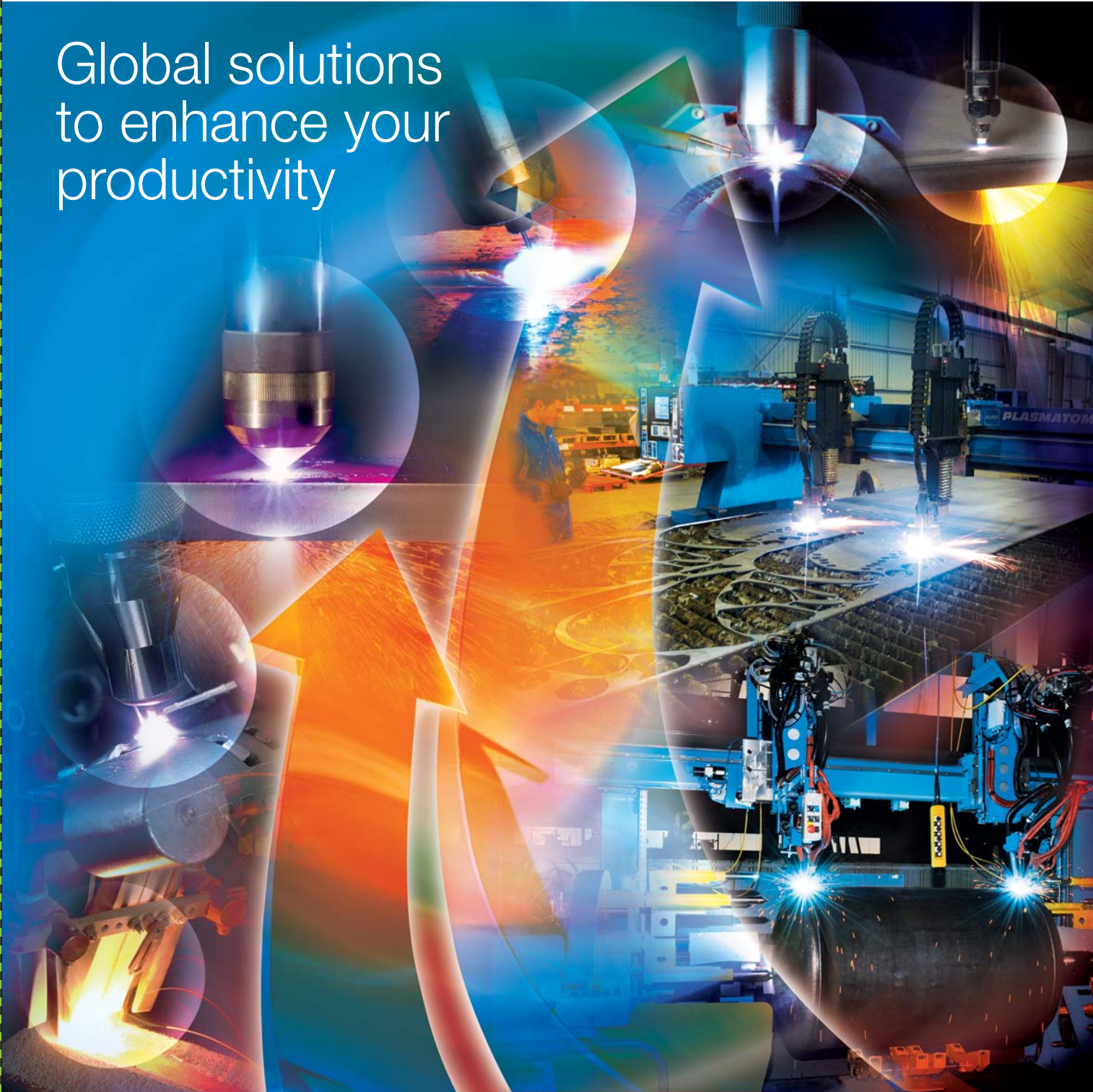


Automatic welding and cutting

Global solutions
to enhance your
productivity



Summary

Global automatic welding and cutting solutions

Automatic welding


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Air Liquide Welding

Global automatic welding and cutting solutions



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.





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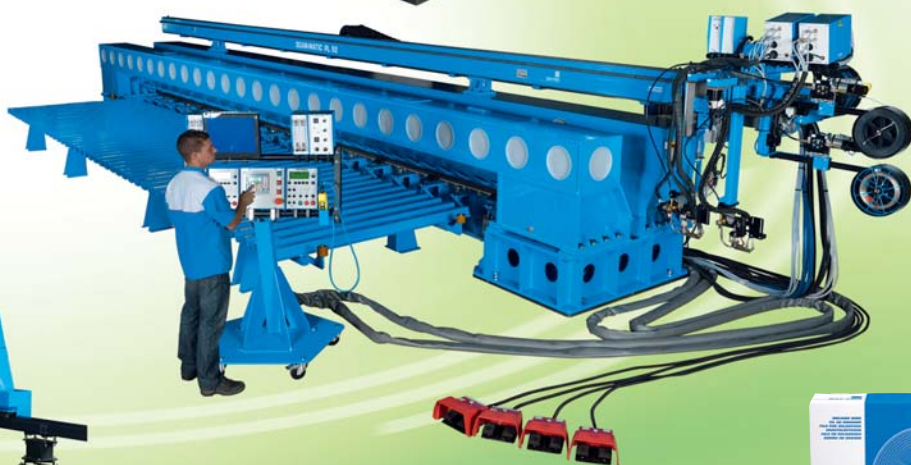
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Equipment

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.



Air Liquide Welding commits to develop and provide you equipment with a reduced electric consumption.



Quality approach

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

Consumables

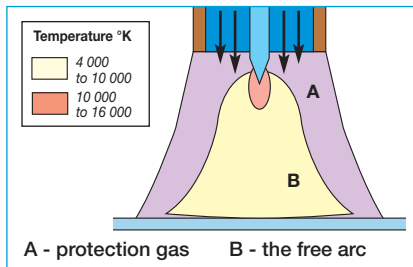
Air Liquide Welding help you in the choice of the best welding consumables (wires, fluxes etc..) as well as gas and wear parts. This choice will improve the quality of your production.



Welding processes

Technology:

TIG

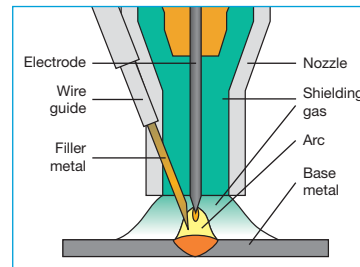


By means of an appropriate electric current, one causes an electric arc to flash in a stream of inert gas (argon or a gas mixture), between a tungsten electrode (infusible) and the workpiece. This inert gas, generally with an argon or helium base, isolates the molten metal and the surrounding hot areas 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,
- aluminium weldability,
- adapted for fine thickness,
- welding in all positions.

TOPTIG

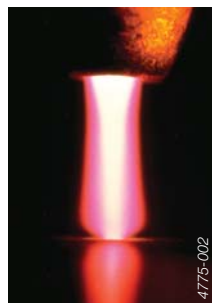
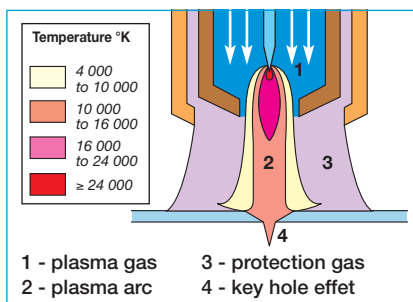


Based on principle of TIG process, an additional filler metal is fed through the nozzle directly into the arc with an angle of 20° to the electrode. This concept guarantees a high deposition rate and an efficient metal transfer. This welding process is used for welding of carbon steel, stainless steel,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

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.

PLASMA



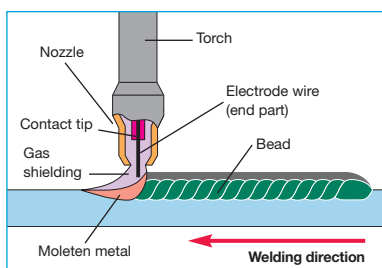
The contribution of energy necessary for welding is ensured by an electric arc in an atmosphere of plasmagene neutral gas. This arc established between an infusible electrode and the parts to be

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 bevelling 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

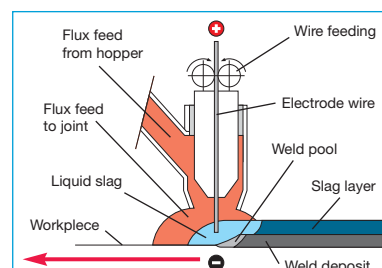


With MIG / MAG welding process an arc is established between the workpiece and the electrode wire fuse. The arc and weld pool are shielded by an inert or active gas. Metal is transferred in the form of drops through the arc towards the workpiece. This welding process is used for welding of carbon steel, stainless steel, aluminium, copper...

The benefits are:

- easy implementation,
- high welding speed,
- welding in all positions,
- low welding investment cost.

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.

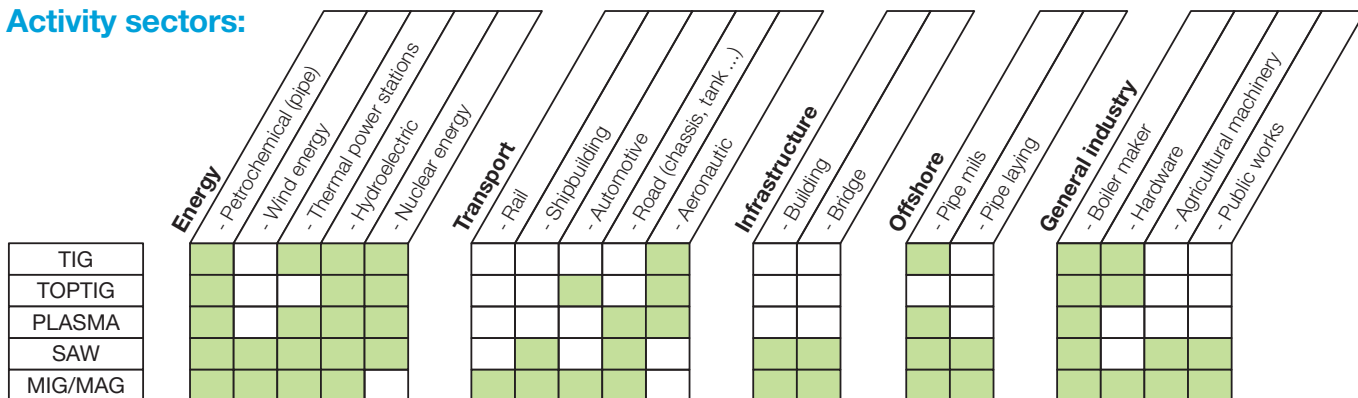
The benefits are:

- high deposition rates,
- high penetration,
- large execution speeds obtained by the use of high currents on one or more electrode-wires,
- excellent compact joints with good mechanical properties,
- high duty cycle,
- operator comfort: low fumes and invisible arc.

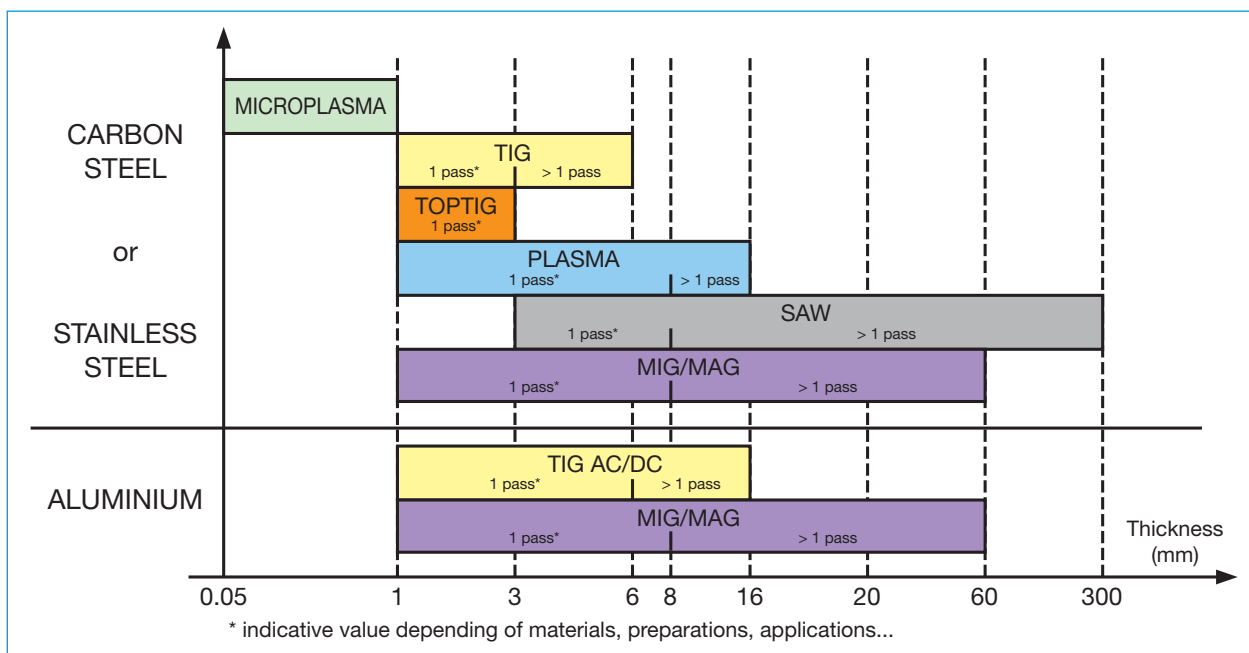
Air Liquide Welding offers a large choice of welding processes through its products.

Several criteria allow to define the best process adapted to the customer application, function of materials, thicknesses, technology, quality and productivity required.

Activity sectors:



Welding performances:



Comparison of the main welding processes:

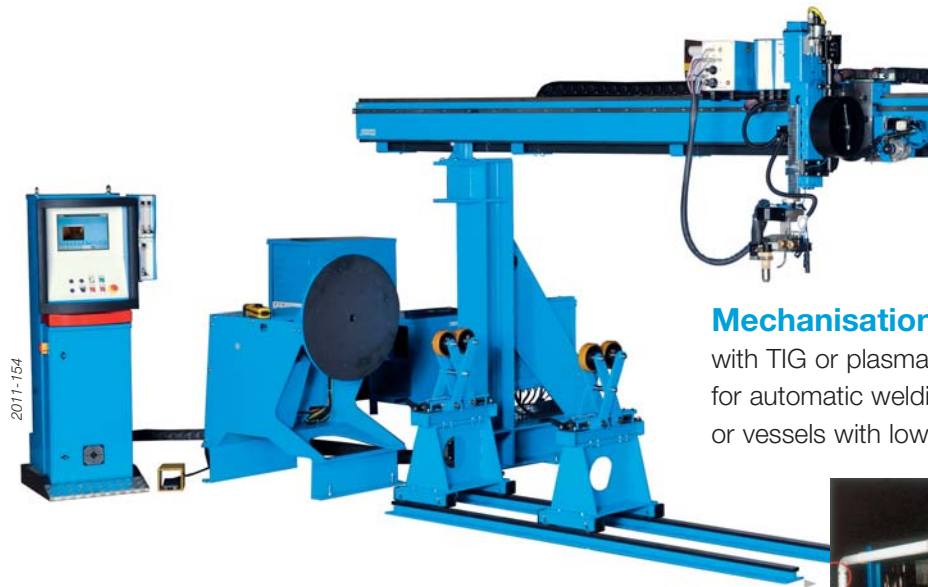
	Processes				
Choice criterias	TIG	TOPTIG	PLASMA	SAW	MIG / MAG
Quality	●	●	●	●	●
Speed	●	●	●	●●	●●
Spatter	●	●	●	●	●
Completion	●	●	●●	●	●
Cost	●	●	●	●	●●

● Excellent
● Good
● Fair

Plasma / TIG machine range

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.



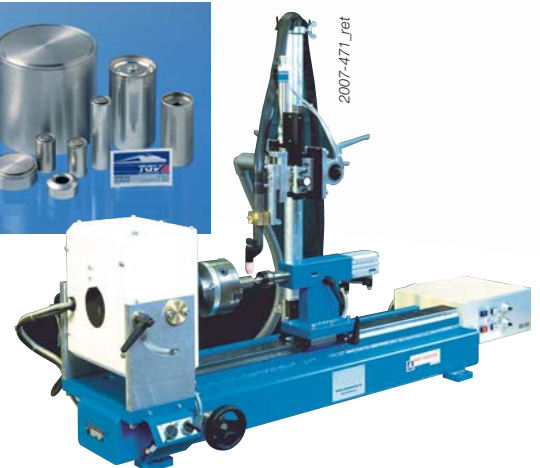
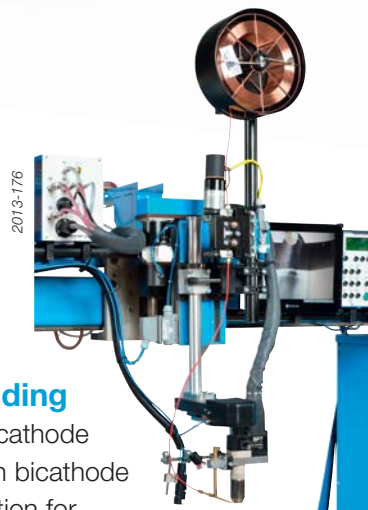
Tricathode installation

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.

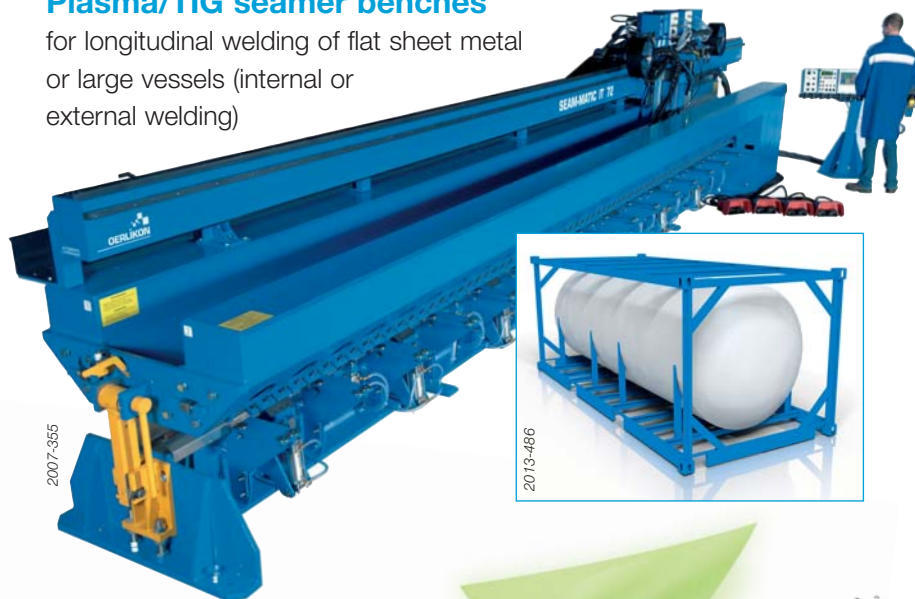


CITOTURN lathe

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)



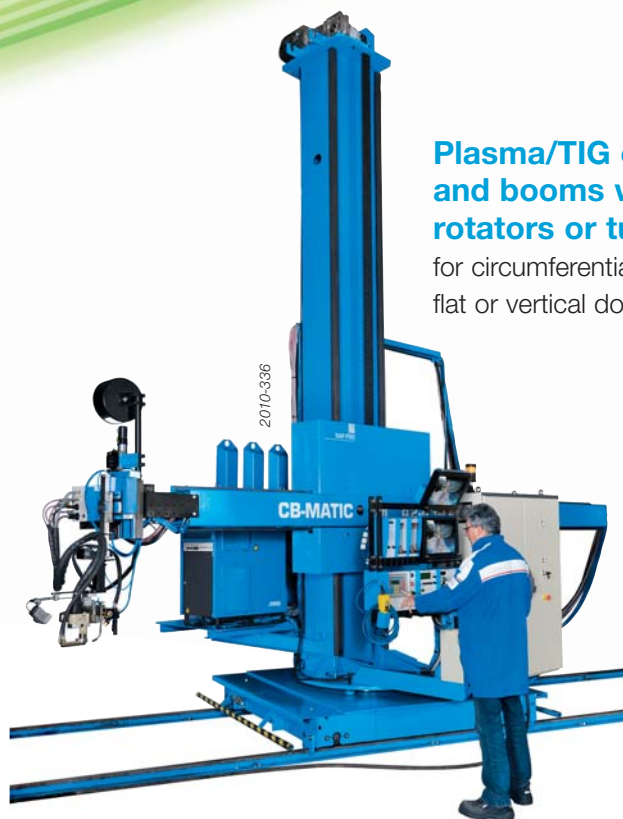
Specific machines

built from standard
equipment and adapted to
the customer applications



Plasma/TIG column and booms with rotators or turntable

for circumferential, cornice,
flat or vertical down welding



For all other specific requests: consult us.

TIG and Plasma



2003-670

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.

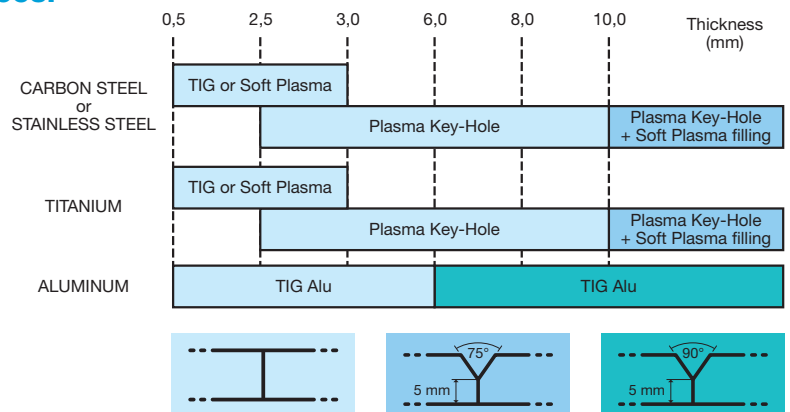
TIG / PLASMA process and performances:

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.

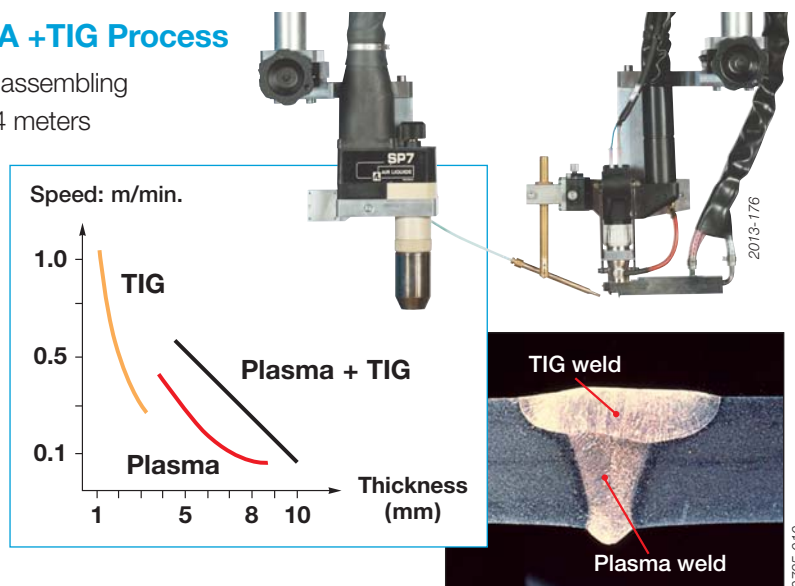


Improvement productivity with PLASMA +TIG Process

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.

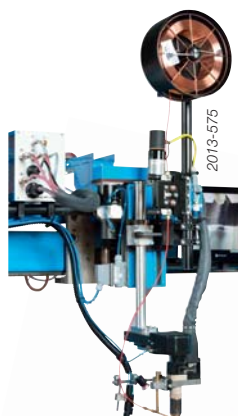
This process of using 2 torches in tandem gives a productivity gain of 30-50 % over a single-torch plasma installation.

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

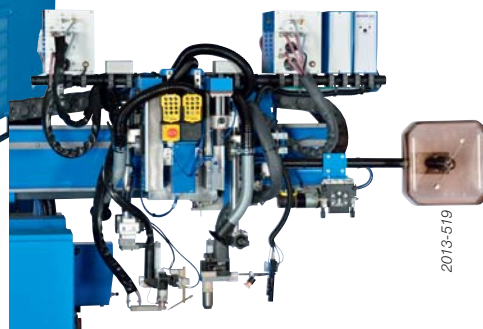
Single torch:
PLASMA or TIG



2007-301



Bi-cathode:
PLASMA+TIG



2013-519

Performances

TIG/PLASMA equipments

Air Liquide Welding offers two types of control panel.

NERTAMATIC 450 Plus



Tools edit programs
and create WPS

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



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 repetitivity 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.

Welding



Programming



Configuration



Quality (as a option)



2013-595

Wireless
remote
control

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.



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

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.

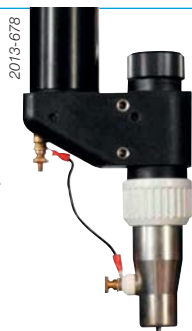
MEC4:

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.



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.

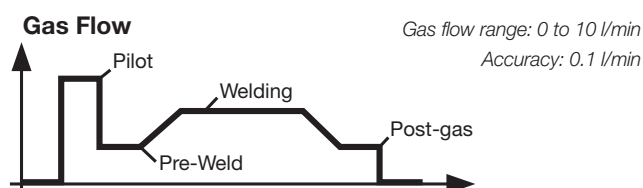


PLASMA GAS

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.



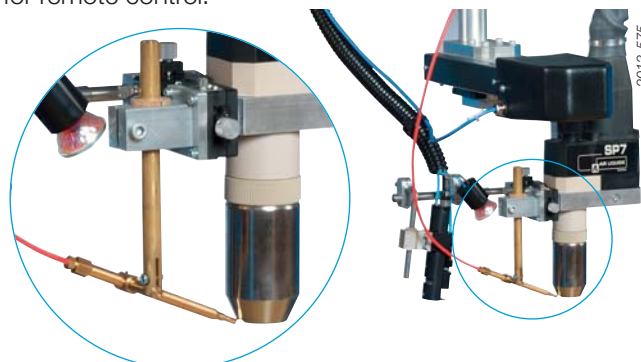
WIRE FEED DEVICE

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 successive 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
Carbon steel Stainless steel Titanium wires	Ø 0.8 / 1.0 / 1.2 mm
Aluminium wire	Ø 1.2 / 1.6 mm
Max wire speed	6 m/min

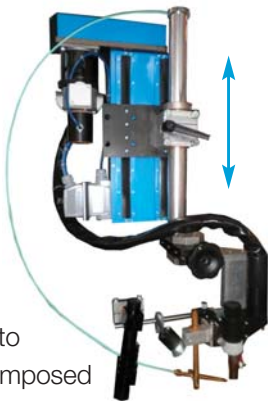


Equipments

AVC SYSTEM

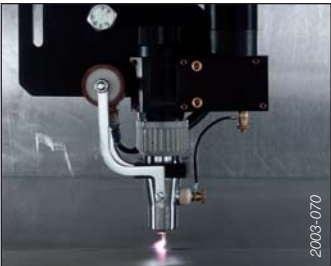
A constant distance between the torch and the workpiece is a key of quality to ensures a constant penetration and bead width.

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.

VIDEO CAMERA

The TIG/plasma video system VISIOARC VA2 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

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.

