excellent protection. Throughout its manufacturing Air Liquide Welding commits to develop appropriate solutions to produce in a cleaner way.

### Services
Air Liquide Welding leads you throughout the life of your equipment and with its technical center can offer to you: appropriate training programs, the optimisation of your parameters, the assistance in production as well as process management, follow-up in production, preventive maintenance contracts and teleservices.
Air Liquide Welding commits to develop and provide you equipment with a reduced electric consumption.

**Equipment**

Air Liquide Welding has developed a whole range of automatic welding and cutting equipment to answer all needs linked to the automation: machines, autonomous installations and positioning equipment. To guarantee the best possible quality all our equipments are assembled and tested before sending in your production facilities.

**Consumables**

Air Liquide Welding help you in the choice of the best welding consumables (wires, fluxes etc...) as well as gas and wear parts. This choice will improve the quality of your production.

**Quality approach**

For constant supplying to our customers high quality equipment and consumables, all our production units and our logistic activities are ISO certified.
Welding processes

**Technology:**

**TIG**

By means of an appropriate electric current, one causes an electric arc to flash in a stream of inert gas (argon or a gas mixture), between a tungsten electrode (infusible) and the workpiece. This inert gas, generally with an argon or helium base, isolates the molten metal and the surrounding hot areas from the air, and thus avoids any oxidation of the tungsten electrode. This welding process is used for welding of carbon steel, stainless steel, aluminium, titanium, copper...

The benefits are:
- good weld bead appearance,
- adapted for fine thickness,
- welding in all positions.

**PLASMA**

The contribution of energy necessary for welding is ensured by an electric arc in an atmosphere of plasma gene neutral gas. This arc established between an infusible electrode and the parts to be assembled is forced through a nozzle which constricts it mechanically and pneumatically. This welding process is used for welding of carbon steel, stainless steel, duplex, titanium, Inconel, nickel and alloys...

The benefits are:
- reduction in the preparation times for assemblies by eliminating beveling for thicknesses up to 10 mm,
- joint quality: Complete and regular penetration guaranteed, 100% X-ray quality,
- reduction of the heat affected zone thanks to the arc concentration,
- respect of the base material chemical composition,
- low distortion,
- reduction or elimination of finishing operations,
- excellent visual aspect.

**MIG/MAG**

With MIG / MAG welding process an arc is established between the workpiece and the electrode. Metal is transferred in the form of drops through the arc towards the workpiece. This welding process is used for welding of carbon steel, stainless steel, aluminium, copper...

The benefits are:
- easy implementation,
- high welding speed,
- welding in all positions,
- low welding investment cost.

**TOPTIG**

Based on principle of TIG process, an additional filler metal is fed through the nozzle directly into the arc with an angle of 20° to the electrode. This concept guarantees a high deposition rate and an efficient metal transfer. This welding process is used for welding of carbon steel, stainless steel, titanium, Inconel, electro-galvanized coated steel (brazen)...

The benefits are:
- TIG high quality welding and guaranteed spatter free,
- good global productivity,
- excellent appearance of the weld bead,
- torch accessibility and welding in all positions.

**SAW**

SAW (Submerged Arc Welding) is a welding process associating a electrode wire fuse with an additional protection of flux. So it is dedicated mainly for flat and fillet welding. This process is generally used for the welding of materials as carbon steel and stainless steel.

The benefits are:
- high deposition rates,  
- high penetration,  
- high duty cycle,  
- operator comfort: 
- excellent compact joints  
- low fumes and invisible arc.
Air Liquide Welding offers a large choice of welding processes through its products. Several criteria allow to define the best process adapted to the customer application, function of materials, thicknesses, technology, quality and productivity required.

**Activity sectors:**

- Energy
  - Petrochemical (pipe)
  - Thermal power stations
- Transport
  - Rail
- Shipbuilding
- Automotive
- Road (chassis, tank...)
- Aeronautic
- Agriculture
- Public works
- General industry

**Welding performances:**

<table>
<thead>
<tr>
<th>Process</th>
<th>Carbon Steel</th>
<th>Stainless Steel</th>
<th>Aluminium</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIG</td>
<td>1 pass*</td>
<td>&gt; 1 pass</td>
<td>&gt; 1 pass</td>
</tr>
<tr>
<td>TOPTIG</td>
<td>&gt; 1 pass</td>
<td>&gt; 1 pass</td>
<td>&gt; 1 pass</td>
</tr>
<tr>
<td>PLASMA</td>
<td>&gt; 1 pass</td>
<td>&gt; 1 pass</td>
<td>&gt; 1 pass</td>
</tr>
<tr>
<td>SAW</td>
<td>&gt; 1 pass</td>
<td>&gt; 1 pass</td>
<td>&gt; 1 pass</td>
</tr>
<tr>
<td>MIG/MAG</td>
<td>&gt; 1 pass</td>
<td>&gt; 1 pass</td>
<td>&gt; 1 pass</td>
</tr>
</tbody>
</table>

* indicative value depending on materials, preparations, applications...

**Comparaison of the main welding processes:**

<table>
<thead>
<tr>
<th>Choice criteria</th>
<th>TIG</th>
<th>TOPTIG</th>
<th>PLASMA</th>
<th>SAW</th>
<th>MIG / MAG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td>Speed</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td>Spatter</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td>Completion</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td>Cost</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
</tbody>
</table>

[Colors: Excellent (🟢), Good (🟢), Fair (🔴)]
The PLASMA/TIG solutions are often used to weld vessels or pipes in various domains as food, transport, petrochemical or aeronautical industries. Air Liquide Welding proposes a large range of machines adapted and dedicated to each activity sector.

**Mechanisation machines**
with TIG or plasma process for automatic welding of pipes or vessels with low diameter.

**Tricathode installation**
for in line pipe welding with high productivity level.

**Autonomous and multi-purpose welding installation**
in monocathode Plasma/TIG version or in bicathode Plasma + TIG configuration for higher productivity.

**CITOTURN lathe**
with microplasma installation used for high precision welding of thin noble metals.
Plasma/TIG seamer benches
for longitudinal welding of flat sheet metal or large vessels (internal or external welding)

Plasma/TIG column and booms with rotators or turntable
for circumferential, cornice, flat or vertical down welding

Specific machines
built from standard equipment and adapted to the customer applications

For all other specific requests: consult us.
Applications:
Multi-purpose welding installation to enable the following processes to be used in automatic applications:
- DC TIG with smooth or pulsed current,
- AC TIG with variable polarity,
- DC plasma with smooth or pulsed current.

This installation meets the highest quality standards for welding and productivity for industries as diverse as boiler-making using stainless steels, aeronautics using noble metals, chemical engineering, energy production, transformation and transport as well as prefabrication of gas and petrol pipelines etc.

TIG / PLASMA process and performances:
The Plasma process is the ideal extension of TIG for thicknesses greater than 3 mm.
It ensures the same level of quality, higher performances and 100% penetration thanks to Key-Hole technology. The diagram shows the different welding performances according to the materials and thicknesses.

Maximum thickness which can be welded in a single pass is reduced for:
- vertical down and cornice (2G) welding positions,
- small diameter and very thick tubes.

Improvement productivity with PLASMA +TIG Process
The Plasma + TIG process is specially designed for assembling panels for the prefabrication of vessels longer than 4 meters and carrying out circular welds for diameters greater than 2 meters.

This process of using 2 torches in tandem gives a productivity gain of 30-50 % over a single-torch plasma installation.

The “plasma” arc penetrates the butt-jointed panels. The “TIG” arc equipped with filler metal, electromagnetic arc oscillation and a gas trailing shield produces a perfect surface finish which can often be left without any further treatment.
Installation

NERTAMATIC 450 Plus integrates the management of the complete welding process controlled from a central panel, robust and easy to use with a clear text LCD screen display of 4 lines of 20 characters which allows:
- storing of 50 welding programs (voltage, current, wire speed, plasma gas, movement speed, magnetic oscillation...),
- parameters modification during welding,
- cycle start/stop, manual control of gas/wire/AVC/ movement,
- complete management of key hole closure,
- pulse current settings for fine thickness welding and vertical or cornice welding,
- easy integration and communication with external PLC thanks to Open PLC function,
- import/export via USB key for uploading or downloading programs,
- edition of programs on external computer, thanks to Off-line software.

HPW NERTAMATIC 450 is an industrial PC allowing the global management of the complete welding process and machine axes. Its main characteristics are:
- touch screen with a friendly and intuitive interface allowing the programming, controls and follow up,
- numerical management of the welding process, its associated movements and drive units via industrial PC,
- traceability, a program integrates all the parameters allowing the repetitivities of the welding operation,
- quality follow-up in option, record and storage of the essential parameters of welding (current, voltage, gas, wire feeding, movement),
- wireless remote control (option),
- import/export via USB key for uploading or downloading programs and WPS edition.

TIG/PLASMA equipments

Air Liquide Welding offers two types of control panel.

NERTAMATIC 450 Plus

HPW

Performances
TIG and Plasma

POWER SOURCE
The power source NERTAMATIC 450 Plus centralizes the global management of the welding cycle: the control of the current, the voltage, the wire speed, the gases flow, the magnetic oscillation and the welding speed.

An optional AC module can be integrated to control the current for variable polarity aluminium welding.

TORCHES
High performance water cooled torches to ensure quality and stability of the process and its equipments.

Torches are equipped with quick connection systems for easy change and maintenance.

MEC4:
For TIG welding:
- 500 A at 100%,
- standard electrode simple to replace,
- twin HF ignition for better arc striking.

Options:
- gas trailing shield to protect welds of sensitive metals,
- magnetic arc oscillation equipment.

PLASMA GAS
For thicknesses greater than 2.5 mm, PLASMA welding uses the Key-Hole technique.

If one cuts the arc current off instantly, the key hole remains in the work piece.

In order to remedy this disadvantage on circular welding, and in order to make the Key-Hole disappear, it is necessary, before extinguishing the arc, to gradually reduce the torch’s plasma gas flow simultaneously with the arc current. This made possible with a numerical valve controlling the plasma gas cycle.

SP7:
This torch is the reference in the market, for soft and key hole plasma welding:
- 450 A at 100%,
- standard electrode simple to replace and self-aligning,
- cooled nozzle ensuring long life time of consumables.

Options:
- gas trailing shield to protect welds of sensitive metals.

WIRE FEED DEVICE
It is often necessary to feed the molten pool with metal during the welding operation in order to prevent the seam from showing hollows, to supply soft steels with deoxidizing elements and for succesive seams.

The system allows to quickly and accurately adjust the wire impact point in the welding pool thanks to micrometer slides.

The adjustment can be manual or motorised for remote control.

### Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duty cycle</td>
<td>450 A @ 100%</td>
</tr>
<tr>
<td>Pulsed current</td>
<td>1 to 100 Hz</td>
</tr>
<tr>
<td>AC current</td>
<td>50 to 200 Hz</td>
</tr>
<tr>
<td>Data exchange</td>
<td>USB</td>
</tr>
<tr>
<td>Primary power supply</td>
<td>3 x 230 V - 400 V - 415 V - 440 V / 50-60 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>22 kVA</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP23</td>
</tr>
<tr>
<td>Weight and dimensions</td>
<td>270 kg, 1200 (h) x 500 (w) x 850 (d) mm</td>
</tr>
</tbody>
</table>

### Carbon steel

<table>
<thead>
<tr>
<th>Wire Type</th>
<th>Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel</td>
<td>Ø 0.8 / 1.0 / 1.2 mm</td>
</tr>
<tr>
<td>Titanium wires</td>
<td>Ø 0.8 / 1.0 / 1.2 mm</td>
</tr>
<tr>
<td>Aluminium wire</td>
<td>Ø 1.2 / 1.6 mm</td>
</tr>
</tbody>
</table>

### Max wire speed

6 m/min
**AVC SYSTEM**

A constant distance between the torch and the workpiece is a key of quality to ensure a constant penetration and bead width. The Arc Voltage Control (AVC) keeps this constant distance by automatic regulation of the arc voltage: function fully integrated into the Air Liquide Welding system composed of an electrical vertical slide travel 200 mm.

**OSCILLARC PLUS**

**Arc deviation**

This technique is used to electrically deflect the TIG arc forward in the welding axis, increasing the speed by 30 to 50% for thicknesses of less than 2 mm.

**Arc oscillation**

Arc oscillation is used to deposit metal over areas up to 15 mm wide to fill bevels or reconstitute surface coating.

**COOLING UNIT**

The FRIOJET 300 cooling unit is compact with coolant constant supply, in closed circuit, used to cool down torches. Water circulation in closed circuit makes it possible:

- to prevent the deposit of boiler scale in conduits and in the torches to be cooled,
- to save water, to have a constant water flow-rate,
- the regulation of water temperature provides a constant production quality and extends significantly useful life of torches and of wearing parts (steady temperature).

Cooling unit equipped with display of temperature and control of return flow plus coolant level.

**HOT WIRE**

Productivity improvement by increasing the deposition rate

For filling bevels 40 mm deep, the use of hot filler wire provides a good solution and is particularly suited to applications where a high specification of the welded joint is required. This special technique uses an auxiliary current to bring the end of the wire to near its melting point.

Viable for plates of thickness 10 mm and above, the use of hot filler wire enables 2.5 to 3 kg of metal to be deposited per hour for filling bevels using multiple passes or for quality hard-surfacing:

- additional power source for the hot wire current between 60A and 120A,
- no additional wire feed thanks to direct connection on the cold wire system.
Welding in line pipe

Applications:
Air Liquide Welding proposes solutions for in line pipe welding to be integrated into pipe mills:
- monocathode installation with MEC4 TIG torch for tube thickness 0.5 to 3 mm,
- monocathode installation with SP7 plasma torch for tube thickness 2.5 to 8 mm,
- tricathode installation with E16 torch for tube thickness 0.5 to 1.5 mm,
- tricathode installation with E25 torch for tube thickness 1 to 3.5 mm,
- tricathode installation with combination of TIG + PLASMA + TIG torches for tube thickness 2.5 to 8 mm.

Piping: Chemical, Petrochemical, Nuclear power industry, Boilers and heat exchanger, Off shore, Cryogenic, Shipbuilding, Military and Aeronautic...
Structure: Industrial building, Commercial center...
Ornamental: Door, Windows, General railing, Furniture, Decoration...

Typical performances:
- Welding speed * m/min

TRICATHODE
- TRICATHODE Possible Recommended
- E16
- E25
- TIG + PLASMA + TIG torches assembly

MONOCATHODE
- TIG
- PLASMA

* Welding speeds are indicative and depend on the material, the quality required, and the quality of the pipe mill.

TRICATHODE process:
TRICATHODE welding consists of a sequence of three dual-flow TIG processes or a combination of TIG and Key hole plasma processes using a special welding torch. The first arc is fitted with an electromagnetic arc deviation device.
Compared to other welding process used for this type of fabrication, Air Liquide Welding’s TRICATHODE process is of particular interest in terms of performance flexibility, investment/performance ratio and operating costs.

Tricathode Dualgas flux process:
Installation

**Monocathode MEC4 or SP7**
Package dedicated to TIG or plasma process without wire feed device and arc voltage control, the pipe line machine assuring a constant arc height.
Main components of the package:
- power source 450 A at 100%, smooth current welding,
- MEC4 TIG torch or SP7 plasma torch,
- remote control,
- HF starting unit.

**Tricathode E16 or E25**
The basic system consists mainly of:
- 3 x power sources 400 A each at 100%, smooth current welding,
- E25 or E16 welding torch with combinaison of 3 x TIG dual flux arcs,
- Control panel with current control, digital voltage and current displays for each arc, adjustment and displays of gas flow setting, adjustment of electromagnetic arc on first electrode,
- HF starting unit,
- welding head mounting assembly.

**E16 torch**
- Implements the dual flow tricathode process
- 200 Amp per electrode (total 600 Amp)
- Independant adjustment of each electrode to the shoe (one piece design)
- Electrode tungsten Ø 2.4 mm and 3.2 mm
- Typical application (wall thickness): 0.5 to 1.5 mm

**E25 torch**
- Implements the dual flow tricathode process
- 400 Amp per electrode (total 1200 Amp)
- Independant adjustment of each electrode to the shoe (one piece design)
- Electrode tungsten Ø 3.2 and Ø 4 mm
- Typical application (wall thickness): 1 to 3.5 mm

**Sp7 plasma torch**
- 450 A at 100%
- Typical application (wall thickness): 2.5 to 8 mm

**Tricathode TIG + PLASMA + TIG**

**Tricathode TPT N450**
The basic system consists mainly of:
- 3 x power sources NERTAMATIC 450 Plus,
- 450 A each at 100%, smooth or pulsed current welding,
- combination of 3 x welding torches: TIG + PLASMA + TIG process,
- control panel with current control, digital voltage and current displays for each arc, adjustment and displays of gas flow setting, adjustment of electromagnetic arc on first electrode,
- torches interface including HF source,
- welding head mounting assembly.

**TPT welding head**
- Two MEC4 TIG torches
- One SP7 plasma torch
- Independant adjustment on each torch
- Typical application (wall thickness): 2.5 to 8 mm
Applications:
TOPTIG process is a major innovation in the world of automatic welding. Developed in the Air Liquide Welding research center, TOPTIG is a new process development from arc welding classical solutions. This new process can be used effectively on carbon or stainless steel plates up to 3 mm or on galvanized sheets with weld brazing. The activities sectors are:
- automotive subcontracting,
- fine boiler making,
- metal furniture,
- aeronautics subcontracting.

Process
TOPTIG allows a better accessibility for welding complex structures. It offers very good performance concerning speed, and quality (spatter free).

