FontechCEA
TECHNICAL ALLIANCE

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FONTECH

SPECIAL WELDING PROCESSES

INDEX

FURTHER JUMP INTO THE FUTURE

Enter the future of welding with QUBOX, DIGITECH and for robotized applications, ROBOCASE : perfect arc striking and a welding puddle always continuously optimized, thanks to the steady perfect control of the arc in any condition, the product of years of research and more than 65 years of experience. Extremely precise welding with repeated results in time, flexibility and the user-friendly simplicity, combined with an exceptionally stable welding arc, are the basic goals of the philosophy which have led to the development of such high tech products.

These power sources enable to weld in MIG/MAG, MMA and TIG with a “lift” type striking; for even easier use, all machines have been provided with the possibility of memorizing up to 99 personalized JOBS, saving the welding parameters as wished.

Their operating facility makes them suitable for numerous applications from civil and naval constructions, petrochemical and automotive industries, to heating and air conditioner systems, as well as all small, medium and large metal work , whenever precision and quality welding are required.

But there is more: these equipment have been designed to keep up with the evolution of welding technology over time: both firmware and software are designed to be always updatable.

Particular care has been given to energy savings: very high energy efficiency and a high power factor level ensure lower annual energy expenses, at the same utilization levels of conventional machines. The special “Energy Saving” function helps prevent waste, activating auxiliary power supplies, fan motor and torch cooling, if any, only when necessary. Besides these equipment comply with the latest regulations on electromagnetic pollution and are in line with the RoHS directive environmental standards.

GOES GREEN

VISION.ARC

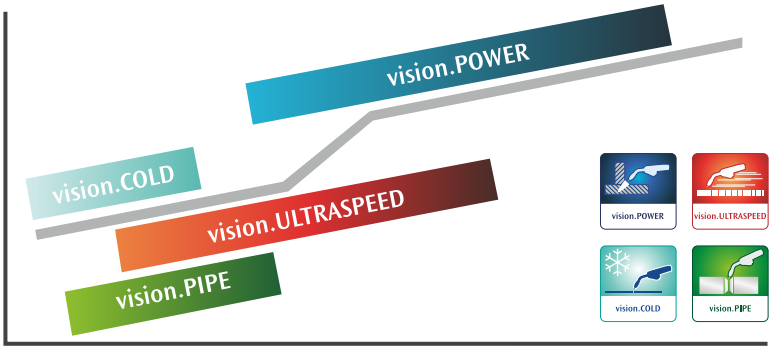
vision.ARC

QUBOX and DIGITECH power sources distinguish themselves by their vision.ARC, the innovative arc control which ensures outstanding welding performances with greater wire deposit, higher speed and reduced thermal dilatation. 65 years’ experience in welding technology allowed CEA to develop a new digital system for controlling arc dynamics, vision.ARC, which guarantees excellent performances in all MIG-MAG and MIG PULSE situations.

The vision.ARC electric arc is monitored continuously by the microprocessor which manages the welding process in real time: all the parameters are processed and modified immediately, in a few microseconds, by the control that digitally manages the short circuits that are typical of MIG-MAG welding, keeping the arc stable and precise in spite of any change of the external conditions.

This way, torch movement, irregularities of parts to be welded and other factors do not influence the final result at all. Welding process is always under control from arc striking, by Wire Start Control (WSC), to when the arc is interrupted by Burn Back Control. vision.ARC is the support basis for special welding software such as:

- vision.PIPE for more accurate welding in pipe first root pass
- vision.COLD for low heat transfer MIG-MAG welding
- vision.ULTRASPEED to weld small and medium thickness at a far higher speed
- vision.POWER to obtain deeper penetration on medium and large thickness material



VISION.ARC 2

vision.ARC 2

vision.ARC2 is the evolution of the vision.ARC software for the arc control, developed by CEA to achieve a more perfect and stable arc, together with a superior correction in the control of the welding pulse impulse.

Available not only for all DIGITECH VP2 equipment, but also – in robotized applications – for ROBOCASE power sources, new innovative vision.ARC2 allows to better monitor and manage in a far more efficient way all unwished physical phenomena, which may often negatively affect the arc stability and, consequently, the control capacity of the power source.