	Characteristics
Primary supply *	230 V / 1 ph / 50 or 60 Hz
Nominal water flow rate	6 l/min
Nominal water pressure	5 bars

* directly supplied by power source
NERTAMATIC 450

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:

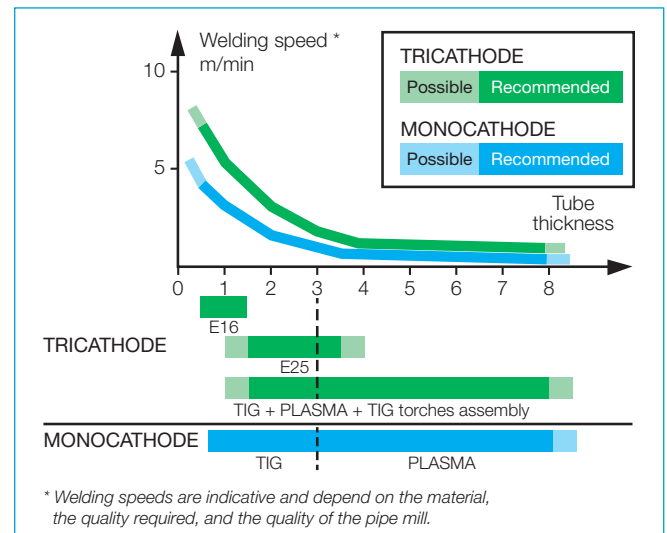
Air Liquide Welding proposes solutions for in line pipe welding to be integrated into pipe mills:

- 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:



TRICATHODE process:

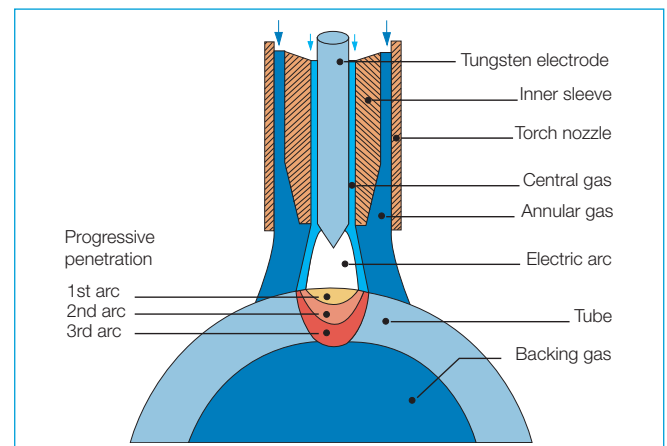
TRICATHODE welding consists of a sequence of three dual-flow TIG processes or a

combination of TIG and Key hole plasma processes using a special welding torch. The first arc is fitted with an electromagnetec 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 torch



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.

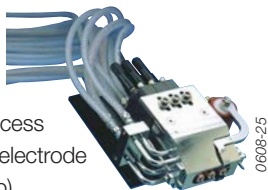
Tricathode E16 or E25

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.

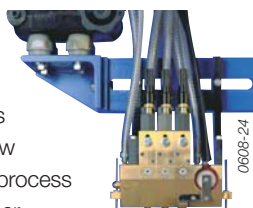
E16 torch

- 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



Tricathode E25 torch



Tricathode TIG + PLASMA + TIG



Performances

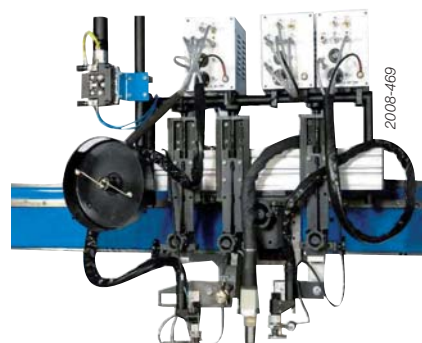
Tricathode TPT N450

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



TOPTIG



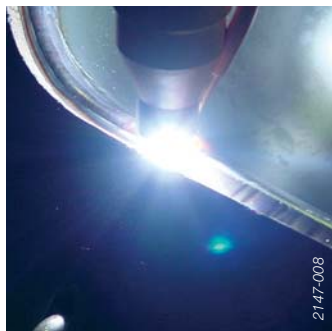
Applications:

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

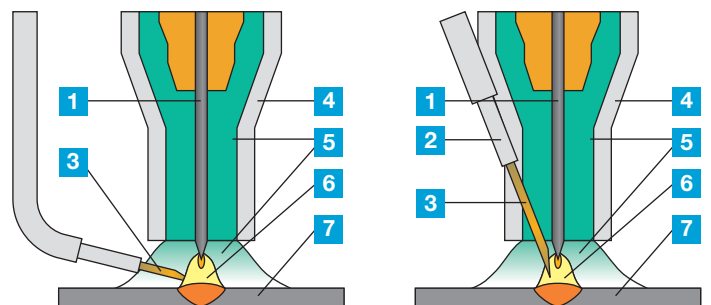
TOPTIG allows a better accessibility for welding complex structures. It offers very good performance concerning speed, and quality (spatter free).



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.



TIG process

- 10 000 à 16 000 °K
- 4 000 à 10 000 °K

TOPTIG process

- 1 - Electrode
- 2 - Wire guide
- 3 - Filler metal
- 4 - Nozzle
- 5 - Shielding gas
- 6 - Arc
- 7 - Base metal

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.

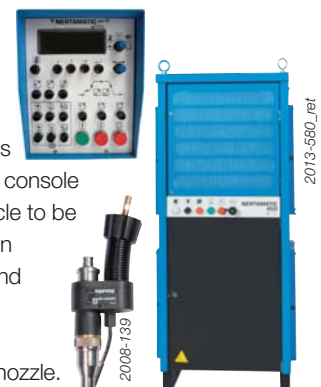
TOPTIG 220DC

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.

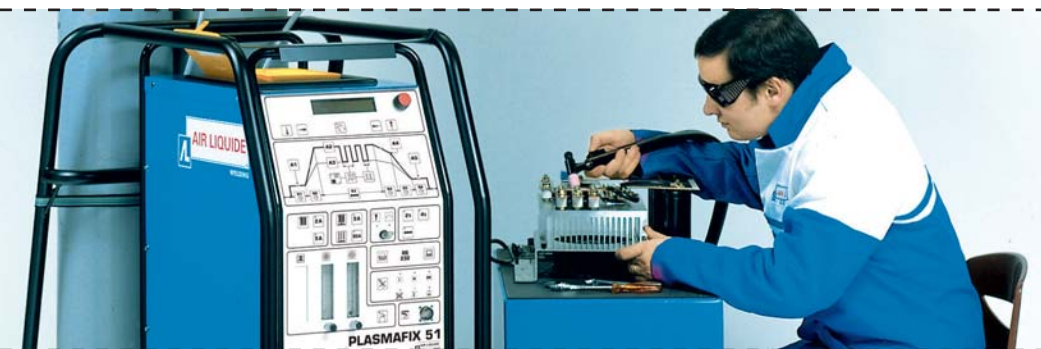


TOPTIG NERTAMATIC 450 PLUS

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.

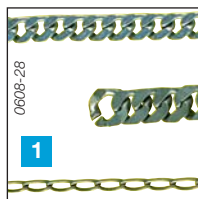


Microplasma



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.



1 - Jewellery



2 - Fine sheet metal work



3 - Small containers



4 - Filters

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



Torches

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



SP45 automatic



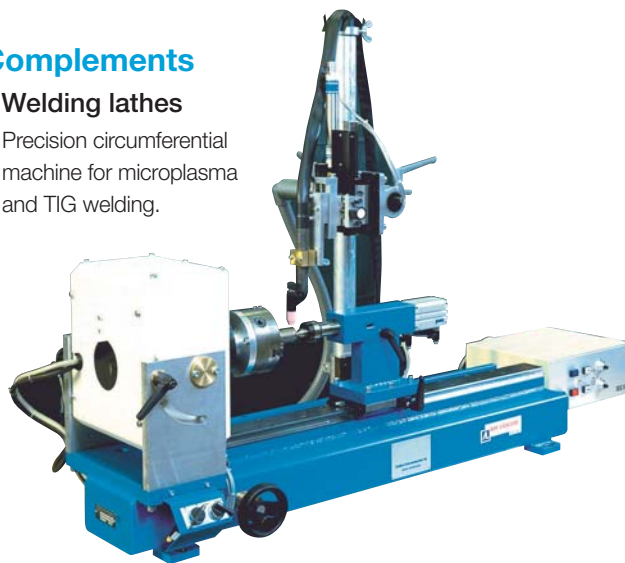
SP45 manual

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.

• Torch maintenance box with set of wear



2007-471

3534-05

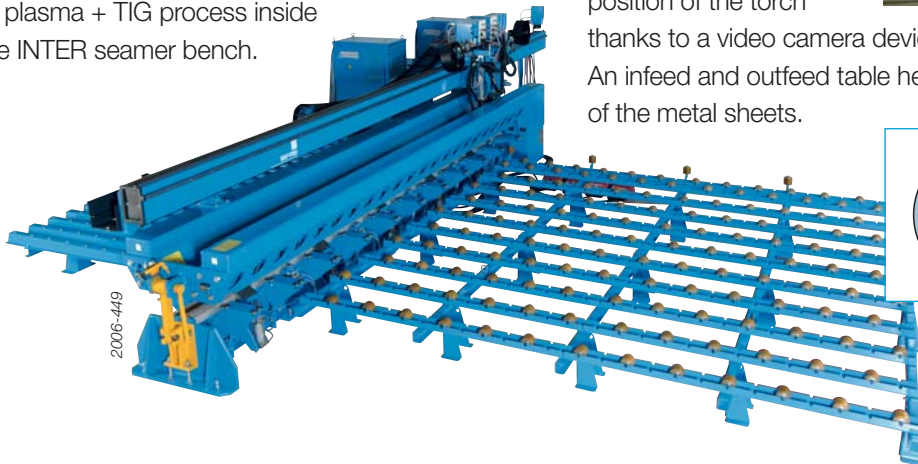
Plasma / TIG machines

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

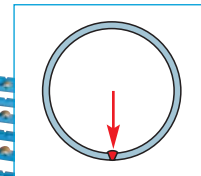
Seamer bench for longitudinal welding.

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.

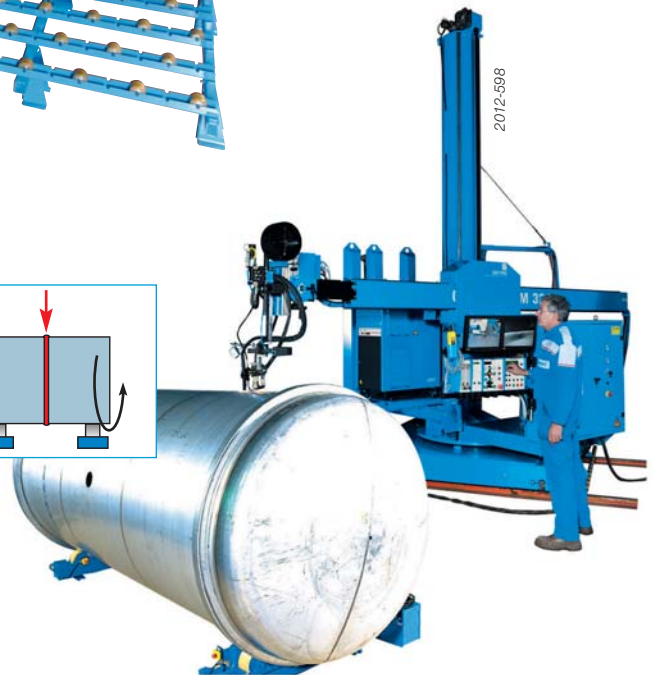
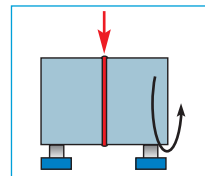


Assembly of vessels by conventional technique

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.

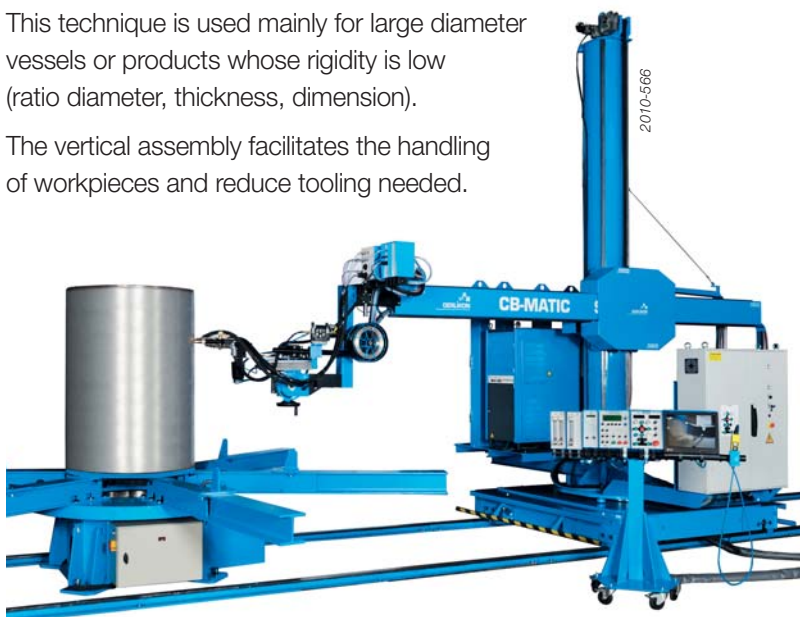
Safety and operator comfort are guaranteed thanks to the control of the welding operation from the ground.



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.

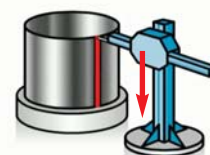


Column and boom with turntable

for longitudinal and circumferential welding:

- longitudinal
in vertical
down position,

- circumferential in
cornice position



Pipe prefabrication assembly

Mechanisation machine with plasma process and HPW control to weld pipes with elbows and flanges.

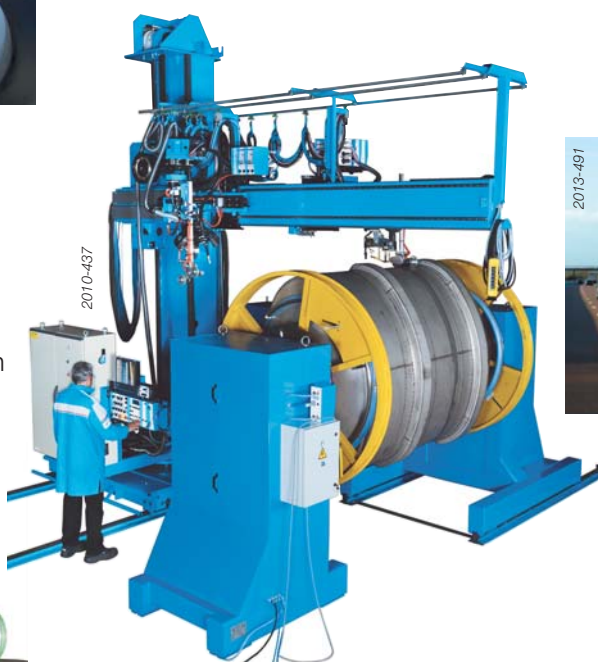
The work piece is positioned on the X-rotators and the motorised headstock carries out the rotation.



Elliptical tank

The plasma torch movement is controlled by the column and boom.

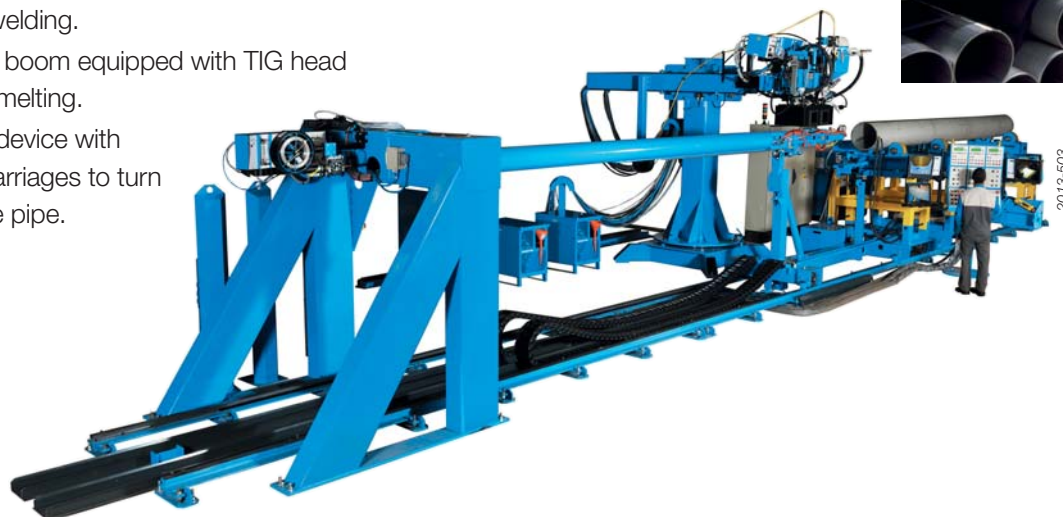
The Headstock HLM+F allows the rotation of the tank and ensures a high flexibility for the mounting and the holding of the piece.



Pipe 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.



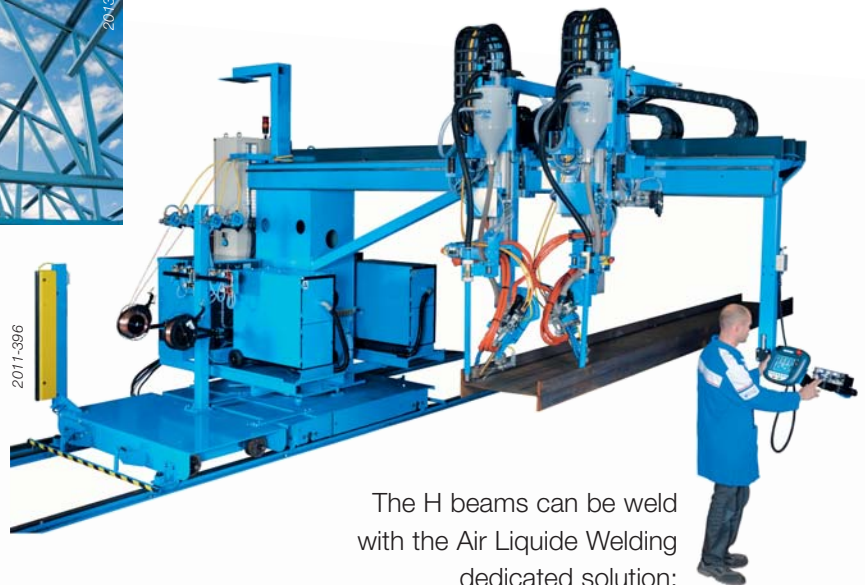
SAW machine range

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 find in these sectors of activity.



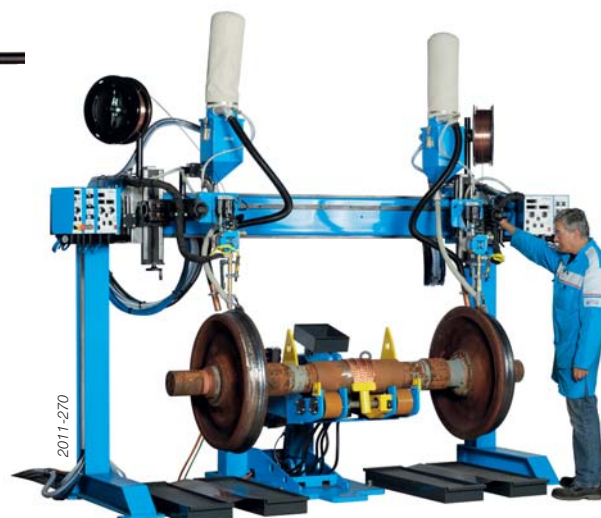
MEGATRAC SAW carriage offers the possibility to weld in restricted area and on large pieces. It is the ideal economical solution for welding on site or in workshop.



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



The **Autonomous SAW head** can be combined with all external support.



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



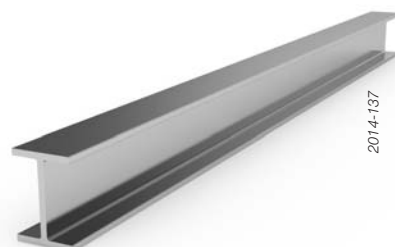
2012-582

Internal welding boom allowing the longitudinal and circular welding of pipes.



2012-582

Weld the I-beams in vertical positions, without tacking is possible thanks to the **T-MASTER solution**.

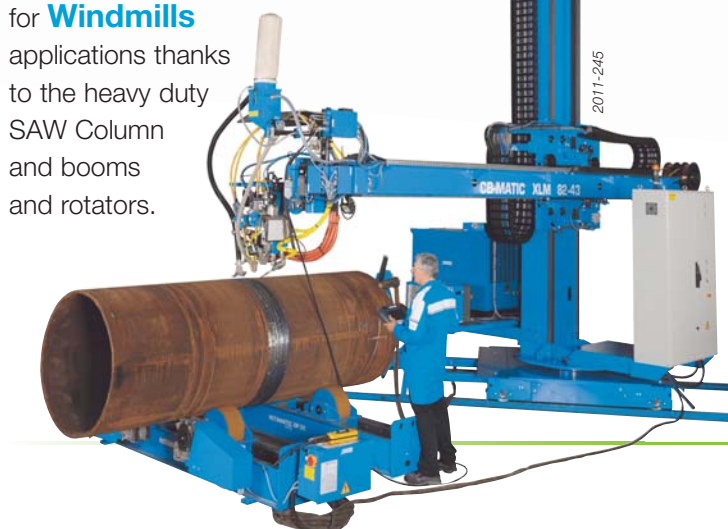


2014-137

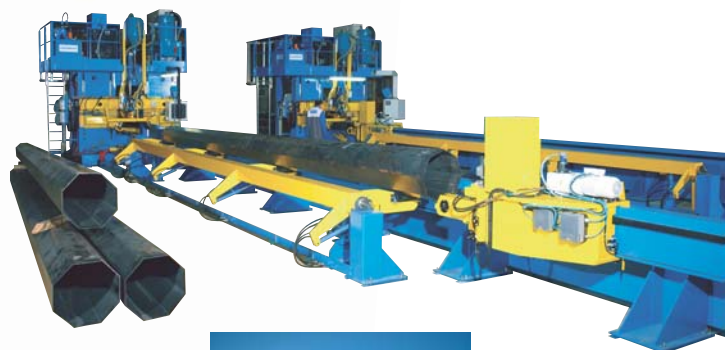


2010-311

Air Liquide Welding has solutions for **Windmills** applications thanks to the heavy duty SAW Column and booms and rotators.



2011-245



2356-053

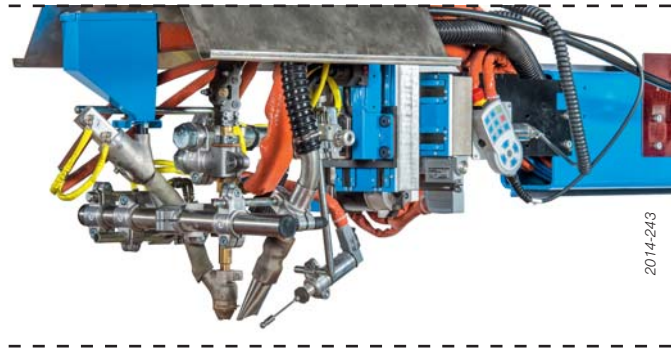


2013-484

The **Lamp post machine** allows an increase of productivity in this hard competition domains.

For all other specific requests: consult us.

SAW: Submerged Arc Welding

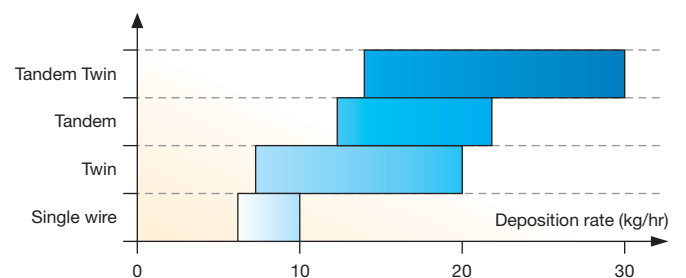
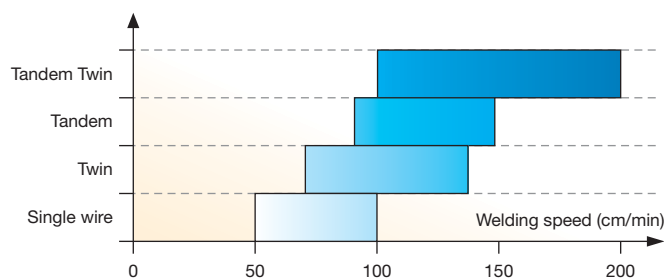
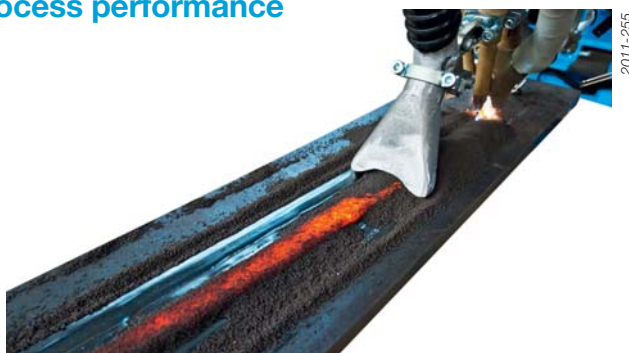


Applications:

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...

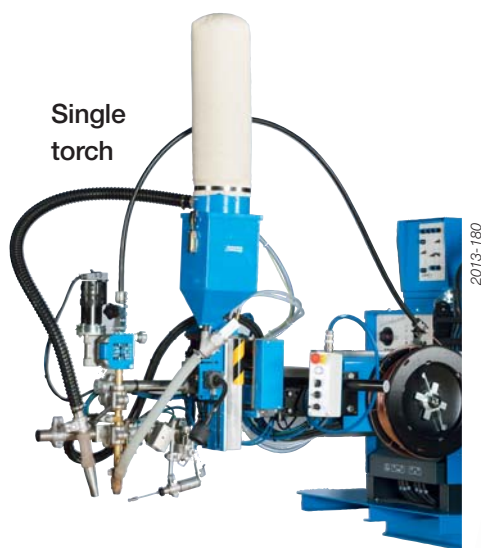


Process performance

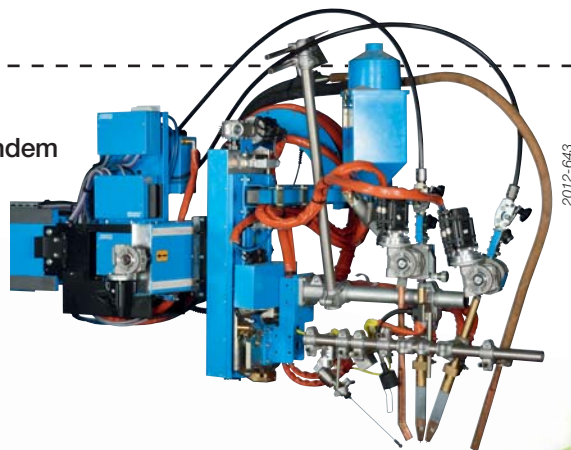


Values are indicative and depend on the material and the quality required.

Installation



Tandem



Performances

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.



3670-003



2006-780



2000-357

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

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.



Tandem torch
Heavy duty

	SD range Standard duty <700 A	HD range Heavy duty >700 A
Single wire		
Ø 1.6		
Ø 2.0		
Ø 2.4		
Ø 3.2		
Ø 4.0		
Ø 5.0		
Twin wire		
2 x Ø 1.2		
2 x Ø 1.6		
2 x Ø 2.0		
2 x Ø 2.4		
Tandem		
Ø 3.2 + Ø 3.2		
Ø 3.2 + Ø 4.0		
Ø 4.0 + Ø 4.0		
Ø 4.0 + Ø 5.0		
Ø 5.0 + Ø 5.0		
Ø 3.2 + 2 x Ø 2.4		
2 x Ø 2.4 + 2 x Ø 2.4		



Standard duty
Single wire nozzle



Standard duty
Twin wire nozzle



Heavy duty
Single and twin wire nozzle

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.



2006-936



2010-268

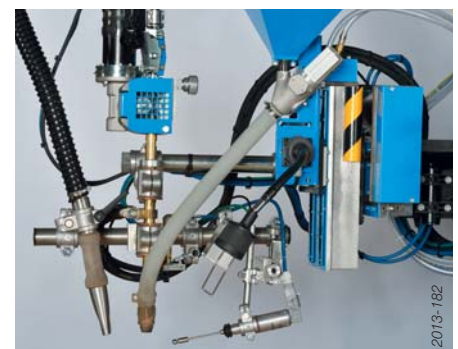


2013-180

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.



2013-182

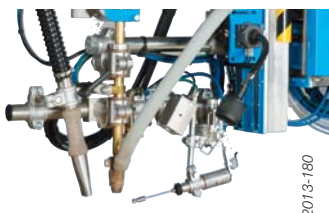
Equipments

SEAM TRACKING

TRACKMATIC device guarantees the good positioning of the torch in the joints to be welded without operator intervention.

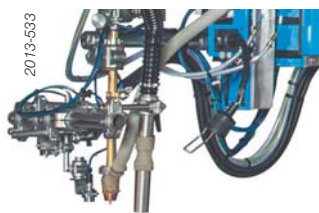
A sensing probe finger or an inductive sensor detects positioning errors (height or alignment) and commands the necessary corrections required to the torch trajectory thanks to motorised slides travel 100 - 200 or 500 mm.

