



# MATRIX AC/DC



## TIG INVERTER WELDING EQUIPMENT

Based on the very latest IGBT inverter technology, TIG power sources with high frequency arc striking of the MATRIX series are equipped with an innovative digital panel for the complete control of all the welding parameters.

The excellent technical characteristics of these welding machines, coupled with the high technology of their digital control, allow high quality TIG welding, suitable for the toughest industrial applications and maintenance.

Highly technologically advanced, robust and user friendly, MATRIX AC/DC's can be used for TIG welding of all metals, including aluminium and its alloys.

MATRIX series power sources also offer excellent performance in MMA welding with the most difficult basic and cellulosic electrodes.



CC



AC  
DC



- ▶ Digital control of all the welding parameters
- ▶ Standard equipped with pulse mode integrated into the control with available "EASY PULSE" facility
- ▶ Excellent TIG welding characteristics
- ▶ High frequency Arc Striking, precise and efficient even from long distance
- ▶ "Energy Saving" function to operate the power source cooling fan and the torch water cooling only when necessary
- ▶ Low energy consumption
- ▶ Ability of storing and recalling personalised welding programs
- ▶ Electromagnetic disturbance reduction being high frequency used at arc striking only
- ▶ Use of special TIG torches will enable the remote control of the welding parameters directly from the torch
- ▶ Overheating thermostatic protection
- ▶ Metallic main structure with shockproof fibre compound front panel
- ▶ Control panel protected against accidental impact
- ▶ Robust handle integrated into the chassis
- ▶ Sloping front panel easy to read and adjust and highly visible from any direction
- ▶ Reduced weight and size, easy-to-carry
- ▶ IP 23 protection class and dust proof electronic components, thanks to the innovative "tunnel" fan cooling system, allow their use in the toughest environments.



- ▶ Digital adjustment of all the welding parameters
- ▶ Digital Ammeter and Voltmeter with welding current presetting and Hold Function of the last read value
- ▶ Digital ammeter with welding current presetting
- ▶ Digital display for the presetting of the welding parameters
- ▶ Full monitoring of the welding parameters
- ▶ Welding process selector: TIG AC • TIG DC • TIG DC “Lift” • MMA
- ▶ Welding mode selector: 2 Stroke • 4 Stroke • Cycle • Spot Timer
- ▶ Personalised welding program storing and recalling
- ▶ Pulse TIG welding adjustable from 0,5 up to 2000 Hz with available “EASY PULSE” facility
- ▶ AC square wave balance and Balance Plus
- ▶ AC square wave frequency adjustment
- ▶ Tungsten electrode diameter presetting for a better control of the arc striking and arc dynamics
- ▶ Wave Selector: Square • Mixed • Sinusoidal • Triangular



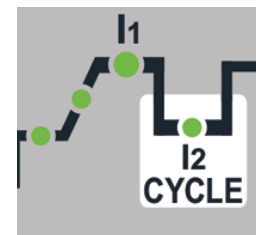
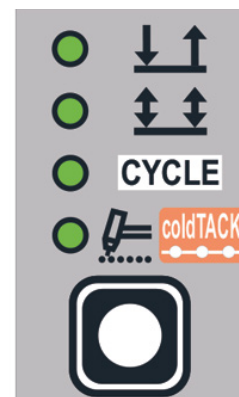
#### MMA FUNCTIONS

- ▶ Adjustable Arc Force for choosing the best welding arc dynamics
- ▶ Adjustable Hot Start to improve the arc striking with difficult electrodes
- ▶ Electrode Antisticking function

FUNCTION	TIG AC	TIG DC	MMA
High Frequency striking	•	•	
“Lift” mode striking		•	
Pre Gas	•	•	
Initial Current	•	•	
Up Slope	•	•	•
Welding current	•	•	
2nd welding current	“CYCLE”	•	
Base current	“PULSE”	•	
Peak current	“PULSE”	•	
Pulse frequency	“PULSE”	•	
Down Slope	•	•	
Final current	•	•	
Post gas	•	•	
Spot time	•	•	
Square wave balance	•		
Square wave frequency	•		
Hot Start			•
Arc Force			•

#### “CYCLE” FUNCTION

“CYCLE” function allows, by simply pressing the torch trigger, to continuously switch between two current values, previously preselected. This function is most suitable for welding different thickness profiles, requiring a continuous current adjustment change. In welding aluminium, the ability of using a higher start current favours the workpiece preheating.

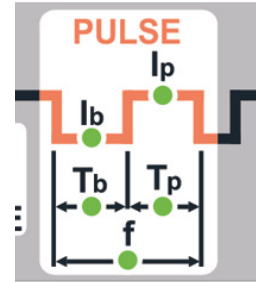




### “EASY PULSE” - SYN

“EASY PULSE”- SYN facility, in function of the chosen peak current, generates, in a simple and automatic way, an adequate pulse frequency and base current, both readjustable in a synergic way.

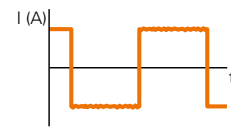
Pulse parameter values preselected in the control will save setting time, by ensuring the best possible pulse parameter combinations, ideal for less skilled welders.