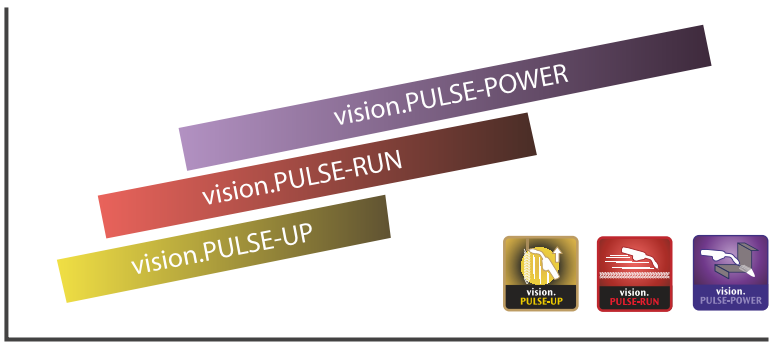
New vision.ARC2 allows the power source control to operate in a very precise and faster way, thus granting an absolute constant arc and a perfect detachment of the droplet, mostly in MIG PULSED and DUAL PULSED.

Main advantages of vision.ARC2 versus previous version are the following:

- better arc stability
- optimization of the impulse characteristics
- quick and precise control of the shortcircuits, whenever welding with a very short arc
- faster welding speed
- furher reduced heat input

vision.ARC2, besides perfectly supporting all special welding processes, i.e. vision.COLD, vision.PIPE, vision.ULTRASPEED and vision.POWER, is the software platform which enabled the development of the herebelow listed new special pulsed processes, i.e.

- Vision.PULSE-UP for a faster and more precise vertical up welding
- Vision.PULSE-RUN for a faster and colder pulse welding
- Vision.PULSE-POWER for a deeper and more flattened welding bead on medium large thickness



SPECIAL WELDING PROCESSES

MIG/MAG WELDING

vision.POWER to obtain deeper penetration on medium and large thickness material

VISION.ARC
VISION.ARC 2

vision.ULTRASPEED to weld small and medium thickness at a far higher speed

VISION.ARC
VISION.ARC 2

vision.COLD for low heat transfer MIG/MAG welding

VISION.ARC
VISION.ARC 2

vision.PIPE for more accurate welding in pipe first root pass

VISION.ARC
VISION.ARC 2

This is a package of additional curves, dedicated to highly specialised machining and procedures.

VISION.ARC
VISION.ARC 2

PULSED MIG WELDING

vision.PULSE-UP for a quicker and more precise vertical up welding

VISION.ARC 2

vision.PULSE-RUN for a colder and faster pulsed welding

VISION.ARC 2

vision.PULSE-POWER for a more penetrated and smoothly shaped welding on medium large thickness

VISION.ARC 2

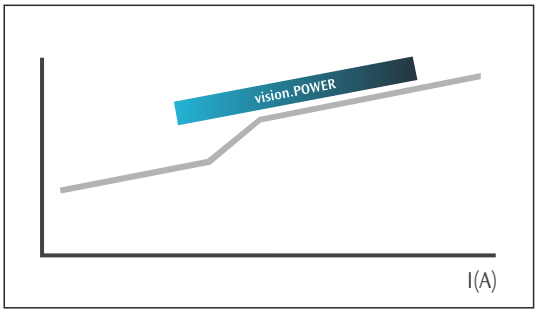
HIGH PENETRATION MIG/MAG WELDING

vision.POWER is the innovative MIG/MAG process developed by CEA for welding medium large thickness steel and non ferrous materials (aluminium, copper, etc.), whenever high penetration is required.

By means of this special welding process, the arc cone becomes narrower, therefore its pressure is concentrated on a smaller area of the workpiece, thus heavily increasing the penetration.

vision.POWER more concentrated arc is ideal for fillet welding and to enter into very narrow joints requiring a very long stick-out.

vision.POWER enables to replace MIG/MAG spray arc welding with a remarkable increase in penetration and faster welding execution too.