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



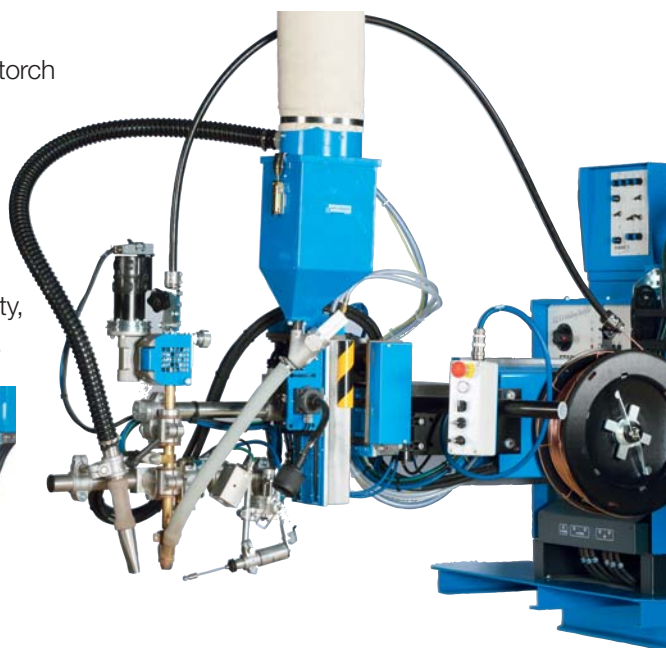
2013-180

Seam tracking
with sensing probe



2013-533

Seam tracking
with inductive sensor



2013-180

FLUX MANAGEMENT

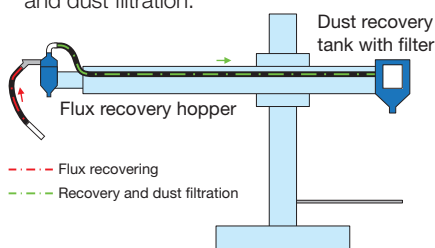
Equipment to improve productivity and ensure operator safety.

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.



2013-181

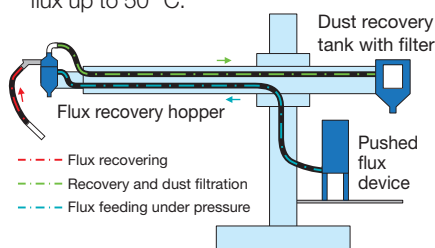


Flux supply equipment

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.



2356-037

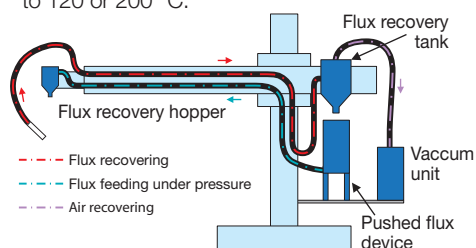


Centralised recovery

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.



2014-241



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".



2008-312



2003-035

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.



209-419

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.

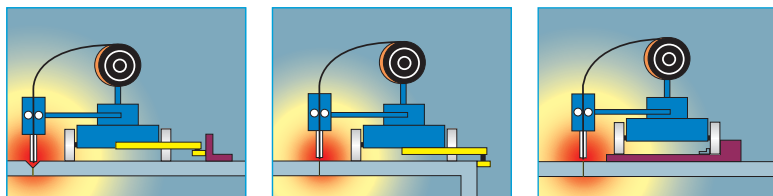
Carriage characteristics:

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

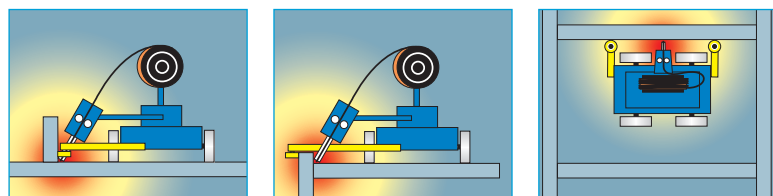
Applications:

Its adaptability 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.

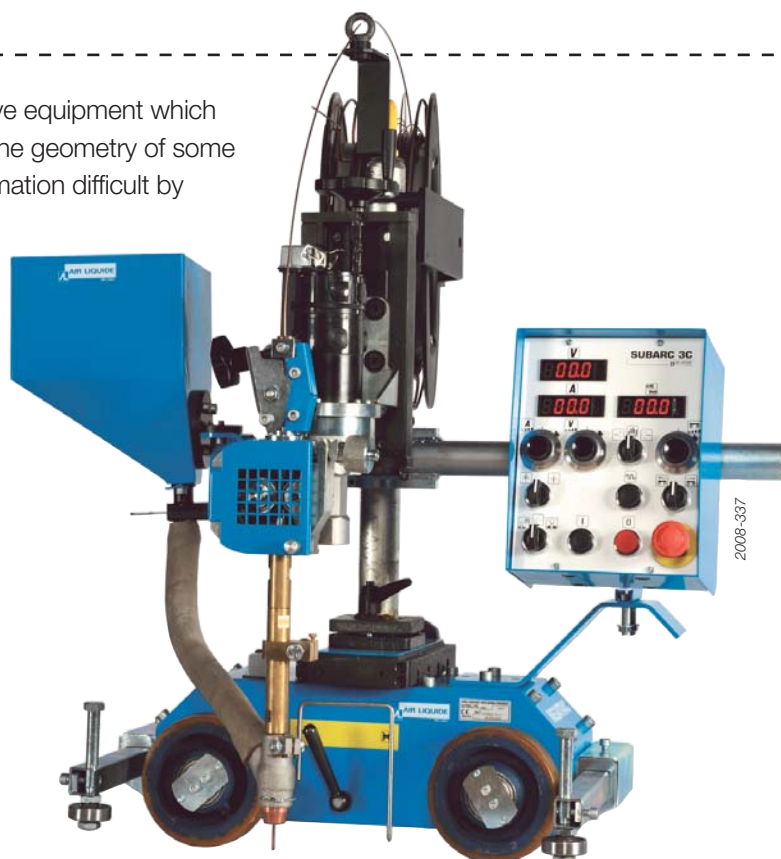
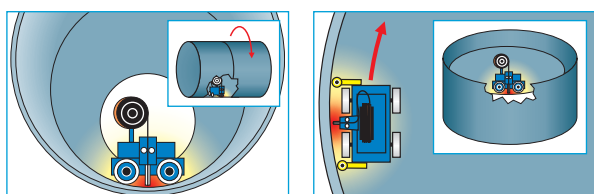
FLAT BUTT WELDING



FILLET WELDING



CIRCULAR WELDING OF LARGE VESSELS WITH \varnothing OVER 1600 mm



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.



MEGATRAC 6 twin wires equipped with flux recovery

SAW internal boom



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 an other equipment.

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

Internal boom from 4 m to 12 m stroke.



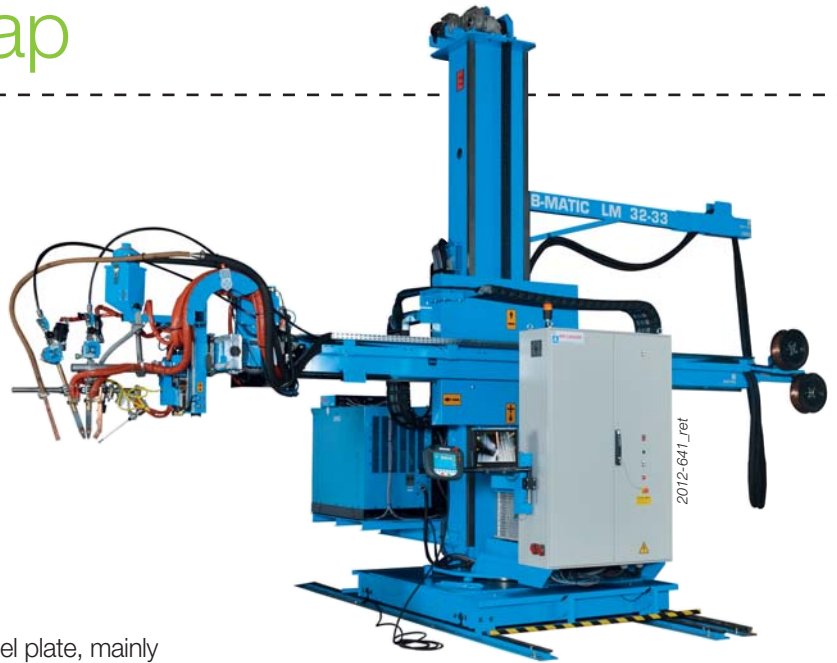
Internal welding head with single or twin wire, video and seam tracking.



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.

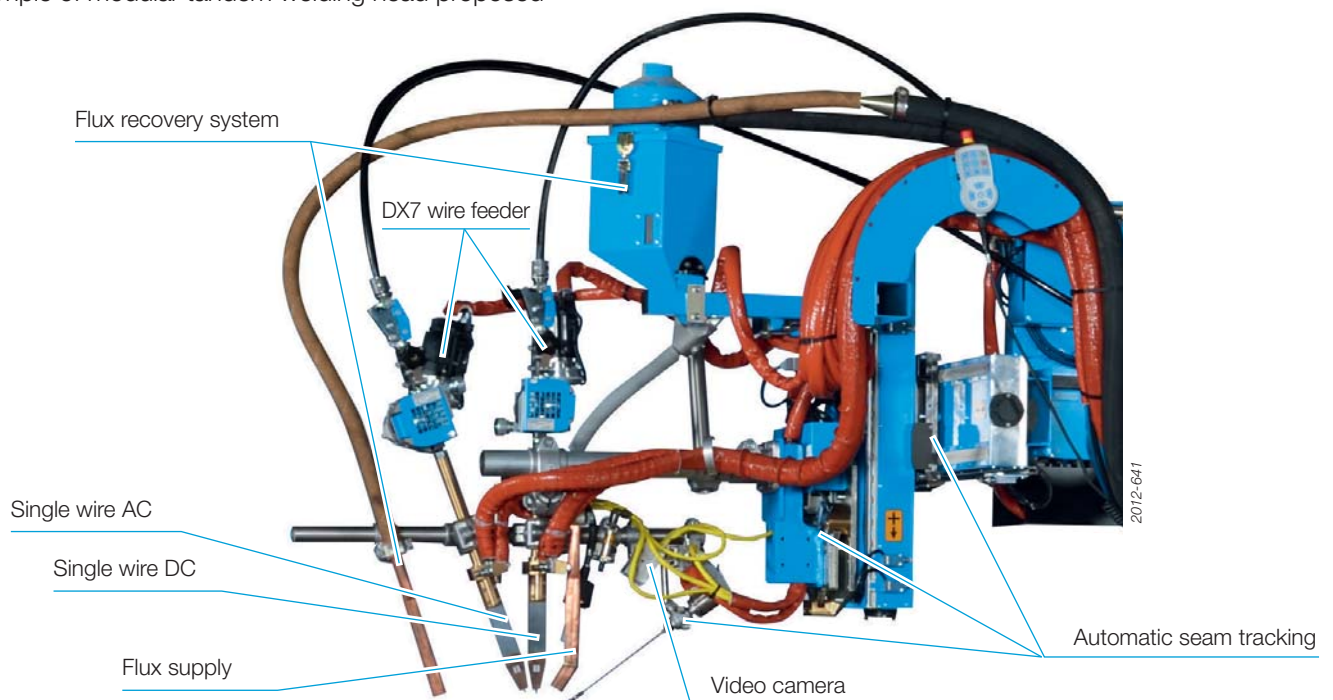
Narrow gap process allows to increase productivity and to result in lower cost welding by decreasing the volume of metal needed and the welding time compared to conventional preparation with bevel.

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.

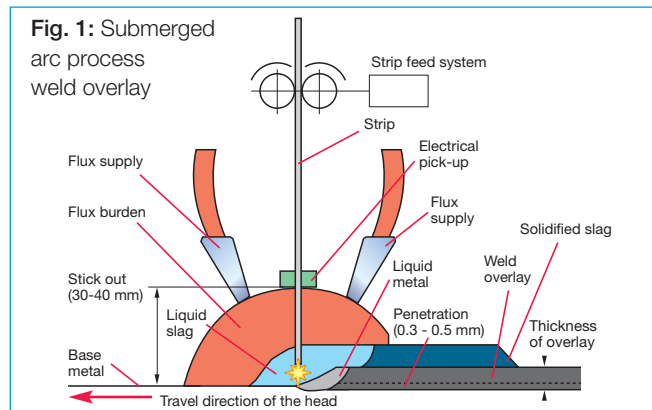


Submerged arc strip cladding (fig 1)

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 main 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.

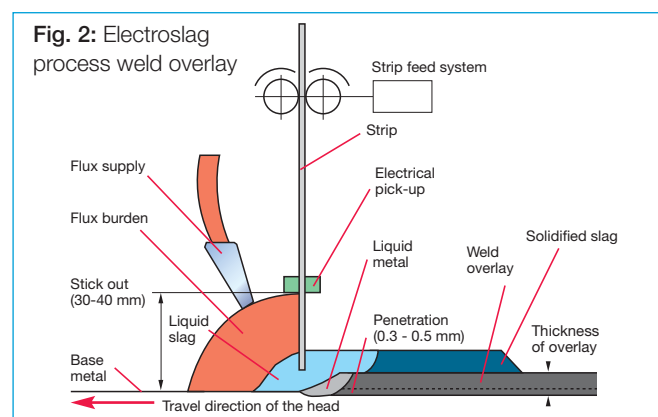


Electroslag strip cladding (fig2)

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:

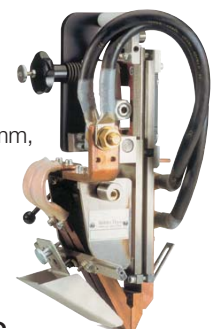
- a higher rate of deposition,
- a lower dilution,
- a less penetration.



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.

BEAM-MATIC

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.*

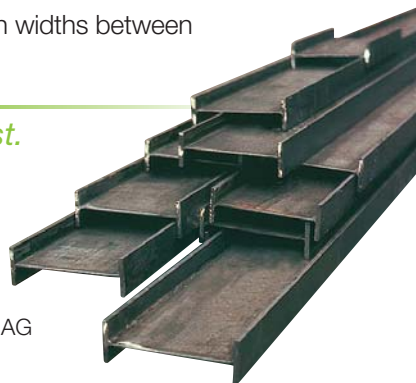
2 types of BEAM-MATIC are available:

- cantilever: **CT**,
- on base column and boom: **LM**.

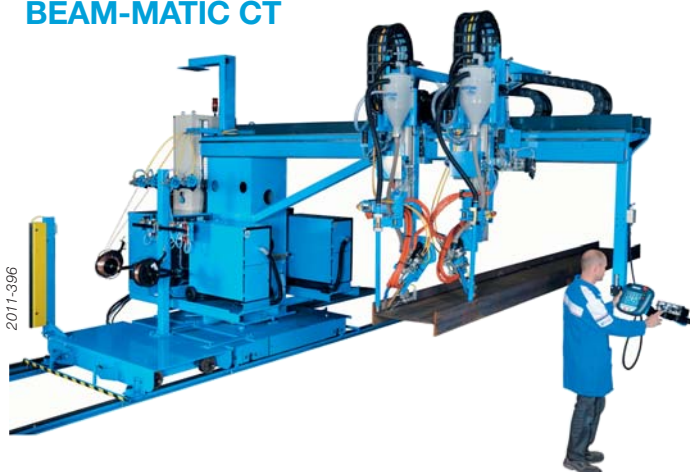
The BEAM-MATIC allows to weld in MIG-MAG or SAW (single or twin wire) process. In standard, the machine is equipped with a flux recovery device and a pushed flux supply.

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.



BEAM-MATIC CT



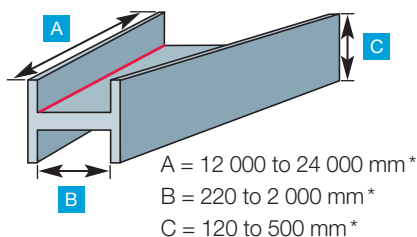
BEAM-MATIC LM



Clamping bench:

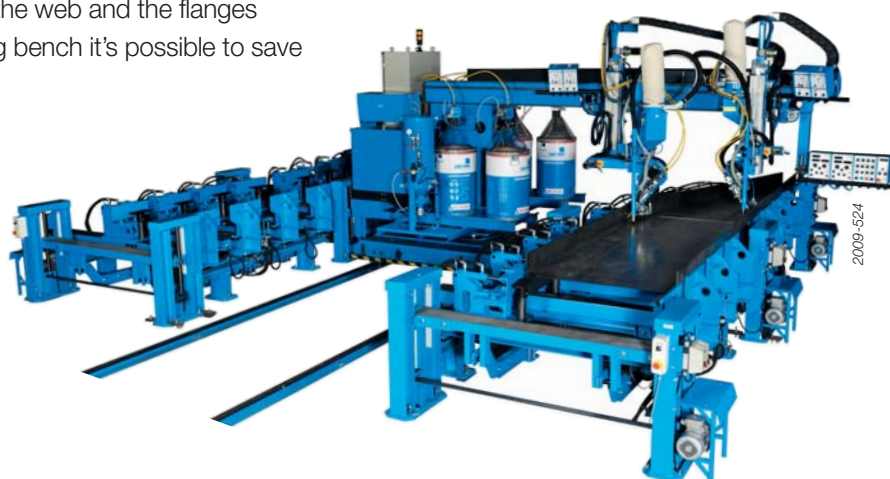
The clamping bench allows the positioning of the web and the flanges before the welding, with an additional clamping bench it's possible to save time and increase productivity.

Standard / Dimensions for clamping bench



Web thickness: 4 to 20 mm

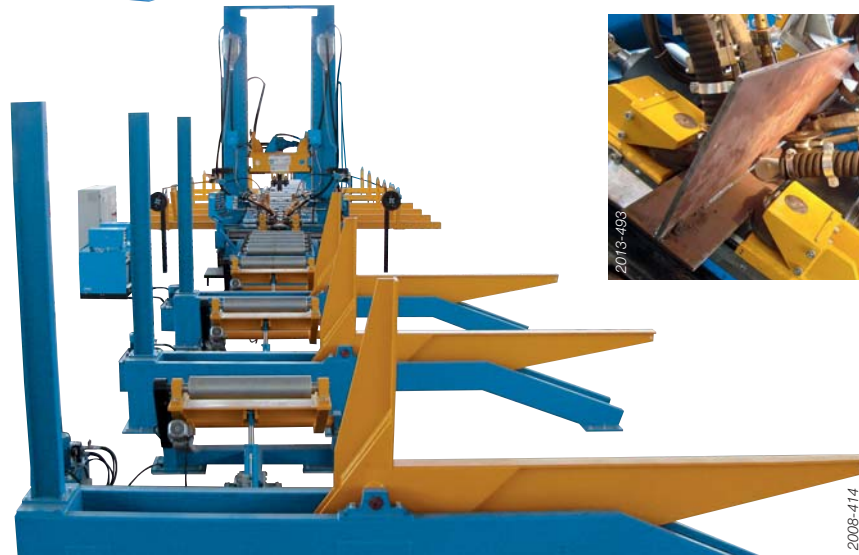
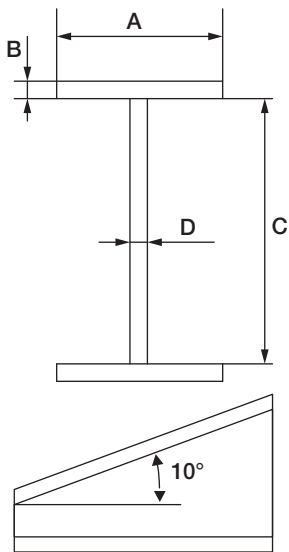
Flange thickness: 10 to 30 mm



** Other dimensions on request.*

T-MASTER

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.



		TBL 2 000 x 800 - 1 000 kg/m		TBL 3 000 x 1 250 - 1 500 kg/m		TBL 3 500 x 1 500 - 2 500 kg/m	
		mini	maxi	mini	maxi	mini	maxi
A: Flange width	mm	160	800	200	1 250	200	1 500
B: Flange thickness	mm	8	50	8	80	8	80
C: Web height	mm	200	2 000	300	3000	300	3 500
D: Web thickness	mm	6	30	6	30	6	30
L: Beam length	mm	6 000	12 000	6 000	12 000	6 000	12 000
			16 000		16 000		16 000
			18 000		18 000		18 000
Weight / meter			1 000 kg/m		1 500 kg/m		2 500 kg/m
Taper angle			10°		10°		10°

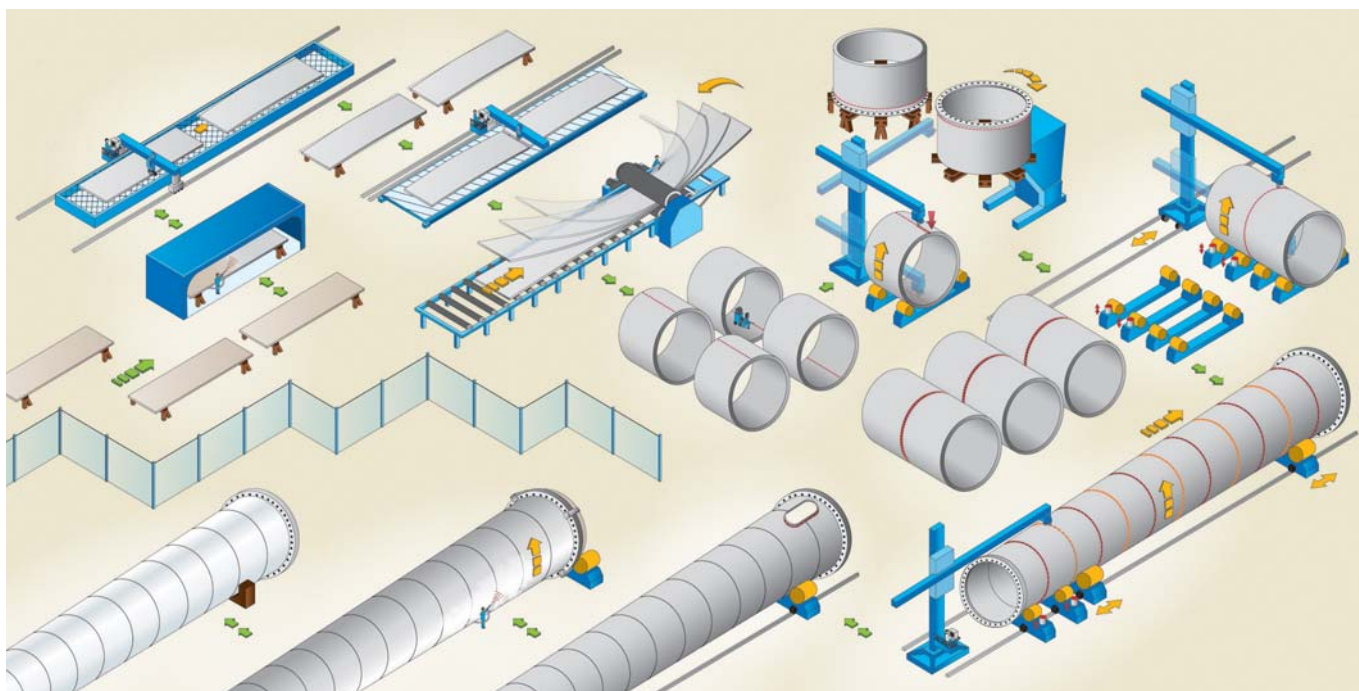
Other dimensions on request.

Windmill solutions

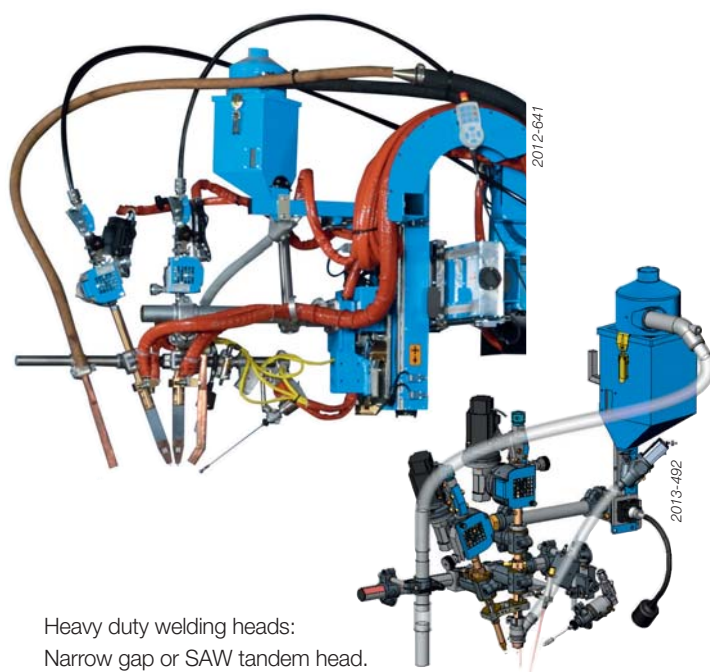
Since the beginning, Air Liquide Welding has been involved in most mobile and fixed platform constructions in the cold waters of the North Sea and in the onshore wind-energy industry.

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.

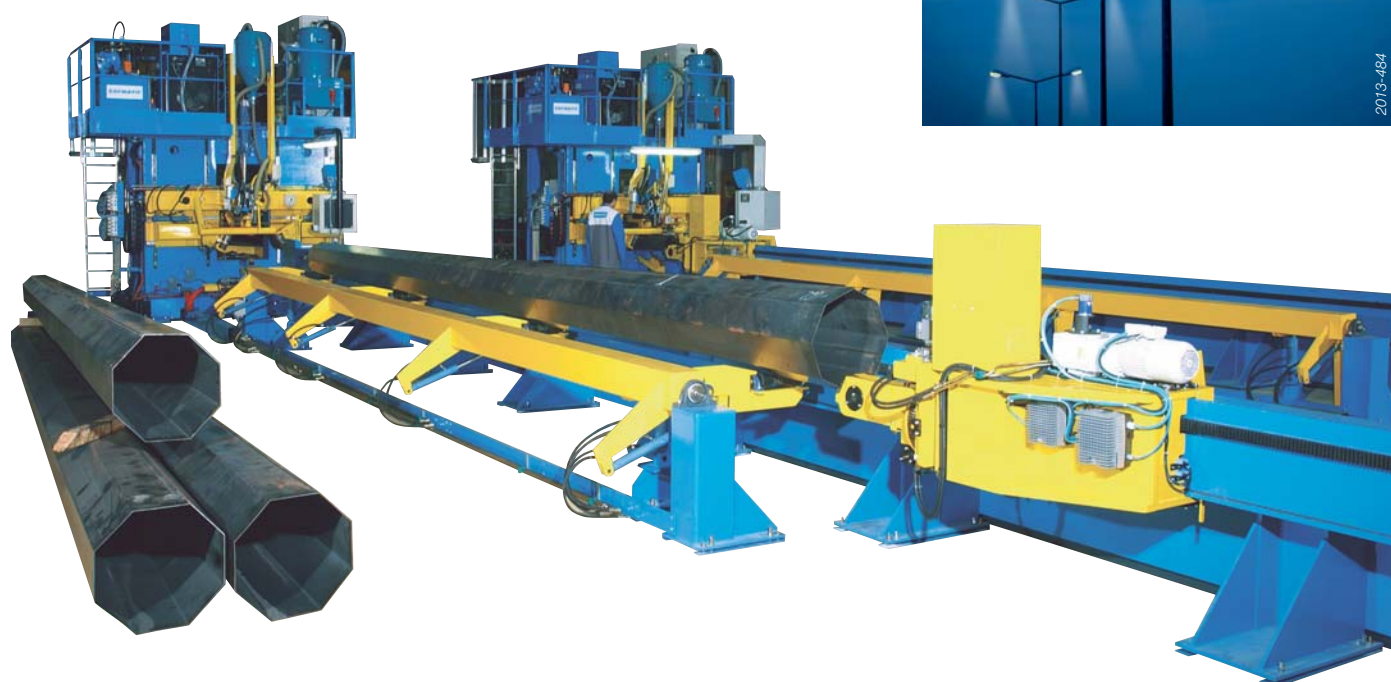
A burner ramp under the lamp-post allows decreasing the distortions.

Once the piece welded, it's evacuated thanks to a tilting device.

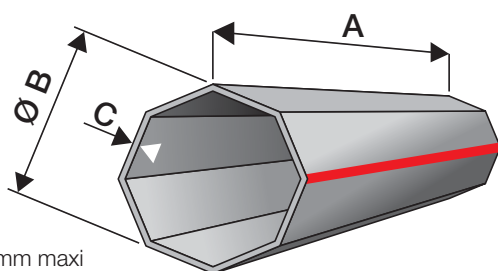
Several options are available on request.