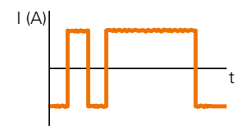
### WAVE SHAPES SPECIAL TIG FUNCTIONS

#### WAVE SHAPE CONTROL IN AC

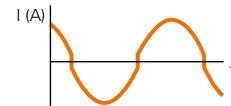
- **DYNAMIC TIG** – Square wave: high arc dynamics for all applications
- **SOFT TIG** – Sinusoidal wave: smoother and softer arc with a reduced noise, ideal for medium thickness
- **SPEED TIG** – Mixed wave: optimal penetration at high welding speed with electrode low consumption
- **COLD TIG** – Triangular wave: low heat transfer with reduced deformation, ideal for small thickness.



DYNAMIC TIG



SPEED TIG



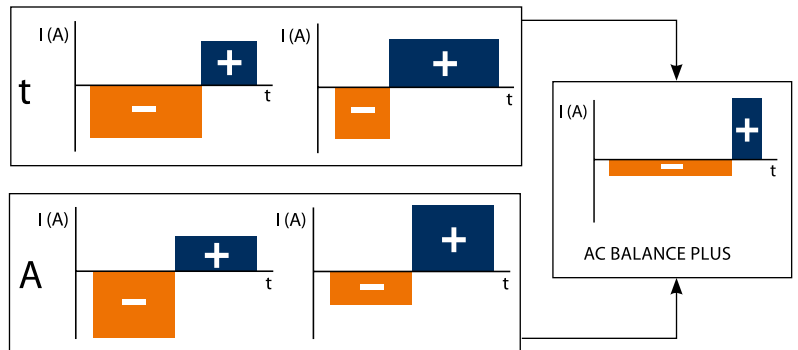
SOFT TIG



COLD TIG

### BALANCE PLUS

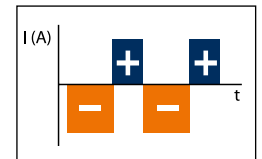
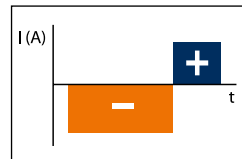
Possibility of independently adjust both **current time (t)** and **its amplitude (A)** while staying in either positive or negative polarity, by offering a perfect control of penetration and arc cleaning with a drastic reduction in lateral undercuts.



### FREQUENCY CONTROL IN AC

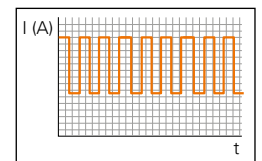
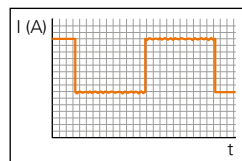
Frequency adjustment of the various AC wave shapes for better directional control, reduction of the thermally altered area, deeper penetration and electrode lower wearing out.

High level frequency enables to weld very thin material with excellent results. Low frequency is ideal for medium thickness or whenever edge preparation is not accurate.



### ULTRA FAST - HIGH PULSE FREQUENCY IN DC

Pulse TIG welding grants better control of the arc and less material deformation. Possibility of utilizing high pulse frequency, up to 2000 Hz ideal for thin thickness, allows greater reduction of both arc cone and thermally altered area with an arc more stable and concentrated, thus favoring an increase in welding penetration and speed.

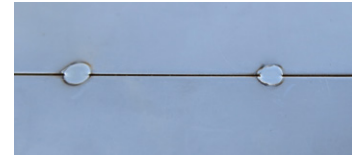


## coldTACK

Innovative spot welding device to achieve precise and safe joining with a minimal thermal input.

“Multi-coldTACK” function grants cold spotting in a rapid sequence, thus further widening the benefits of the single spot.

Thanks to “Perfect-Point” function coldTACK allows to obtain the most precise spot positioning.

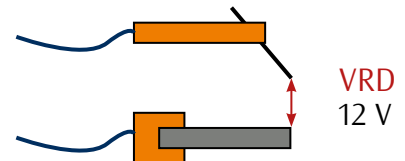


### ACCESSORIES

- VT 100 trolley for lodging gas cylinder and water cooling equipment
- CT 400 trolley for lodging gas cylinder and water cooling equipment
- CT 70 trolley for lodging gas cylinder and water cooling equipment
- HR 23 - HR 30/32 water cooling equipment
- PSR 7 foot remote control
- CD 6 remote control
- Up/Down torches



TECHNICAL DATA		MATRIX		
		3000 AC/DC	4100 AC/DC	5100 AC/DC
Three phase input 50/60 Hz	V	400 +20% -20%	400 +15% -20%	400 +15% -20%
Input Power @ I <sub>2</sub> Max	kVA	9,6	19	26
Delayed Fuse (I <sub>eff</sub> )	A	10	32	40
Power Factor / cos φ		0,95/0,99	0,65/0,99	0,70/0,99
Efficiency Degree		0,76	0,82	0,82
Open circuit voltage	V	100	70	70
Current range	A	5 - 300	5 - 400	5 - 500
Duty cycle at (40°C)	A 100%	210	350	380
	A 60%	250	400	500
	A 35%	300	-	-
Standards		EN 60974-1 • EN 60974-3 • EN 60974-10		
		<b>S</b>		
Protection Class	IP	23 S	23 S	23 S
Insulation Class		F	H	H
Dimensions	↗ mm	495	660	660
	→ mm	185	290	290
	↑ mm	390	515	515
Weight	kg	19	47	51



### VRD - VOLTAGE REDUCTION DEVICE

VRD device reduces the open circuit voltage to values below 12 V, by enabling the use of the machine in highly hazardous environments for the operator's maximum safety.

Other voltages available on request

These power sources are built for industrial environment use. EMC (CISPR 11): class A