TOPTIG innovative process principle
In TIG automatic welding mode, the filler wire is fed into the weld pool in front of the torch. In the TOPTIG process, the filler wire is fed through the welding nozzle in the area where the temperature is the highest. The wire therefore melts into small droplets exactly as in the MIG process.
The use of a pulsed current synchronized with wire gives better control over the welding operation.

Torch accessibility
Compared with a traditional automatic TIG torch, the compactness of the wire lead-in incorporated into the nozzle gives accessibility at an angle comparable with that obtained using a MIG/MAG torch.
This increases the scope for robotization and extends the range of workpieces which can be welded automatically.

Installation
Air Liquide welding offers two types of TOPTIG installation with flat or pulsed current. It can drive a constant or pulsed wire feed which is synchronized with the welding current.

TOPTIG 220DC
TOPTIG 220 DC supplies 220 A at 100% duty cycle. The RC-JOB permits a complete welding cycle to be programmed. Program selection and chaining is carried out by analog signals.

TOPTIG NERTAMATIC 450 PLUS
NERTAMATIC 450 Plus supplies 450 A at 100% duty cycle. The console permits a complete welding cycle to be programmed. Program selection is carried out by binary code, and program chaining by pulse. Torch capacity limited to 350 A at 100% using a water cooled nozzle.
Microplasma

Manual and automatic welding applications

For the manual or automatic assembly of thin precious metals in the thickness range: 0.05 - 1.0 mm (stainless steels, Inconel, titanium, silver and gold alloys). For the electric and electronics components industries, small containers, metal filters and tool repairs as well as sectors of the horology, goldsmith and medical industries.

Installation

PLASMAFIX 51 Characteristics:
- user friendly front panel,
- multilingual display,
- programmable welding cycles,
- 100 programmes memory,
- configuration adapted to the user’s needs,
- programme print out,
- also for TIG welding,
- equipped of RS 232 for coupling a P.C or printer,
- cooling by a liquid,
- tungsten electrodes: Ø 1.0 or 1.6 mm, 75 or 150 mm long

Installation with cooling unit on trolley

Torch maintenance box with set of wear

Torch

Two types of torch for use in manual or automatic mode:

SP45 automatic
SP45 manual

An SP20 manual or automatic torch can be supplied. This weights considerably less and has a maximum current rating of 20 A at 100%.

Complements

• Welding lathes
  Precision circumferential machine for microplasma and TIG welding.

• Double welding command pedal
  (replaces the torch’trigger)

• Trigger and current adjustment pedal

• Trolley
  Able to receive the PLASMAFIX 51 power source, the cooling unit and two gas bottles.
Plasma / TIG machines

The Plasma / TIG applications are multiple and varied, here some examples of machines which answer to the main customer needs.

Assembly of flat sheet metal and closure of vessel sections

Seamer bench for longitudinal welding.
The vessel is welded by plasma / TIG or plasma + TIG process inside the INTER seamer bench. The operator can see the joint and adjust the position of the torch thanks to a video camera device. An infeed and outfeed table help setting up and handling of the metal sheets.

Assembly of vessels by conventional technique

Column and boom with rotators for circumferential welding.
To assemble 2 vessels, it’s possible to put them on rotators and the plasma column and boom carries out the circumferential welding. Safety and operator comfort are guaranteed thanks to the control of the welding operation from the ground.

Assembly of vessels in vertical position

This technique is used mainly for large diameter vessels or products whose rigidity is low (ratio diameter, thickness, dimension).
The vertical assembly facilitates the handling of workpieces and reduce tooling needed.

Column and boom with turntable for longitudinal and circumferential welding:
- longitudinal in vertical down position,
- circumferential in cornice position
Elliptical tank
The plasma torch movement is controlled by the column and boom.
The Headstock HLM+F allows the rotation of the tank and ensures a high flexibility for the mounting and the holding of the piece.

Pipe prefabrication assembly
Mechanisation machine with plasma process and HPW control to weld pipes with elbows and flanges.
The work piece is positioned on the X-rotators and the motorised headstock carries out the rotation.

Pipe production full automatised process according to ASME codes
Complete welding system with:
- Column and boom equipped with plasma + TIG process for external longitudinal and circular welding.
- Fixed internal boom equipped with TIG head for internal remelting.
- Pipe holding device with rotators on carriages to turn and move the pipe.
SAW machine range

The SAW equipments are used in various domains from the simple head for any autonomous installation to complete welding systems for infrastructure, energy and piping industries.

Air Liquide Welding developed turnkey solutions for the main applications we can found in these sectors of activity.

MEGATRAC SAW carriage offers the possibility to weld in restricted area and on large pieces. It is the ideal economical solution for welding on site or in workshop.

The H beams can be welded with the Air Liquide Welding dedicated solution: **BEAM-MATIC**.

Some dedicated platforms exist as the **wagon wheels cladding** applications.

The **Autonomous SAW head** can be combined with all external support.
The Lamp post machine allows an increase of productivity in this hard competition domains.

For all other specific requests: consult us.
Applications:
Process for welding and hard surfacing of low alloyed carbon steel, stainless steel and refractory steel. It combines productivity, quality and operator comfort. It is used in thicknesses from 3 to 300 mm and provides a high welding speed and high deposition rates. With one or more wires, it is found in many industries: infrastructure, shipbuilding, offshore pipe mill, heavy duty pressure vessels, energy...

Process performance

Values are indicative and depend on the material and the quality required.
SAW equipments

Air Liquide Welding offers a complete range of equipment combining performance, flexibility of use and ensuring high reliability in welding cycle management. Subarc 5 and D2C SAW installations allow:

- welding with direct current (DC) according to horizontal or drooping power source characteristics,
- welding with alternating current (AC) according to drooping power source characteristics.

SUBARC 5 control

For the most demanding users, a control box with:
- rugged, simple and user friendly controls,
- digital read-out of three parameters: current, voltage and wire speed,
- presetting of voltage and welding current,
- storage and read-out on digital displays of current and welding voltage,
- wire/workpiece short-circuit detection and display in manual wire feeding mode minimizes mechanical stresses on wire feed head supports.

Power unit box

The installation SUBARC 5 is completed with a power unit box installed to the top of the power source away from “sensitive” areas of the installation (near the arc).
It carries out the full control of all welding cycle time-delays. The controls for configuring the installation are accessible on the front panel of the power module.

Software for analysis and recording of welding parameters (option)

The installation can be equipped by software for the analysis and recording of the welding parameters (current, voltage).
Two parameter display screens are available; the first provides the trace of both current and voltage, the second provides a display of the welding data: current, voltage and energy.

D2C SAW: Digital Cycle Control

Digital welding system for the complete management of the machine and the main parameters of SAW welding (current, voltage, wire speed, welding speed) from only one cycle control:
- centralized console to manage welding process, machine cycle and integrated peripherals as laser spot, crossed slides of the head, seam tracking...
- large graphic display on touch screen with user friendly and intuitive interface allowing the programming, controls and follow up,
- easy setting of the machine,
- data saving via ethernet connection.

Remote control RC-MATIC

For immediate action throw push buttons, a remote control can be added to the D2C SAW welding system. Connected at the welding head throw a cable of 5m, the operator can get the useful basic function of SAW head management. Fixation of the remote control on steel basis by magnet.

Remote service

This complement facilitates the maintenance of the machine thanks to a remote assistance of ALW through a network connection.
The customer can save downtime of production after failures or can have welding expertise assistance for the SAW process.
SAW: Submerged Arc Welding

POWER SOURCES
A complete range of power sources DC or AC available for the various SAW applications:
- rugged, reliable, suitable for aggressive industrial surroundings,
- fan cooled, fitted with thermal cut-out,
- easy to move using crane or forklift,
- quick connection,
- remote control.

<table>
<thead>
<tr>
<th></th>
<th>STARMATIC 650 DC</th>
<th>STARMATIC 1003 DC</th>
<th>STARMATIC 1303 DC</th>
<th>STARMATIC 1003 AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duty cycle at 100%</td>
<td>650 A - 44 V</td>
<td>1 000 A - 44 V</td>
<td>1 300 A - 44 V</td>
<td>1 000 A - 44 V</td>
</tr>
<tr>
<td>Primary power supply</td>
<td>3x 400 - 440 V / 50-60 Hz</td>
<td>3x 380 - 400 V / 415 V / 50-60 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>34.5 kVA</td>
<td>69 kVA</td>
<td>103 kVA</td>
<td>122.7 kVA</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP 21</td>
<td>IP 23</td>
<td>483 kg</td>
<td>IP 21</td>
</tr>
<tr>
<td>Weight</td>
<td>247 kg</td>
<td>394 kg</td>
<td>483 kg</td>
<td>540 kg</td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>692 x 565 x 914 mm</td>
<td>900 x 650 x 950 mm</td>
<td>1 120 x 692 x 1 170 mm</td>
<td></td>
</tr>
</tbody>
</table>

Tools and wire feeding accessories
A wide choice of tools and accessories for the wire feeding with wire lead-ins and nozzles dedicated to standard or heavy duty use.

<table>
<thead>
<tr>
<th></th>
<th>SD range</th>
<th>HD range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single wire</td>
<td>Standard duty</td>
<td>Heavy duty</td>
</tr>
<tr>
<td>Ø 1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 2.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 3.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 5.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Twin wire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 x Ø 1.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 x Ø 1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 x Ø 2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 x Ø 2.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tandem</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 3.2 + Ø 3.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 3.2 + Ø 4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 4.0 + Ø 4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 4.0 + Ø 5.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 5.0 + Ø 5.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 3.2 + 2 x Ø 2.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 x Ø 2.4 + 2 x Ø 2.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DX7 wire feed unit for spools and drums
A simple and rugged mechanical assembly, easy to configure to suit application: with single wire Ø 1.6 to 5.0 mm or twin wires Ø 1.2 to 2.4 mm.

The wire feed unit with accessories is mounted on a tubular support with collars allowing a quick and easy adjustment of the wire in the joint.

This support authorizes the positioning without misadjustments in welding positions required:
- rotation axis +/- 90° in tool center for a circular or longitudinal welding,
- rotation axis +/- 45° for a fillet welding.
SEAM TRACKING

TRACKMATIC device guarantees the good positioning of the torch in the joints to be welded without operator intervention. A sensing probe finger or an inductive sensor detects positioning errors (height or alignment) and commands the necessary corrections required to the torch trajectory thanks to motorised slides travel 100 - 200 or 500 mm.

Whilst increasing productivity, it ensures a constant weld quality, a reduction in repair operation and easier use for the operator.

FLUX MANAGEMENT

Equipment to improve productivity and ensure operator safety.

Flux recovery equipment
A compact unit to reduce significantly manual refilling of the flux feed hopper 10 liters powered by compressed air. Pressure 4 to 6 bar. Venturi device completed with tank and filter cartridge for recovery and dust filtration.

Flux supply equipment
Pushed flux supply system providing a greater welding autonomy due to the flux hopper capacity of 70 L. To avoid any risk of humidity recovery in the flux, ALW can propose a system equipped with a device to keep the temperature of the flux up to 50 °C.

Centralised recovery
Centralised flux recovery system through pushed flux device and electrical turbine with filtration of flux dust. Ideal system for heavy duty application with reduced flux consumption and minimum flux handling. The system can be equipped with a device to keep the temperature of the flux up to 120 or 200 °C.

VIDEO CAMERA

Combined with a laser spot, the video camera unit allows to view the welding area and can remotely control the positioning of the torch in the joint. This is an essential tool for welding in difficult access area like inside a tank of small diameter. The equipment is supplied with a spot light to illuminate over viewed area, and a color LCD industrial screen high definition 15”.

LASER SPOT

To show the wire point of impact relative to the joint on the workpiece. The spot projects an illuminated point in front of the electrode wire for guiding. One spot is used for horizontal alignment and the association of two spots make it possible to monitor the horizontal position and the vertical distance between the torch and the workpiece.
MEGATRAC 6

Automatic welding often requires heavy and expensive equipment which can pay for itself only by this high productivity. Also, the geometry of some parts and handling difficulties sometimes make automation difficult by conventional means (boom, gantry, ...)

In such case, the MEGATRAC 6 welding carriage is the best solution to the problems of productivity associated with the welding of large workpieces that are difficult to handle.

Rugged and compact, the carriage MEGATRAC 6 is specially designed for intensive work.

Carriage characteristics:
- Welding in single or twin wires configuration:
  - single wire Ø 1.6 to 5 mm,
  - twin wires Ø 1.2 and 1.6 mm.
- Weight of carriage with welding equipment: 100 kg (without wire and flux).
- Internal welding in vessels Ø mini = 1600 mm.
- Travel speed: 10 to 200 cm/min.

Applications:
Its adaptibility and flexibility allows to respond the most demanding applications: long welds, welding of thick plate in one or more runs, welding of stiffeners in restricted spaces, welding inside or outside tanks, welding inside box sections.

Welding Equipment SUBARC 3C:
Associated with one power source of STARMATIC range the control box SUBARC 3C manages the welding parameters and the carriage travel. Simple to use, it includes all the necessary controls and displays for the operator during welding.

Complements:
- flux recovery system by venturi,
- steel wheels,
- 4 drive wheels equipment,
- 3 wheels equipment.
Air Liquide Welding can propose several solutions of internal boom welding.

The main processes are:
- pipe manufacturing by internal longitudinal welding,
- assembling of 2 pipes by circular welding.

Once the internal weld is done, the outside weld is performed by another equipment.

The structure and configuration of the internal boom depends on the length of the pipes.

Internal boom from 4 m to 12 m stroke.

The SAW process allows to weld high thickness, the minimum internal diameter depends on the welding head configuration.
SAW: Narrow Gap

Applications
Narrow Gap process is used to weld thick walled steel plate, mainly for the following industrial applications: Power Generation, Nuclear, Pressure Tanks, Windmill, Petrochemical.

Process
It is a Submerged Arc process with single or tandem narrow gap torch, designed to weld thick plate (generally over 50 mm) using practically parallel sides and narrow gap preparation.

Narrow gap process allows to increase productivity and to result in lower cost welding by decreasing the volume of metal needed and the welding time compared to conventional preparation with bevel.

The process is adapted for both longitudinal and circumferential welding.

Equipment: Air Liquide Welding provides a full range of equipment for every application
Example of modular tandem welding head proposed
SAW strip cladding

Applications
The cladding is mainly used for surfacing the internal surfaces of pressure vessels and large diameter pipes in the oil and gas and nuclear industries.

The process is also used to repair worn parts at low cost as cladding continuous casting rollers, valve body, etc...

Process
The cladding is a fusion welding technique in which a material is deposited on the surface of a parent material to achieve the desired dimensions or properties. It consists in using a thin wide metal strip instead of a wire as consumable electrode.

The majority of the parent materials are carbon or low alloy steels, selected for their inexpensive cost or for their specific mechanical properties. The deposited sophisticated material imparts surface properties such as corrosion resistance to the substrate.

There are two cladding processes similar to the submerged arc welding: the submerged arc strip cladding and the electroslag strip cladding.

Submerged arc strip cladding (fig 1)
In the submerged arc strip cladding process the required energy to melt the strip and the base material is created by an electrical arc between the welding strip and the parent material under a flux protection. The flux is added on both sides of the strip. The mainly advantages of the submerged arc strip welding are:
- a low penetration,
- a good deposit rate,
- a low dilution preserving the mechanical properties of the weld metal.

Electroslag strip cladding (fig 2)
The electroslag strip overlay process is based on the ohmic resistance heating of a molten electrically conductive slag. There is no arc between the strip electrode and the parent material, the flux is added on the front of the strip. The welding currents used are higher than for submerged arc strip welding and the temperature of the slag pool is higher. The main differences with the submerged arc strip cladding process are:
- a higher rate of deposition,
- a lower dilution,
- a less penetration.

Additional equipment for standard installation
STRIP CLADDING HEAD
This head is designed for Electroslag and Submerged Arc overlay with strip sizes of 30 mm, 60 mm and 90 mm, thickness 0.5 mm. Other heads are available for reduced internal cladding environment.

MAGNETIC STEERING DEVICE
Magnetic steering device is used with Electroslag process to reduce the risk of lack of fusion at the overlap, and to increase the flatness of the surface of the deposit.
The automation of long workpieces welding (beams, wagons, box section constructions) requires sophisticated machines which move on rails.

The BEAM-MATIC system is used to weld castellated welded beams of constant or varying cross-section in widths between 220 and 2,000 mm.

* Other dimensions on request.

2 types of BEAM-MATIC are available:
- cantilever: CT,
- on base column and boom: LM.

The BEAM-MATIC allows to weld in MIG-MAG or SAW (single or twin wire) process.
In standard, the machine is equipped with a flux recovery device and a pushed flux supply.
Possibility to use wire spools or wire drums on the 2 BEAM-MATIC.
The torch level is fix on the BEAM-MATIC CT and it’s possible to lift the torch level on the BEAM-MATIC LM.

Clamping bench:
The clamping bench allows the positioning of the web and the flanges before the welding, with an additional clamping bench it’s possible to save time and increase productivity.

<table>
<thead>
<tr>
<th>Standard / Dimensions for clamping bench</th>
</tr>
</thead>
<tbody>
<tr>
<td>A = 12,000 to 24,000 mm *</td>
</tr>
<tr>
<td>B = 220 to 2,000 mm *</td>
</tr>
<tr>
<td>C = 120 to 500 mm *</td>
</tr>
</tbody>
</table>

Web thickness: 4 to 20 mm
Flange thickness: 10 to 30 mm

* Other dimensions on request.
The T-MASTER “Big size beam welding line” is designed to weld with Submerged arc process the T and I beams with the web in vertical position without need of continuous tack-welding of beam. A short tacking is only needed at the beam leading edge.