ADVANTAGES

- Deeper penetration at same welding current being used
- Far higher welding speed versus spray-arc MIG/MAG process
- Less consumption of filler material and shielded gas
- Heat transfer heavy reduction to eliminate hot cracking in the workpiece material
- Less welding passes thanks to reduced angle sizes in the edge bevelling
- Far less risk of different solid material inclusion into the welding bead
- Lack of porosity and blow holes
- No filler material overdepositing in butt joints
- Total lack of spatters and metallic projections

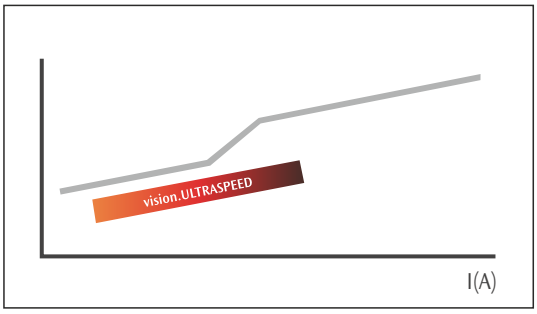
APPLICATIONS

- Medium and heavy fabrication work
- Mild steel, stainless large erection works
- Ideal for welding in narrow gaps, where longer stick out is necessary
- “T” fillet welding
- Manufacture of heavy duty trucks and vehicles
- Shipyards
- Railway wagon manufacture
- Fabrication of large size tanks and containers

HIGH SPEED MIG/MAG WELDING

vision.ULTRASPEED is an innovative MIG/MAG process developed by CEA for welding steel and non ferrous materials which, thanks to the arc increased magnetic strength and a narrower arc cone, allows a remarkable increase in welding speed.

This process grants an inferior overheating of the base material with less shrinkage tension and consequently less workpiece reworking and finishing job. vision.ULTRASPEED allows to replace short-arc and mixed-arc MIG/MAG with a remarkable increase in the welding job completion.



ADVANTAGES

- Very high welding speed
- Welding of medium thickness carbon steel, stainless and aluminium
- Narrower welding beads with less filler material and shielding gas
- Reduction of heat input in the welding puddle
- Lack of spatters and projections in wire deposition

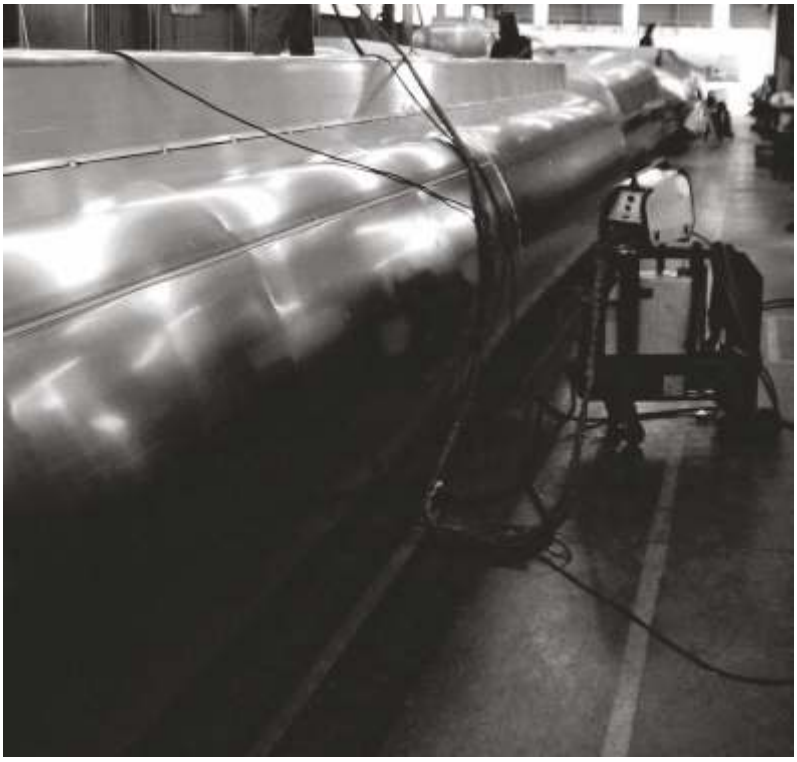
APPLICATIONS

- Light and medium fabrication work
- Manufacture of mild and stainless steel and aluminium
- Automotive industry
- Petrochemical industry
- Food industry
- Railway wagon manufacturing
- Small medium size tank and container construction