2013-484



2356-053



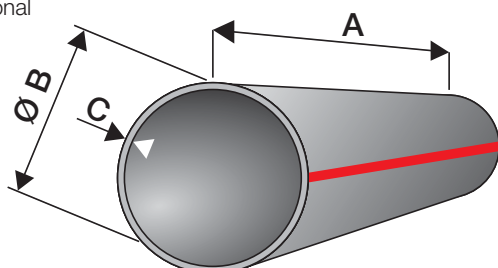
A: 3 to 17 m

B: 60 mm mini - 600 mm maxi

C: 3 to 6 mm

Round conical, polygonal
(32, 16 and 8 sides)

Conicity maxi: 50%



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

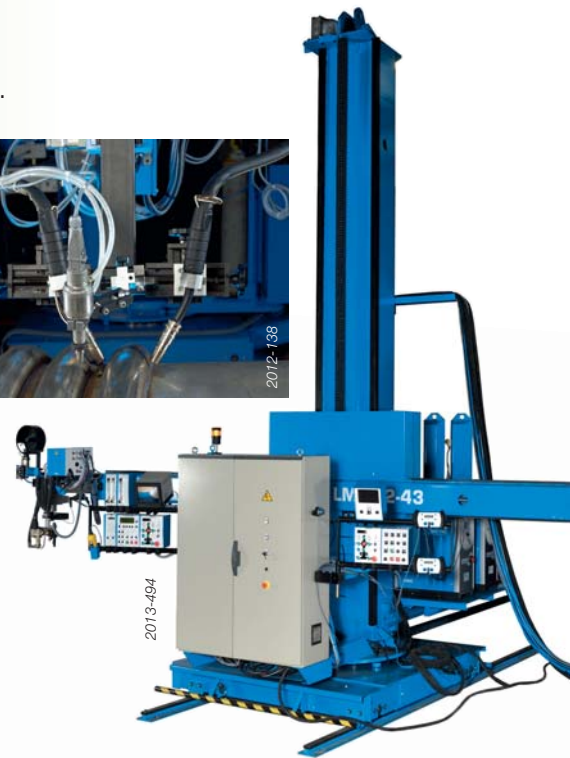
The MIG/MAG applications are used in various domains from the simple carriage for shipyard industry to large gantry for train manufacturing.

The choice of the machine depends mainly on the size of the piece to weld.

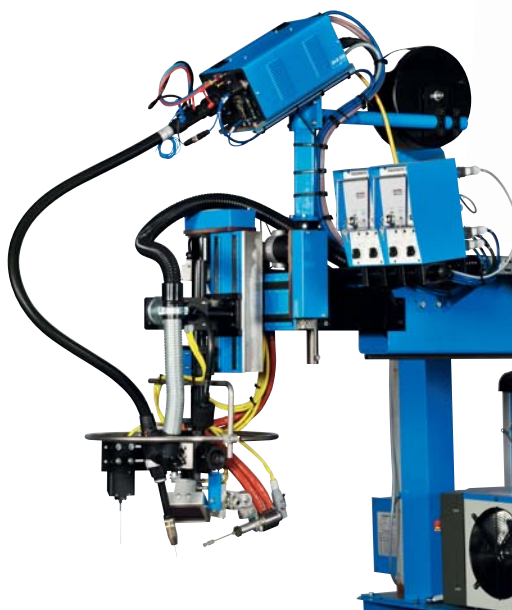
Air Liquide Welding propose solutions according your need.



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



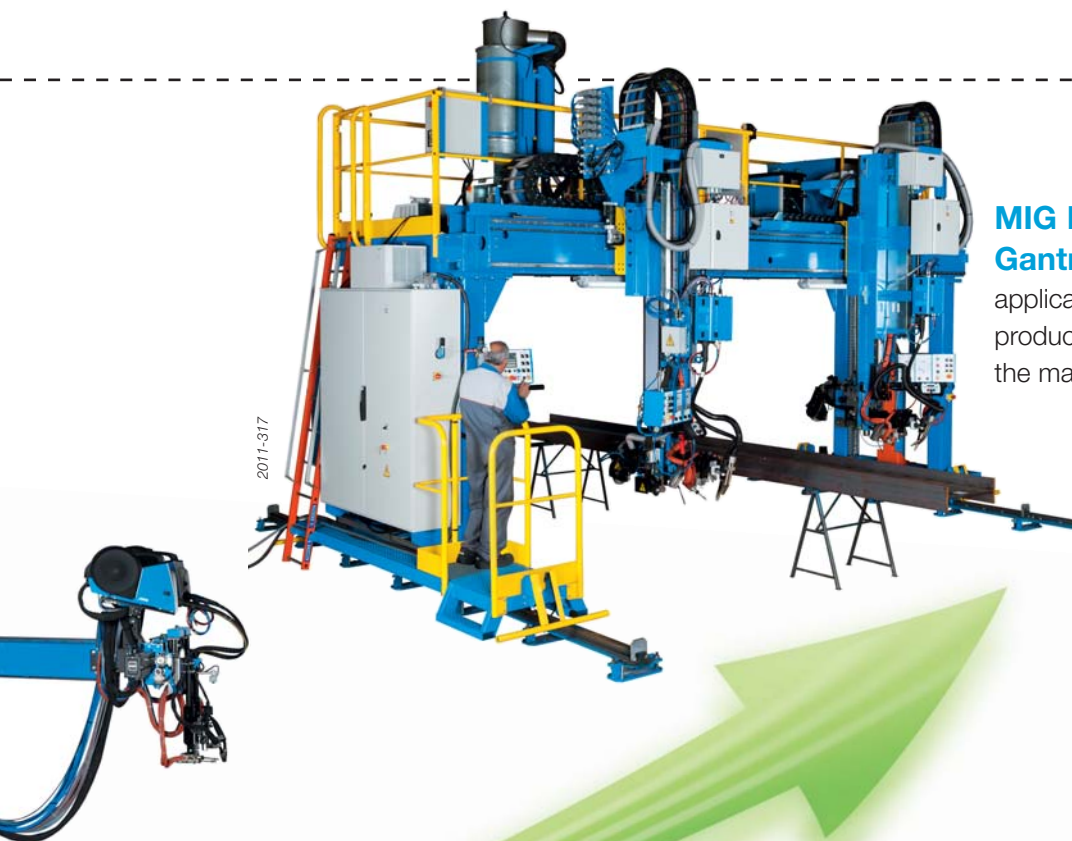
The **Straightener/cooler MIG/MAG application** is often combined to the food tanks manufacturing with plasma process.



The MIG/MAG **Autonomous welding head installation** to retrofit any old machines.



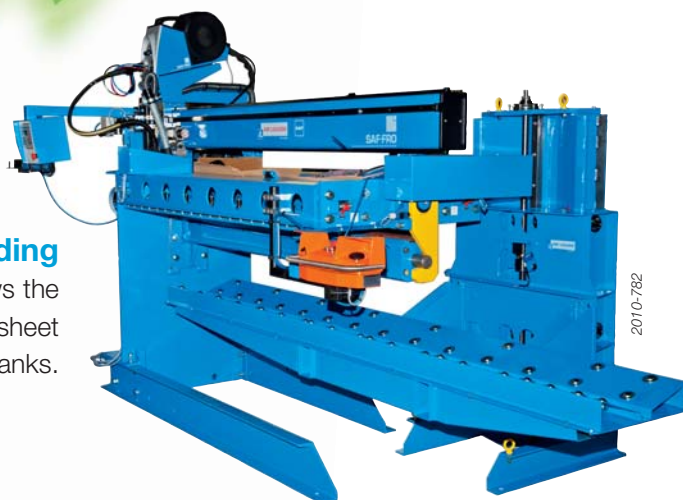
The **Autonomous carriages** allow the longitudinal and circular welding of large vessels. They are also often used in the shipyard industry.



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.



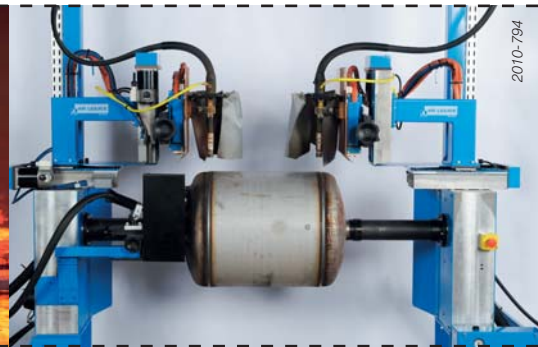
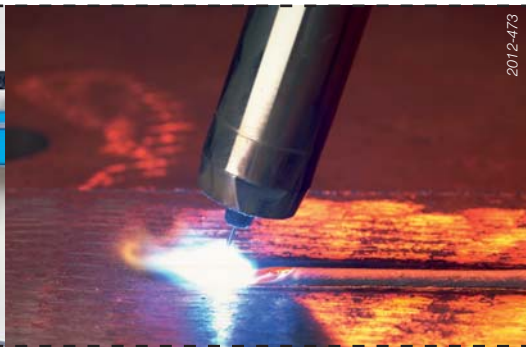
The **MIG/MAG welding seamer bench** allows the longitudinal weld of sheet metal or tanks.



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

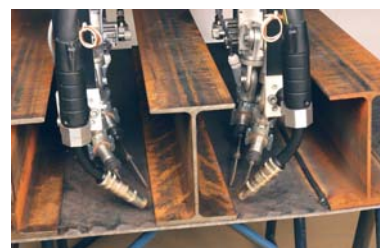
For all other specific requests: consult us.

MIG/MAG



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, boilermaking, 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.

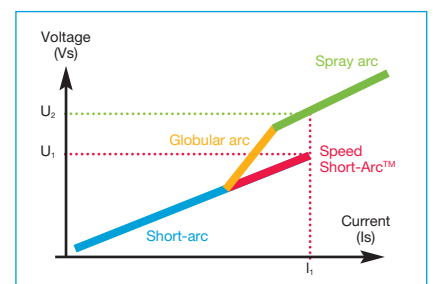
Air Liquide Welding offers several high technological metal transfer modes as:

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.

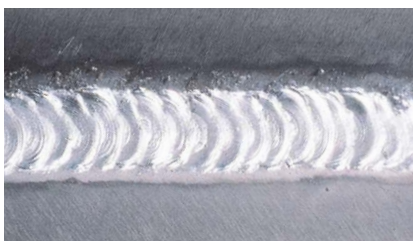


SPRAY MODAL (SM)

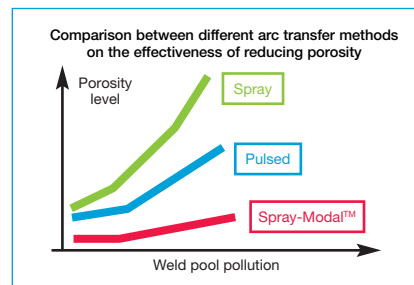
The Spray Modal mode permits to reduce strongly the porosities and increases the penetration. It uses a modulated current at frequencies of 30 to 50 Hz that produce vibrations in the liquid weld pool that have the effect of removing most of the hydrogen bubbles before the metal solidifies. This mode 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.



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HIGH PENETRATION SPEED (HPS)

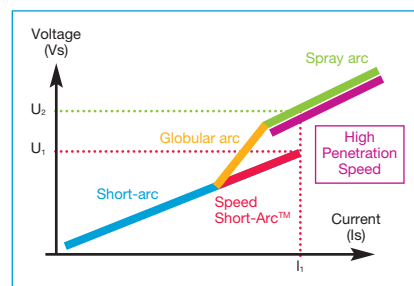
HPS (High penetration speed) is welding characteristics available with the high range of MIG/MAG inverter power sources manufactured by Air Liquide Welding. Combination of high wire speed and lower energy, HPS is taking benefit of Spray Arc and Short Arc modes.

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.

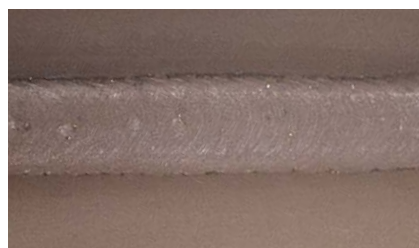


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SOFT SILENCE PULSE (SSP)

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.



2006-032

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.



2221-007

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).



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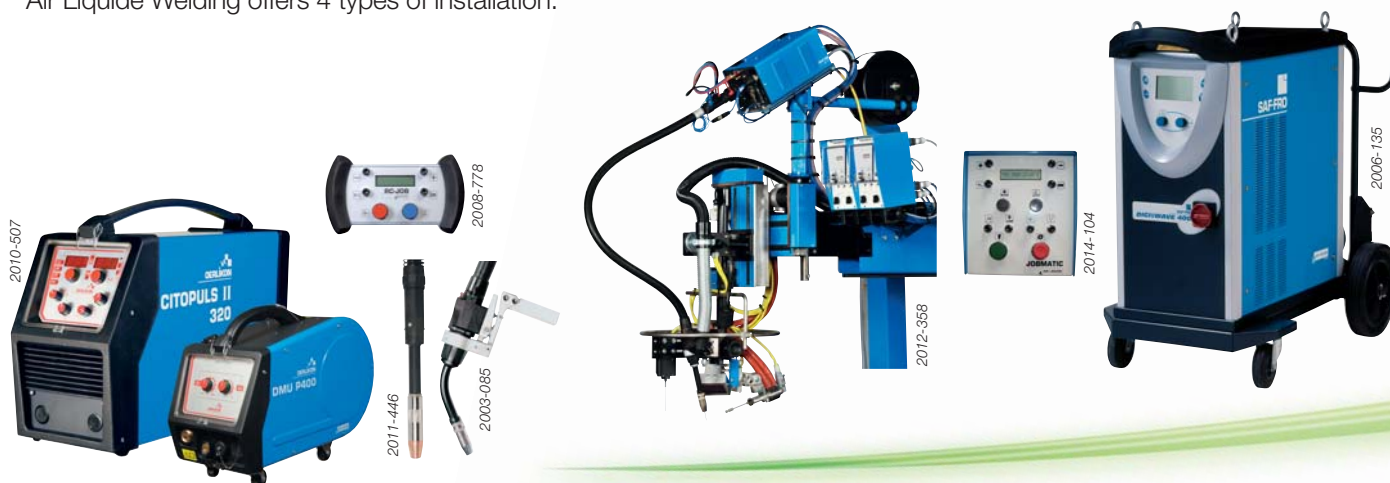
Advantages:

- TIG appearance weld bead
- effective on thin sheets
- aluminium low thickness
- reduce distortion.

MIG/MAG

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.



Complements for all types of installation

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.

Characteristics	TM 501W	TR 600	TM 700
Duty cycle	500 A at 100%	400 A at 100%	700 A at 100%
Wire diameter (mm)	1 to 2.4	0.8 to 1.6	1.2 to 3.2
Harness length (m)	1 to 2.5	1 to 4	without - direct connection
Version	straight or curved 22 or 45°	straight or curved 22 or 45°	straight
Option	-	-	additional gas protection for light metal alloy

Installation



Performances

CITOWAVE II - DIGI WAVE II 420-520 350-450 A at 100%

With its smart design, its color screen and its innovative communication interfaces, the CITOWAVE II - DIGI WAVE 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.



STARMATIC 650DC 650 A at 100%

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



WELDYPOCKET



WELDYCAR NV



WELDYSTIFFENER



WELDY-RAIL

Autonomous carriage with rechargeable battery. MIG/MAG welding with manual equipment.

Flat position welding, small footprint. Basic application, easy implementation.

All positions welding (permanent magnet).
Exists in three models:

- WELDYCAR NV - speed 5 - 70 cm/min,
- WELDYCAR S NV - speed 15 - 140 cm/min,
- WELDYCAR SP - speed 15 - 140 cm/min with programming (continuous welding or not).

Welding with 2 manual welding torches. Programmable carriage.

Exists in 2 models:

- for height: 60-160 mm,
- for height: 120-320 mm.

All positions welding of carbon steels, stainless steels and aluminium.

Exists in 2 models:

- WELDY-RAIL manual,
- WELDY-RAIL with linear oscillating.

2 rail models:

- Magnetic rail,
- Pneumatic rail.

Applications

This carriage is used to facilitate the implementation of a regular welding. Boiler making in carbon steel.

Angle, butt, overhead and vertical welding with guidance by crabbing arm.

Welding of stiffeners in ship yards.



Angle, butt, overhead and vertical welding. The carriage is travelling on a magnetic or pneumatic rail according the piece to be welded.

Main features

Carriage speed	15 - 120 cm/min	5 - 70 cm/min or 15 - 140 cm/min	15 - 180 cm/min	5 - 80 cm/min
Dimensions (L x l x h)	140 x 240 x 220 mm	250 x 300 x 260 mm	500 x 500 x 600 mm	220 x 270 x 230 mm
Weight (netto)	5 kg	11 kg	16 kg	7 kg
Options	Arc protection	Pendular oscillating unit. Linear oscillating unit. Magnetic crabbing rails, aluminium wheels... many other options on request.	-	Linear oscillating unit for WELDY-RAIL manual.

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.

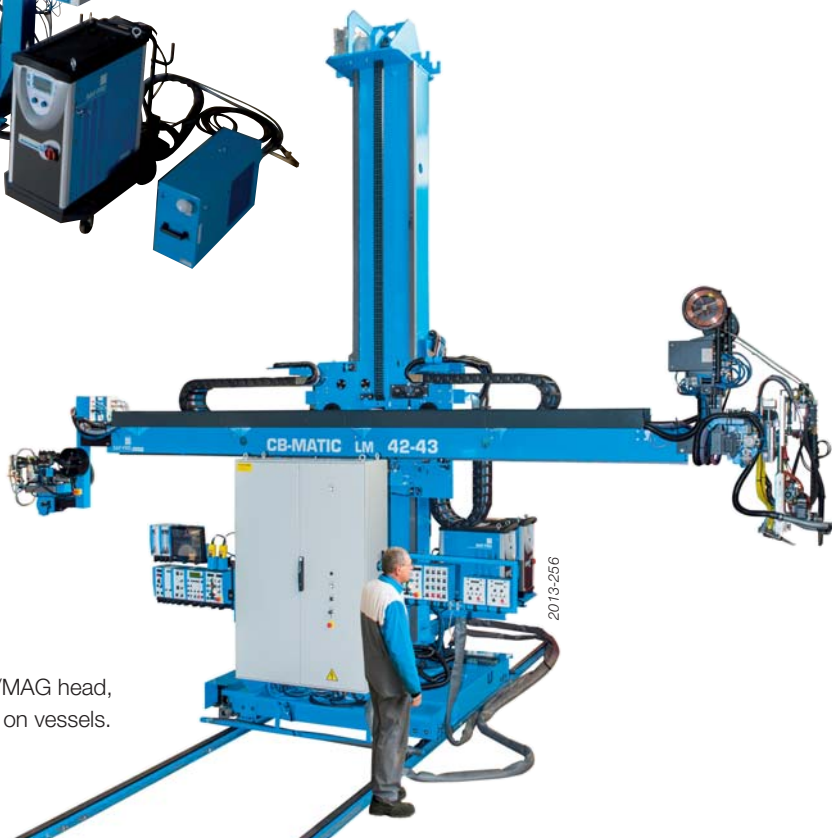
MIG/MAG BEAM-MATIC for heat exchangers, traffic signs... with seam tracking and arc protection for the operator.



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.



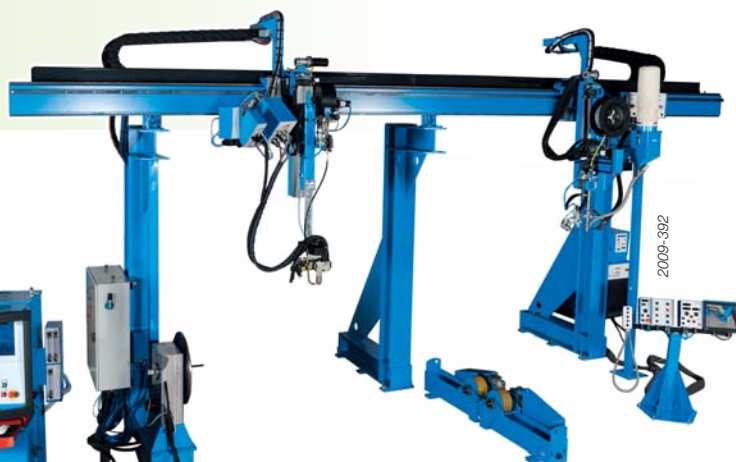
For more applications in MIG/MAG: consult us.

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 **Mechanization** to customize the machine around the piece to weld.



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



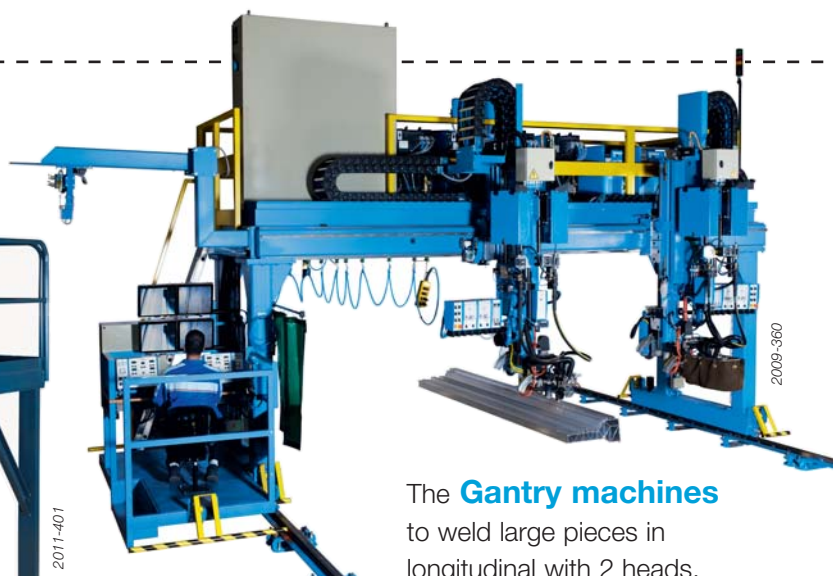
The **Rotators** to position large vessels for welding.

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

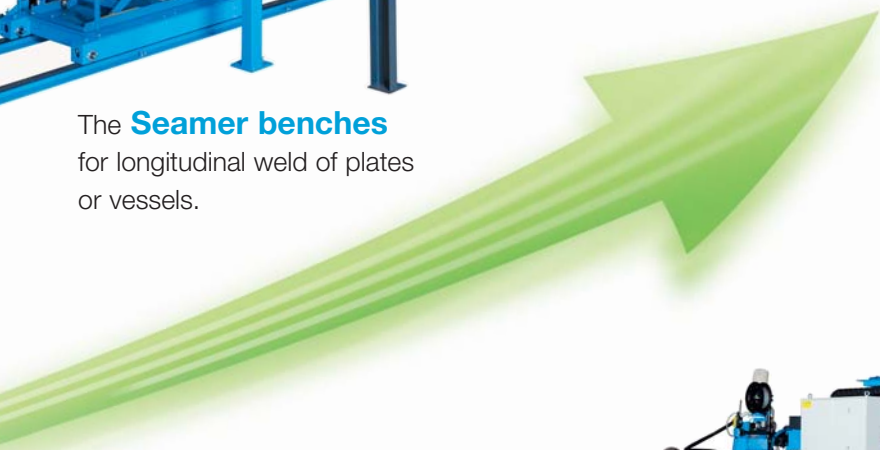




The **Seamer benches** for longitudinal weld of plates or vessels.



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



The **Turntables** to turn the piece for positioning or for welding.



The **Column & Booms** to weld large tanks with any processes.

CB-MATIC: column and booms

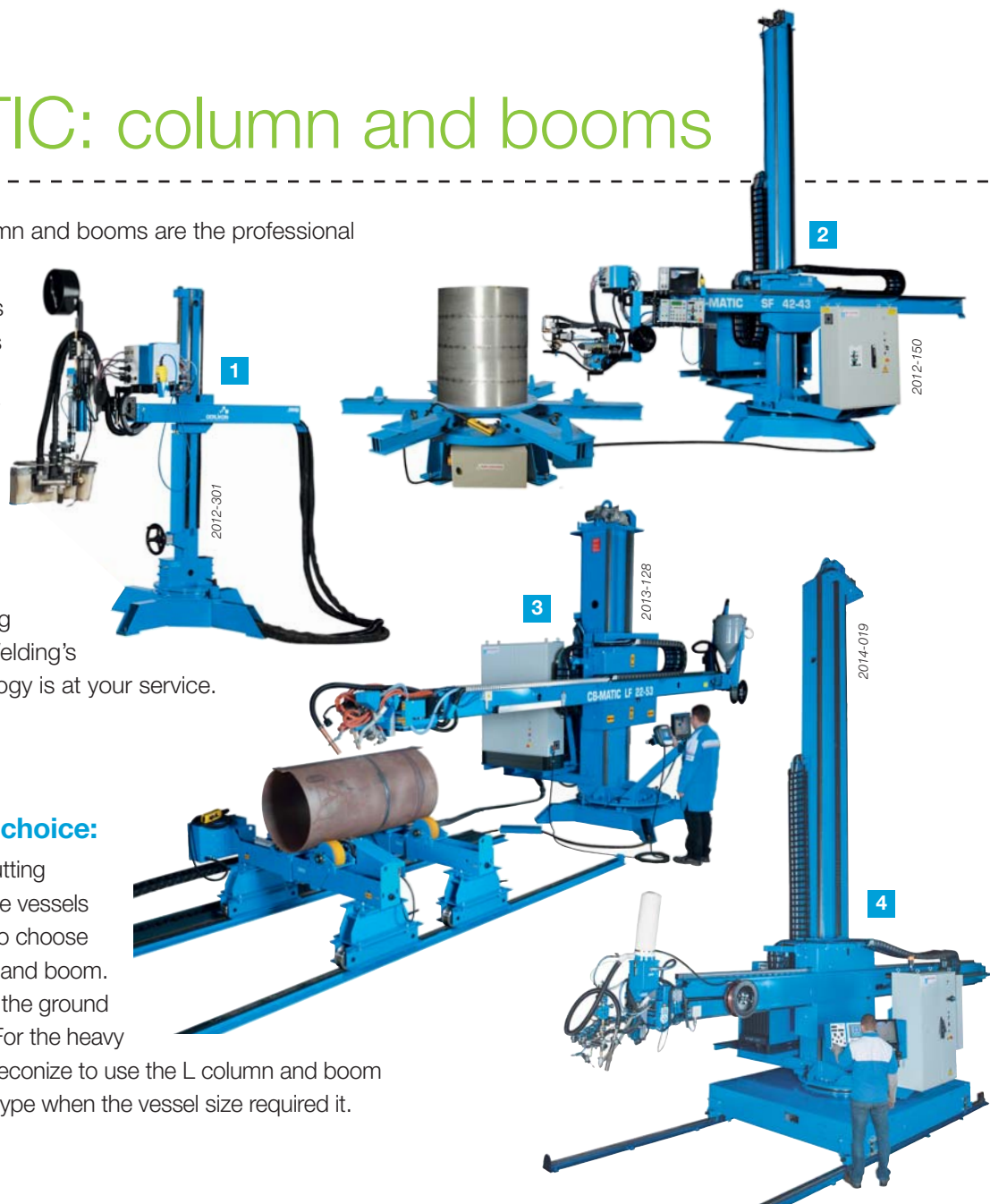
Air Liquide Welding column and booms are the professional answer to your needs.

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.

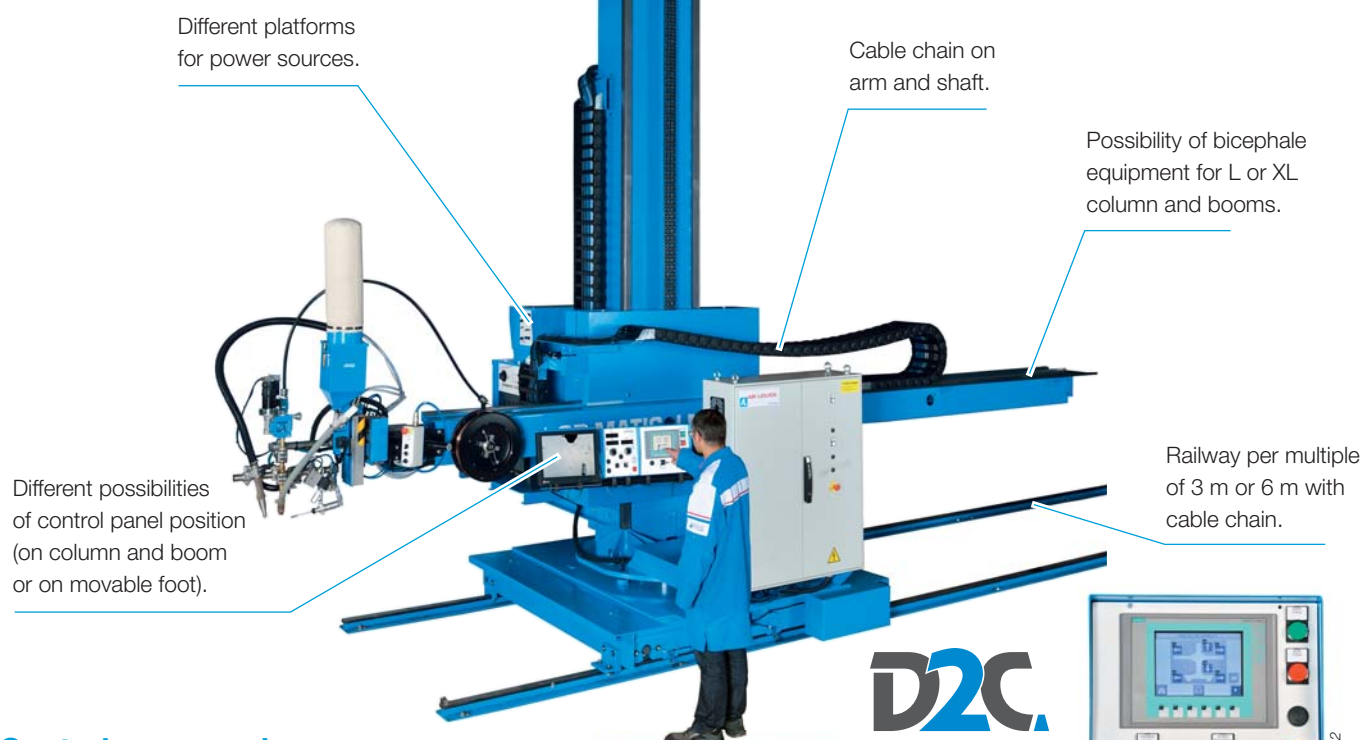
Column and boom choice:

According 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.