<table>
<thead>
<tr>
<th></th>
<th>TBL 2 000 x 800 - 1 000 kg/m</th>
<th>TBL 3 000 x 1 250 - 1 500 kg/m</th>
<th>TBL 3 500 x 1 500 - 2 500 kg/m</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Flange width</td>
<td>mm</td>
<td>160</td>
<td>800</td>
</tr>
<tr>
<td>B: Flange thickness</td>
<td>mm</td>
<td>8</td>
<td>50</td>
</tr>
<tr>
<td>C: Web height</td>
<td>mm</td>
<td>200</td>
<td>2 000</td>
</tr>
<tr>
<td>D: Web thickness</td>
<td>mm</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>L: Beam length</td>
<td>mm</td>
<td>6 000</td>
<td>12 000</td>
</tr>
<tr>
<td>Weight / meter</td>
<td>kg/m</td>
<td>1 000</td>
<td>1 500</td>
</tr>
<tr>
<td>Taper angle</td>
<td>10°</td>
<td>10°</td>
<td>10°</td>
</tr>
</tbody>
</table>

Other dimensions on request.
Windmill solutions

Since the beginning, Air Liquide Welding has been involved in most mobile and fixed platform constructions in the cold waters of the North Sea and in the onshore wind-energy industry.

Working closely with engineering departments and major manufacturers in this sector, Air Liquide Welding is constantly working to develop processes, equipments and consumables meeting the ever more demanding requirements of increasingly hostile environments.

This constant innovation has resulted in an unsurpassable range of equipment and consumable solutions specially designed for wind-power industries.

Example of layout for windmill towers fabrication.

Heavy duty welding heads:
Narrow gap or SAW tandem head.

Large column and booms, rotators and positioners are proposed in this windmills solution.
Lamp-post solutions

We propose some semi-automatic machines for the lamp-post welding. The operator positions the piece in the infeed line of the machine, once the clamping of the piece done, he adjust the joint to be welded, and then start the automatic welding of the lamp-post in SAW process. A burner ramp under the lamp-post allows decreasing the distortions. Once the piece welded, it’s evacuated thanks to a tilting device.

Several options are available on request.

Welding process:
- SAW single wire diameter from 1.6 to 5.0 mm

Machine cycle:
- SIEMENS controller
- Overview and control in real time of the machine, parameters recording, remote connection

Performances / Outstanding points:
- Joint tracking with camera and operator joystick
- Only 1 operator
- Machine availability: 95%
- Fix machine / Movable piece
- Speed range: 1 m/min. to 2.8 m/min.
MIG/MAG machine range

The MIG/MAG applications are used in various domains from the simple carriage for shipyard industry to large gantry for train manufacturing. The choice of the machine depends mainly on the size of the piece to weld. Air Liquide Welding propose solutions according your need.

The **Autonomous carriages** allow the longitudinal and circular welding of large vessels. They are also often used in the shipyard industry.

The **Turning electrode** is a simple solution for small circular welds with MIG/MAG torches.

The **Straightener/cooler MIG/MAG application** is often combined to the food tanks manufacturing with plasma process.

The **MIG/MAG Autonomous welding head installation** to retrofit any old machines.
The **MIG/MAG welding seamer bench** allows the longitudinal weld of sheet metal or tanks.

**MIG MAG welding aluminium Gantry** with two torches to answer applications requiring a high level of productivity with large pieces such as the manufacture of railway wagons.

The **LPG welding compact installations** are dedicated for LPG semi-automatic production.

*For all other specific requests: consult us.*
Applications:
The MIG/MAG welding process is used more than any other process, it can be easily automatised and it is found in many industries and various segments of activity such as: automotive, transport, shipbuilding, boîtemaking, public works, agricultural machinery, energy...

Process and performances:
Provided with the latest digital technology, the Air Liquide Welding installations offer new welding methods that respond perfectly to the technical developments taking place in industry. These innovative arc transfers guarantee the quality and productivity levels demanded by modern welding applications.

The performances achieved by the MIG/MAG process depends on the arc regimes. Air Liquide Welding offers several high technological metal transfer modes as:

SPEED SHORT ARC (SSA)
SSA is an Air Liquide Welding patented arc transfer. It’s an extension of the short arc area due to a very dynamic regulation of the current. The results is keeping benefit of short arc, SSA extend energy but avoid globular mode.

Advantages:
- large increase in travel speed,
- reduced distortion (thin steel sheets),
- suited to welding in position,
- reduction of adhering spatters and fumes,
- tolerance and usability.
SPRAY MODAL (SM)
The Spray Modal mode permits to reduce strongly the porosities and increases the penetration. It uses a modulated current at frequencies of 30 to 50 Hz that produce vibrations in the liquid weld pool that have the effect of removing most of the hydrogen bubbles before the metal solidifies. This mode is mainly for aluminium applications using sheet thicknesses from 3 to 8-10 mm.

Advantages:
- avoid porosity in the weld bead,
- increases penetration and travel speeds,
- efficient for repair (dirty aluminium),
- no sensible to magnetic perturbation.

HIGH PENETRATION SPEED (HPS)
HPS (High penetration speed) is welding characteristics available with the high range of MIG/MAG inverter power sources manufactured by Air Liquide Welding. Combination of high wire speed and lower energy, HPS is taking benefit of Spray Arc and Short Arc modes.

Advantages:
- higher deposition,
- deeper penetration,
- longer stick-outs can be used,
- lower heat input,
- less base material distortion,
- less structural changes of base material,
- reduction of undercut,
- welding arc length instantaneously adjusted.

SOFT SILENCE PULSE (SSP)
The Soft Silence Pulse is a quiet pulsed mode recommended for the stainless steel applications. The SSP produces a soft and stable arc with a good wetting of the weld bead. This wave shape gives a fine appearance of the weld bead.

Advantages:
- efficient on stainless steel & carbon steel,
- very well appreciated in confined area,
- gives good mechanical characteristics,
- low spatters as in pulse mode,
- produce an hotter arc than pulse mode,
- reduces the noise of the arc,
- reduction of adhering spatters.

MIG BRAZING
MIG brazing is a cold process that conserves the coating applied on steel sheet (galvanized sheets). It is MIG but using special consumable based with copper.

Advantages:
- effective on thin coated sheets,
- large joint tolerance,
- good mechanical characteristics,
- need to keep galvanized protection.

COLD DOUBLE PULSE (CDP)
CDP is not an arc transfer but a specific cycle (Cadencer or sequencer) bringing some good point. This is an alternative phase of wire speed (cold and hot) in pulse or short arc transfer (same transfer for both phases).

Advantages:
- TIG appearance weld bead
- effective on thin sheets
- aluminium low thickness
- reduce distorsion.
MIG/MAG equipments

Air Liquide Welding offers 4 types of installation.

**CITOPULS II - DIGIPULS II 420**
350 A at 100%

Installations offering superior quality welding and advanced welding processes with a simple Interface at a competitive price.

Main characteristics and advantages:
- simple interface easy to use with direct access to parameters,
- fully digitally controlled inverter for process repeatability,
- higher welding quality and simplified regulation,
- full range of processes: standard and pulsed MIG/MAG,
- Speed Short Arc, Spray Modal, Cold Double Pulse,
- MIG brazing, MMA coated electrodes, HPS,
- more than 100 synergies available,
- storage of 100 welding programs (with RC JOB),
- parameter locking with a digital code,
- RC JOB for remote control the main parameters of the installation.

**CITOWAVE - DIGIWAVE 400 - 500W**
350 A - 450 A at 100 %

Installations designed for all applications requiring very high quality welding for all thicknesses and all materials used in the main industries.

Main characteristics and advantages:
- digital control for all parameters providing exceptional arc stability and extremely accurate reproduction of welding parameters, wide graphic screen allowing the operator to navigate easily around a menu bar for adjusting the various parameters,
- full range of processes: standard and pulsed MIG/MAG,
- Speed Short Arc, Soft Silence Pulse, Spray Modal, Cold Double Pulse,
- MIG brazing, MMA coated electrodes,
- more than 150 synergies available,
- storage of 100 welding programs,
- download and backup on USB key,
- monitoring of parameters by process control,
- JOBMATIC: dedicated control box for managing and display of the welding parameters.

**TORCHES**

Water cooled torches dedicated for automatic welding MIG/MAG installations.
- excellent cooling up to the nozzle holder,
- good gas protection with the long shape of the nozzle.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>TM 501W</th>
<th>TR 600</th>
<th>TM 700</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duty cycle</td>
<td>500 A at 100%</td>
<td>400 A at 100%</td>
<td>700 A at 100%</td>
</tr>
<tr>
<td>Wire diameter (mm)</td>
<td>1 to 2.4</td>
<td>0.8 to 1.6</td>
<td>1.2 to 3.2</td>
</tr>
<tr>
<td>Harness length (m)</td>
<td>1 to 2.5</td>
<td>1 to 4</td>
<td>without - direct connection</td>
</tr>
<tr>
<td>Version</td>
<td>straight or curved 22 or 45°</td>
<td>straight or curved 22 or 45°</td>
<td>straight</td>
</tr>
<tr>
<td>Option</td>
<td>-</td>
<td>-</td>
<td>additional gas protection for light metal alloy</td>
</tr>
</tbody>
</table>
With its smart design, its color screen and its innovative communication interfaces, the CITOTAWE II - DIGIWAVE II concretizes the most recent technologic breakthroughs and positions itself at the cutting edge of the welding techniques.

Main characteristics and advantages:
- digital precision and outstanding welding performances
- large color screen for easy and precise setting
- full range of processes for all applications: Speed Short Arc, Pulse, Soft Silence Plus, Spray Modal, High Penetration Speed, Advanced Sequencer, MMA coated electrodes, Gouging up to 8 mm,
- more than 200 synergic curves with possibility to realize yourselves up to 50 customizable curves,
- storage up to 100 welding programs
- traceability of the welding parameters,
- control process: you set yourselves the control thresholds of the welding parameters not to go above, and you are warned in real time as soon as a fault is detected,
- user management and locking mode,
- monitoring with USB, Ethernet,
- RC JOB II for remote control.

Installation dedicated more particularly for heavy duty applications requiring high welding current, with solid or cored wire or aluminium alloys wire.

Main characteristics and advantages:
- powerful installation for smooth welding up to 650 A at 100%,
- robustness, reliability and simplicity of use,
- excellent wire feeding thanks to a direct connection of the torch on the wire feed unit (no guiding sheath between the two elements).

SEAM TRACKING
TRACKMATIC device guarantees the good positioning of the torch in the joint to be welded without operator intervention. A sensing probe finger or an inductive sensor detects positioning errors (height or alignment) and commands the necessary corrections required to the torch trajectory. It ensures a constant weld quality, an increase of productivity, a reduction in repair operation and easier use for the operator.

VIDEO CAMERA
The video system VISIOARC VA2 including protection against spatters and fumes, can be easily integrated. It uses a greatly enlarged image which enables the precise position of the welding torch to be viewed thus making the operator’s work easier and improving the quality of the welding operation.

System with large color screen 15", miniaturised camera and additional lighting.
**MIG/MAG carriages**

### Carriages for MIG/MAG welding

| Carriage          | Modular and easy to use, MIG/MAG welding with manual equipment. | Flat position welding, small footprint. Easy implementation. | All positions welding (permanent magnet). **Exists in three models:**
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>WELDYPOCKET</td>
<td>WELDYCAR NV</td>
<td>WELDYSTIFFENER</td>
<td>WELDYRAIL</td>
</tr>
</tbody>
</table>

**WELDYCAR NV**
- Welding with 2 manual welding torches.
- Programmable carriage.

**WELDYSTIFFENER**
- All positions welding of carbon steels, stainless steels and aluminium.

**WELDY-RAIL**
- All positions welding of carbon steels, stainless steels and aluminium.

**Applications**

<table>
<thead>
<tr>
<th>Carriage</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>WELDYPOCKET</td>
<td>This carriage is used to facilitate the implementation of a regular welding.</td>
</tr>
<tr>
<td>WELDYCAR NV</td>
<td>Boiler making in carbon steel.</td>
</tr>
<tr>
<td>WELDYSTIFFENER</td>
<td>Angle, butt, overhead and vertical welding with guidance by crabbing arm.</td>
</tr>
<tr>
<td>WELDY-RAIL</td>
<td>Welding of stiffeners in shipyards.</td>
</tr>
</tbody>
</table>

**Main features**

<table>
<thead>
<tr>
<th>Carriage</th>
<th>Carriage speed</th>
<th>Dimensions (L x l x h)</th>
<th>Weight (netto)</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>WELDYPOCKET</td>
<td>15 - 120 cm/min</td>
<td>140 x 240 x 220 mm</td>
<td>5 kg</td>
<td>Arc protection</td>
</tr>
<tr>
<td>WELDYCAR NV</td>
<td>5 - 70 cm/min</td>
<td>250 x 300 x 260 mm</td>
<td>11 kg</td>
<td>Pendular oscillating unit, Linear oscillating unit, Magnetic crabbing rails, aluminium wheels... many other options on request.</td>
</tr>
<tr>
<td>WELDYSTIFFENER</td>
<td>15 - 180 cm/min</td>
<td>500 x 500 x 600 mm</td>
<td>18 kg</td>
<td>-</td>
</tr>
<tr>
<td>WELDY-RAIL</td>
<td>5 - 80 cm/min</td>
<td>220 x 270 x 230 mm</td>
<td>7 kg</td>
<td>Linear oscillating unit for WELDY-RAIL manual.</td>
</tr>
</tbody>
</table>

Thanks to the modularity of the design, the carriages can be used in different configurations.
MIG/MAG machines

Air Liquide Welding proposes various machines to answer to the customer needs in MIG/MAG applications.

We designed some specific machines as BEAM-MATIC, seamer with extended beam, special column and boom for straightener or cooling device welding.

MIG/MAG BEAM-MATIC for heat exchangers, traffic signs... with seam tracking and arc protection for the operator.

Long beam with MIG/MAG carriage for longitudinal weld in the seamer and circular weld on the rotators.

Bicephal Column and Boom with double MIG/MAG head, for the welding of stiffeners or cooling devices on vessels.

For more applications in MIG/MAG: consult us.
Positioning range

Since control over the welding process is the key to any system’s performance, Air Liquide Welding offers a full range of positioning equipment. This high quality and robust equipment can be combined with any processes. The good choice in this complete positioning range, depends on the characteristics of the piece to manipulate.

The **Headstocks** 2 or 3 axes to manipulate medium piece in all positions.

The **Rotators** to position large vessels for welding.

The **Positioners** to allow the positioning of the piece in 2 or 3 axes.

The **Mechanization** to customize the machine around the piece to weld.
The **Turntables** to turn the piece for positioning or for welding.

The **Seamer benches** for longitudinal weld of plates or vessels.

The **Gantry machines** to weld large pieces in longitudinal with 2 heads.

The **Column & Booms** to weld large tanks with any processes.
Air Liquide Welding column and booms are the professional answer to your needs.

Ideal for pressure vessels manufacturer of stainless steel, mild steel and light alloy, they maximise your benefit from automatic MIG/MAG, submerged arc, TIG, plasma and plasma + TIG welding processes.

Developed by the welding specialists, Air Liquide Welding’s world-renowned technology is at your service.

Column and boom choice:

According to the welding/cutting process and the size of the vessels to work on, it is possible to choose for XS, S, L or XL column and boom. This C&B can be fixed on the ground (F) or mobile on rails (M). For the heavy and intensive work, we preconize to use the L column and boom and for large tank the XL type when the vessel size required it.

<table>
<thead>
<tr>
<th>Vertical stroke (mm)</th>
<th>15 x 10</th>
<th>25 x 23</th>
<th>32 x 33</th>
<th>42 x 43</th>
<th>52 x 43</th>
<th>62 x 43</th>
<th>52 x 53</th>
<th>62 x 63</th>
<th>72 x 73</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm speed (cm/min)</td>
<td>1 500</td>
<td>2 500</td>
<td>3 200</td>
<td>4 200</td>
<td>5 200</td>
<td>6 200</td>
<td>5 200</td>
<td>6 200</td>
<td>7 200</td>
</tr>
<tr>
<td>Carriage speed (cm/min)</td>
<td>1 000</td>
<td>2 300</td>
<td>3 300</td>
<td>4 300</td>
<td>4 300</td>
<td>5 300</td>
<td>6 300</td>
<td>7 300</td>
<td></td>
</tr>
<tr>
<td>Lifting speed (cm/min)</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Horizontal stroke (mm)</th>
<th>1 000</th>
<th>2 300</th>
<th>3 300</th>
<th>4 300</th>
<th>4 300</th>
<th>4 300</th>
<th>5 300</th>
<th>6 300</th>
<th>7 300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm speed (cm/min)</td>
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<td>Carriage speed (cm/min)</td>
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<tr>
<td>Lifting speed (cm/min)</td>
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</tr>
</tbody>
</table>

Maxi load at the end of the arms (kg) + Height (mm) without rail

<table>
<thead>
<tr>
<th>XSF</th>
<th>1</th>
<th>200</th>
<th>80</th>
<th>Manual or 12 to 300</th>
<th>-</th>
<th>Manual or 12 to 300</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>2</td>
<td>625</td>
<td>3 625</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XSM</td>
<td>2</td>
<td>200</td>
<td>80</td>
<td>Manual or 12 to 300</td>
<td>Manual or 12 to 300</td>
<td>Manual or 12 to 300</td>
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<tr>
<td>A</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SF</td>
<td>3</td>
<td>200</td>
<td>175</td>
<td>150</td>
<td>20 to 300 or 5 to 300</td>
<td>-</td>
</tr>
<tr>
<td>A</td>
<td></td>
<td></td>
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<td>B</td>
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<td></td>
</tr>
<tr>
<td>SM</td>
<td>4</td>
<td>380</td>
<td>5 280</td>
<td>6 280</td>
<td>20 to 300 or 5 to 300</td>
<td>20 to 500 or 5 to 500</td>
</tr>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
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</tr>
<tr>
<td>LF</td>
<td>5</td>
<td>400</td>
<td>400</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>A</td>
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<tr>
<td>B</td>
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</tr>
<tr>
<td>LM</td>
<td>6</td>
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<td>400</td>
<td>300</td>
<td>300</td>
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<td>A</td>
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<tr>
<td>XLF</td>
<td>7</td>
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<td>400</td>
<td>400</td>
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<td>A</td>
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<td>B</td>
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<td></td>
</tr>
<tr>
<td>XLM</td>
<td>8</td>
<td>7 075</td>
<td>8 075</td>
<td>9 075</td>
<td>8 075</td>
<td>9 075</td>
</tr>
<tr>
<td>A</td>
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<tr>
<td>B</td>
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</tr>
</tbody>
</table>
Control command:
The column and boom is controlled by a touch screen panel offering the possibility to easily numerize the axes.
According to the process, the column and boom can be equipped with D2C or HPW control.