UP TO

50%

FASTER



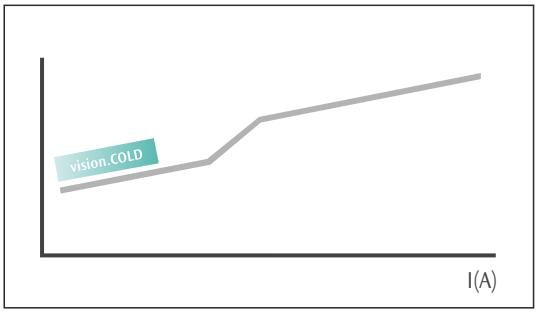
LOW HEAT TRANSFER MIG/MAG WELDING

vision.COLD is an innovative low heat transfer MIG/MAG process, developed by CEA for welding thin thickness lamination sheets and for MIG brazing in all welding positions.

Thanks to supplied synergic programs, vision.COLD allows very high quality welding of thin sheets and its optimized arc ensures no deformation with minimal modification of the metallurgical characteristics of the joints. vision.COLD software is also an excellent solution for welding open gap joints.

ADVANTAGES

- Welding of high carbon and highly alloyed steel thin sheets
- High speed in welding joints versus traditional short arc MIG/MAG
- Very contained damage to zinc coated layer in Mig Brazing
- Significant reduction of heat input in welding joints with minimal deformation of the workpieces
- Lack of spatters and projections during the short circuit phase
- Vertical up or vertical down welding with perfect edge joints

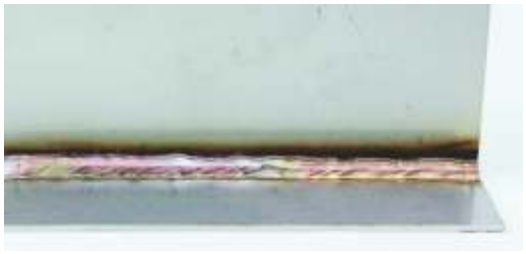


APPLICATIONS

- Welding of thin thickness laminations with low heat transfer
- Open gap joints in all positions
- MIG brazing with low heat transfer
- Welding of stainless steel

FRONT

BACK



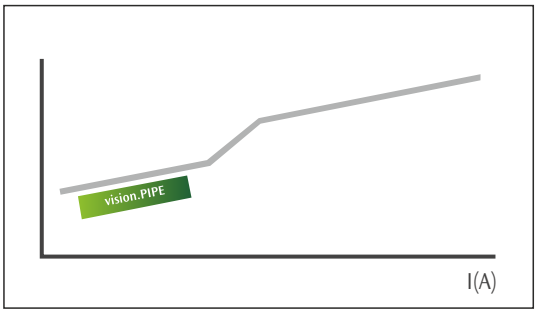
PIPE FIRST ROOT PASS AND OPEN GAP MIG/MAG WELDING

vision.PIPE is the innovative MIG/MAG process developed by CEA for first root pass whenever butt-joining pipes in all positions.

The supplied vision.PIPE synergic programs grant extremely high quality performance with an optimized arc for welding pipes in a precise and safe way also whenever having to deal with larger size open gap joints.

vision.PIPE process enables to replace MMA and TIG processes with a far shorter welding time.

vision.PIPE package is also an ideal solution for welding laminations with open gap joints.



ADVANTAGES

- Perfect and safe welding in first root pass
- Far higher welding performance speed versus TIG & MMA processes
- Precise arc control in welding pipes and laminations with any thickness and in all positions
- Significant reduction of heat input in welding joints
- Possibility of first root pass welding without any backing
- Less care in edge bevelling preparation prior to welding
- Easy welding process, easy to learn and use
- No longer obligation of employing highly qualified personnel as imposed by TIG and MMA processes
- Welding process continuity
- Vertical up or vertical down welding with perfect edge joints

APPLICATIONS

- Pipe first root pass
- Welding open gap laminations on all positions.

VERTICAL UP PULSED WELDING

vision.PULSE-UP is the newly developed special process dedicated to vertical up welding.