		15 x 10	25 x 23	32 x 33	42 x 43	52 x 43	62 x 43	52 x 53	62 x 63	72 x 73	Possible speed		
Vertical stroke (mm)		1 500	2 500	3 200	4 200	5 200	6 200	5 200	6 200	7 200	Arm speed	Carriage speed	Lifting speed
Horizontal stroke (mm)		1 000	2 300	3 300	4 300	4 300	4 300	5 300	6 300	7 300	cm/min	cm/min	cm/min
<div> <div>Maxi load at the end of the arms (kg) + Height (mm) without rail</div> </div>	1 XSF	A	200	80							Manual or 12 to 300	-	Manual or 120
		B	2 625	3 625									
	XSM	A	200	80							Manual or 12 to 300	Manual or 57 to 570	Manual or 120
		B	2 630	3 630									
	2 SF	A		200	175	150					20 to 300 or 5 to 300	-	110 or 5 to 110
		B		4 580	5 280	6 280							
	SM	A		200	175	150					20 to 300 or 5 to 300	20 to 500 or 5 to 500	110 or 5 to 110
		B		4 635	5 335	6 335							
	3 LF	A		400	400	300	300	300	150		20 to 500 or 5 to 500	-	110 or 5 to 160
		B		4 850	5 550	6 550	7 550	8 550	7 550				
	LM	A		400	400	300	300	300	150		20 to 500 or 5 to 500	20 to 500 or 5 to 500	110 or 5 to 160
		B		4 850	5 550	6 550	7 550	8 550	7 550				
	XLF	A				400	400	400	400	300	5 to 500	-	160 or 5 to 160
		B				7 075	8 075	9 075	8 075	9 075			
	4 XLM	A				400	400	400	400	300	5 to 500	20 to 500	160 or 5 to 160
		B				7 125	8 125	9 125	8 125	9 125			

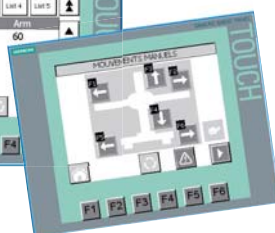
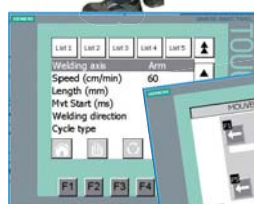
Standard equipment:



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.



D2C control panel



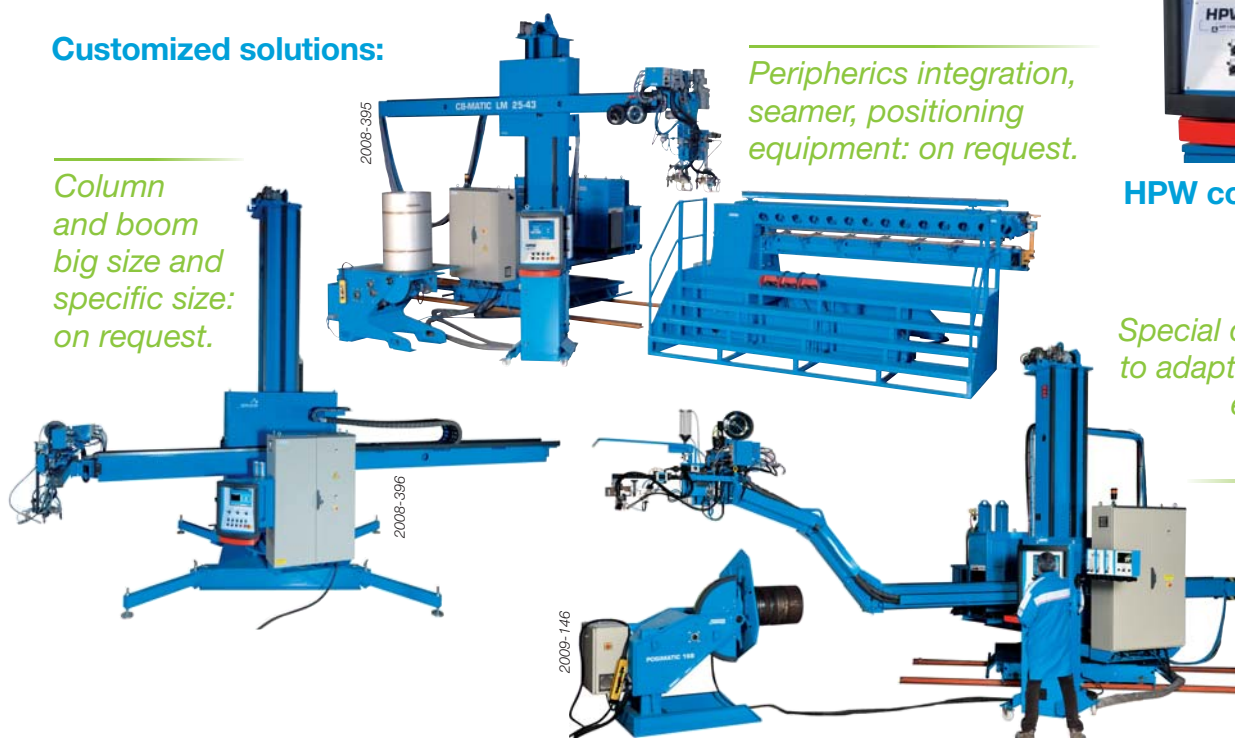
HPW control panel

Customized solutions:

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

Peripherals integration, seamer, positioning equipment: on request.

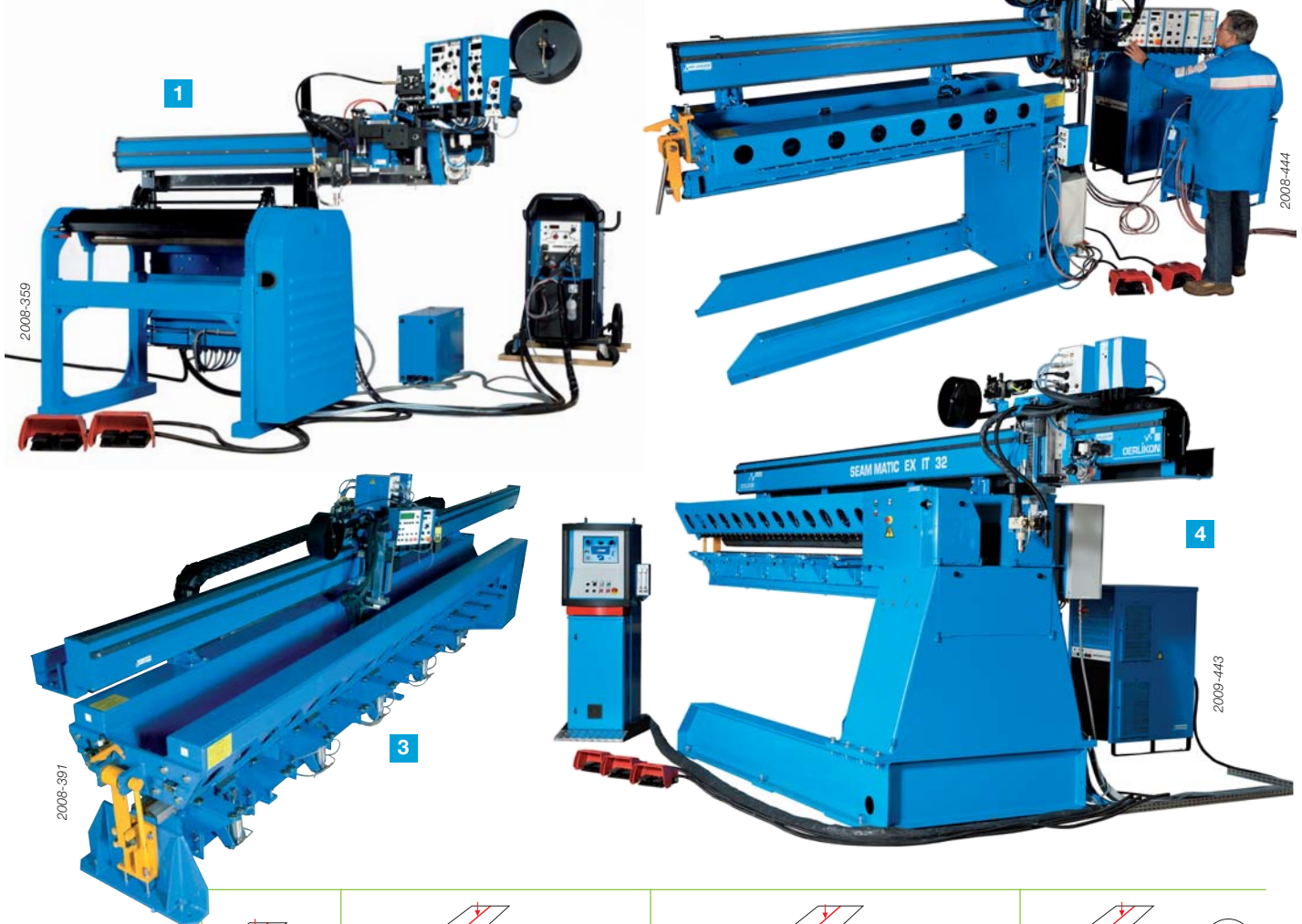
Special configuration to adapt to customer environment: on request.



SEAM-MATIC: welding seamer benches

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.



		1						2						3						4					
		FIN						EX (xx from 10 to 20)						IT						EXIT					
		10V07	12Vxx	17Vxx	22Vxx	32Vxx	42Vxx	22	32	42	52	62	72	32	42	52	62	32	42	52	62	32	42	52	62
Maxi weldable length (included run on/off plates)		1 050	1 250	1 750	2 250	3 250	4 250	2 250	3 250	4 250	5 250	6 250	7 250	3 250	4 250	5 250	6 250	3 250	4 250	5 250	6 250	3 250	4 250	5 250	6 250
External welding (mm)	Ø mini	80	210	220	270	320	460	-	-	-	-	-	-	380	480	580	600	-	-	-	-	-	-	-	-
	Ø maxi	700	xx00	xx00	xx00	xx00	xx00	-	-	-	-	-	-	1 450	1 450	1 500	1 500	-	-	-	-	-	-	-	-
Internal welding		-	-	-	-	-	-	1 450	1 450	1 450	1 500	1 500	1 600	1 450	1 450	1 500	1 500	-	-	-	-	-	-	-	-
Thickness (mm)	without tacking	0.6 to 3	0.8 to 5	0.8 to 5	1 to 5	1 to 5	1 to 5	1 to 5	1 to 5	1 to 5	1 to 5	1 to 5	1 to 5	1 to 5	1 to 5	1 to 5	1 to 5	-	-	-	-	-	-	-	-
	with tacking	0.6 to 3	0.8 to 8	0.8 to 8	1 to 8	1 to 8	1 to 8	1 to 10	1 to 10	1 to 10	1 to 10	1 to 10	1 to 10	1 to 10	1 to 10	1 to 10	1 to 10	-	-	-	-	-	-	-	-

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).



2008-413

Control panel

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

Control panels on foot

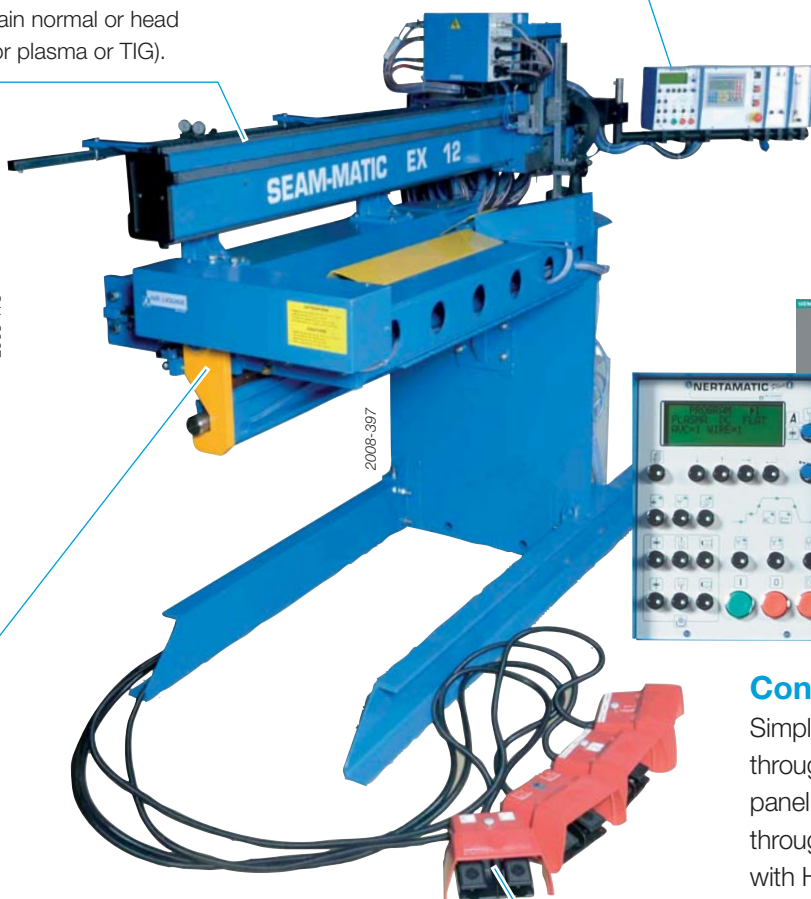


2009-445_ret

Open device

In standard, the open device is manual.

For the EX seamer, there is the possibility to have a pneumatic open device.



2008-397



Control command:

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

Customised solutions:

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

Operator platform: on request.



2008-358

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



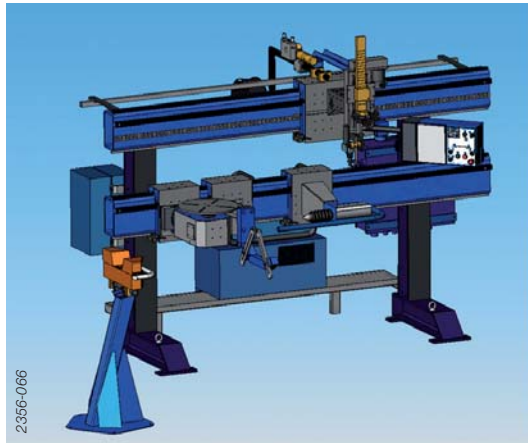
2012-654

Mechanisation

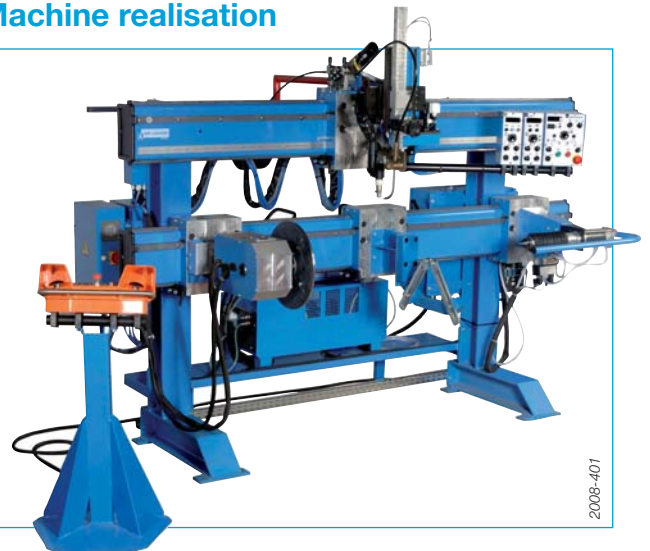
Air Liquide Welding proposes to design machines with modular elements in order to build the machine around to piece to be welded or cutted.

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

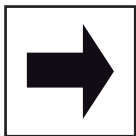
Machine design



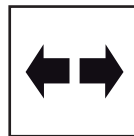
Machine realisation



A large choice of mechanisation parts



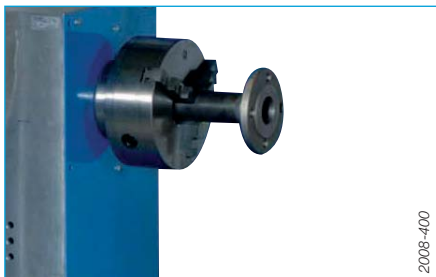
Beam, carriage, manual or motorised slides...



Oscillation mechanism...



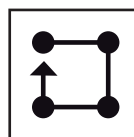
Headstock, tailstock, rotation block, mandrel...



X rotators, support blocks, command box supports...



Trackmatic probes, mechanical tracking...



Cycle control boxes, electrical cabinet...

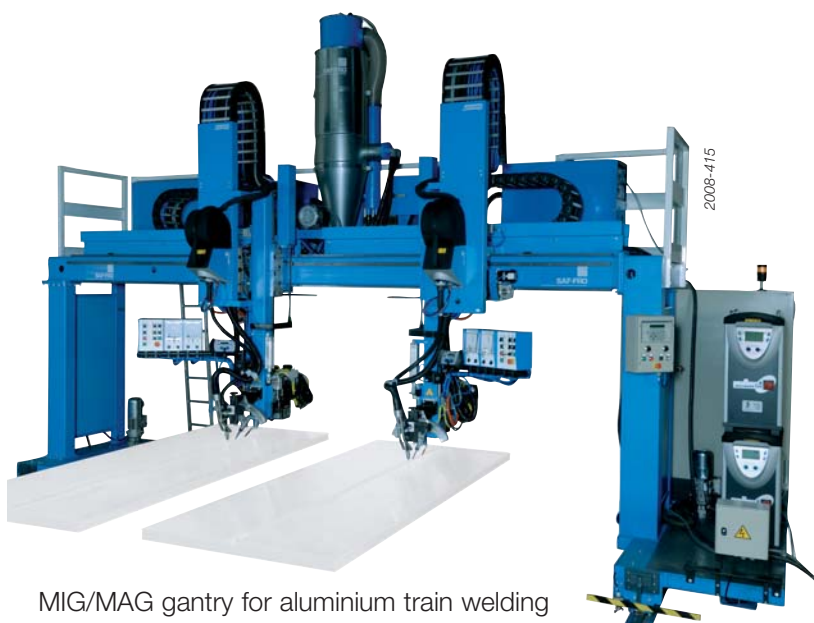


Examples of mechanisation machines

Double MIG/MAG
mechanisation for endless
screw welding



0200-029



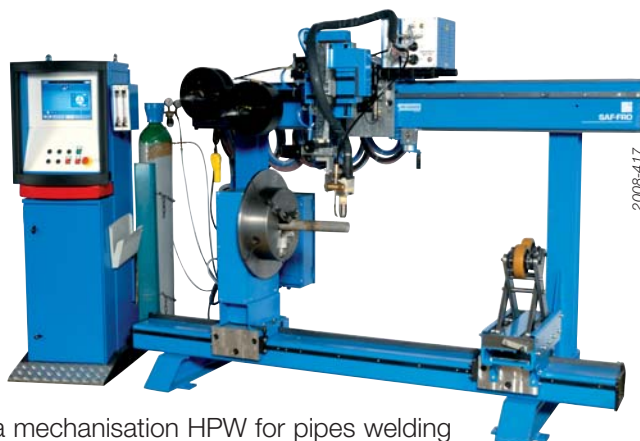
2008-415

MIG/MAG gantry for aluminium train welding

SAW platform
for school
training



2010-772



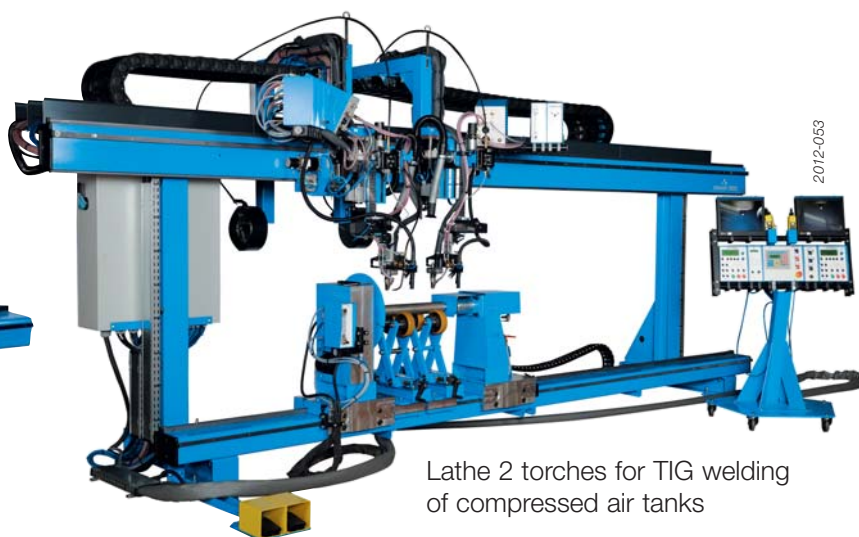
2008-417

Plasma mechanisation HPW for pipes welding

Headstock mechanisation
on CTP2 beam



2008-453



2012-053

Lathe 2 torches for TIG welding
of compressed air tanks

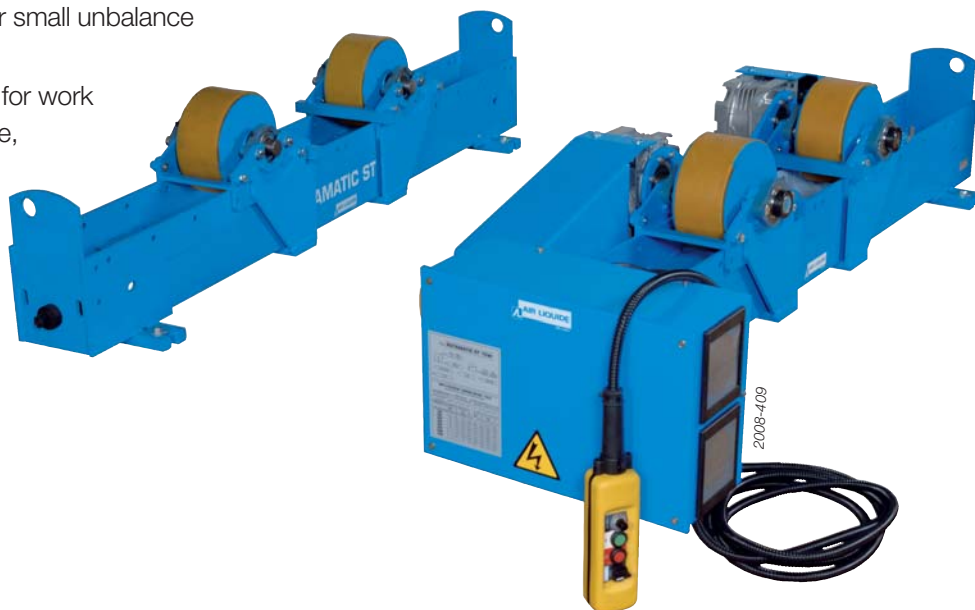
ROTAMATIC: single roller rotators

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 $\pm 1\%$ speed regulation,
- kit encoder 5000 pts,
- lorry and railway.



Technical specifications:

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

Keys:

M = Single motorisation

F = Idler roller

W = Double motorisation

MT = Single motorisation with tube system

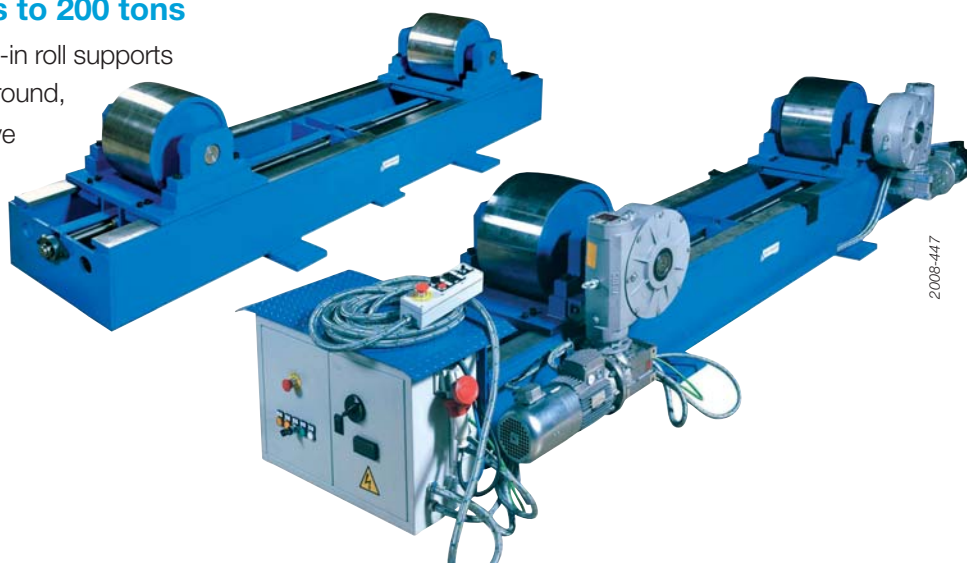


Heavy-duty rotator: 42 tons to 200 tons

- 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.



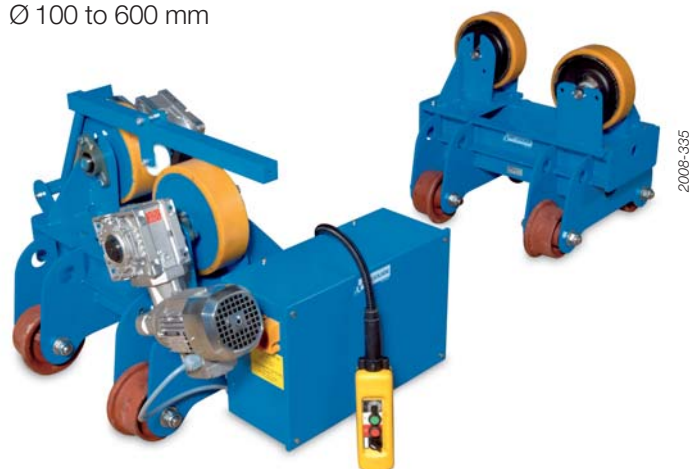
Technical specifications:

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

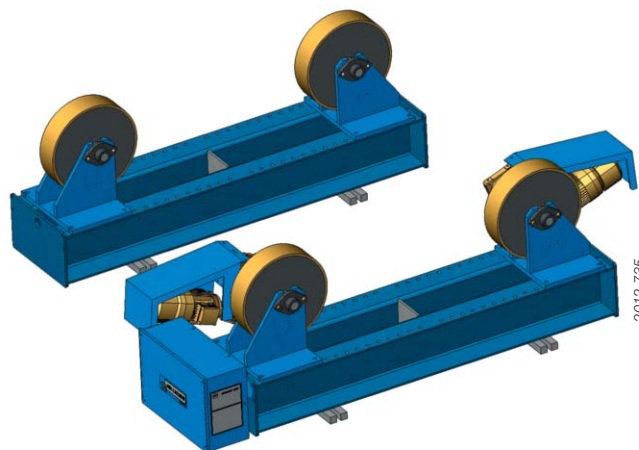
* Available in version **W** (Double motorisation) or **F** (Idler roller)

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.