Customized solutions:

Column and boom big size and specific size: on request.

Peripherics integration, seamer, positioning equipment: on request.

Special configuration to adapt to customer environment: on request.
Air Liquide Welding offers a range of seamers specifically designed for horizontal welding, supporting flat or cylindrical (round or square section) workpieces with a wide range of dimensions. 4 types of seamers: FIN: small thickness, EX: external welding, IT: internal welding and EXIT: external/internal welding.

**SEAM-MATIC: welding seamer benches**

<table>
<thead>
<tr>
<th>Maxi weldable length (included run on/off plates)</th>
<th>EX (xx from 10 to 20)</th>
<th>IT</th>
<th>EXIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø mini</td>
<td>Ø maxi</td>
<td>Ø mini</td>
<td>Ø maxi</td>
</tr>
<tr>
<td>10V07</td>
<td>12Vxx</td>
<td>17Vxx</td>
<td>22Vxx</td>
</tr>
<tr>
<td>1 050</td>
<td>1 250</td>
<td>1 750</td>
<td>2 250</td>
</tr>
<tr>
<td>2 250</td>
<td>3 250</td>
<td>4 250</td>
<td>5 250</td>
</tr>
<tr>
<td>8 250</td>
<td>9 250</td>
<td>10 250</td>
<td>11 250</td>
</tr>
</tbody>
</table>

Other dimensions or types on request.
Standard equipment:

Cable chain
In standard configuration:
- FIN: cable chain normal
- IT and EXIT: cable chain head
- EX: cable carrying garland
Possibility to have cable chain normal or head to foot in option (required for plasma or TIG).

Control panel
For all seamers, possibility to have control panel on the welding head or on movable foot.

Open device
In standard, the open device is manual.
For the EX seamer, there is the possibility to have a pneumatic open device.

Control command:
Simple analogical command through the process command panel or numerical command through the PLC command with HMI - D2C.

Customised solutions:
According to the customer's needs, we could adapt the sizes and the process to reach the best productivity and quality.

Operator platform: on request.

Large length and sheet support for in and out of the seamer: on request.
Mechanisation

Air Liquide Welding proposes to design machines with modular elements in order to build the machine around to piece to be welded or cutted.

The mechanisation allows to save time for your project of machine.

Machine design

Machine realisation

A large choice of mechanisation parts

- Beam, carriage, manual or motorised slides...
- Oscillation mechanism...
- Headstock, tailstock, rotation block, mandrel...
- X rotators, support blocks, command box supports...
- Trackmatic probes, mechanical tracking...
- Cycle control boxes, electrical cabinet...
Examples of mechanisation machines

Double MIG/MAG mechanisation for endless screw welding

MIG/MAG gantry for aluminium train welding

SAW platform for school training

Plasma mechanisation HPW for pipes welding

Headstock mechanisation on CTP2 beam

Lathe 2 torches for TIG welding of compressed air tanks
ROTAMATIC: single roller rotators

Medium-duty rotator: 2 tons to 30 tons
- single powered (one drive roller) for small unbalance work piece,
- double powered (two drive rollers) for work pieces having significant unbalance,
- roller-to-roller center distance adjusting by screw (except for ST 2: by step),
- remote pendant and kit auto on all versions.

Possible options:
- kit display,
- kit ± 1% speed regulation,
- kit encoder 5000 pts,
- lorry and railway.

Technical specifications:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Load capacity (1 drive + 1 idler) kg</th>
<th>Load capacity per section kg</th>
<th>Shell diameter mm</th>
<th>Peripherical speed cm/min</th>
<th>Wheel dimension OD x width mm</th>
<th>Wheel material</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST 2</td>
<td>2000</td>
<td>1000</td>
<td>30 to 2500</td>
<td>12 to 120</td>
<td>Ø 150 x 50</td>
<td>Polyurethane</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>W</td>
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<tr>
<td></td>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Polyamide</td>
</tr>
<tr>
<td>ST 6</td>
<td>6000</td>
<td>3000</td>
<td>300 to 3500</td>
<td>12 to 120</td>
<td>Ø 250 x 75</td>
<td>Polyurethane</td>
</tr>
<tr>
<td></td>
<td>M</td>
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<td>F</td>
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<td></td>
<td></td>
<td></td>
<td>Polyamide</td>
</tr>
<tr>
<td>ST 15</td>
<td>15000</td>
<td>7500</td>
<td>300 to 4000</td>
<td>12 to 120</td>
<td>Ø 250 x 110</td>
<td>Polyurethane</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Polyurethane</td>
</tr>
<tr>
<td>ST 30</td>
<td>30000</td>
<td>15000</td>
<td>350 to 4500</td>
<td>12 to 120</td>
<td>Ø 350 x 150</td>
<td>Polyurethane</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F</td>
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</tbody>
</table>

Keys:
M = Single motorisation  F = Idler roller
W = Double motorisation  MT = Single motorisation with tube system
Heavy-duty rotator: 42 tons to 200 tons

- special frame conception with built-in roll supports reduces welding height from the ground,
- machined bed on the idler and drive roller for perfect alignment,
- remote pendant, kit auto and display in standard on all versions.

Possible options:
- lorry and railway,
- screw adjusting or step adjusting.

Technical specifications:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Load capacity (1 drive + 1 idler) kg</th>
<th>Load capacity per section kg</th>
<th>Shell diameter mm</th>
<th>Peripherical speed cm/min</th>
<th>Wheel dimension OD x width mm</th>
<th>Wheel material</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP42*</td>
<td>42000</td>
<td>21000</td>
<td>700 to 5000</td>
<td>10 to 100 or 9 to 180</td>
<td>Ø 400 x 200</td>
<td>Steel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ø 400 x 250 Polyurethane</td>
<td></td>
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<tr>
<td>LP55*</td>
<td>55000</td>
<td>27500</td>
<td>700 to 5000</td>
<td>10 to 100 or 9 to 180</td>
<td>Ø 400 x 200</td>
<td>Steel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ø 400 x 250 Polyurethane</td>
<td></td>
</tr>
<tr>
<td>LP70*</td>
<td>70000</td>
<td>35000</td>
<td>900 to 6000</td>
<td>10 to 100 or 8 to 160</td>
<td>Ø 460 x 250</td>
<td>Steel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ø 460 x 300 Polyurethane</td>
<td></td>
</tr>
<tr>
<td>LP100*</td>
<td>100000</td>
<td>50000</td>
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<td>10 to 100 or 8 to 160</td>
<td>Ø 450 x 250</td>
<td>Steel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ø 450 x 300 Polyurethane</td>
<td></td>
</tr>
<tr>
<td>LP160*</td>
<td>160000</td>
<td>80000</td>
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<td>10 to 100 or 9 to 160</td>
<td>Ø 450 x 300</td>
<td>Steel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ø 450 x 300 Polyurethane</td>
<td></td>
</tr>
<tr>
<td>LP200*</td>
<td>200000</td>
<td>100000</td>
<td>1200 to 6000</td>
<td>10 to 100 or 10 to 160</td>
<td>Ø 500 x 300</td>
<td>Steel</td>
</tr>
</tbody>
</table>

* Available in version W (Double motorisation) or F (Idler roller)

**Special rotator**

Small 6 tons rotator
Ø 100 to 600 mm

Special rotators with large diameter rollers for the rotation of the tank with stub nozzle.

Higher capacity rotators on request.
Fit-up rotator: 30 tons to 200 tons

- in standard, the up and down movement is made by a manual hydraulic pump.

Possible options:
- automatic hydraulic pump (hydraulic central),
- lorry and railway.

### Technical specifications:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Load capacity (2 fit-up) kg</th>
<th>Lifting capacity per section kg</th>
<th>Shell diameter mm</th>
<th>Wheel dimension OD x width mm</th>
<th>Wheel material</th>
<th>Wheels adjustment</th>
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</thead>
<tbody>
<tr>
<td>TR30</td>
<td>30000</td>
<td>15000</td>
<td>700 to 4500</td>
<td>Ø 300 x 160</td>
<td>Polyurethane</td>
<td>Screw</td>
</tr>
<tr>
<td>TR42</td>
<td>42000</td>
<td>21000</td>
<td>700 to 5000</td>
<td>Ø 350 x 250</td>
<td>Polyurethane</td>
<td>Screw</td>
</tr>
<tr>
<td>TR55</td>
<td>55000</td>
<td>27500</td>
<td>700 to 5000</td>
<td>Ø 350 x 250</td>
<td>Polyurethane</td>
<td>Screw</td>
</tr>
<tr>
<td>TR70</td>
<td>70000</td>
<td>35000</td>
<td>900 to 6000</td>
<td>Ø 400 x 300</td>
<td>Polyurethane</td>
<td>Screw</td>
</tr>
<tr>
<td>TR100</td>
<td>100000</td>
<td>50000</td>
<td>900 to 8000</td>
<td>Ø 400 x 250</td>
<td>Steel</td>
<td>Step</td>
</tr>
<tr>
<td>TR160</td>
<td>160000</td>
<td>80000</td>
<td>1200 to 6000</td>
<td>Ø 450 x 250</td>
<td>Steel</td>
<td>Step</td>
</tr>
<tr>
<td>TR200</td>
<td>200000</td>
<td>100000</td>
<td>1200 to 6000</td>
<td>Ø 450 x 300</td>
<td>Steel</td>
<td>Step</td>
</tr>
</tbody>
</table>

**Keys:**

- = Single roller rotator motorized
- = Single roller rotator idler
- = Fit-up rotator

**Version with automatic hydraulic central:**

*Higher capacity rotators on request.*
ROTAMATIC: self aligning rotators

12 tons to 250 tons
• in standard: remote pendant, kit auto and display on all versions.
Possible options:
- lorry and railway.

Technical specifications:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Load capacity (1 drive + 1 idler) kg</th>
<th>Load capacity per section kg</th>
<th>Mini Shell diameter for 1/2 load mm</th>
<th>Shell diameter for maximum load mm</th>
<th>Peripherical speed cm/min</th>
<th>Wheel dimension OD x width mm</th>
<th>Wheel material</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP12-2R</td>
<td>12000</td>
<td>6000</td>
<td>500 to 1500</td>
<td>1500 to 4000</td>
<td>10 to 100 or 10 to 200</td>
<td>Ø 300 x 220</td>
<td>Rubber</td>
</tr>
<tr>
<td>LP20-2R</td>
<td>20000</td>
<td>10000</td>
<td>500 to 1500</td>
<td>1500 to 4000</td>
<td>10 to 100 or 10 to 200</td>
<td>Ø 350 x 300</td>
<td>Rubber</td>
</tr>
<tr>
<td>LP30-2R</td>
<td>30000</td>
<td>15000</td>
<td>500 to 1500</td>
<td>1500 to 4500</td>
<td>10 to 100 or 8 to 160</td>
<td>Ø 400 x 300</td>
<td>Rubber</td>
</tr>
<tr>
<td>LP42-2R</td>
<td>42000</td>
<td>21000</td>
<td>500 to 1500</td>
<td>1500 to 5000</td>
<td>10 to 100 or 9 to 180</td>
<td>Ø 400 x 400</td>
<td>Rubber</td>
</tr>
<tr>
<td>LP55-2R</td>
<td>55000</td>
<td>27500</td>
<td>800 to 1800</td>
<td>1800 to 5000</td>
<td>10 to 100 or 9 to 180</td>
<td>Ø 500 x 230</td>
<td>Rubber</td>
</tr>
<tr>
<td>LP70-2R</td>
<td>70000</td>
<td>35000</td>
<td>800 to 1800</td>
<td>1800 to 6000</td>
<td>10 to 100 or 9 to 180</td>
<td>Ø 500 x 400</td>
<td>Rubber</td>
</tr>
<tr>
<td>LP100-2R</td>
<td>100000</td>
<td>50000</td>
<td>600 to 1500</td>
<td>1500 to 6000</td>
<td>10 to 100 or 8 to 160</td>
<td>Ø 420 x 300</td>
<td>Polyurethane</td>
</tr>
<tr>
<td>LP160-2R</td>
<td>160000</td>
<td>80000</td>
<td>1000 to 1500</td>
<td>1500 to 6000</td>
<td>10 to 100 or 8 to 160</td>
<td>Ø 460 x 300</td>
<td>Polyurethane</td>
</tr>
<tr>
<td>LP200-2R</td>
<td>200000</td>
<td>100000</td>
<td>1000 to 1500</td>
<td>1500 to 7000</td>
<td>10 to 100 or 7.5 to 150</td>
<td>Ø 500 x 300</td>
<td>Steel</td>
</tr>
<tr>
<td>LP250-2R</td>
<td>250000</td>
<td>125000</td>
<td>1000 to 1500</td>
<td>1500 to 7000</td>
<td>10 to 100 or 7.5 to 150</td>
<td>Ø 550 x 400</td>
<td>Polyurethane</td>
</tr>
</tbody>
</table>

RO TAMATIC options

Lorry
The lorry allows to move the rotators with or without the piece.
The idler lorry and the motorised lorry can be mounted on the same line.

Anti-drift device
The manual anti-drift device allows the piece to turn without twisting.
An automatic solution can be proposed with a PLC which controls the idler roller positions.

Higher capacity rotators on request.
# POSIMATIC: positioners

2 types of positioners are available:
- conventional: from 100 kg to 30 tons,
- with lifting table: from 1500 kg to 10 tons.

Higher capacity or different rotation speed range on request.

<table>
<thead>
<tr>
<th>Load all positions kg</th>
<th>Tilt torque m.kg</th>
<th>Rotation torque m.kg</th>
<th>Rotation speed tr/min</th>
<th>Turntable height mm</th>
<th>Remote control or pedal</th>
<th>Pictures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conventional range</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1E 1</td>
<td>100</td>
<td>25</td>
<td>2</td>
<td>0.2 to 5</td>
<td>385</td>
<td>Pedal</td>
</tr>
<tr>
<td>P2E 2</td>
<td>200</td>
<td>40</td>
<td>4</td>
<td>0.25 to 5</td>
<td>500</td>
<td>Pedal</td>
</tr>
<tr>
<td>3F 3</td>
<td>400</td>
<td>90</td>
<td>20</td>
<td>0.14 to 2.2</td>
<td>650</td>
<td>Pedal</td>
</tr>
<tr>
<td>7F 2</td>
<td>650</td>
<td>175</td>
<td>75</td>
<td>0.076 to 1.53</td>
<td>896</td>
<td>RC + Pedal</td>
</tr>
<tr>
<td>16B 3</td>
<td>1600</td>
<td>400</td>
<td>150</td>
<td>0.074 to 1.48</td>
<td>975 to 1400</td>
<td>RC + Pedal</td>
</tr>
<tr>
<td>30B 4</td>
<td>3000</td>
<td>840</td>
<td>250</td>
<td>0.06 to 1.18</td>
<td>980 to 1380</td>
<td>RC + Pedal</td>
</tr>
<tr>
<td>TP4 5</td>
<td>4000</td>
<td>1100</td>
<td>500</td>
<td>0.045 to 0.45</td>
<td>1110</td>
<td>RC</td>
</tr>
<tr>
<td>TP6 6</td>
<td>6000</td>
<td>2500</td>
<td>720</td>
<td>0.03 to 0.3</td>
<td>1150</td>
<td>RC</td>
</tr>
<tr>
<td>TP8 7</td>
<td>8000</td>
<td>3600</td>
<td>850</td>
<td>0.025 to 0.25</td>
<td>1000</td>
<td>RC</td>
</tr>
<tr>
<td>TP10 8</td>
<td>10000</td>
<td>6750</td>
<td>1450</td>
<td>0.022 to 0.22</td>
<td>1190</td>
<td>RC</td>
</tr>
<tr>
<td>TP15 9</td>
<td>15000</td>
<td>10300</td>
<td>2100</td>
<td>0.02 to 0.2</td>
<td>1275</td>
<td>RC</td>
</tr>
<tr>
<td>TP20 10</td>
<td>20000</td>
<td>14200</td>
<td>2900</td>
<td>0.018 to 0.18</td>
<td>1340</td>
<td>RC</td>
</tr>
<tr>
<td>TP30 11</td>
<td>30000</td>
<td>22500</td>
<td>4400</td>
<td>0.015 to 0.15</td>
<td>1450</td>
<td>RC</td>
</tr>
<tr>
<td><strong>With lifting table range</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TPE 1.5 5</td>
<td>1500</td>
<td>375</td>
<td>160</td>
<td>0.06 to 0.6</td>
<td>970 to 1700</td>
<td>RC</td>
</tr>
<tr>
<td>TPE 2.5 6</td>
<td>2500</td>
<td>600</td>
<td>200</td>
<td>0.06 to 0.6</td>
<td>1030 to 1850</td>
<td>RC</td>
</tr>
<tr>
<td>TPE 4 7</td>
<td>4000</td>
<td>1100</td>
<td>500</td>
<td>0.045 to 0.45</td>
<td>1060 to 2010</td>
<td>RC</td>
</tr>
<tr>
<td>TPE 6 8</td>
<td>4000</td>
<td>2500</td>
<td>720</td>
<td>0.035 to 0.35</td>
<td>1125 to 2125</td>
<td>RC</td>
</tr>
<tr>
<td>TPE 8 9</td>
<td>4000</td>
<td>3600</td>
<td>850</td>
<td>0.025 to 0.25</td>
<td>1125 to 2125</td>
<td>RC</td>
</tr>
<tr>
<td>TPE 10 10</td>
<td>10000</td>
<td>6750</td>
<td>1450</td>
<td>0.022 to 0.22</td>
<td>1150 to 2350</td>
<td>RC</td>
</tr>
</tbody>
</table>

Worktable with various fixing slots and holes for mounting various workpieces.