Thanks to the fine-tuned and well-balanced combination between MIG Pulse and a special MIG process it is now possible to effect this type of welding in an easy and economical way too, with a far greater travel speed if compared to the traditional and typical triangular welding up technique, the so called "Christmas tree".

By using vision.PULSE-UP special process , MIG Pulse grants the perfect melting of the material without any spatter or shortcircuits, whilst MIG process, thanks to its low heat input, allows to properly solidify and smoothly shape deposited material.

Final result consists of a narrower, well-dimensioned and defect-free bead.

ADVANTAGES

- Faster welding speed and excellent performances in vertical up
- Straightforward welding instead of the "Christmas tree" technique
- Perfect melting of the top edge
- Low heat transfer on low thickness material
- Faster welding speed versus TIG welding for first root passes
- Perfect heat transfer control with edge contained deformation
- Easy-to-use also for less skilled welders

APPLICATIONS

- Vertical up welding of all metals
- Positional welding of medium-small thickness material
- Large gap joint welding
- MIG brazing with low heat transfer
- Stainless steel welding
- Petrochemical industry
- Food industry

UP TO

40%

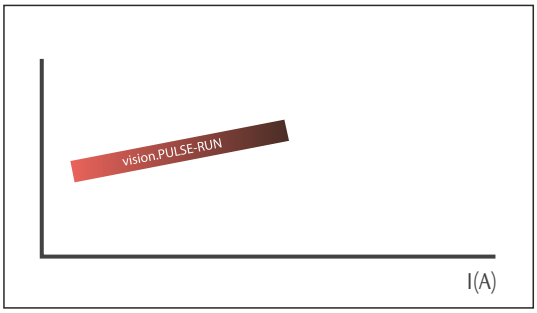
FASTER

HIGH SPEED PULSED WELDING

vision.PULSE-RUN is the new special process appositely conceived in order to combine the advantages of pulse welding together with a faster travel speed while welding alloyed or low alloyed steel and aluminium.

The fine-tuned and well-balanced combination between MIG Pulse and vision. ULTRASPEED processes now enables to greatly increase welding job completion, while maintaining unchanged both aesthetic and metallurgical characteristics of pulse welding.

By using vision.PULSE-RUN special process, MIG Pulse grants the perfect melting of the material without any spatter or shortcircuits, whilst the combined use of vision. ULTRASPEED allows to reduce the heat input and to increase welding speed, thus resulting into a well-dimensioned defect-free bead obtained in a far quicker time versus traditional pulse welding.