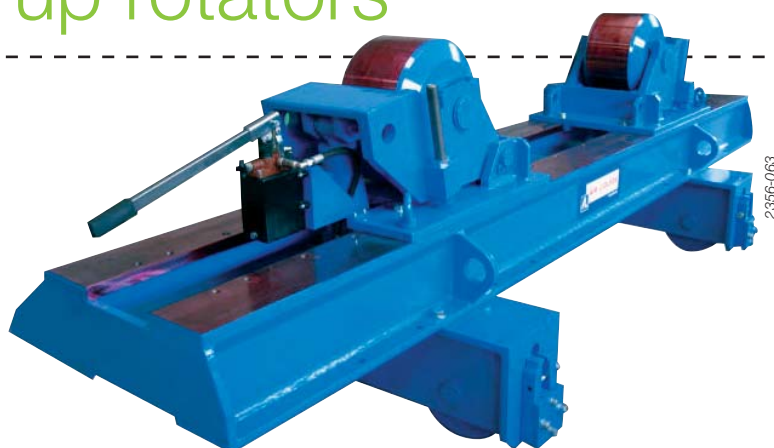
ROTAMATIC: fit-up rotators

Fit-up rotator: 30 tons to 200 tons

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

Possible options:

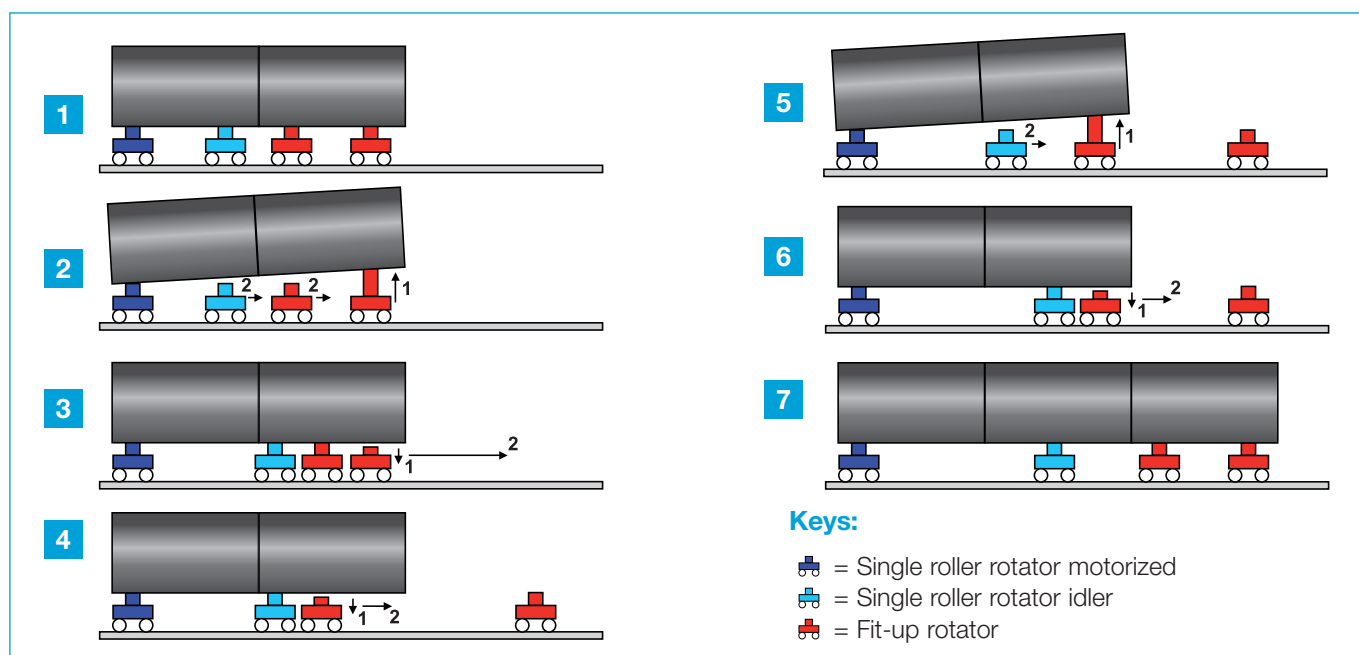
- automatic hydraulic pump (hydraulic central),
- lorry and railway.



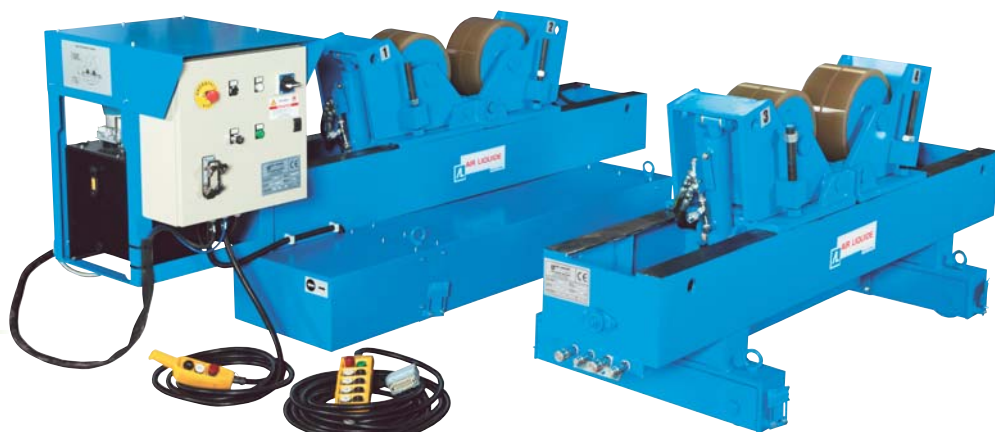
2356-063

Technical specifications:

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



Version with automatic hydraulic central:



2012-334

Higher capacity rotators on request.

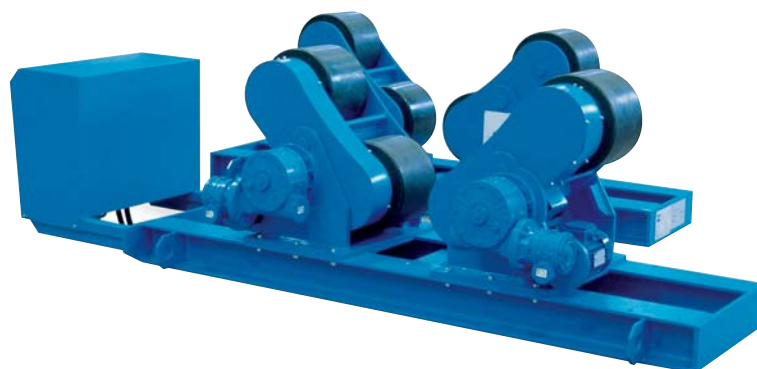
ROTAMATIC: self aligning rotators

12 tons to 250 tons

- in standard: remote pendant, kit auto and display on all versions.

Possible options:

- lorry and railway.



2008-356

Technical specifications:

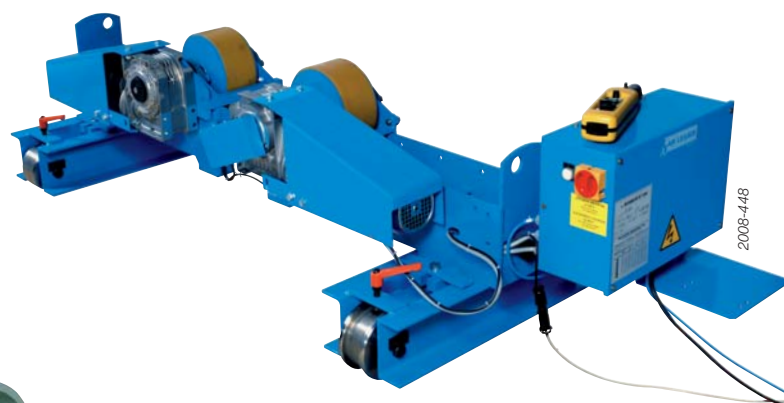
Designation	Load capacity (1 drive + 1 idler) kg	Load capacity per section kg	Mini Shell diameter for 1/2 load mm	Shell diameter for maximum load mm	Peripheral speed cm/min	Wheel dimension OD x width mm	Wheel material
LP12-2R	12000	6000	500 to 1500	1500 to 4000	10 to 100 or 10 to 200	Ø 300 x 220	Rubber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

ROTAMATIC options

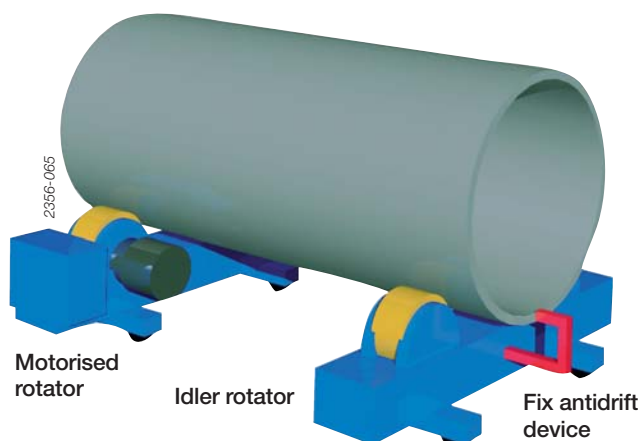
Lorry

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.



2008-448



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:

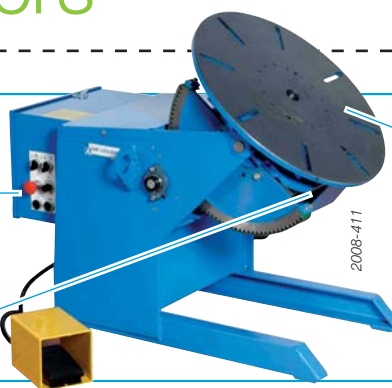
- conventional: from 100 kg to 30 tons,
- with lifting table: from 1500 kg to 10 tons.

Higher capacity or different rotation speed range on request.

CE standard electrical cabinet.

Swept counterweight system under the worktable.

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



	Load all positions kg	Tilt torque m.kg	Rotation torque m.kg	Rotation speed tr/min	Turntable height mm	Remote control or pedal	Pictures
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Conventional range

P1E	1	100	25	2	0.2 to 5	385	Pedal
P2E		200	40	4	0.25 to 5	500	Pedal
3F		400	90	20	0.14 to 2.2	650	Pedal
7F	2	650	175	75	0.076 to 1.53	896	RC + Pedal
16B	3	1600	400	150	0.074 to 1.48	975 to 1400	RC + Pedal
30B		3000	840	250	0.06 to 1.18	980 to 1380	RC + Pedal
TP4		4000	1100	500	0.045 to 0.45	1110	RC
TP6		6000	2500	720	0.03 to 0.3	1150	RC
TP8		8000	3600	850	0.025 to 0.25	1000	RC
TP10		10000	6750	1450	0.022 to 0.22	1190	RC
TP15	4	15000	10300	2100	0.02 to 0.2	1275	RC
TP20		20000	14200	2900	0.018 to 0.18	1340	RC
TP30		30000	22500	4400	0.015 to 0.15	1450	RC



With lifting table range

TPE 1.5		1500	375	160	0.06 to 0.6	970 to 1700	RC
TPE 2.5	5	2500	600	200	0.06 to 0.6	1030 to 1850	RC
TPE 4		4000	1100	500	0.045 to 0.45	1060 to 2010	RC
TPE 6		4000	2500	720	0.035 to 0.35	1125 to 2125	RC
TPE 8		4000	3600	850	0.025 to 0.25	1125 to 2125	RC
TPE 10		10000	6750	1450	0.022 to 0.22	1150 to 2350	RC



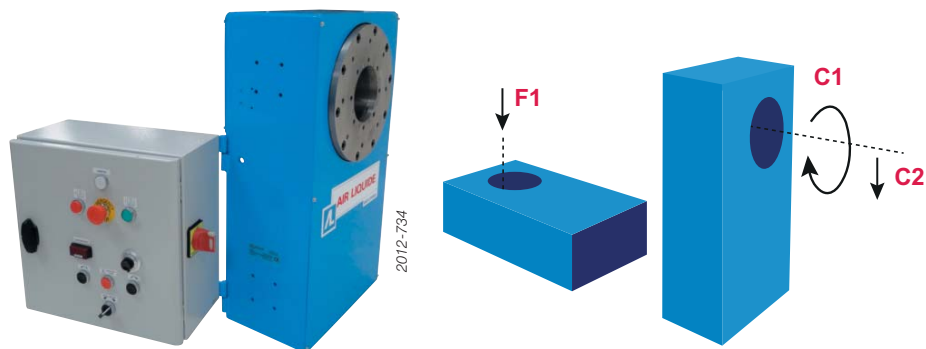
HEADMATIC: headstock

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.



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

- **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.

Designation	Load capacity kg	Rotation torque (C1) m.kg	Rotation speed tr/min
HLM+F 2x1.5	3000	250	0.1 to 1
HLM+F 2x4	8000	500	0.1 to 1
HLM+F 2x6	12000	720	0.1 to 1
HLM+F 2x8	16000	960	0.1 to 1
HLM+F 2x10	20000	1200	0.1 to 1
HLM+F 2x16	32000	1900	0.1 to 1

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



TURNMATIC: turntable

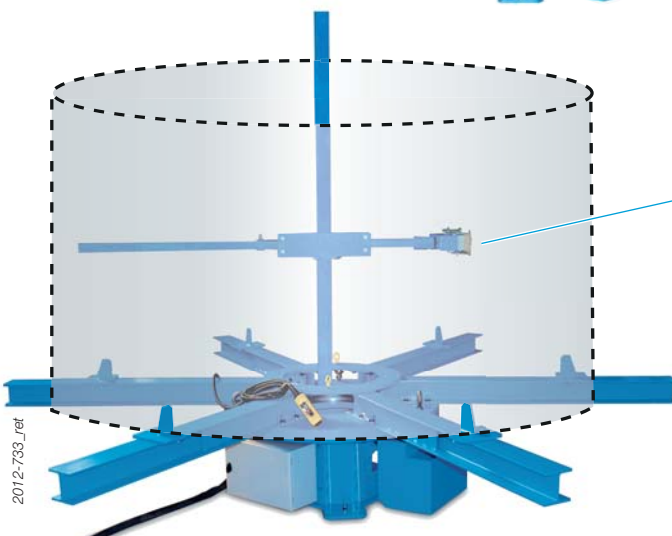
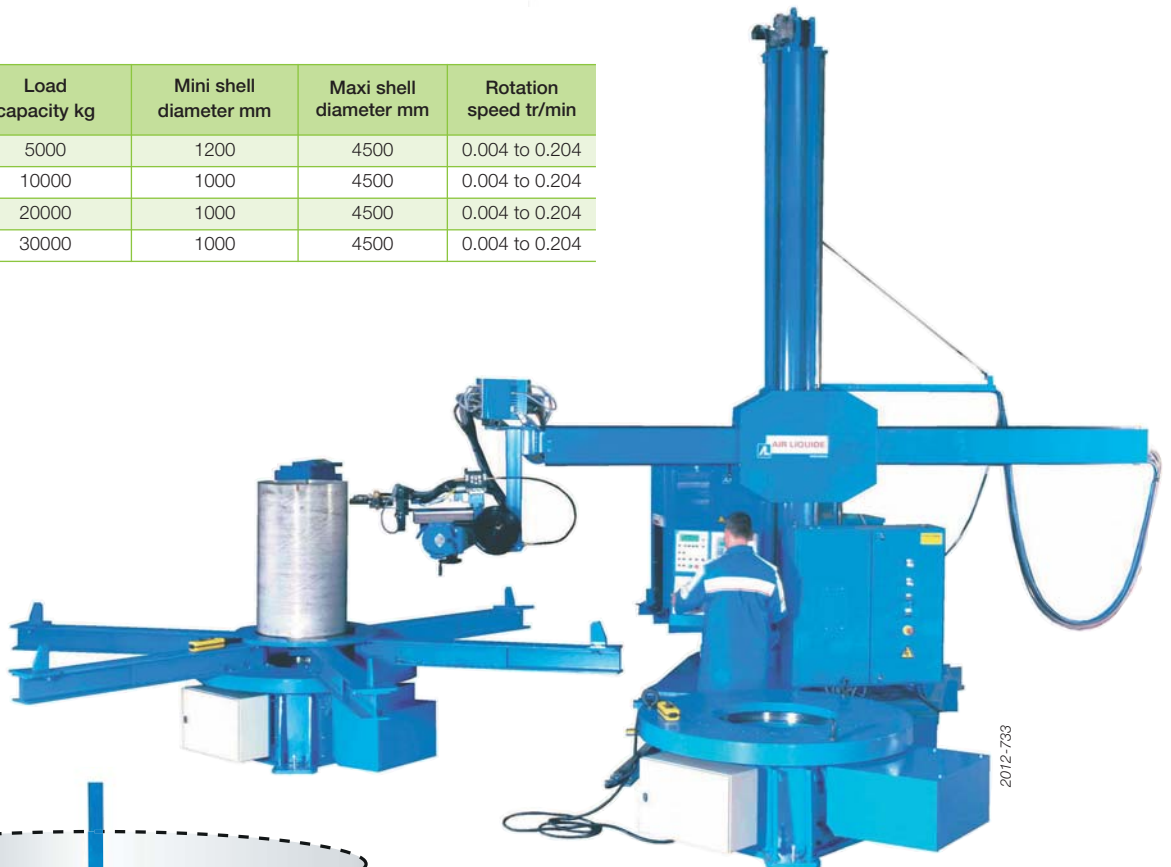
Turntable 5 tons to 30 tons

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.



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



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.

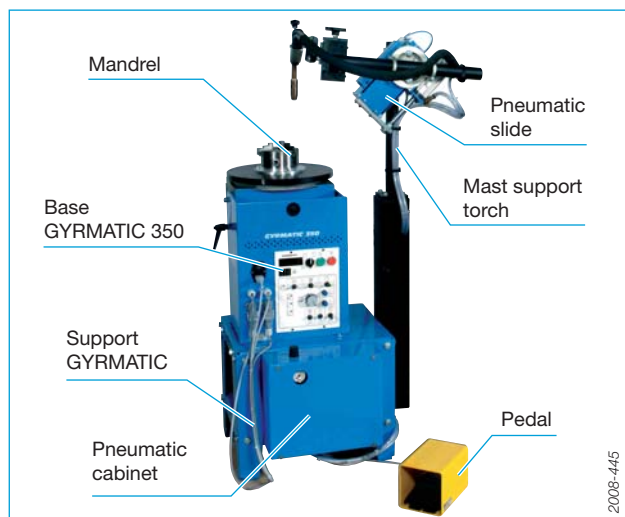
Other sizes, capacities or rotation speed range on request.

GYRMATIC

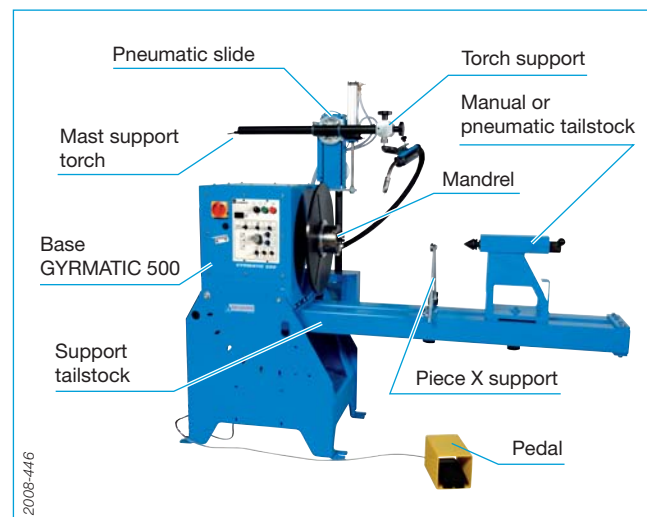
GYRMATIC 350 & 500 are modular systems designed to adapt easily and quickly to all conditions for circular welding around a horizontal or vertical axis or in intermediate positions set using a manual tilt device.

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

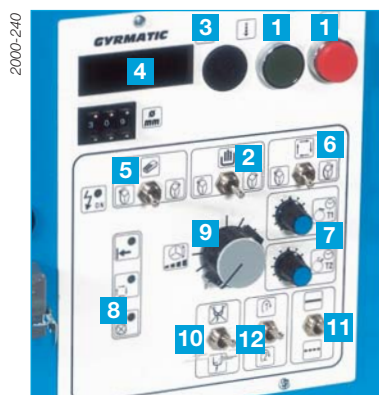


Example of GYRMATIC 500 assembly



Not shown: pneumatic cabinet and electrical cabinet.

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



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

Technical specifications:

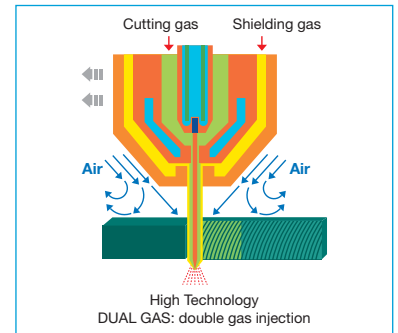
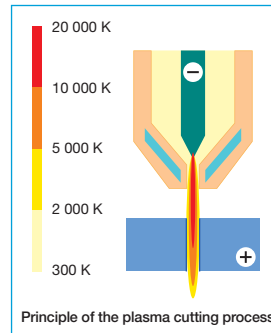
Turntable	Base GYRMATIC 350		Base GYRMATIC 500	
Welding axis				
Rotation speed	0.9 to 18.5 tr/min	0.29 to 7.4 tr/min	0.25 to 4.5 tr/min	0.5 to 10 tr/min
Number of earth clips	One 250 A clip - capacity can be increased to 500 A as option			
Backing gas	option			
Intermittent welding	option			
Mechanical specifications				
Machined turntable diameter	Ø 350 mm		Ø 490 mm	
Max. rotation torque	1 m/daN	2 m/daN	5 m/daN	10 m/daN
Max. workpiece diameter with tailstock	Ø 300 mm		Ø 500 mm	
Max. workpiece length with tailstock	300 mm		800 mm	
Possible tilt	Manual from 0° to 90° with 7 set positions at 15° intervals			
Dimensions / Power supply				
Dimensions (L x H x D)	430 x 508 x 408 mm		600 x 1150 x 750 mm	
Power supply	230 V / 50-60 Hz		230 V / 50-60 Hz	
Unloaded weight without welding equipment	38 kg		140 kg	

Cutting processes

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.

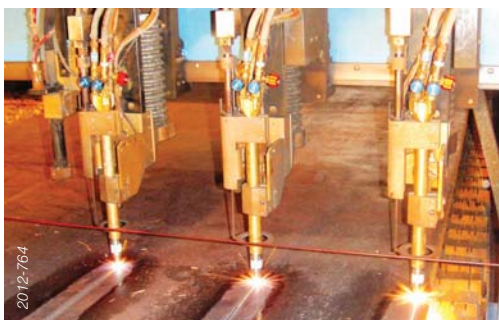
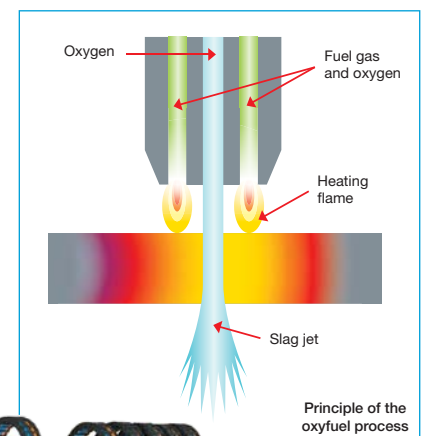
The basic plasma arc cutting system consists of a power supply, an arc starting circuit and a torch. These system components provide the electrical energy, ionization capability and process control that is necessary to produce high quality, highly productive cuts on a variety of different materials (carbon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

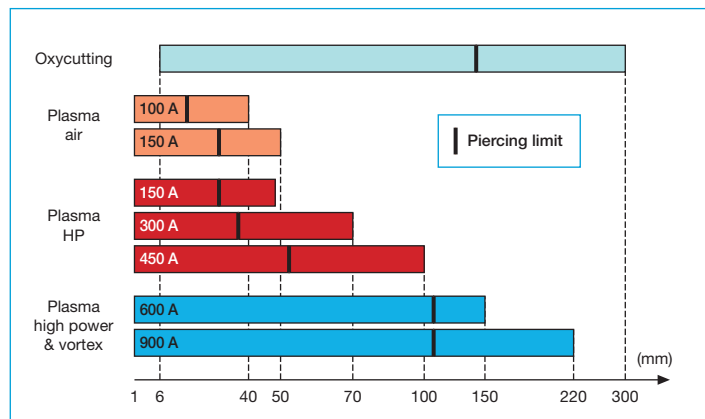


Air Liquide Welding offers a large choice of cutting processes through its products.

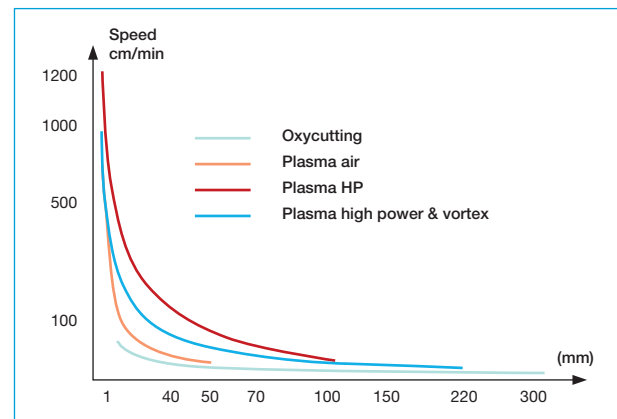
Several criteria allow to define the best process adapted to the customer application, function of materials, thicknesses, technology, quality and productivity required.

Comparison between the main cutting processes

Thicknesses range multi material (mm)



Average speed cutting multi material (cm/min)



Cutting technology ALW	Quality cutting ISO9013 (*)	Heat affected zone	Investment	Use cost
Oxycutting	Range 1/2	Orange	Green	Green
Plasma air	Range 4/5	Green	Green	Green
Plasma HP	Range 2/4	Green	Orange	Green
Plasma High power & vortex	Range 3/5	Green Vortex	Orange	Green

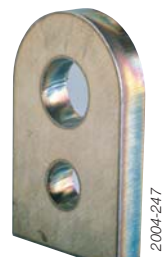
● Excellent ● Good ● Fair



HP cuts - carbon steel O₂/Air



Carbon steel - 25 mm oxyfuel process



HP cut - 15mm stainless steel ArH₂/N₂

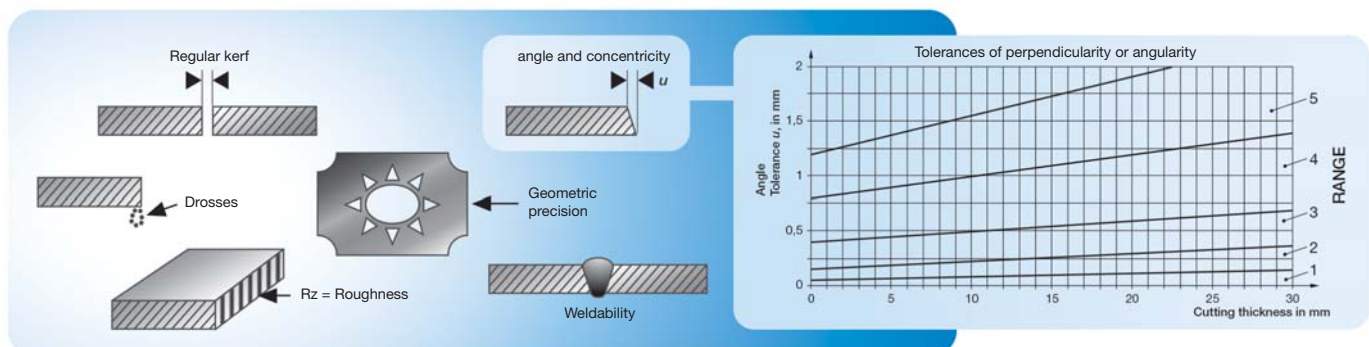
Main cutting quality criteria

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



2009-313

Power

NERTAJET HP range

Heavy power

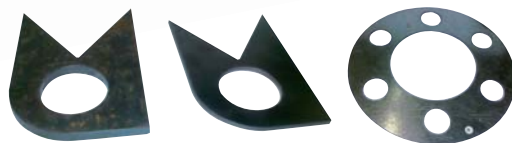
CPM720-900



NERTAJET range

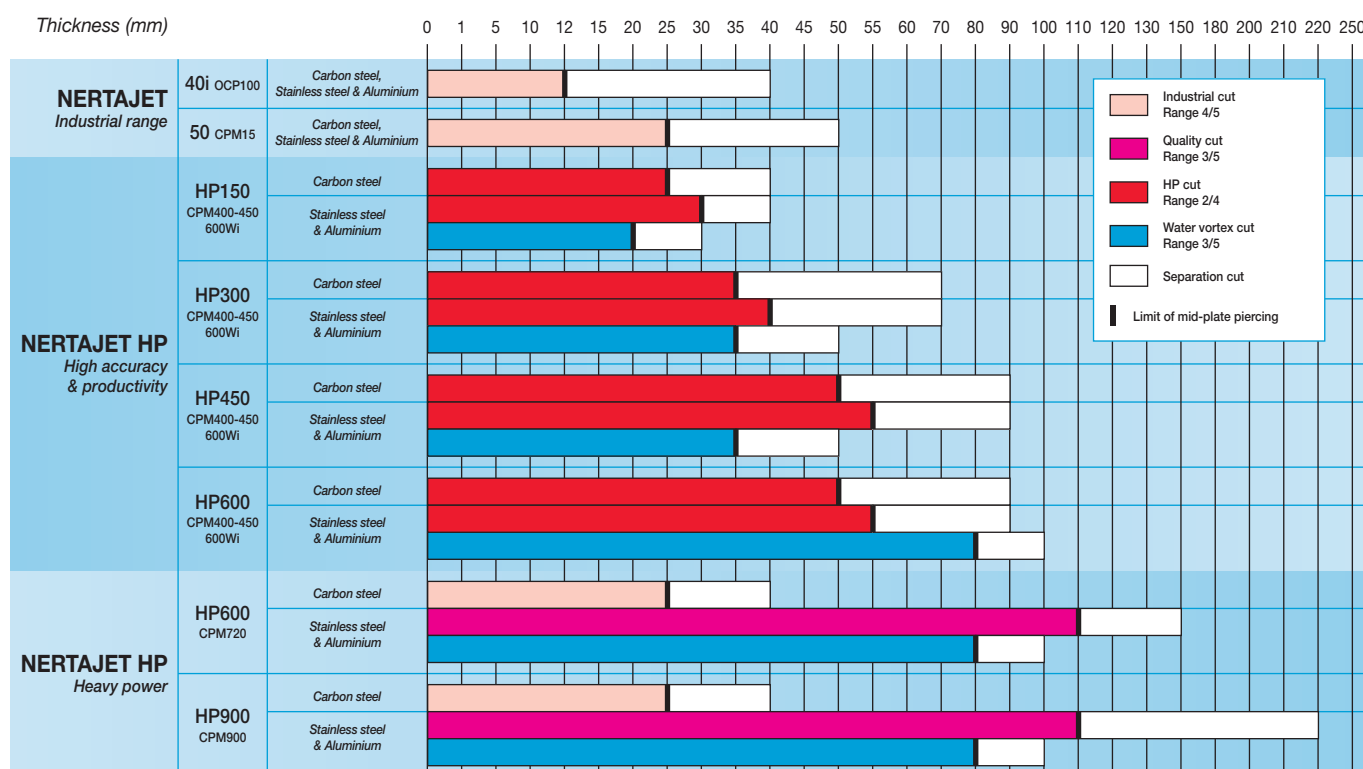
Industrial plasma

OCP100 and CPM15



2016-222

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



NERTAJET range

NERTAJET plasma cutting installations are built with the following components:

2013-214



An automatic cycle
The interface is either external or integrated in the numerical control.