[Image 455] CE standard electrical cabinet.

Swept counterweight system under the worktable.

[Image 457] Worktable with various fixing slots and holes for mounting various workpieces.

[Image 459] CE standard electrical cabinet.

Swept counterweight system under the worktable.

[Image 461] Worktable with various fixing slots and holes for mounting various workpieces.

[Image 463] CE standard electrical cabinet.

Swept counterweight system under the worktable.
HEADMATIC: headstock

Headstock
The headstock range allows the rotation of pieces up to 32 tons.

3 types of headstock:
- MINITOP, TOP and SUPERTOP II to be integrated on a mechanization.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Flat Load capacity (F1) kg</th>
<th>Rotation torque (C1) m.kg</th>
<th>Tilt torque (C2) m.kg</th>
<th>Rotation speed tr/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINITOP 26.8 tr</td>
<td>50</td>
<td>3.6</td>
<td>14</td>
<td>2.7 to 26.8</td>
</tr>
<tr>
<td>MINITOP 8.25 tr</td>
<td>50</td>
<td>9.4</td>
<td>14</td>
<td>0.82 to 8.25</td>
</tr>
<tr>
<td>MINITOP 3.75 tr</td>
<td>50</td>
<td>16</td>
<td>14</td>
<td>0.37 to 3.75</td>
</tr>
<tr>
<td>TOP</td>
<td>300</td>
<td>15</td>
<td>90</td>
<td>0.05 to 4.5</td>
</tr>
<tr>
<td>SUPERTOP II</td>
<td>1000</td>
<td>60</td>
<td>300</td>
<td>0.05 to 5</td>
</tr>
</tbody>
</table>

- HL range with synchronized lifting movement for manual manipulation or integrated on machine. The HL machine is composed of
  - HLM: motorized headstock
  - HLF: idler headstock.

We can propose the HLM without the idler headstock and the load capacity is half of the HLM+F load capacity.

- Special HEADMATIC 3 axes: HL3A
  Possibility to propose HEADMATIC 3 axes up to 20 tons.
TURNMATIC: turntable

**Turntable 5 tons to 30 tons**
Circular welding can be done by the movement of the turntable without moving the torch.

In the standard range, a turntable can make the rotation of shells up to 30 tons and up to 4500 mm diameter.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Load capacity kg</th>
<th>Mini shell diameter mm</th>
<th>Maxi shell diameter mm</th>
<th>Rotation speed tr/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>TURNMATIC 5 T</td>
<td>5000</td>
<td>1200</td>
<td>4500</td>
<td>0.004 to 0.204</td>
</tr>
<tr>
<td>TURNMATIC 10 T</td>
<td>10000</td>
<td>1000</td>
<td>4500</td>
<td>0.004 to 0.204</td>
</tr>
<tr>
<td>TURNMATIC 20 T</td>
<td>20000</td>
<td>1000</td>
<td>4500</td>
<td>0.004 to 0.204</td>
</tr>
<tr>
<td>TURNMATIC 30 T</td>
<td>30000</td>
<td>1000</td>
<td>4500</td>
<td>0.004 to 0.204</td>
</tr>
</tbody>
</table>

**Backing gas device:**
The backing gas device mounted on turntable, complete the turn-key solution of plasma or TIG welding column and boom.

A man hole in the turntable allows the operator to adjust the backing gas device inside the shell.

*Other sizes, capacities or rotation speed range on request.*
GYRMATIC 350 & 500 are modular systems designed to adapt easily and quickly to all conditions for circular welding around a horizontal or vertical axis or in intermediate positions set using a manual tilt device. They are designed for manual or automatic MIG/MAG or TIG welding of circular parts secured to the turntable or between tailstocks.

**Example of GYRMATIC 350 assembly**

- Automatic cycle start/stop.
- Manual control to start up part rotation with direction selector.
- Raise/lower torch (option).
- Display of rotation speed (option).
- Selection of part rotation direction in foot pedal control mode.
- Selection of workpiece rotation direction in automatic mode.

**Example of GYRMATIC 500 assembly**

- Time-delays controlling overlap area and stop time before reset.
- LED display of current cycle status.
- Adjustment of workpiece rotation speed by potentiometer to guarantee constant, regular movement.
- Selection of automatic cycle mode: with or without welding.
- Selection of welding mode: continuous or intermittent.
- Selection of one or two turns.

**Technical specifications:**

<table>
<thead>
<tr>
<th>Turntable</th>
<th>Base GYRMATIC 350</th>
<th>Base GYRMATIC 500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welding axis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation speed</td>
<td>0.9 to 18.5 tr/min</td>
<td>0.29 to 7.4 tr/min</td>
</tr>
<tr>
<td>Number of earth clips</td>
<td></td>
<td>One 250 A clip - capacity can be increased to 500 A as option</td>
</tr>
<tr>
<td>Backing gas</td>
<td>option</td>
<td>option</td>
</tr>
<tr>
<td>Intermittent welding</td>
<td>option</td>
<td>option</td>
</tr>
<tr>
<td>Mechanical specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machined turntable diameter</td>
<td>Ø 350 mm</td>
<td>Ø 490 mm</td>
</tr>
<tr>
<td>Max. rotation torque</td>
<td>1 m/daN</td>
<td>2 m/daN</td>
</tr>
<tr>
<td>Max. workpiece diameter with tailstock</td>
<td>Ø 300 mm</td>
<td>Ø 500 mm</td>
</tr>
<tr>
<td>Max. workpiece length with tailstock</td>
<td>300 mm</td>
<td>800 mm</td>
</tr>
<tr>
<td>Possible tilt</td>
<td>Manual from 0° to 90° with 7 set positions at 15° intervals</td>
<td></td>
</tr>
<tr>
<td>Dimensions / Power supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (L x H x D)</td>
<td>430 x 508 x 408 mm</td>
<td>600 x 1150 x 750 mm</td>
</tr>
<tr>
<td>Power supply</td>
<td>230 V / 50-60 Hz</td>
<td>230 V / 50-60 Hz</td>
</tr>
<tr>
<td>Unloaded weight without welding equipment</td>
<td>38 kg</td>
<td>140 kg</td>
</tr>
</tbody>
</table>
**Plasma cutting**

The plasma cutting process, as used in the cutting of electrically conductive metals, utilizes this electrically conductive gas to transfer energy from an electrical power source through a plasma cutting torch to the material being cut.

The basic plasma arc cutting system consists of a power supply, an arc starting circuit and a torch. These system components provide the electrical energy, ionization capability and process control that is necessary to produce high quality, highly productive cuts on a variety of different materials (carbon steel, stainless steel, aluminum, copper) and thicknesses (from 0.5 to 220 mm).

**Flame cutting**

The oxyfuel process is the most widely applied industrial thermal cutting process. It can cut thicknesses from 3 mm to more than 1000 mm. The equipment is low cost and can be used manually or mechanised. There are several fuel gas and nozzle design options that can significantly enhance performance in terms of cut quality and cutting speed.

A mixture of oxygen and the fuel gas is used to preheat the metal to its “ignition” temperature which, for steel, is around 1150 °C (bright red heat) but well below its melting point. A jet of pure oxygen is then directed into the preheated area instigating a vigorous exothermic chemical reaction between the oxygen and the metal to form iron oxide or slag. The oxygen jet blows away the slag enabling the jet to pierce through the material and continue to cut through the material.
Air Liquide Welding offers a large choice of cutting processes through its products. Several criteria allow to define the best process adapted to the customer application, function of materials, thicknesses, technology, quality and productivity required.

**Comparison between the main cutting processes**

**Thicknesses range multi material (mm)**

<table>
<thead>
<tr>
<th>Cutting technology</th>
<th>Quality cutting ISO9013 (*)</th>
<th>Heat affected zone</th>
<th>Investment</th>
<th>Use cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxycutting</td>
<td></td>
<td>Range 1/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plasma air</td>
<td></td>
<td>Range 4/5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plasma HP</td>
<td></td>
<td>Range 2/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plasma High power &amp; vortex</td>
<td></td>
<td>Range 3/5</td>
<td>Vortex</td>
<td></td>
</tr>
</tbody>
</table>

**Average speed cutting multi material (cm/min)**

<table>
<thead>
<tr>
<th>Cutting process</th>
<th>Speed cm/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxycutting</td>
<td></td>
</tr>
<tr>
<td>Plasma air</td>
<td></td>
</tr>
<tr>
<td>Plasma HP</td>
<td></td>
</tr>
<tr>
<td>Plasma high power &amp; vortex</td>
<td></td>
</tr>
</tbody>
</table>

**Main cutting quality criteria**

Various features can be evaluated to understand the cutting quality. EN standard ISO 9013 retains mainly three:
- geometric accuracy,
- roughness surface,
- angle / concentricity.

This last criteria determines, based on the thickness, the perpendicularity tolerance in five classifications (ranges 1 to 5).
### NERTAJET & NERTAJET HP

Automatised plasma cutting range by Air Liquide Welding

#### NERTAJET HP range

- **High accuracy and productivity**
- CPM400-450-600wi

#### NERTAJET range

- **Industrial plasma**
- OCP100 and CPM15

#### Thickness range* of the Air Liquide Welding automatic plasma cutting installations

| Thickness (mm) | 0 | 1 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 150 | 180 | 210 | 220 | 250 |
|----------------|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| **NERTAJET** Industrial range | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40i OCP100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 CPM15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HP150 CPM400-450 (600wi) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HP300 CPM400-450 (600wi) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HP450 CPM400-450 (600wi) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HP600 CPM400-450 (600wi) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HP800 CPM400-450 (600wi) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HP900 CPM400-450 (600wi) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

#### NERTAJET HP range

- **Heavy power**
- CPM720-900

**Power**

*Indicative values*
**NERTAJET range**

NERTAJET plasma cutting installations are built with the following components:

- An automatic cycle
  The interface is either external or integrated in the numerical control.
- A power source
  That includes the torch cooling device (air or liquid according to models).
- A torch holder
  Insuring the sheet detection and voltage control functions.
- A plasma cutting torch
  With a 100% duty cycle for heavy duty production.

NERTAJET installations are easy to use and to set up. NERTAJET equipment show a large range of applications on several kind of materials and thicknesses with reduced operation costs.

**NERTAJET HP range**

What are the components of a NERTAJET HP installation?

- Power source
- Cooling unit
- Torch holder

**NERTAJET HP installations** are completely piloted with the HPC Digital Process. The management of the different parameters is full automatized. The HPC Digital Process is the command center of the complete machine including the plasma process. For more information see dedicated pages about CNC.

**Plasma marking**

All NERTAJET HP installations manage with the same torch both plasma cutting technology and plasma marking. The process uses argon and provides high quality marking for trails, identification or tracing.
NERTAJET

NERTAJET 40i - OCP100
Mechanised plasma cutting installation with a maximum cutting thickness of 40 mm.
The main benefits of the installation include:
- high cutting quality with compressed air,
- versatile applications on all materials,
- simple and fast implementation,
- arc stricking without high frequency,
- inverter technology 120 A,
- duty cycle: 100 A - 100%.

NERTAJET 40i power source

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight &amp; dimensions</td>
<td>35 kg</td>
</tr>
<tr>
<td></td>
<td>720 x 235 x 380 mm</td>
</tr>
<tr>
<td>Primary power supply</td>
<td>400 V ±15% 50/60 Hz three phase</td>
</tr>
<tr>
<td>Current consumption</td>
<td>25.2 A - 100%</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>120 A - 60% 100 A - 100%</td>
</tr>
<tr>
<td>Protection index</td>
<td>IP23</td>
</tr>
<tr>
<td>Current regulation</td>
<td>From 10 to 120 A</td>
</tr>
<tr>
<td>Gas supply</td>
<td>Air : 6 bars - 170 l/min</td>
</tr>
</tbody>
</table>

OCP 100 torch
Rugged torch offering a great simplicity of implementation:
- limited number of consumables,
- compressed air,
- without high frequency (HF),
- reduced cost of use.

Compatible with:

<table>
<thead>
<tr>
<th>PYROTOME CNC</th>
<th>EASYTOME</th>
<th>OPTITOME</th>
<th>EUROTOME, OXYTOME HPC</th>
<th>Autonomous installation for carriage, retrofit, mechanisation etc...</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thickness range

Carbon steel, Stainless steel, Aluminium and its alloys.

Industries cut: Separation cut: Limit of mid-plate piercing

2009-117
2014-222
2012-311
2013-552
2011-453
2013-222
NERT AJET 50 - CPM15
Mechanised plasma cutting installation with a maximum cutting thickness of 50 mm.

The main benefits of the installation include:
- high quality for air cutting all materials up to 25 mm of mid-plate piercing,
- excellent cutting quality on stainless steel and aluminium thanks to nitrogen and argon / hydrogen process,
- versatile applications on all materials from 0.5 to 50 mm,
- simple and fast implementation,
- liquid cooled torch allowing intensive use,
- duty cycle : 150 A - 100%.

NERT AJET 50 power source

<table>
<thead>
<tr>
<th>Characteristics</th>
<th></th>
</tr>
</thead>
</table>
| Weight & dimensions | 260 kg  
 | 1170 x 710 x 1200 mm |
| Primary power supply | 220 V / 400 V / 415 V / 440 V (+/- 10%)  
 | 50/60 Hz three phase |
| Current consumption | 109 A (230 V)  
 | 60 A (415 V) |
| Duty cycle | 150 A at 100% |
| Protection index | IP23 |
| Current regulation | From 20 to 150 A |
| Gas supply | Air : 6 bars - 150 l/min  
 | Nitrogen (N2) : 8 bars - 150 l/min  
 | ArH2 : 8 bars - 41 l/min |

Thickness range

<table>
<thead>
<tr>
<th>Thickness (mm)</th>
<th>Carbon steel</th>
<th>Stainless steel, Aluminium and its alloys</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6</td>
<td>Air / Air</td>
<td>Air / Air</td>
</tr>
<tr>
<td>1</td>
<td>Air / Air</td>
<td>N2 / N2</td>
</tr>
<tr>
<td>1.5</td>
<td>Air / Air</td>
<td>Ar H2 / N2</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>2.5</td>
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<td>3</td>
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<td>40</td>
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<tr>
<td>50</td>
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</tr>
</tbody>
</table>

Compatible with:

OPTITOME
EUROTOME, OXYTOME HPC
CYBERTOME, OXY/PLASMATOME RS
Autonomous installation for carriage, retrofit, mechanisation etc...
NERTAJET HP is a development of the classic plasma process offering an interesting alternative to laser cutting:

Quality:
- dimensional and geometrical precision of cutted parts and/or holes in a wide range of materials,
- consistent surface condition and quality of the cut faces.

Productivity:
- adjustment of electrical power to suit the speed required for each thickness,
- facility to combine several ranges of speed in a single geometry,
- possibility to combine cutting and marking operations with the same torch.

Operating costs:
- extension of the lifetime of consumable parts or reduction of the number of consumables,
- low gas consumption,
- versatility of its applications which, depending on the selected power, cut or mark from 1 to 100 mm with dry processes or water vortex.

The CPM 400 - 450 and 600 wi torch, a range of benefits:
- high cutting capacity (thicknesses and materials),
- range 2-4 cutting quality according to standard ISO 9013,
- cut with no adhering drosses,
- direct weldability of cutted parts,
- improved productivity with optimised cutting speed,
- versatility of marking and cutting operations,
- ease of use due to a removable torch and digital process HPC control,
- longer lifetime of consumables.

Installation with lower energy consumption

Air Liquide Welding plasma cutting installations are designed to provide efficiency energetic and productivity without equal. The use of natural resources is therefore less important and the impact on the environment reduced.
The dispenser "Easy Wear Parts Storage" for simplified management of consumables and accurate monitoring of your stock levels. This visual tool storage also avoids any risk of incorrect assembly of consumables.

**Thickness range**

**Carbon steel**

| Thickness (mm) | 0,8 | 1 | 2,5 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 20 | 22 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---------------|-----|---|-----|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| **HP 150**    |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **HP 300**    |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **HP 450**    |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **O2-O2**     |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **O2-N2O2**   |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **N2-N2O2**   |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

**Stainless steel**

| Thickness (mm) | 0,8 | 1 | 2,5 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 20 | 22 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---------------|-----|---|-----|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| **HP 150**    |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **HP 300**    |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **HP 450**    |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **N2-N2O2**   |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **N2-ArH2**   |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

**Aluminium and alloys**

| Thickness (mm) | 0,8 | 1 | 2,5 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 20 | 22 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---------------|-----|---|-----|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| **HP 150**    |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **HP 300**    |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **HP 450**    |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **N2-N2O2**   |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **N2-ArH2**   |     |   |     |   |   |   |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

**Compatible with:**

<table>
<thead>
<tr>
<th></th>
<th>OPTITOME</th>
<th>OXYTOME PLASMATOME HPC</th>
<th>ALPHATOME 2</th>
<th>OXYTOME / PLASMATOME RS or TWIN &amp; CYBERTOME</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NERTAJET HP 150</strong></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td><strong>NERTAJET HP 300 &amp; 450</strong></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td><strong>NERTAJET HP 600</strong></td>
<td>✔</td>
<td></td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>
**NERTAJET BEVEL HP**

*NERTAJET BEVEL HP* is an efficient tool for all cuts that require particular preparation for welding, or any other applications requiring bevels. It thus makes it possible to make V, Y, X and K bevels in a large range of thicknesses and materials.