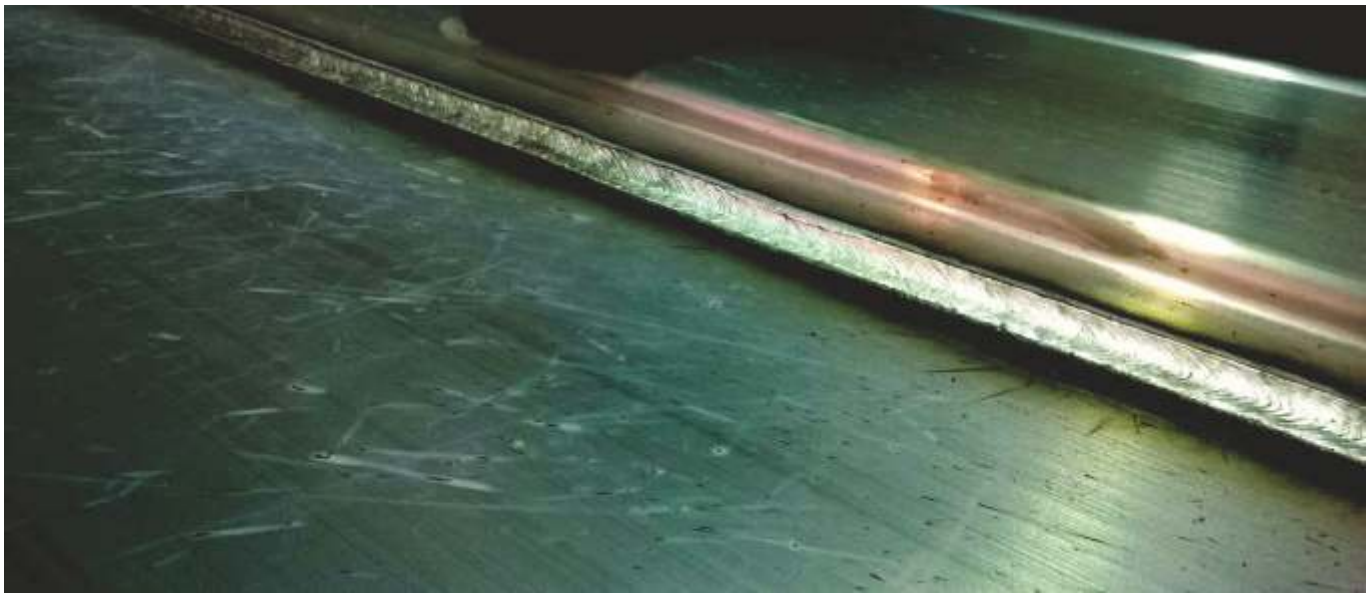


ADVANTAGES

- Faster welding speed (40% more versus traditional MIG pulse)
- Better control of the puddle at high speed welding
- Low heat transfer to the workpiece
- Better penetration
- Lower deformation of the workpiece (stainless steel)
- Lack of spatters and projections

APPLICATIONS

- Steel, stainless and aluminium component welding
- Fabrication work
- Steel erection
- Petrochemical
- Food industry
- Railway wagon manufacture
- Small dimension tanks and containers



HIGH PENETRATION PULSED WELDING

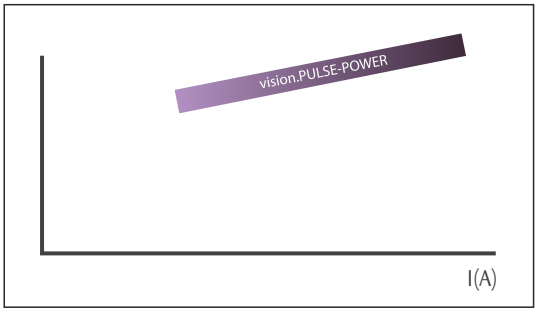
vision.PULSE-POWER is the new special process developed for welding medium large thickness steel and non ferrous materials, whenever high penetration, coupled with a very smooth bead, is required.

The fine-tuned and well-balanced combination between MIG Pulse and vision.POWER processes now allows to perform the welding operation in a simple and quick way with a substantial reduction of any melting defects in the puddle and even the heat affected area is greatly reduced to the minimum.

By utilizing vision.PULSE-POWER special process, MIG Pulse grants the perfect melting of the material without any spatter or shortcircuits, whilst vision.POWER favours a greater penetration and an increase in the welding speed, coupled with a minor heat input and an easier control on the deposited material.

The result is a very smooth, well-penetrated and defect-free bead.

Besides, by using this new process, the operator will be able to simply weld straightforward, i.e. without any torch manipulation at all.



ADVANTAGES

- Deeper penetration
- Wide and smoothly shaped welding bead
- Faster welding speed
- Low heat transfer and less deformation of the workpiece material
- No undercut at all and improved edge finishing
- Straightforward welding technique without any torch manipulation
- Less consumption of both filler materials and shielding gas
- Less fume emission

APPLICATIONS

- Positional welding of medium large thickness material
- “T” fillet welding
- Medium and large fabrication work
- Heavy duty truck and vehicle manufacture
- Shipyards
- Railway wagon fabrication
- Large size tank and container manufacture
- Food industry

SPECIAL PROCESS

QUBOX PULSE

vision.POWER

vision.ULTRASPEED

vision.COLD

vision.PIPE

E.C.P. EXTRA CURVE PACKAGE

DIGITECH

vision.POWER

vision.ULTRASPEED

vision.COLD

vision.PIPE

vision. PULSE-UP

vision. PULSE-RUN

vision. PULSE-POWER

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ADOR FONTECH LIMITED
Belview 7 Haudin Road Bangalore 560 042
T +91 80 2559 6045 / 73
E customerservice@adorfon.com
www.adorfon.com