2011-453

A power source
that includes the torch cooling device (air or liquid according to models).



2013-220

A torch holder
insuring the sheet detection and voltage control functions.



2000-281_ret

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 ?

Process management



BRT 400
(Gas control)

CNC



HPC or HPC Bevel
(machine axes and process control)



HPC-CA3
(Plasma cycle)



HF
(Arc striking)

Power source

NERTAJET HP 150



NERTAJET HP 300



2010-142

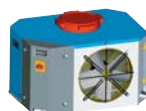


NERTAJET HP 450 or 600



NERTAJET HP 900

Cooling unit



FRIJET 300



FRIJET 300



FRIJET 720



FRIJET 900

2003-292

Torch holder



2010-547

Torch impact device



2011-542

Torch impact device

NERTAJET HP

Straight cut parts and bevelled straight line cuts applications.

Removable plasma cutting torch



2012-751

2009-299

2012-748

"Easy Wear Parts Storage" : wear parts storage



2012-759

NERTAJET BEVEL HP

Bevelling unit for straight cut application, simple - composed or progressive bevels (dry plasma process up to HP 450)

NERTAJET HP installations are completely piloted with the HPC Digital Process. The management of the different parameters is full automatised. 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.

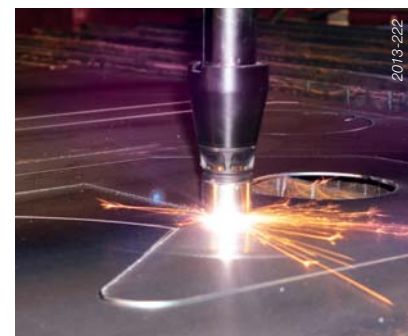
The main benefits of the installation include:

- high cutting quality with compressed air,
- versatile applications on all materials,
- simple and fast implementation,
- arc striking without high frequency,
- inverter technology 120 A,
- duty cycle: 100 A - 100%.



NERTAJET 40i power source

	Characteristics
Weight & dimensions	35 kg 720 x 235 x 380 mm
Primary power supply	400 V \pm 15% 50/60 Hz three phase
Current consumption	25.2 A - 100%
Duty cycle	120 A - 60% 100 A - 100%
Protection index	IP23
Current regulation	From 10 to 120 A
Gas supply	Air : 6 bars - 170 l/min

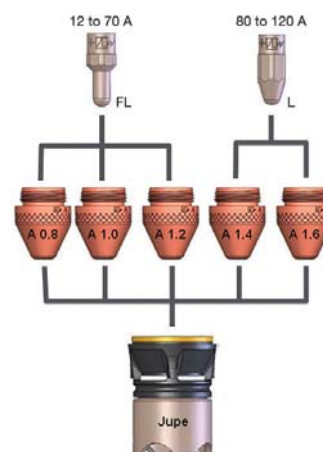
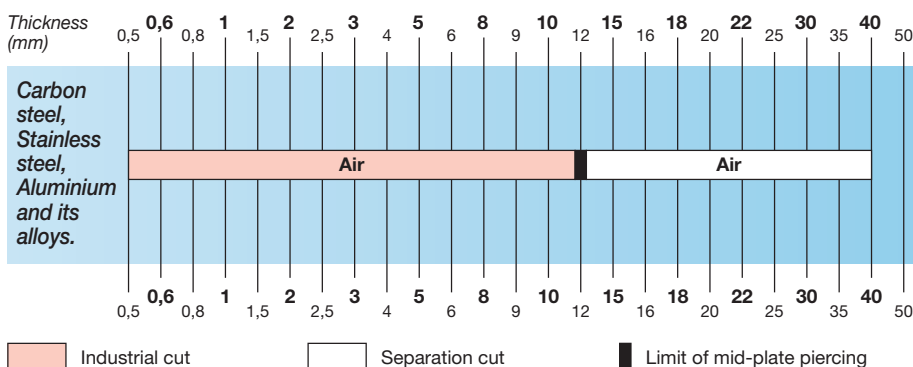


OCP 100 torch

Rugged torch offering a great simplicity of implementation:

- limited number of consumables,
- compressed air,
- without high frequency (HF),
- reduced cost of use.

Thickness range



Compatible with:

 <p>2013-552</p> <p>PYROTOME CNC</p>	 <p>2013-211</p> <p>EASYTOME</p>	 <p>2012-311</p> <p>OPTITOME</p>	 <p>0255-43</p> <p>EUROTOME, OXYTOME HPC</p>	 <p>2011-453</p> <p>Autonomous installation for carriage, retrofit, mechanisation etc...</p>
✓	✓	✓	✓	✓

NERTAJET 50 - CPM15

Mechanised plasma cutting installation with a maximum cutting thickness of 50 mm.

The main benefits of the installation include:

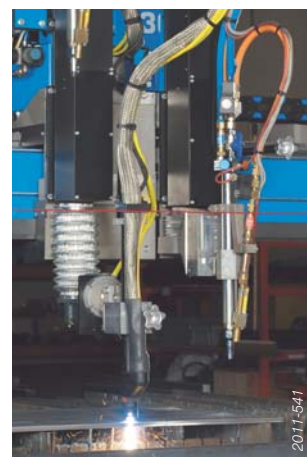
- high quality for air cutting all materials up to 25 mm of mid-plate piercing,
- excellent cutting quality on stainless steel and aluminium thanks to nitrogen and argon / hydrogen process,
- versatile applications on all materials from 0.5 to 50 mm,
- simple and fast implementation,
- liquid cooled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

NERTAJET 50 power source

	Characteristics
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 (N ₂): 8 bars - 150 l/min ArH ₂ : 8 bars - 41 l/min



2007-281



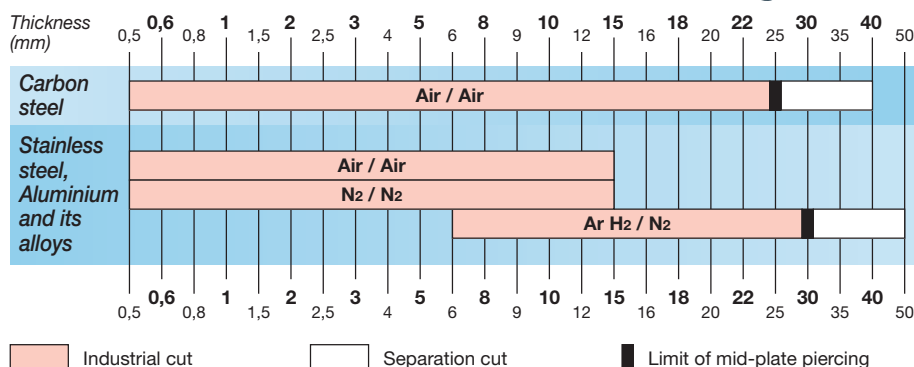
2011-541

CPM15 torch

Rugged and liquid cooled torch offering a great simplicity of implementation:

- limited number of consumables,
- reduced cost of use.

Thickness range



Industrial cut

Separation cut

Limit of mid-plate piercing



2000-281_ref



Compatible with:



2012-311

OPTITOME



0255-43

EUROTOME, OXYTOME
HPC



2011-014

CYBERTOME,
OXY/PLASMATOME RS



2007-281

Autonomous installation
for carriage, retrofit,
mechanisation etc...



NERTAJET HP

NERTAJET HP is a development of the classic plasma process offering an interesting alternative to laser cutting:

Quality:

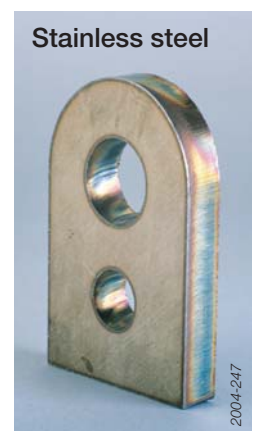
- dimensional and geometrical precision of cutted parts and/or holes in a wide range of materials,
- consistent surface condition and quality of the cut faces.

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.

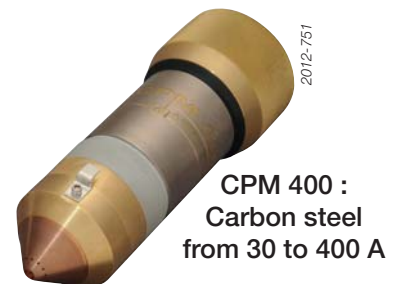
Operating costs:

- 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.

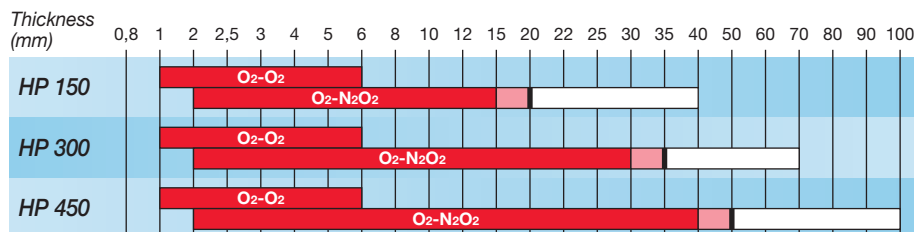
The dispenser "Easy Wear Parts Storage" for simplified management of consumables and accurate monitoring of your stock levels.

This visual tool storage also avoids any risk of incorrect assembly of consumables.

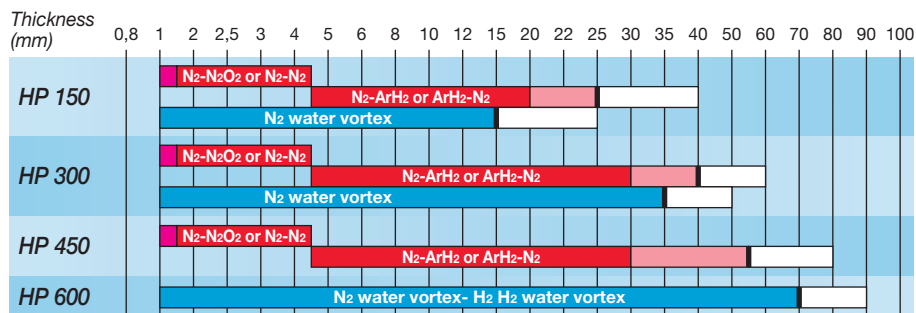


Thickness range

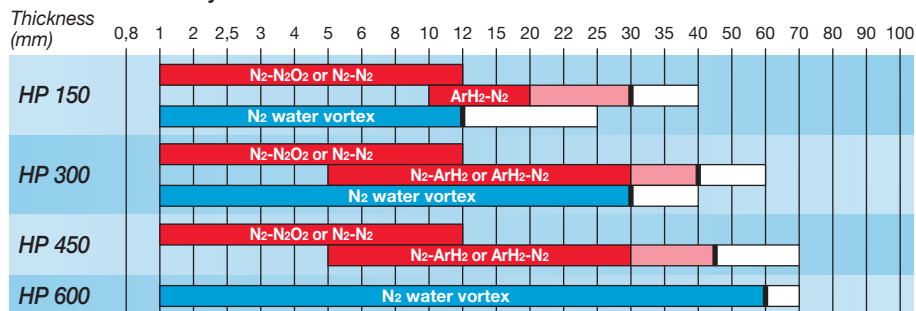
Carbon steel



Stainless steel



Aluminium and alloys



O₂: Oxygen N₂O₂: Industrial air
N₂: Nitrogen ArH₂: Argon Hydrogen

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

Compatible with:



OPTITOME



OXYTOME
PLASMATOME HPC



ALPHATOME 2

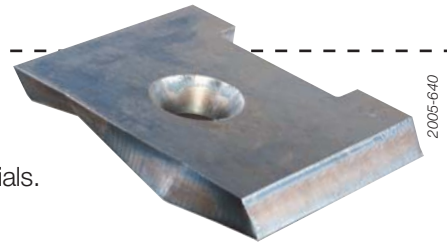


OXYTOME /
PLASMATOME RS or
TWIN & CYBERTOME

NERTAJET HP 150	✓	✓	✓	✓
NERTAJET HP 300 & 450		✓	✓	✓
NERTAJET HP 600		✓		✓

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.



2005-640

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).

Axis	Travel	Speed
Rotation	+/- 455°	30 rpm
Torch angle	+/- 49°*	40 rpm
Up/down movement	250 mm or 800 mm	5 m/min

* allows cutting angles of +/- 45°



2011-542

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.

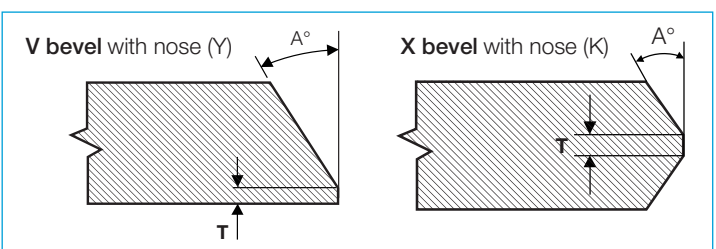
General considerations:

- 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:



2011-049

ALPHATOME 2



2013-203

PLASMATOME / OXYTOME RS or TWIN & CYBERTOME



2003-342

NERTAJET BEVEL HP
300 or 450



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



Plasma cutting machine



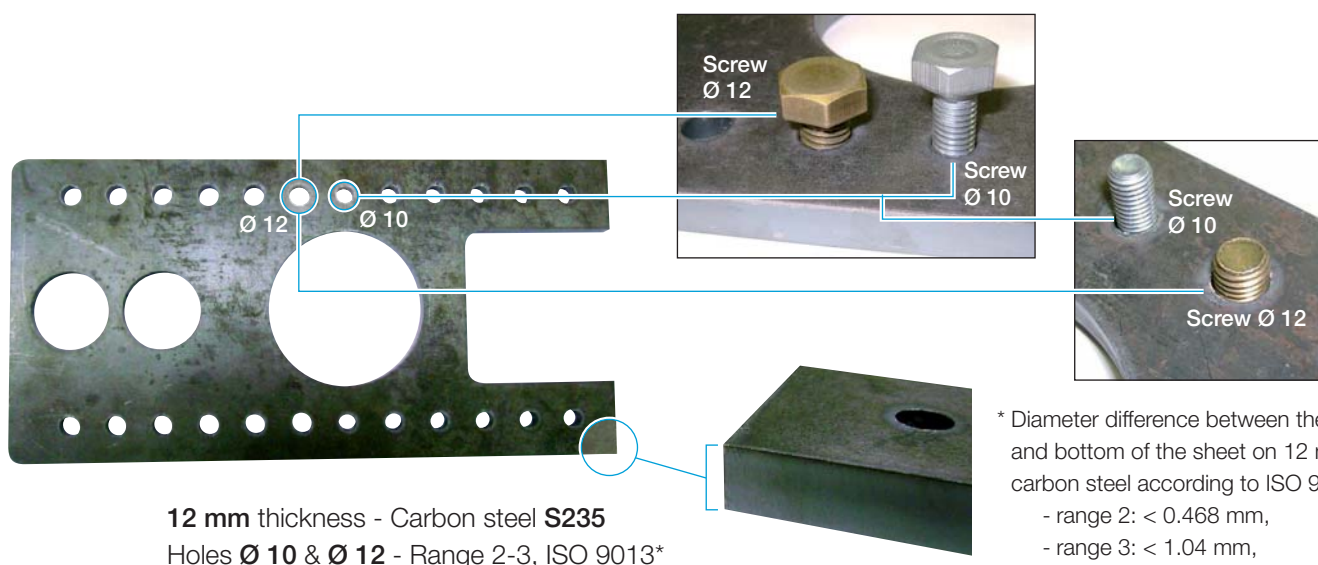
HPC Digital Process numerical control



A drawing and nesting software

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:

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



* 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 High Power

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



Stainless steel 80 mm



Stainless steel 150 mm

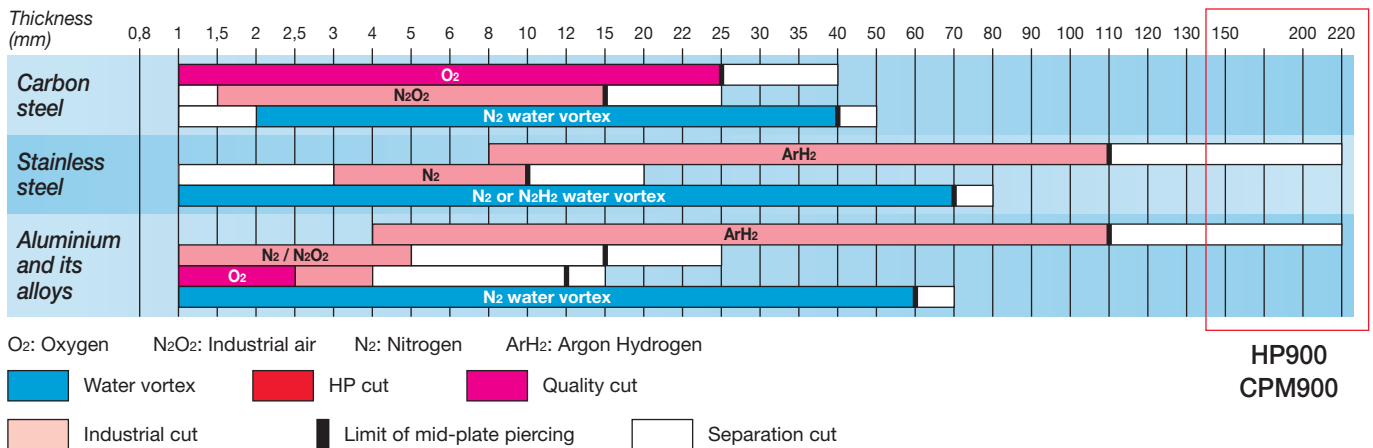


Stainless steel - water vortex - 60 mm



Stainless steel - water vortex - 60 mm

Thickness range



Compatible with:



OXYTOME / PLASMATOME HPC



OXYTOME / PLASMATOME RS or TWIN & CYBERTOME



NERTAJET HP 600 or 900




Main characteristics


Electrical supply

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



Maximum gas flow cut (l/min)

NERTAJET HP CPM400 - 450 - 600wi	Max flow rate (l/min)	HP150	HP300	HP450	HP600
	Argon (Ar) CPM400 / 450 & 600wi	7 / 25	11 / 26	11 / 26	11 / 30
	Oxygen (O ₂)	20	28	40	40
	Air (N ₂ O ₂)	40	130	130	130
	Nitrogen (N ₂) CPM450 / 600wi	40 / 31	42 / 45	42 / 45	42 / 70
	Argon Hydrogen (ArH ₂)	23	54	54	54
	Water	1.5	2	2	2

NERTAJET HP CPM600 - 900	Max flow rate (l/min)	HP600	HP900
	Argon (Ar)	110	130
	Oxygen (O ₂)	25	25
	Air (N ₂ O ₂)	25	25
	Nitrogen (N ₂)	70	70
	Argon Hydrogen (ArH ₂)	160	200
	Water	2	2

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.

		Mix ArH ₂	Mix N ₂ H ₂
MIXOJET DUAL	Range of adjustment	0 - 40% H ₂	
	Flow	8 - 80 l/min	
	Inlet pressures	12 bar (+/- 1 bar)	
	Outlet pressures	10 bar (+/- 0.5 bar)	
MIXOJET 20	Range of adjustment	0 - 40% H ₂	
	Flow	20 - 200 l/min	
	Inlet pressures	10 bar (+/- 1 bar)	
	Outlet pressures	8 bar (+/- 0.5 bar)	



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.

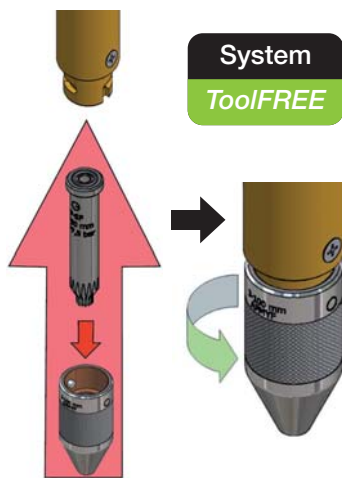
In choosing OXYCUT G2, you can cut thicknesses from 200 to 900 mm.

High technology and productivity range

MACH HP

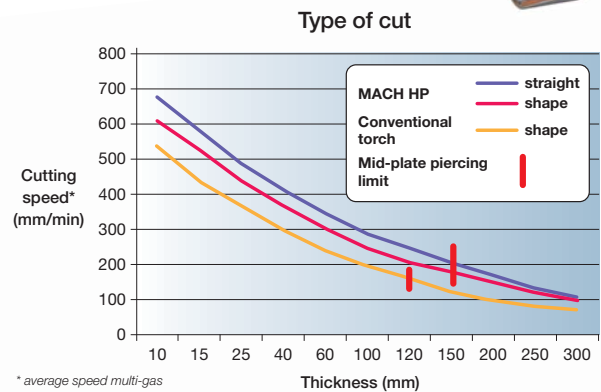
Main advantages of MACH HP:

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

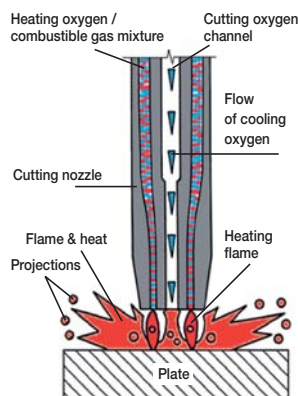


Thickness 6 to 300 mm

High speed cutting nozzles

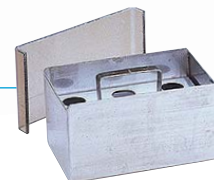


System OxyCOOL



To complete the automatic oxycutting offer Air Liquide Welding proposes many accessories :

- VXK bevelling system,
- strip cutting system,
- tiltable nozzle for bevelling,
- flash back-arrestors,
- maintenance and cleaning tools,
- measuring and control accessories,
- etc...





0876-23

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

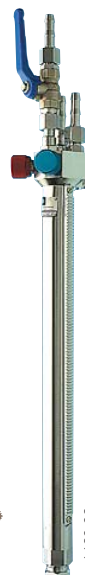
OXYCUT G1

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.



2009-499



1160-02

Thickness
3-6 to 300 mm

OXYCUT MACHOXY

Main advantages
of OXYCUT MACH:

- cutting capacity from 6 to 300 mm,
- cutting quality,
- robustness,
- easy to use,
- low cost of consumables.



0264-54

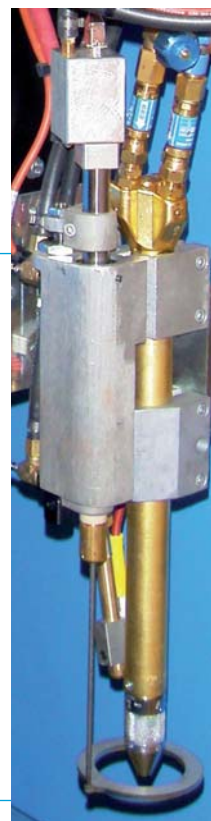
Thickness



2008-470

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 edges.



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.

OXY/PLASMATOME HPC



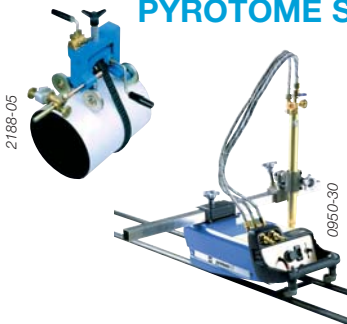
2010-543



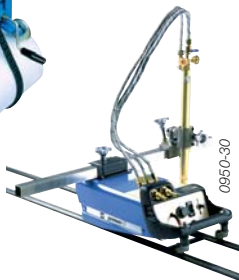
2011-531

EUROTOME

TAGLIATUBI, and PYROTOME SE



2188-05



0950-30



2013-552

PYROTOME CNC

EASYTOME



2013-211

Examples of equipment and options:

- CNC HPC digital process, D610,
- NERTAJET BEVEL HP,
- cutting of tube,
- numerical drilling unit,
- micro-percussion marker,
- etc...



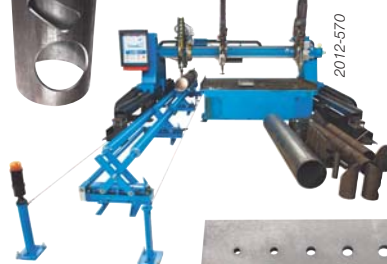
2007-489



2011-542



2012-581



2012-570



2011-173



2010-282

OXY/PLASMATOME HPC RS & Twin



CYBERTOME



ALPHATOME 2



OPTITOME



Main characteristics, equipment and options

MACHINES	Transversal stroke											Useful longitudinal stroke	PLASMA (maximal number)			OXY (maximal number)		Main technological options		
	1 m	1.5 m	2 m	2.5 m	3 m	3.5 m	4 m	5 m	6 m	6.5 m	...12 m		Air	HP	High Power	Manual	Auto	Tube	NERTAJET BEVEL HP	Drilling unit
PYROTOME CNC												15	1	-	-	1	-	-	-	-
EASYTOME												4	1	-	-	-	-	X	-	-
OPTITOME												3	1	1 (150 A)	-	1	-	-	-	-
ALPHATOME 2												3 to 24	-	2	-	-	-	X	X	X
EUROTOME												3 to 24	2	-	-	2	-	-	-	-
OXY/PLASMATOME HPC												3 to 30	2			-	6	X	-	-
OXY/PLASMATOME RS HPC												3 to 30	2			-	8	X	X	-
OXY/PLASMATOME TWIN RS												3 to 24	-	2		-	3	X	X	-
CYBERTOME												3 to ...	2			-	12	X	X	-

Portable carriages TAGLIATUBI & PYROTOME SE

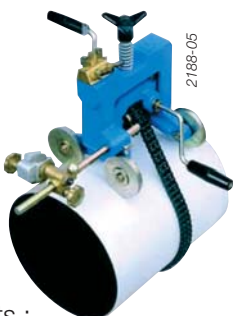
Two practical and functional carriages for ancillary cutting jobs in the workshop and on site.