**Characteristics of NERTAJET BEVEL HP:**
- Robotic arm type of engineering technology,
- Brushless motor with absolute encoders,
- NERTAJET HP plasma equipment (300 A or 400 A) CPM 400/450 with removable torch tip,
- Magnetic multidirectional torch impact safety system,
- HPC BEVEL numerical control,
- CDHC (Cutting Digital Height Control) function,
- AC System integrated intelligent database (automatic compensation system: height, cutting angle and kerf correction).

**Cutting quality and dimensional commitment:**
The precise analysis of your production by Air Liquide Welding makes it possible to define the limits of use relating to the plasma cutting method.

**General considerations:**
- The cutting results show high geometry quality, with few or no drosses,
- Geometric tolerances (angularity and flatness) of bevels: range 3-4 according to standard ISO 9013.(1)
- Dimensional tolerances of finished parts:
  - Tolerance class 2 according to ISO 9013.(1)
- Dimensional tolerances of noses T: +/-1 mm.

For carbon steel, the minimum nose thickness is:
- For plate thickness 5 to 15 mm: 3 to 4 mm,
- For plate thickness 5 to 30 mm: 5 mm.

(1) For optimum results, a test part should be made before the start of each production run.

**Compatible with:**

<table>
<thead>
<tr>
<th>ALPHATOME 2</th>
<th>PLASMATOME / OXYTOME RS or TWIN &amp; CYBERTOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>
Hole Master technology

Based on the latest generation plasma cutting torch **CPM 400** and optimised management of parameters via **HPC, Hole Master** technology achieves a high level of quality during production of holes in carbon and low alloy steels with a diameter to sheet thickness ratio close to 1.

**The 4 pillars for performance**

![Plasma cutting torch CPM400](image1.png) ![Plasma cutting machine](image2.png) ![HPC Digital Process numerical control](image3.png) ![A drawing and nesting software](image4.png)

The realisation of high quality holes is a major issue that can be only solved with a global approach that includes the cutting process, the machine, the numerical control and the part program.

For this purpose the Air Liquide Welding solution features are:

<table>
<thead>
<tr>
<th>Features</th>
<th>Advantages</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plasma torches integrating the latest technological developments</td>
<td>Very rigid and regular plasma arc</td>
<td>High quality and repeatable cutting</td>
</tr>
<tr>
<td>Specific setting of gas flow rates and current</td>
<td>Control of the process through real-time adjustment of parameters</td>
<td>Optimisation of the complex geometry cutting (holes etc...)</td>
</tr>
<tr>
<td>Accurate management of the cutting height</td>
<td>Allows perfect control of the sheet piercing phase and repeatability of the cutting height</td>
<td>Ensures the lifetime of consumables and the consistency of the cutting quality</td>
</tr>
<tr>
<td>High quality mechanical structure and tool-holder</td>
<td>Quick and accurate positioning of the torch</td>
<td>Get the best possible performance from the plasma cutting process</td>
</tr>
<tr>
<td>Use of the numerical control perfectly mastering the cutting trajectories and integrating the process management</td>
<td>Synchronisation of the cutting trajectories and the process management</td>
<td>Perfect mastering of the cut quality particularly those needing high accuracy</td>
</tr>
<tr>
<td>Adapted starts and ends of cuts</td>
<td>Optimised starts and ends of cuts</td>
<td>Produces highly aesthetic cuts</td>
</tr>
</tbody>
</table>

* Diameter difference between the top and bottom of the sheet on 12 mm carbon steel according to ISO 9013:
  - range 2: < 0.468 mm,
  - range 3: < 1.04 mm,
  - range 4: < 2.08 mm.
**NERTAJET HP** is also available in installation “High Power” that allows cuts up to thickness of 220 mm.

Its main advantages are:
- cut up to 220 mm on stainless steel,
- capacity and cutting quality unparalleled with water vortex process,
- combines dry process and water vortex with automatic adjustment of cycles and gases,
- intuitive control with HPC,
- economic use thanks to the excellent lifetime of the electrodes in ArH2 and water vortex process.

### CPM 720 and CPM 900 torches
Rugged torch with double liquid cooling circuit:
- dry or water process,
- cutting capacity from 30 to 600/900 A,
- multi gas,
- process case

### Thickness range

<table>
<thead>
<tr>
<th>Thickness (mm)</th>
<th>0.8</th>
<th>1</th>
<th>1.5</th>
<th>2</th>
<th>2.5</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
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<th>90</th>
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<th>110</th>
<th>120</th>
<th>130</th>
<th>150</th>
<th>200</th>
<th>220</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon steel</td>
<td></td>
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<tr>
<td>Stainless steel</td>
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<tr>
<td>Aluminium and its alloys</td>
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</tbody>
</table>


- Water vortex
- HP cut
- Quality cut
- Industrial cut
- Limit of mid-plate piercing
- Separation cut

**Compatible with:**

- **NERTAJET HP 600 or 900**: ✓
- **OXYTOME / PLASMATOME HPC**: ✓
- **OXYTOME / PLASMATOME RS or TWIN & CYBERTOME**: ✓
Main characteristics

### Electrical supply

<table>
<thead>
<tr>
<th></th>
<th>HP150</th>
<th>HP300</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Three phase supply (+/- 10%)</strong></td>
<td>230 V</td>
<td>230 V</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>400 V</td>
</tr>
<tr>
<td></td>
<td>440 V</td>
<td>440 V</td>
</tr>
<tr>
<td><strong>Current consumption</strong></td>
<td>101.2 A</td>
<td>207.4 A</td>
</tr>
<tr>
<td></td>
<td>64.3 A</td>
<td>124.3 A</td>
</tr>
<tr>
<td></td>
<td>55.2 A</td>
<td>108.7 A</td>
</tr>
<tr>
<td><strong>Cos Φ</strong></td>
<td>0.93</td>
<td>0.93</td>
</tr>
<tr>
<td></td>
<td>0.85</td>
<td>0.89</td>
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<tr>
<td></td>
<td>0.9</td>
<td>0.92</td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
<td>50/60Hz</td>
<td></td>
</tr>
<tr>
<td><strong>Duty cycle 100% @ 40 °C</strong></td>
<td>150 A - 230 V</td>
<td>300 A - 230 V</td>
</tr>
<tr>
<td><strong>Protection index</strong></td>
<td>IP21S</td>
<td></td>
</tr>
</tbody>
</table>

### Maximum gas flow cut (l/min)

<table>
<thead>
<tr>
<th>NERTAJET HP CPM400 - 450 - 600wi</th>
<th>Max flow rate (l/min)</th>
<th>HP150</th>
<th>HP300</th>
<th>HP450</th>
<th>HP600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argon (Ar)</td>
<td>CPM400 / 450 &amp; 600wi</td>
<td>7 / 25</td>
<td>11 / 26</td>
<td>11 / 26</td>
<td>11 / 30</td>
</tr>
<tr>
<td>Oxygen (O2)</td>
<td></td>
<td>20</td>
<td>28</td>
<td>40</td>
<td>40</td>
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<tr>
<td>Air (N2O2)</td>
<td></td>
<td>40</td>
<td>130</td>
<td>130</td>
<td>130</td>
</tr>
<tr>
<td>Nitrogen (N2)</td>
<td>CPM450 / 600wi</td>
<td>40 / 31</td>
<td>42 / 45</td>
<td>42 / 45</td>
<td>42 / 70</td>
</tr>
<tr>
<td>Argon Hydrogen (ArH2)</td>
<td></td>
<td>23</td>
<td>54</td>
<td>54</td>
<td>54</td>
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<tr>
<td>Water</td>
<td></td>
<td>1.5</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

### MIXOJET gas mixer

Range of devices to constitute gas mixtures such as Argon Hydrogen (ArH2) or Nitrogen Hydrogen (N2H2). They are particularly suitable for customers frequently cutting on stainless steel or aluminium.

<table>
<thead>
<tr>
<th>MIXOJET DUAL</th>
<th>Mix ArH2</th>
<th>Mix NaN2H4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range of adjustment</td>
<td>0 - 40% Hz</td>
<td></td>
</tr>
<tr>
<td>Flow</td>
<td>8 - 80 l/min</td>
<td></td>
</tr>
<tr>
<td>Inlet pressures</td>
<td>12 bar (+/- 1 bar)</td>
<td></td>
</tr>
<tr>
<td>Outlet pressures</td>
<td>10 bar (+/- 0.5 bar)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MIXOJET 20</th>
<th>Mix ArH2</th>
<th>Mix NaN2H4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range of adjustment</td>
<td>0 - 40% Hz</td>
<td></td>
</tr>
<tr>
<td>Flow</td>
<td>20 - 200 l/min</td>
<td></td>
</tr>
<tr>
<td>Inlet pressures</td>
<td>10 bar (+/- 1 bar)</td>
<td></td>
</tr>
<tr>
<td>Outlet pressures</td>
<td>8 bar (+/- 0.5 bar)</td>
<td></td>
</tr>
</tbody>
</table>
Oxycutting

A large range of oxyfuel cutting torches with performance and flexibility

For oxycutting of non or low alloyed steels from 3 to 300 mm, Air Liquide Welding offers a full range of oxyfuel cutting torches: OXYCUT G1, OXYCUT MACH or MACH HP to install on semi automatic machines (gantry machines) or fully automatic machines (gantry machines type OXYTOME HPC).

According to your needs, you will choose, mixing nozzles with the OXYCUT G1, and cutting torches internal mixing with high speed and high quality with OXYCUT MACH or MACH HP.

In choosing OXYCUT G2, you can cut thicknesses from 200 to 900 mm.

High technology and productivity range

MACH HP

Main advantages of MACH HP:
- productivity,
- cutting quality,
- easy to use,
- lifetime,
- capacity of mid-plate piercing up to 300 mm,
- torch in short or long version.

To complete the automatic oxycutting offer Air Liquide Welding proposes many accessories:
- VXK beveling system,
- strip cutting system,
- tiltable nozzle for beveling,
- flash back-arrestors,
- measuring and control accessories,
- etc...

Thickness 6 to 300 mm

High speed cutting nozzles

System ToolFREE

System OxyCOOL

To complete the automatic oxycutting offer Air Liquide Welding proposes many accessories:
- VXK beveling system,
- strip cutting system,
- tiltable nozzle for beveling,
- flash back-arrestors,
- maintenance and cleaning tools,
High thickness range

**Thickness 200 to 900 mm**

**OXYCUT G2**
Main advantages of OXYCUT G2:
- cutting capacity up to 900 mm,
- cutting quality,
- robustness,
- cooling by liquid.

**Versatile range**

**OXYCUT G1**
Main advantages of OXYCUT G1:
- cutting capacity from 3 to 300 mm,
- torch in short or long version,
- robustness,
- easy to use,
- according to the price level and the quality needed, possibility to use nozzles for manual or automatic torch.

**OXYCUT MACHOXY**
Main advantages of OXYCUT MACH:
- cutting capacity from 3 to 300 mm,
- cutting quality,
- robustness,
- easy to use,
- low cost of consumables.

Optimised performance of OXYCUT, MACHOXY or MACH HP oxyfuel cutting torches thanks to the HPC controller notably:
- a system for automatic process control HPC,
- a detection and capacitive height sensing with probe,
- a robust and simply maintained igniter,
- a height sensing probe and igniter retractable during plate piercing phases,
- instantaneous passage between the heating and over-heating phases which limits melting of the cut egdes.
Cutting machines range

A wide range from the simple mechanised carriage to fully automatised large capacity machines, from torch for straight cut to the 3D plasma cutting tool.

The complete offer of Air Liquide Welding can answer to all your cutting needs with oxycutting and/or plasma process.

The various tools and options will enable you to produce parts with shapes, with or without bevel for occasional use or intensive production, on small or large format sheet metal.

Examples of equipment and options:
- CNC HPC digital process, D610,
- NERTAJET BEVEL HP,
- cutting of tube,
- numerical drilling unit,
- micro-percussion marker,
- etc...
### Main characteristics, equipment and options

<table>
<thead>
<tr>
<th>MACHINES</th>
<th>Transversal stroke</th>
<th>Useful longitudinal stroke</th>
<th>PLASMA (maximal number)</th>
<th>OXY (maximal number)</th>
<th>Main technological options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 m</td>
<td>1.5 m</td>
<td>2 m</td>
<td>2.5 m</td>
<td>3 m</td>
</tr>
<tr>
<td></td>
<td>3 m</td>
<td>3.5 m</td>
<td>4 m</td>
<td>5 m</td>
<td>6 m</td>
</tr>
<tr>
<td></td>
<td>6.5 m</td>
<td>...</td>
<td>12 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PYROTOME CNC</td>
<td></td>
<td></td>
<td>15</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>EASYTOME</td>
<td></td>
<td></td>
<td>4</td>
<td>1</td>
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<tr>
<td>OPTITOME</td>
<td></td>
<td></td>
<td>3</td>
<td>1 (150 A)</td>
<td>1</td>
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<tr>
<td>ALPHATOME 2</td>
<td>3 to 24</td>
<td></td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>EUROTOME</td>
<td>3 to 24</td>
<td></td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>OXY/PLASMATOME HPC</td>
<td>3 to 30</td>
<td></td>
<td>2</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>OXY/PLASMATOME RS HPC</td>
<td>3 to 30</td>
<td></td>
<td>2</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>OXY/PLASMATOME TWIN RS</td>
<td>3 to 24</td>
<td></td>
<td>-</td>
<td>2</td>
<td>-</td>
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<td>CYBERTOME</td>
<td>3 to ...</td>
<td></td>
<td>2</td>
<td>-</td>
<td>12</td>
</tr>
</tbody>
</table>
Portable carriages
TAGLIATUBI & PYROTOME SE

Two practical and functional carriages for ancillary cutting jobs in the workshop and on site.

TAGLIATUBI
The TAGLIATUBI carriage allows the mechanised oxycutting of tubes with outside diameter varying from 6’’ (150 mm) to 48’’ (1 200 mm) and having a thickness from 5 to 50 mm.

It is adapted for the execution of cuts:
- straight and with bevel +/- 45° with one oxyfuel torch,
- X and Y bevel when the machine is equipped with two torches and its additional accessories (in option)

PYROTOME SE, the carriage on rails
The PYROTOME SE is a portable multiprocess carriage for straight or V bevel cuts.

Its electronic speed regulation (10 to 125 cm/min) and robustness make it the indispensable tool for intensive use.

The PYROTOME SE basic version is equipped for oxycutting (plasma cutting on request)

PYROTOME CNC

PYROTOME CNC is a small mechanised machine integrating a digital controller for cutting on metal sheets format of 1 000 x 2 000 mm.

The programming is carried out from a library of standard shapes integrated in the digital controller or from the drawing and nesting software included in the package. Equipped with one oxycutting torch or one plasma air installation, PYROTOME CNC is simple to implement, versatile, rugged and economical.

<table>
<thead>
<tr>
<th>Plasma process</th>
<th>Oxyfuel process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>1</td>
</tr>
<tr>
<td>Type</td>
<td>NERTAJET 40i</td>
</tr>
<tr>
<td></td>
<td>OXYCUT G1 short</td>
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<table>
<thead>
<tr>
<th>Options</th>
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</thead>
<tbody>
<tr>
<td>Arm for cut width 1.5m</td>
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<tr>
<td>Additional rail</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Cut</th>
<th>Width</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lox</td>
<td>1 000 mm</td>
<td>1 400 mm</td>
</tr>
<tr>
<td>Lop</td>
<td>2 000 mm</td>
<td>2 500 mm</td>
</tr>
<tr>
<td>Total width *</td>
<td>1 400 mm</td>
<td></td>
</tr>
<tr>
<td>Total length *</td>
<td>2 500 mm</td>
<td></td>
</tr>
<tr>
<td>Total height *</td>
<td>500 mm</td>
<td></td>
</tr>
<tr>
<td>Total weight</td>
<td>85 kg</td>
<td></td>
</tr>
</tbody>
</table>

Main technical characteristics:
- cutting speed up to 2.5 m/min,
- cut up to 50 mm thick,
- possibility to extend the railway of the machine up to 15 m.

(*) excluding safety zone
**Monobloc plasma cutting machine**

**Easy to use, versatile, efficient and cost effective.**

The EASYTOME concept relies on fast and simple set up, by its design software and integrated tool path, the procedure for cutting one or more pieces is extremely simple and fast.

Brushless motor system with planetary reduction provides accuracy, fluidity and dynamism of movements.

The rugged monobloc frame integrates table with compartments, the machine is simple to use and maintain.

Associated with the ESSENTIAL fume extraction and treatment range, the machine offers great efficiency and a high-quality working environment.

Through the NERTAJET 40i/OCP100 technology with compressed air, the machine produces a high level of quality for the cutting on carbon steel, stainless steel and light alloys.

**Main technical characteristics:**
- travel speed 21 m/min,
- numerically encoded tool holder managed by the numerical controller,
- data base of plasma parameters integrated,
- cut of tube in option.

<table>
<thead>
<tr>
<th>Version</th>
<th>1020</th>
<th>1515</th>
<th>1530</th>
<th>2040</th>
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</thead>
<tbody>
<tr>
<td>Cutting width (mm)</td>
<td>1000</td>
<td>1500</td>
<td>1500</td>
<td>2000</td>
</tr>
<tr>
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<td>1500</td>
<td>3000</td>
<td>4000</td>
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<td>Total width (mm) *</td>
<td>1770</td>
<td>2000</td>
<td>2000</td>
<td>2500</td>
</tr>
<tr>
<td>Total length (mm) *</td>
<td>2800</td>
<td>2200</td>
<td>3600</td>
<td>4800</td>
</tr>
<tr>
<td>Total height (mm) *</td>
<td>1350</td>
<td>1350</td>
<td>1350</td>
<td>1350</td>
</tr>
</tbody>
</table>

(*): excluding safety zone and equipments (plasma power source, filter, etc...)

**Plasma process**

| Number | 1 |
| Type   | NERTAJET 40i |
| Option | Cut of tube, Beam extension |
Monobloc plasma cutting machine: robust, versatile and efficient

The OPTITOME 15 is a monobloc plasma cutting machine driven by numerical controller. It is designed for customers who want to optimize their investment with a tool that can work intensively.

It fulfills the requirements for industrial plasma cutting or HP thanks to:
- an extremely rigid and lightweight transverse beam with an efficient drive that allows to obtain optimum cutting results,
- robustness and rigidity of the frame,
- a table incorporated and independent limiting the mechanical stresses due to the thermal cutting, sheet metal loading or unloading of the cutted pieces.

Main technical characteristics:
- travel speed 15 m/min,
- brushless motorisation guaranteeing accuracy and fluidity of movement,
- separate table on the machine frame,
- management by HPC digital process or D610.

<table>
<thead>
<tr>
<th>Version</th>
<th>1515</th>
<th>1530</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Total width (mm) *</td>
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<tr>
<td>Total length (mm) *</td>
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<td>4920</td>
</tr>
<tr>
<td>Total height (mm) *</td>
<td>1714</td>
<td>1714</td>
</tr>
</tbody>
</table>

Plasma process | OXY process
---|---
Number | 1 | 1 (option)
Type | NERTAJET 50 NERTAJET HP 150 OXYCUT MACH OXY MACH HP
| Options | Marker WEN, felt

(*): excluding safety zone and equipments (plasma power source, filter, etc...)
High precision plasma cutting machine: high quality, robustness and productivity

High quality plasma cutting requires more and more precision. The ALPHATOME® allows cutting and marking by plasma process on non-alloy or low-alloy carbon steel, stainless steel and light alloy plates with a thickness from 0.5 to 50 mm.

Its linear guideline systems fully protected, double beam concept with central cutting tool, fluidity of movement and dynamism make a machine specially designed for HP plasma cutting at intensive use.

- 2 versions available:
  - “package version” (fixed dimensions)
  - version with implantation “à la carte”,
- high speed up to 22.5 m/min (15 m/min package version),
- numerical control by HPC digital process: management and control fully automated of plasma processes,
- Brushless motorisation ensuring accuracy and fluidity of movement,
- rails with roller bearing fully protected,
- motor gearboxes with play adjustment

In the version “à la carte”, with quick-opening side doors and retractable curtain system located on the front of the beam, it fits perfectly in the workshop environment by significantly reducing noise and visual pollution.

<table>
<thead>
<tr>
<th>Package version</th>
<th>&quot;À la carte&quot; version</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of cutting tool</td>
<td>1</td>
</tr>
<tr>
<td>Type plasma</td>
<td>NERTAJET HP150 NERTAJET HP300</td>
</tr>
<tr>
<td>Main options</td>
<td>• Remote control • Laser positioning • Visio Process &amp; remote control • NERTAJET BEVEL HP • Numerical drilling unit • Cut of tube • Micro percussion marker • 4\textsuperscript{th} axis • R = additional rail L = 2 or 3 m Useful travel maxi = 24 m</td>
</tr>
<tr>
<td>Format machine</td>
<td>Format of the beam width</td>
</tr>
<tr>
<td>2040</td>
<td>2060</td>
</tr>
<tr>
<td>Cutting width (mm)</td>
<td>2000</td>
</tr>
<tr>
<td>Cutting length (mm)</td>
<td>4000</td>
</tr>
<tr>
<td>Total width (mm) *</td>
<td>3271</td>
</tr>
<tr>
<td>Total length (mm) *</td>
<td>6510</td>
</tr>
<tr>
<td>Total height (mm) *</td>
<td>2165</td>
</tr>
</tbody>
</table>

(*) excluding safety zone and equipments (plasma power source, filter, etc ...)

Main technical characteristics:

- 2 versions available:
  - “package version” (fixed dimensions)
  - version with implantation “à la carte”,
- high speed up to 22.5 m/min (15 m/min package version),
- numerical control by HPC digital process: management and control fully automated of plasma processes,
- Brushless motorisation ensuring accuracy and fluidity of movement,
- rails with roller bearing fully protected,
- motor gearboxes with play adjustment
EUROTOME

Thermal cutting machine: easy to use, versatile and economical

EUROTOME: a rugged mechanical machine design which brings together all the necessary qualities for the implementation of oxycutting, plasma and marking processes.

Equipped with the D610 numerical control with an high quality touchscreen, the EUROTOME fits to all fabrication needs from the lowest thickness (0.5 mm) to the most important with all processes (oxyflame cutting and/or plasma).

Its concept is versatility, EUROTOME can be equipped with various tools: 1-2 oxyfuel torches, a plasma installation, a marking tool and a VXK bevelling tool.

The various sizes of beam width (sizes 20, 25 & 30) and length of railway (original rail effective travel 3 m can be extended with 3 m or 1.5 m modules), EUROTOME can adapt to a wide variety of sheet metal sizes: 1500 x 3000 mm, 2000 x 6000 mm.

Main technical characteristics:
- travel speed 10 m/min or 15 m/min with double motorisation,
- Brushless motorisation ensuring accuracy and fluidity of movement,
- separate table on the machine frame, managed by D610.

<table>
<thead>
<tr>
<th>&quot;A la carte&quot; version</th>
<th>20</th>
<th>25</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutting width (mm)</td>
<td>2425</td>
<td>2925</td>
<td>3425</td>
</tr>
<tr>
<td>Cutting length (mm)</td>
<td>3050-R</td>
<td>3050-R</td>
<td>3050-R</td>
</tr>
<tr>
<td>Total width (mm) *</td>
<td>3920</td>
<td>4420</td>
<td>4920</td>
</tr>
<tr>
<td>Total length (mm) *</td>
<td>4715-R</td>
<td>4715-R</td>
<td>4715-R</td>
</tr>
</tbody>
</table>

R = additional rail by modules of 3 m or 1.5 m / useful travel 24 m maxi

(*) excluding safety zone and equipments (plasma power source, filter, etc...)

<table>
<thead>
<tr>
<th>Plasma process</th>
<th>OXY process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>1 (option)</td>
</tr>
<tr>
<td>Type</td>
<td>NERTAJET 45i, NERTAJET 50</td>
</tr>
</tbody>
</table>

Main options
- Pneumatic marker, straight bevelling block VXK, automatic igniter, electrical cabinet cooling by vortex.
**OXYTOME & PLASMATOME HPC**

**Thermal cutting machine completely automated, robust, versatile and efficient**

The OXYTOME / PLASMATOME HPC range integrates all the features required to implement the plasma and/or oxycutting process.

These machines are suitable for all trades using plasma and oxycutting.

Their concept is versatility and a wide choice:

**Plasma installations:**
- from NERTAJET 50 to NERTAJET HP 900 in single torch or bi-torch.

**Applications:**
- cut from 0.5 to 300 mm thickness low alloy steels or non-alloy steels,
- 220 mm thickness stainless steel,
- 200 mm thickness light alloys.

**Uses:**
- dry plasma cutting to immersed plasma cutting,
- cut of tubes.

**Main technical characteristics:**
- travel speed 15 m/min,
- double motorisation in base version,
- HPC digital process: management and control fully automated for plasma and oxycutting process,
- OXYTOME HPC can receive up to 6 tools (6 OXY or 4 OXY and 2 plasma),
- PLASMATOME HPC can receive up to 2 plasma installations.

<table>
<thead>
<tr>
<th>&quot;A la carte&quot; version</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
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<td>3425</td>
<td>3925</td>
<td>4425</td>
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<tr>
<td>Cutting length (mm)</td>
<td>3050+R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total width (mm) *</td>
<td>3420</td>
<td>3920</td>
<td>4420</td>
<td>4920</td>
<td>5420</td>
<td>5920</td>
</tr>
<tr>
<td>Total length (mm) *</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*R = additional rail by modules of 3 m or 1.5 m / useful travel 30 m maxi.

(\*: excluding safety zone and equipments (plasma power source, filter, etc...))
OXYTOME & PLASMATOME RS

Medium and large format machines for thermal cutting.
Robust, versatile and efficient for intensive use.

The OXYTOME / PLASMATOME RS range integrates all the features required to implement the plasma and/or oxycutting process.

These machines of medium and large format are suitable for all trades requiring intensive production.

In semi automatic version or fully automated they implement versatile applications:

Plasma installations:
• from NERTAJET 50 to NERTAJET HP 900 in single torch or bi-torch.

Applications:
• cut from 0.5 to 300 mm thickness low alloy steels or non-alloy steels,
• 220 mm thickness stainless steel,
• 200 mm thickness light alloys.

Uses:
• dry plasma cutting to immersed plasma cutting with or without automatised bevelling.

Main technical characteristics:
- travel speed 15 m/min,
- double motorisation in base version,
- Brushless motorisation ensuring accuracy and fluidity of movement,
- separate table on the machine frame,
- managed by HPC digital process or D610,
- OXYTOME RS can receive up to 8 tools (8 OXY or 6 OXY and 2 plasma),
- PLASMATOME RS can receive up to 2 plasma installations,
- with version HPC digital process management and control fully automated for plasma and oxycutting process.

<table>
<thead>
<tr>
<th>&quot;A la carte&quot; version</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
<th>50</th>
<th>55</th>
<th>60</th>
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<td>5925</td>
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<td>6925</td>
</tr>
<tr>
<td>Cutting length (mm)</td>
<td>3050+R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total width (mm) *</td>
<td>4920</td>
<td>5420</td>
<td>5920</td>
<td>6420</td>
<td>6920</td>
<td>7420</td>
<td>7920</td>
<td>8420</td>
</tr>
<tr>
<td>Total length (mm) *</td>
<td>4715+R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R = additional rail by modules of 3 m or 1.5 m / useful travel 30 m maxi.

(\*: excluding safety zone and equipments (plasma power source, filter, etc...))

Plasma process | OXY process
--- | ---
Number | up to 2 | up to 8

8 tools maxi

Type
- NERTAJET 50
- NERTAJET HP150
- NERTAJET HP300
- NERTAJET HP450
- NERTAJET HP600
- NERTAJET HP900
- OXYCUT MACH OXY
- MACH HP
- OXYCUT G2

Main options
NERTAJET BEVEL HP cut of tube, micro percussion marker, laser positioning, 4th axis, automatic indexing, straight bevelling block VXK, camera, aerial cable chains.
Robust high-precision machines in medium and large format for thermal cutting with fully automated control.

The OXYTOME / PLASMATOME HPC TWIN range is proposed in medium and large format. It fits all trades for the lowest thicknesses (0.5 mm) to the largest accessible for plasma and/or oxy-cutting.

Its linear guideline systems fully protected, double beam concept, fluidity of movement and dynamism make a machine specially designed for plasma or OXY HP cutting at intensive use.

It is perfectly adapted to implement bevelling applications with plasma HP all automated.

Combined with one or more torches, it provides versatility cutting applications and cuts of high quality: the HP Air Liquide Welding quality.

Main technical characteristics:
- travel speed 15 m/min,
- double motorisation in base version,
- Brushless motorisation ensuring accuracy and fluidity of movement,
- HPC digital process: management and control fully automated for plasma and oxy-cutting process,
- OXYTOME HPC TWIN can receive up to 3 tools (3 OXY or 1 OXY and 2 plasma),
- PLASMATOME HPC TWIN can receive up to 2 plasma installations,
- double beam transverse with roller bearing,
- rails with roller bearing fully protected on longitudinal axis,
- motor gearboxes with play adjustment.

<table>
<thead>
<tr>
<th>“A la carte” version</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
<th>50</th>
<th>55</th>
<th>60</th>
<th>65</th>
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</thead>
<tbody>
<tr>
<td>Cutting width (mm)</td>
<td>3425</td>
<td>3925</td>
<td>4425</td>
<td>4925</td>
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<td>6925</td>
</tr>
<tr>
<td>Cutting length (mm)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total width (mm) *</td>
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<td>5420</td>
<td>5920</td>
<td>6420</td>
<td>6920</td>
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<td></td>
</tr>
</tbody>
</table>

R = additional rail by modules of 2 m or 3 m / useful travel 24 m maxi.

(*) excluding safety zone and equipments (plasma power source, filter, etc...)

<table>
<thead>
<tr>
<th>Plasma process</th>
<th>OXY process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>up to 2</td>
</tr>
<tr>
<td>Type</td>
<td>up to 3 tools maxi</td>
</tr>
<tr>
<td>NERTAJET HP150</td>
<td>NERTAJET HP300</td>
</tr>
<tr>
<td>NERTAJET HP450</td>
<td>NERTAJET HP600</td>
</tr>
<tr>
<td>NERTAJET HP900</td>
<td>NERTAJET HP900</td>
</tr>
<tr>
<td>OXYCUT MACH OXY MACH HP</td>
<td></td>
</tr>
</tbody>
</table>

Main options
- NERTAJET BEVEL HP: cut of tube, micro percussion marker, laser positioning, 4th axis, automatic indexing, straight bevelling block VXK, camera, aerial cable chains.

OXYTOMe & PLASMATOMe HPC TWIN
The CYBERTOME range combines all the qualities necessary for the implementation of the plasma process and/or oxycutting high capacity.

These machines large and extra large format are adapted to all trades for the lowest thickness (0.5 mm) to the largest accessible for plasma and / or oxycutting.

In semi automatic version or fully automated they implement versatile applications:

**Plasma installations:**
- from NERTAJET 50 to NERTAJET HP 900 in single torch or bi-torch,

**Applications:**
- cut from 0.5 to 300 mm thickness low alloy steels or non-alloy steels,
- 220 mm thickness stainless steel and 200 mm thickness light alloys,

**Uses:**
- dry plasma cutting to immersed plasma cutting with or without automatised bevelling.

**Main technical characteristics:**
- travel speed 15 m/min or 30 m/min,
- double motorisation in base version,
- Brushless motorisation ensuring accuracy and fluidity of movement,
- managed by HPC digital process or D610.

The CYBERTOME may receive:
- automatic plasma bevelling unit,
- oxycutting VXK bevelling unit,
- cut of tube,
- thermal protection (heat shields and cooling machine) for cutting very thick.

**Applications:**
- HPC digital process allowing management and control fully automated for plasma and oxycutting process,
- automatic indexing of tools,
- different marking tools for traceability,
- cut of tube,
- thermal protection (heat shields and cooling machine) for cutting very thick.

**Main options**
- NERTAJET BEVEL HP, cut of tube, micro percussion marker, laser positioning, 4th axis, automatic indexing, straight bevelling block VXK, camera, aerial cable chains.

### Other dimensions on request

<table>
<thead>
<tr>
<th>Number</th>
<th>Plasma process</th>
<th>OXY process</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 2</td>
<td>up to 12 tools maxi</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Plasma process</th>
<th>OXY process</th>
</tr>
</thead>
<tbody>
<tr>
<td>NERTAJET 50</td>
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<td>up to 12</td>
</tr>
<tr>
<td>NERTAJET HP150</td>
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<td>NERTAJET HP600</td>
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<td>NERTAJET HP900</td>
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<td>OXYCUT MACH OXY</td>
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<td>MACH HP</td>
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<tr>
<td>OXYCUT G2</td>
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</tbody>
</table>

(*) excluding safety zone and equipments (plasma power source, filter, etc...)
**Numerical controllers and command center**

**D610-HPC numerical controller**

Numerical controller based on PC with open architecture and software under Windows environment for better performance particularly in multi-tasking.

This command is built from the latest generation processors and is equipped with a color touch screen 15” provides access to a friendly Human Machine Interface (HMI).

With its 50 standard shapes library and the most advanced communication modes, the D610-HPC is a numerical controller perfectly adapted to automatic cutting applications.

In addition, software for 2D drawing board (option) allows the integration of more complex parts.

**HPC DIGITAL PROCESS command center**

**HPC DIGITAL PROCESS includes:**

- a numerical controller with its HMI,
- the control of processes,
- a control console for all start-up and emergency operations.

This control concept of Air Liquide Welding has been specially developed for installation in modern machine shops at the leading of technology.

It implements the latest progress in plasma cutting and oxycutting.

**Easy integration means:**

- a tool that is perfectly suited to your various cutting jobs and specially designed to assist the operator,
- an easy-to-use plasma arc cutting machine,
- a modern, innovative and user-friendly design,
- draw complex parts thanks to drawing software 2D on board (option)

**How works the automatic adjustment of processes on HPC DIGITAL PROCESS ?**

**Phase 1 :**

After selecting the program, the operator chooses the material to be cut.

**Phase 2 :**

HPC provides one or more solutions adapted to the application.

**Phase 3 :**

After accepting the proposal, the setting of each parameter is done automatically.

**Phase 4 :**

When the tool (plasma torch or oxyfuel torch) is equipped with consumables recommended, the machine is ready to cut.