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 :

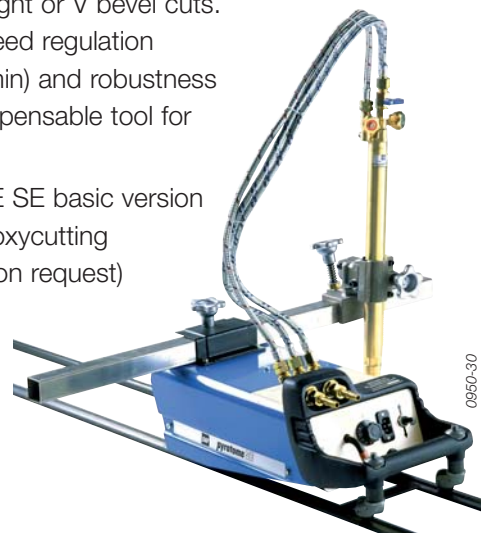
- straight and with bevel $\pm 45^\circ$ with one oxyfuel torch,
- X and Y bevel when the machine is equipped with two torches and its additional accessories (in option)



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.



	Plasma process	Oxyfuel process
Number	1	1
Type	NERTAJET 40i NERTAJET 50	OXYCUT G1 short MACH HP short
Options		
Arm for cut width 1.5m Additional rail		

Cutting width	1 000 mm
Cutting length	2 000 mm
Total width *	1 400 mm
Total length *	2 500 mm
Total height *	500 mm
Total weight	85 kg

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

EASYTOME

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.



Version	1020	1515	1530	2040
Cutting width (mm)	1000	1500	1500	2000
Cutting length (mm)	2000	1500	3000	4000
Total width (mm) *	1770	2000	2000	2500
Total length (mm) *	2800	2200	3800	4800
Total height (mm) *	1350	1350	1350	1350

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

Plasma process	
Number	1
Type	NERTAJET 40i
Option	
Cut of tube Beam extension	

OPTITOME

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.



Version	1515	1530
Cutting width (mm)	1500	1500
Cutting length (mm)	1500	3000
Total width (mm) *	2376	2376
Total length (mm) *	3420	4920
Total height (mm) *	1714	1714

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

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

ALPHATOME²

High precision plasma cutting machine: high quality, robustness and productivity

High quality plasma cutting requires more and more precision. **The ALPHATOME² 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.

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.



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

	Package version 2040, 2060		"A la carte" version				
number of cutting tool	1		Up to 2				
Type plasma	NERTAJET HP150 NERTAJET HP300		NERTAJET HP150 NERTAJET HP300 NERTAJET HP450				
Main options	<ul style="list-style-type: none"> • Remote control • Laser positioning 		<ul style="list-style-type: none"> • Visio Process & remote control • NERTAJET BEVEL HP • Numerical drilling unit • Cut of tube • Micro percussion marker • 4th axis • R = additional rail L = 2 or 3 m Useful travel maxi = 24 m 				
	Format machine		Format of the beam width				
	2040	2060	20	25	30	35	40
Cutting width (mm)	2000	2000	2000	2500	3000	3500	4000
Cutting length (mm)	4000	6000	3000+R	3000+R	3000+R	3000+R	3000+R
Total width (mm) *	3271	3271	3410	3910	4410	4910	5410
Total length (mm) *	6510	8510	6200+R	6200+R	6200+R	6200+R	6200+R
Total height (mm) *	2165	2165	2165	2165	2165	2165	2165

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

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 3m 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.

“A la carte” version	20	25	30
Cutting width (mm)	2425	2925	3425
Cutting length (mm)	3050+R		
Total width (mm) *	3920	4420	4920
Total length (mm) *	4715+R		
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...)

	Plasma process	OXY process
Number	1 (option)	up to 2
Type	NERTAJET 40i NERTAJET 50	OXYCUT G1 OXYCUT MACH OXY MACH HP
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.

"A la carte" version	15	20	25	30	35	40
Cutting width (mm)	1925	2425	2925	3425	3925	4425
Cutting length (mm)	3050+R					
Total width (mm) *	3420	3920	4420	4920	5420	5920
Total length (mm) *	4715+R					

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

	Plasma process	OXY process
Number	up to 2	up to 6
	6 tools maxi	
Type	NERTAJET 50 NERTAJET HP150 NERTAJET HP300 NERTAJET HP450 NERTAJET HP600 NERTAJET HP900	OXYCUT MACH OXY MACH HP
Main options		
Cut of tube, micro percussion marker, laser positioning, 4 th axis, automatic indexing, straight bevelling block VXK, camera, aerial cable chains.		

(*): 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.



Main technical characteristics:

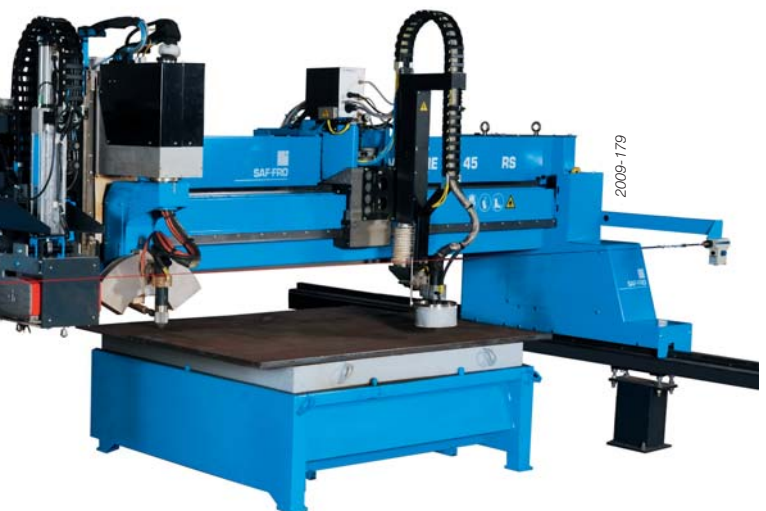
- travel speed 15 m/min,
- double motorisation in base version,
- Brushless motorisation ensuring accuracy and fluidity of movement,
- separate table on the machine frame,
- managed by HPC digital process or D610,
- **OXYTOME RS** can receive up to 8 tools (8 OXY or 6 OXY and 2 plasma),
- **PLASMATOME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

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.



“A la carte” version	30	35	40	45	50	55	60	65
Cutting width (mm)	3425	3925	4425	4925	5425	5925	6425	6925
Cutting length (mm)	3050+R							
Total width (mm) *	4920	5420	5920	6420	6920	7420	7920	8420
Total length (mm) *	4715+R							
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 VVK, camera, aerial cable chains.		

OXYTOME & PLASMATOME HPC TWIN

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 oxycutting.

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 oxycutting 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.

“A la carte” version	30	35	40	45	50	55	60	65
Cutting width (mm)	3425	3925	4425	4925	5425	5925	6425	6925
Cutting length (mm)	4535+R							
Total width (mm) *	4920	5420	5920	6420	6920	7420	7920	8420
Total length (mm) *	6200+R							
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...)

	Plasma process	OXY process
Number	up to 2	up to 3
	3 tools maxi	
Type	NERTAJET HP150 NERTAJET HP300 NERTAJET HP450 NERTAJET HP600 NERTAJET HP900	OXYCUT MACH OXY MACH HP
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.		

CYBERTOME

Machine for large and extra large widths metal sheets with on-board operator for intensive use in the harshest environments. Robust, versatile and efficient.

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,



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:

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

"A la carte" version	30	40	50	60	70	80	90	...120
Cutting width (mm)	3000	4000	5000	6000	7000	8000	9000	12000
Cutting length (mm)	3000+R							
Total width (mm) *	5500	6500	7500	8500	9500	10500	11500	14500
Total length (mm) *	6000+R							
Total height (mm) *	2640							

R = additional rail by modules of 6 m - 3 m or 1.5 m

Other dimensions
on request

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.

	Plasma process	OXY process
Number	up to 2	up to 12
	12 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.

(*): 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.



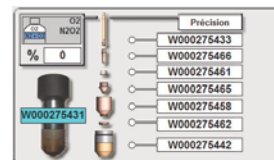
Phase 3 :

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



Phase 4 :

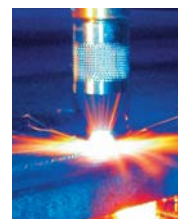
When the tool (plasma torch or oxyfuel torch) is equipped with consumables recommended, the machine is ready to cut.



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.

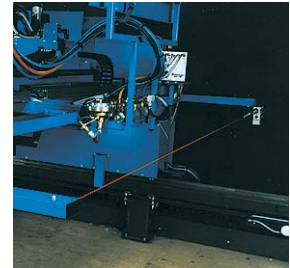


Equipment

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 a 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 oxycutting.



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.



2014-054

2009-173

2014-059

Options

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.



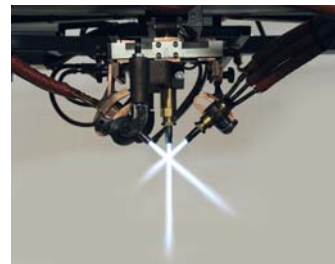
Bevelling block V X K

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.

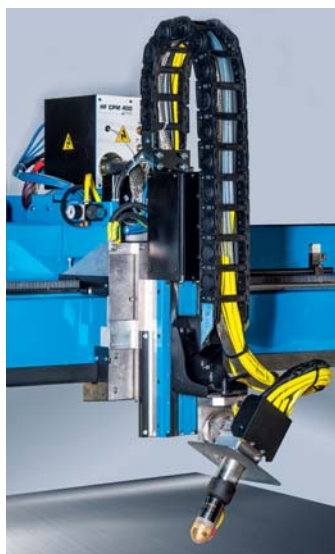


Plasma bevelling following X and/or Y axis

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.



Straight bevel cut

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

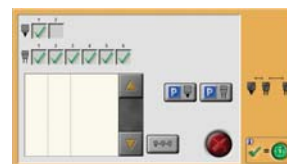
Numerical automatic adjustment of the distance between two or many cutting tools. This option can be managed automatically with the nesting software.

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.



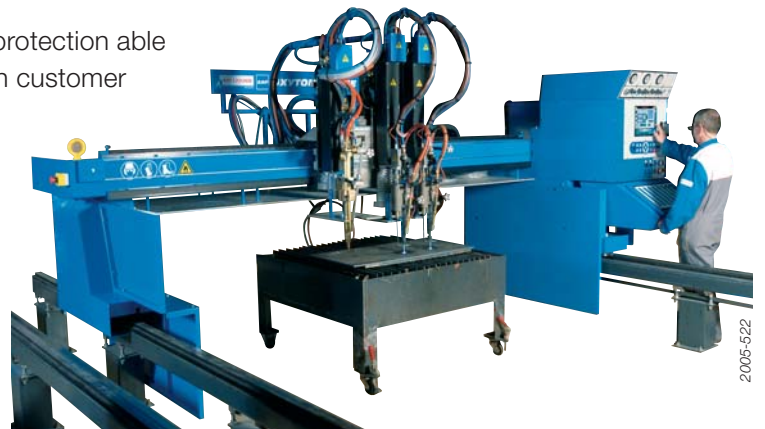
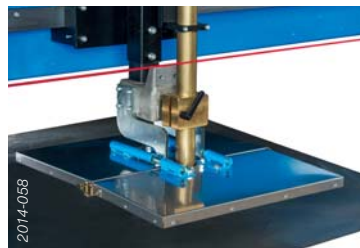
Air cooling system for electrical cabinet

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 *.

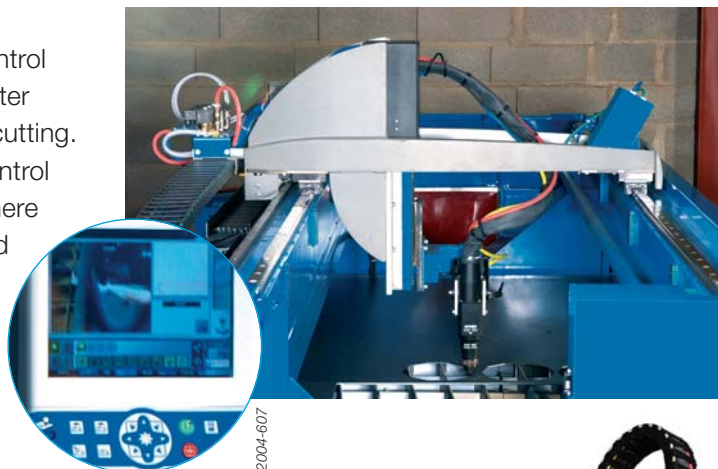
*: oxyfuel process will be cover but not the plasma



Positioning

Visioprocess

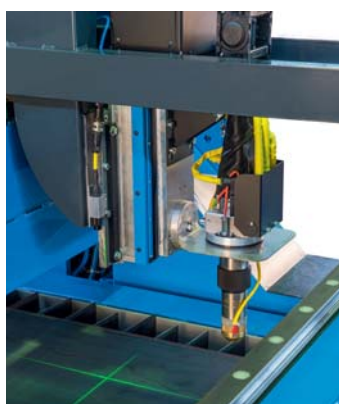
A camera is used to display the torch position on a control screen. The monitored area is about 250 mm in diameter and promotes correct positioning before and during cutting. The device also monitors the arc. The operator can control cutting operations and position the torch no matter where the control 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 colour display.



2004-597

Positioning laser with greencross

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.



2014-126

Laser to detect the position of the plate

This option is a laser for automatically positioning a cutting program according to the position of the sheet. It works following one axis.



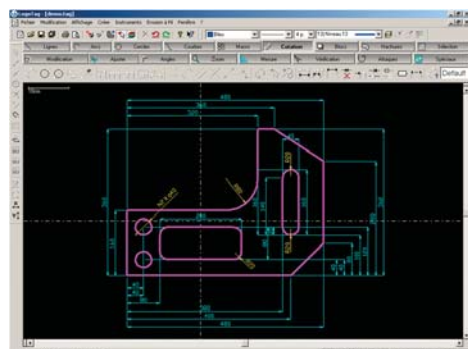
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CNC options

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).

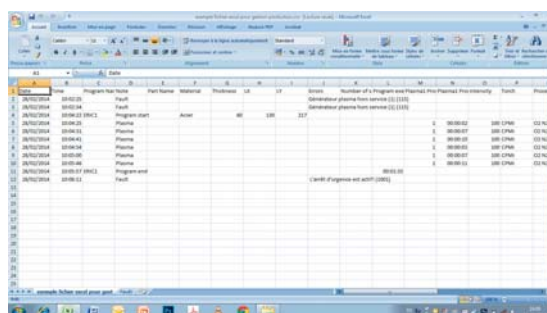


Production monitoring on HPC

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...



Options

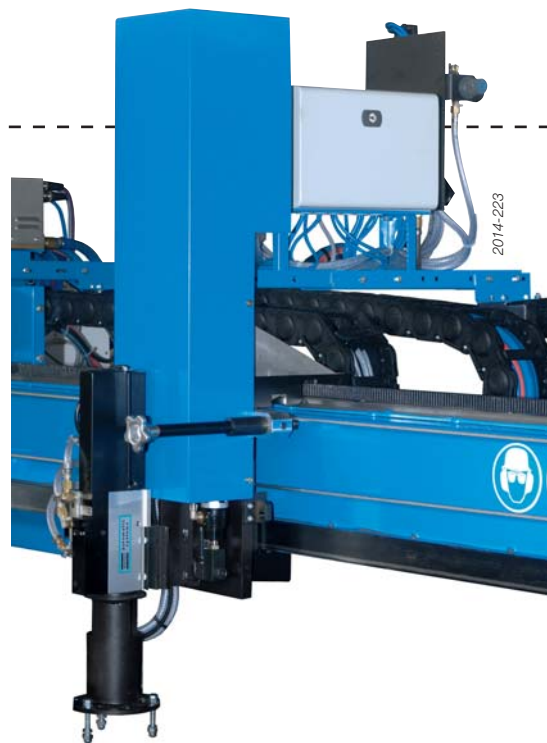
Pneumatic drilling unit

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: 1100 rpm,
- maximum stroke: 80 mm,
- max air flow: less than 6 l/s,
- standard drill chuck.

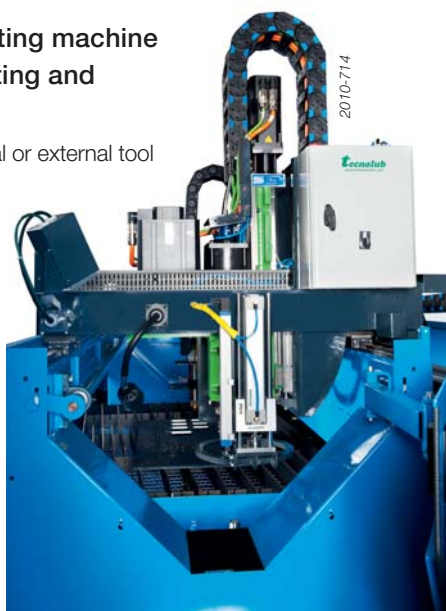


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Numerical drilling unit

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.



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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 stainless steel. In option an automatic tool exchanger up to 4 tools can be used.

	Technical characteristic
Drill diameters	Ø 5 to 30 mm
Max. stroke	300 mm
Tool type	ISO 40
Rotation's rate continuously adjustable	50 - 3 000 rpm
Max. spindle motor power	5.2 kW
Max. thrust	5 500 N
Max. thrust to bloc the metal sheet	80 kg
Tool-holder vertical speed	15 m/min

Cut of tube

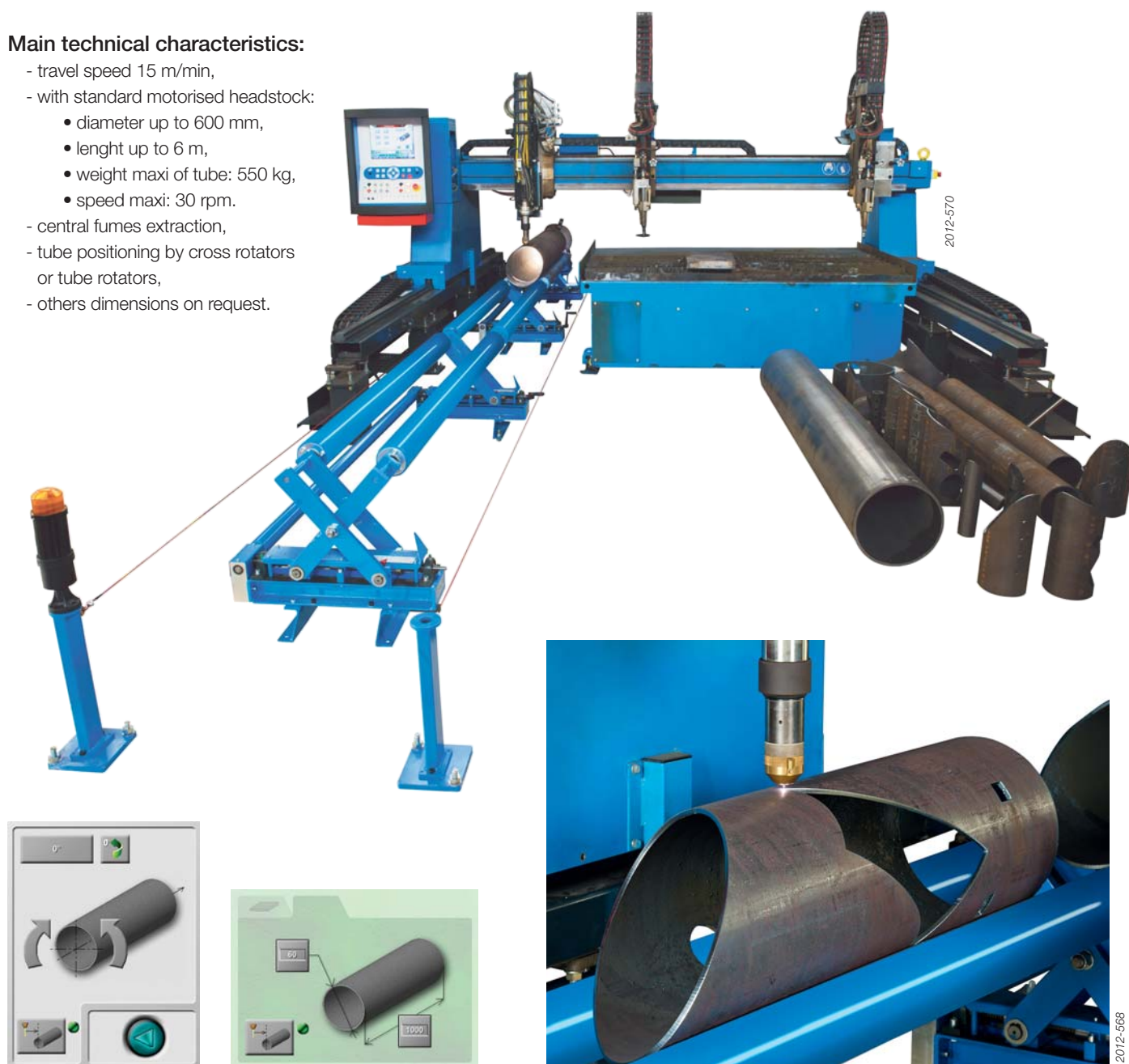
This option has been developed to meet many cutting applications on round tube from small to large diameter. Thanks to its software interfaces, the machine is able to cut different types of geometry on tube : stitching, cod mouth, separation cut, straight bevel etc...

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,
 - lenght up to 6 m,
 - weight maxi of tube: 550 kg,
 - speed maxi: 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...).

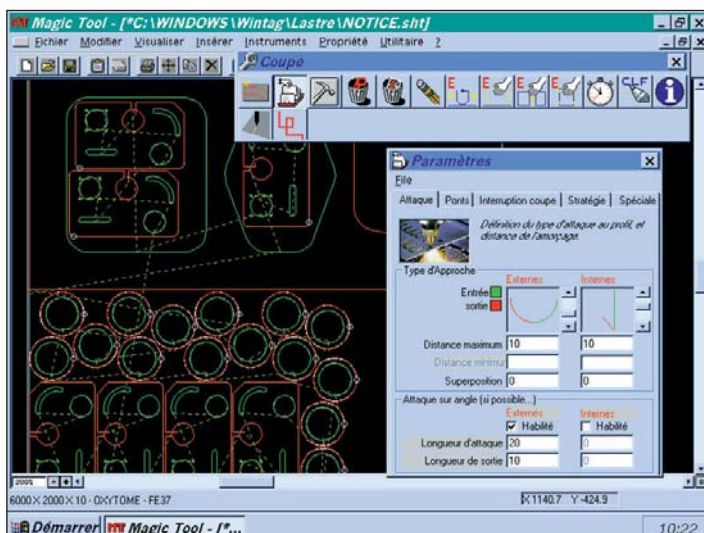
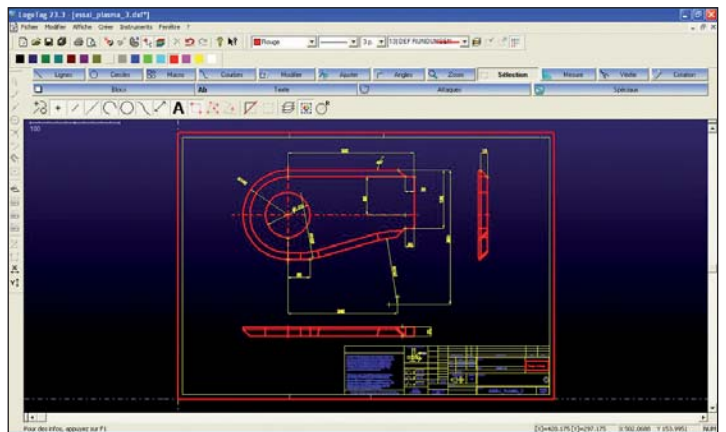


MAGICNEST Software range

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.



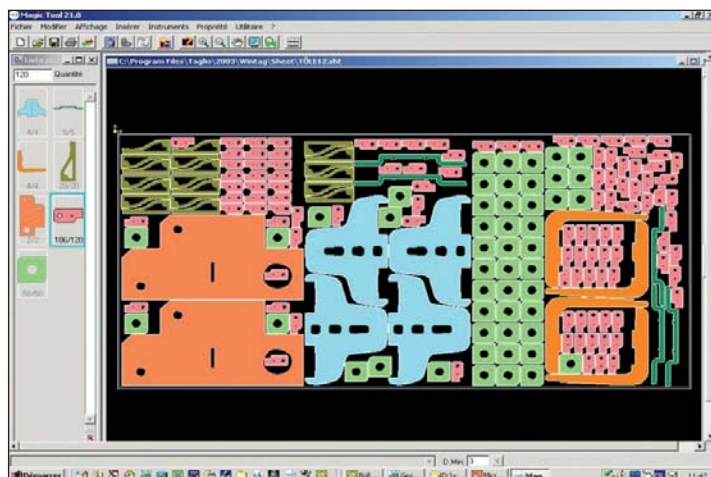
MAGICNEST 01 (manual nesting)

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)

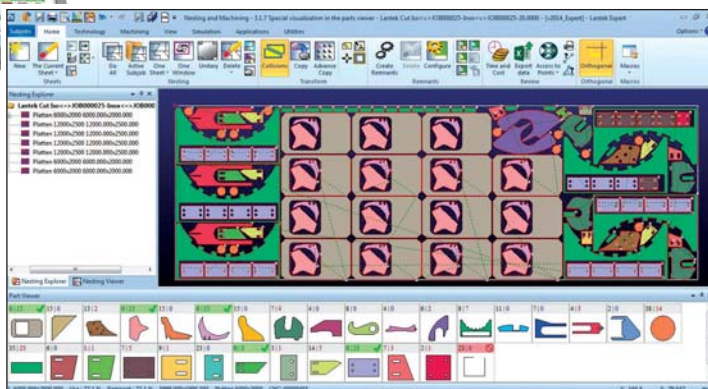
This is the top end version of MAGICNEST 01 for thermal cutting machine. MAGICNEST 10 ensure automatically the following operations:

- 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.



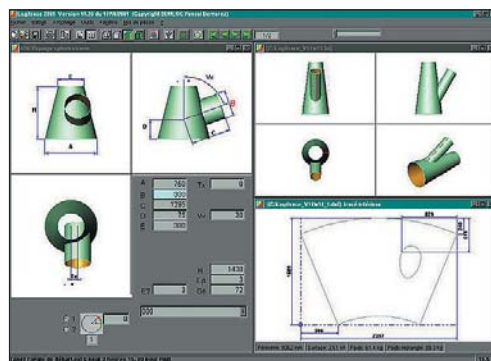
MAGICNEST EXPERT PLUS

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 offers 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.

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.



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.



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:

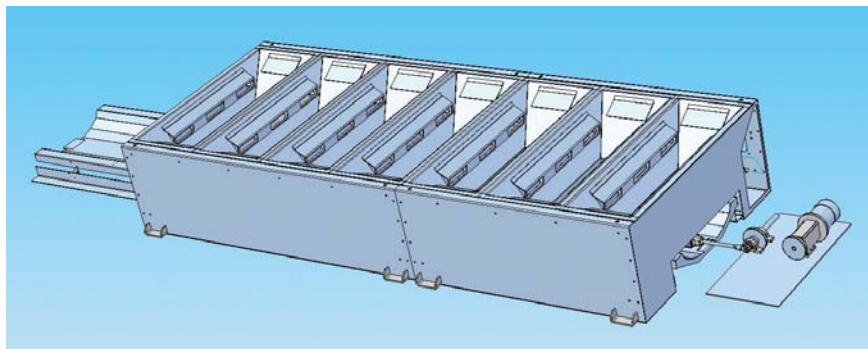
- modular construction in lengths of 1.5, 1.75 and 2 m,
- width: on request,
- pivoting workpiece support frame.



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.

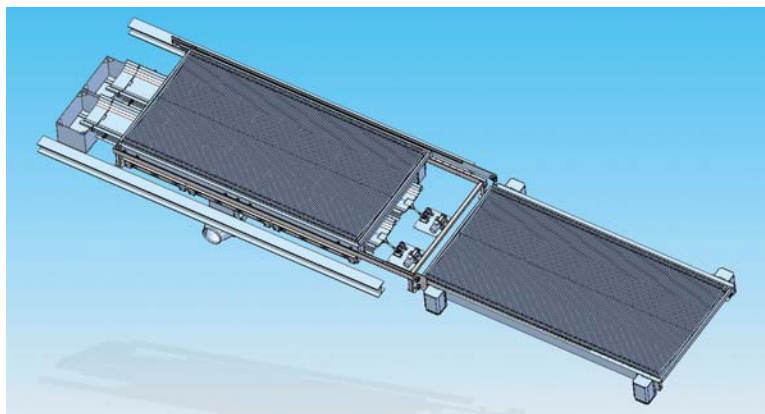


Technical characteristics:

- 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.

Services

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.



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.



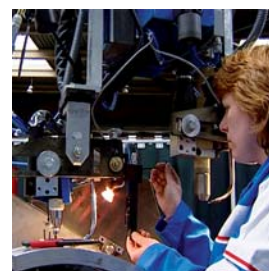
Production support

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.



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