You have chosen to use the data base of HPC or to create your own data base.

JOB function gives you the possibility of attaching this process management to a program loaded and selected in the numerical controller.

This combination can be stored by the JOB function and then used by any operator.
**Equipment**

**Equipment for safety**

*Emergency stop cable*

Equipping the EUROTOME, OXYTOME/PLASMATOME with or without reinforced structure and CYBERTOME, it is used to trigger an emergency stop from any point of the working area. The equipment includes a cable at the front and at the rear of the machine.

**Photocells**

Equipping the ALPHATOME, they are used to trigger an emergency stop from any point of the work area operator. The equipment includes a cell to the front and rear of the machine (and between the beams for package version).

**Emergency stop line**

All Air Liquide Welding machines are equipped with an emergency stop line allowing the operator to stop the machine from any point of the work station. As imposed by the machinery directive, the entire machine including filtration system or other external equipment must be interconnected and stop immediately when actuated.

**Equipment for oxyfuel process**

*Torch holder*

PO 150 for oxyfuel

Torch holder 150 mm travel, robust and specially designed for the implementation of thermal processes. Also available in 250 mm travel.

*Auto gas for oxyfuel process*

Linked with the HPC, the oxyfuel process can be adjusted automatically thanks to a auto gas box. The solution developed by Air Liquide Welding is a dynamic system with accurate setting of the gas pressure.

*Set capacitive sensor/automatic ignition for OXY torch with OXY SAFE PIERCING*

Proposed in the basic version on OXYTOME HPC, OXYTOME RS HPC and OXYTOME TWIN HPC, this unique system on the market, allows to retract during phases of piercing both the sensor and the igniter. OXY SAFE PIERCING authorizes mid plate piercing up to 150 mm thickness in automatic cycle without any disassembly of the probe or the igniter.
Options

Markers

Pneumatic marking
For punching and engraving plates. The depth of marking is controlled by varying the compressed air pressure and the speed. Recommended for use on plates thicker than 15 mm.

Wen marker
This pneumatic vibrator engraves sheet metal by slightly scoring the surface finish. Well adapted for thin and medium thicknesses.

Felt marking
This marker uses a felt tip which has been especially selected for its strength. It operates by gravity and does not alter the surface finish of the material. It is intended for use on galvanized steels, aluminium, stainless and black prepainted steels, depending on the quality of their surface finish.

Plasma marking
Low power plasma arc for engraving or tracing on all metallic materials. The depth of marking is controlled by the plasma arc power. The height is servo-controlled by the arc voltage. It is the ideal complement to machine equipped with torches for oxy cutting.

Micro-percussion marking
It allows a fast and accurate marking. This system can carry out several lines marking with small characters (less than 10 mm). To perform the marking, the micro marker box is automatically positioned above the sheet metal. Then it drives a pen following its 2 axes dedicated to draw characters and mark the sheet with the desired power (marking depth). During this operation, the principal axes of the machine are static and unsolicited, which allow to reduce mechanical wear of gearmotors.

Special torch holders

Torch holder 800
This tool holder 800 mm travel can cut on dished ends with a plasma torch in straight position. Its robust design gives it great rigidity even when the tool holder is fully deployed.

High temperature torch holder
It is especially adapted for cutting very thick material in flame cutting. Its robust design enables it to support the high temperatures found on flame cutting applications up to 900 mm thick.
Options for bevelling applications

Bevel tool for oxyfuel torch
This tool easy to install and use gives the possibility to realize different kind of simple bevel following a straight line: standard V bevel or tapered bevel (bevel over 45° cut on plate edge).

Tapered bevel (bevel over than 45°)
This tool is well adapted to realize tapered bevel on plate edge with or without the assistance of a mechanical sensor to follow the distortion of the plate.

Plasma bevelling following X and/or Y axis
For bevels with a HP plasma torch following X and/or Y axis of the machine. This option can be provided in two configuration:
- straight bevel cut following X,
- straight bevel cut following X & Y.
Those 2 options are equipped of a graduated sector to facilitate the angle torch adjustment. A rotation bloc is added to be able to do bevels following the two axes with the second version of the option.

Bevelling block V X K
For bevels parallel to the axes using mechanical sensors. It allow to work on thicknesses up to 70 mm. The system is equipped with 3 short oxyfuel torches and give the possibility to realize V, Y, X and K bevels. Each side oxyfuel torches can be adjust following an angle from 10 to 45°. The two robust rollers of the mechanical sensor are cooling by compressed air. In option, the VXK can be fit on electrical tool holder with a quick mechanical exchanger. It gives the possibility to work with a standard straight cutting torch or with a VXK bevelling block.

Full automatic plasma bevelling unit NERTAJET BEVEL HP
Please refer to chapter plasma installation NERTAJET BEVEL HP.
Options for multi tools cutting

Strip cutting systems
Tools to realize strip cutting. Two systems are available:
One system to fit directly on the oxy-fuel torch.
The system use two set of nozzles.
The distance between each other is adjusted by opening more or less the tool.
Distance between the 2 nozzles:
from 40 mm to 450 mm (600 mm in option).
The other system uses two extra burners fixed on each side of the master one.
Two mechanical slides give the possibility to adjust the distance between the 3 tools.
It is possible to use the capacitive sensor to follow the plate distortion.
Distance between the 3 torches: from 80 mm to 155 mm.

HPC 4th axis
Automatic adjustment of the distance between cutting tools done with two CNC axes.
This option can be managed automatically with the nesting software. Inside a same program, different distances can be adjusted between the two torches depending the parts sizes to cut.
This option is mainly used with plasma system but can also be adapted with oxy-fuel process. This option is fully managed by HPC thanks to a very nice control interface.

HPC Automatic indexing
Numerical automatic adjustment of the distance between two or many cutting tools. This option can be managed automatically with the nesting software.
Inside a same program, different distances can be adjusted between the torches depending the parts sizes to cut. This option is mainly used with oxy-fuel process. Possibility to use it from 2 to 8 torches.
This option is fully managed by HPC thanks to a very nice control interface.
### Options

#### Cooling systems & thermal protections

**Electrical cabinet cooler vortex system**
Cooling done by vortex effect with air pressurized. It cools the electrical cabinet and limit the introduction of dusts due to the over pressure. Designed to work in hostile environment.

**Air cooling system for electrical cabinet**
Air Cooling system with heat exchanger reducing drastically the temperature inside the electrical cabinet. Designed to work in countries where temperature reach 50 °C and more.

#### Machine thermal protection
The machine can be equipped with different thermal protection able to work in the more hostile condition especially when customer cut with oxyfuel process with many tools or on very big thicknesses.

#### Operator visual protection
Curtain easy to adjust to protect the operator against the plasma electric arc.

#### Voltage inverter
This option is developed to protect the CNC or the machine against the fluctuation and hazard on the voltage supply. It can be propose in two version:
- one able to protect the CNC,
- one able to protect the machine & CNC *.

*: oxyfuel process will be cover but not the plasma
Positioning
Visioprocess
A camera is used to display the torch position on a control screen. The monitored area is about 250 mm in diameter and promotes correct positioning before and during cutting. The device also monitors the arc. The operator can control cutting operations and position the torch no matter where the control console is located. The camera is protected by an anti-dazzle device to protect it from the effects of the plasma arc. The operator can choose between a monochrome or color display.

Positioning laser with green cross
Controlled by the interface of the HPC, this tool helps the operator to position the machine to start cutting program or make the alignment of the sheet metal.

CNC options
Software MAGICNEST JUNIOR for HPC
Module design and programming installed on digital HPC command to:
- import all type of program (dxf, dwg, dstv...),
- create customized drawing,
- use a database of standards forms complementary than the HPC propose in standard,
- customize its own standard forms (optional),
- create a machine program,
- apply technology for chamfering (optional).

Production monitoring on HPC
Module dedicated for production monitoring. The HPC saves all the actions done during production. Those files can be edited with Excel or can be automatically analyzed by CAD/CAM software. Those files data can be saved on a USB Key or directly on a customer directory if the CNC is connected on his network.
Data available:
- number of cutting,
- time of cutting,
- material and process chosen,
- CNC default,
- failed cut part...
Pneumatic drilling unit

Pneumatic drilling system:
This option is a pneumatic drilling mounted on a pneumatic slide equipped with ball bearing rails giving it rigidity and precision. It can be used to produce holes or centering holes.

Main characteristics:
- capacity diameter for carbon steel: 8 mm,
- capacity diameter for aluminium: 10 mm,
- feed force: 350 N,
- max power: 0.22 kW,
- speed: 1 100 rpm,
- maximum stroke: 80 mm,
- max air flow: less than 6 l/s,
- standard drill chuck.

Numerical drilling unit

Drilling unit can be fitted on cutting machine to combine drilling, thermal cutting and marking in one operation:
- minimum flow lubrication using internal or external tool micro lubrication,
- sheet metal press system,
- tool length measure system,
- manual or automatic tool exchanger.

Fully interfaced with the HPC DIGITAL PROCESS System, the management of the drilling unit is simple and user friendly. The operator only has to choose the material and the diameter of the tool (5 to 30 mm). The database (spindle speed, rotated speed, ...) can be updated by the operator depending on the tool used. Minimum and maximum sheet metal thickness depends on the application and cutting machine. Material could be drilled: carbon and stainlesse steel. In option an automatic tool exchanger up to 4 tools can be used.

<table>
<thead>
<tr>
<th>Technical characteristic</th>
<th>Drill diameters</th>
<th>Max. stroke</th>
<th>Tool type</th>
<th>Rotation’s rate continuously adjustable</th>
<th>Max. spindle motor power</th>
<th>Max. thrust</th>
<th>Max. thrust to bloc the metal sheet</th>
<th>Tool-holder vertical speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 5 to 30 mm</td>
<td>300 mm</td>
<td>ISO 40</td>
<td>5 000 rpm</td>
<td>5.2 kW</td>
<td>5 400 N</td>
<td>80 kg</td>
<td>15 m/min</td>
<td></td>
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2014-223
2010-714
2010-712
2003-298_ret
Cut of tube

This option has been developed to meet many cutting applications on round tube from small to large diameter. Thanks to its software interfaces, the machine is able to cut different types of geometry on tube: stitching, cod mouth, separation cut, straight bevel etc...

The option is composed of a cabinet control interconnected to the D610 numerical controller or the HPC DIGITAL PROCESS, of a motorised headstock with smoke suction duct and an adjustable positioning system according to the diameters of tubes.

The positioning of the tube offers many advantages including that hold the pieces once they are cut and avoiding falls (safety, damaged parts).

Main technical characteristics:
- travel speed 15 m/min,
- with standard motorised headstock:
  - diameter up to 600 mm,
  - length up to 6 m,
  - weight max of tube: 550 kg,
  - speed max: 30 rpm.
- central fumes extraction,
- tube positioning by cross rotators or tube rotators,
- others dimensions on request.
Cutting software

A well adapted computerized help increases the automation and the return on investment of machines fitted with the CNC. Air Liquide Welding can supply software specially designed for thermal cutting CAD, pressure vessel shapes developed flat, interleaving, plate stock control, communication, translation of external files and files produced by other CAD systems (DXF, DWG, DSTV...).

MAGICNEST Software range
Four products that run with the latest Windows operating systems to enable to prepare and control thermal cutting production. The software is designed to be intuitive, simple and user-friendly, while offering powerful and effective functions.

MAGICNEST JUNIOR
Principally designed for small sized cutting machines, MAGICNEST JUNIOR is an intuitive and easy-to-use CAD software that integrates 2D designing tools. Its cutting technology, simulation modules complement the product for the fuss-free control of the machine. It can also read and modify all types of drawing - DXF, DWG, DSTV etc. The serial transmission module WINRS completes the functionalities of the product.

MAGICNEST 01 (manual nesting)
MAGICNEST 01 includes MAGICNEST JUNIOR and a nesting module that allows to manage quotes, orders, sheet stock and piece nesting. Its database makes it possible to obtain accurate quotes in a very short time, offer the manual cutting strategy, save know-how and generate machine programs. Its many tools - multiple-torch cutting, junctions, bridges, will enable you to fully control production and retain simplicity and intuitiveness of use.
MAGICNEST 10 (automatic nesting)
This is the top end version of MAGICNEST 01 for thermal cutting machine. MAGICNEST 10 ensure automatically the following operations:
- nesting pieces using the best strategy for maximising material savings.
- IT application of the cutting technology, multiple-torch cutting.
- cutting entry/exit, bridges, micro-junctions, common cutting, scrap recovery.
- tool path and machine program.

MAGICNEST EXPERT PLUS
This is the best and complete version for machine with option bevel, indexing or piercing. Drawing and nesting functions are similar to MAGICNEST 10. With bevel option, MAGICNEST EXPERT PLUS control open-ended bevelling units that use plasma technology. It may be used for all types of bevel - V, Y, X and K - in multiple pass processes. Possibility to include duct module and special marking (SIC marking or inkjet) in option.

LOGITRACE (boiler-making module)
Fully compatible with and complementary to MAGICNEST, JUNIOR 01 and 10. Software for making calculations for boiler works. Trunk cones, intersections, cylindrical, cylinders, etc. Complements MAGICNEST for all your development needs.
AZURMATIC tables

Extraction tables for dry cutting

The AZURMATIC tables with air extraction offer unrivalled efficiency in terms of fume extraction thanks to its unique system of transverse extraction ducts.

Robustly designed in one-piece or modular form, the table is divided over its length into multiple sections, extraction taking place across the full width of the table on the module in operation only.

Mechanical or pneumatic flaps actuated by the displacement of the machine provide suction under the sheet at the place of cutting only.

This principle of operation guarantees optimum extraction, irrespective of the size of the sheet being cut, while maintaining a modest extraction air-flow rate.

Technical characteristics:
- transverse duct extraction system,
- division into 0.75 meter sections over the length of the table,
- removable slag boxes,
- removable workpiece supporting frame with flat irons (section 100 x 6 mm) and wire mesh grid (50 x 50 x 5 mm),
- maximum capacity: sheet up to 300 mm thick.

Variable water level tables

Variable water level tables are specifically intended for immersed plasma cutting.

This procedure limits pollution by solid or gaseous matter and gives protection against audible and visual stress.

It improves accuracy of cutting while limiting distortions caused by heating of the workpiece.

Technical characteristics:
- modular construction in lengths of 1.5, 1.75 and 2 m,
- width: on request,
- pivoting workpiece support frame.
**Extraction tables for dry cutting**

**Table with slag automatic outfeed**
The table has at its base a vibrating belt automatically recovering slag and possibly very small cut pieces. The automatic cleaning system significantly extends the maintenance table maximizing cutting time.

- **Technical characteristics:**
  - transverse duct extraction system, monobloc or modular design,
  - division into 0.6 meter sections over the length of the table,
  - vibrating system recuperator of slag,
  - removable workpiece supporting frame with flat irons (section 150 x 6 mm),
  - maximum capacity: sheet up to 120 mm thick. (more on request),
  - length on request
  - standard width: 1.5 - 2 - 2.5 m.

**Palletisable table**
The palletisation system allows loading and unloading of sheets to cut out of the cutting area. The preparation of sheets to cut is performed in masked time without risks for the operator.

- **Technical characteristics:**
  - cut area design: monobloc or modular,
  - division into 0.6 meter sections,
  - standard length: 3 m (more on request),
  - standard width: 1.5 - 2 - 2.5 m,
  - maximum capacity: 1900 kg/m²,
  - mini height: 1 000 mm (installation without civil works)
  - 2 carriages support sheet (electrical movement) with flat irons section 150 x 6 mm.
  - 1 hydraulic elevator support for carriages palletisation,
  - option: slag automatic outfeed.
Air Liquide Welding services: a complete offer for your production tools.

Far beyond the simple recommendation of processes or equipment, Air Liquide Welding work with you in the service field by offering advice and expertise, demonstrations, feasibility studies, installation and commissioning of facilities, training and assistance to the start of production, maintenance, after-sales service and even upgrade of your equipment.

Excellence Centre for Automation

In our Excellence Center it’s possible to see and test our cutting and welding systems of the latest generation, which are used for demonstrations and the supply of technical assistance.

Advices and Expertises

On the basis of a personalised diagnosis, our technical specialists will analyse your needs, identify potential improvements, build solutions along with you, define action plans and give you the support you need. In your premises or in our Excellence Center for Automation.

Tele-Service

Air Liquide Welding offers innovative services with securely connected machines in order to increase performance of your tool:
- On line intervention allowing reduction of machines’ down time
- On line assistance and training for optimisation of your productivity.

Call Centres

A large team of technicians can answer to every question and keep your manufacturing tools to their best performance levels.
Machine installation and training

Dedicated teams are worldwide available to install your machines and train your manufacturing staff.

Our know-how is well known and our expertise based on experience is here to propose a large range of high quality training with customised solutions.

Production support

You have just invested in a new welding or cutting equipment and would like support while you start up the manufacturing process. Air Liquide Welding can offer technical assistance aimed at helping you produce parts independently as soon as possible, by providing step-by-step tracking for the first pieces you turn out.

Upgrading your processes and machines

The retrofitting and upgrading services offer enhancement of life duration of your machines while giving new functionalities and new performances and applications.

Maintenance

Air Liquide Welding maintenance contracts provide the guarantee of a high performance level for your equipment.

The optimisation of the availability rate and of the life duration of your machines is key regarding your production costs.
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World leader in gases, technologies and services for Industry and Health, Air Liquide is present in 80 countries with more than 50,000 employees and serves more than 2 million customers and patients. Oxygen, nitrogen and hydrogen have been at the core of the company’s activities since its creation in 1902. Air Liquide’s ambition is to be the leader in its industry, delivering long-term performance and acting responsibly.