SHIFTING THE LIMITS

MAGICWAVE 2500/3000
TRANSTIG 2500/3000

/ TIG & MMA welding

ACTIVE WAVE TECHNOLOGY BOOSTS COST EFFICIENCY

/ Whole system is totally digitised: Power source, welding torches, remote-control units, robot interfaces, PC tools.

/ Digital signal processor (DSP) regulates and controls the welding process.

/ Available in 3 versions: Standard, Job and Comfort. “Job” offers extra functions such as job-mode, and supports cold-wire control and automated applications, while the “Comfort” version features a plain-text display and extreme ease of operation.

/ Special program for aluminium: Automatic shaping of the cap on the pointed electrode tip, for perfect root fusion.

/ TAC function for faster tacking of materials.

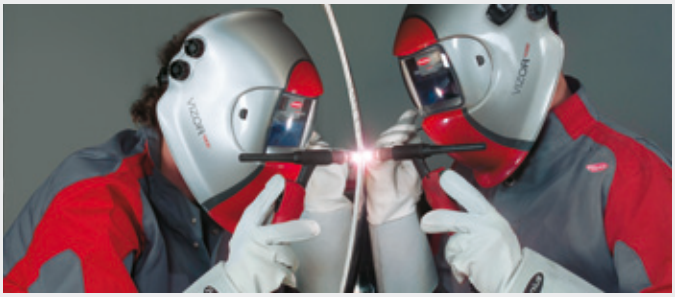
/ As standard: If welding is performed with two power sources, both arcs are synchronised to permit simultaneous welding on both sides.

/ By automatically adapting to different mains voltages, “Multivoltage” ensures worldwide useability.

WELDING PROPERTIES

SIMULTANEOUS WELDING ON BOTH SIDES

/ When joining plates, you normally have to weld a root pass first. This then has to be ground and back-welded – a time-consuming procedure which you can speed up by welding from both sides simultaneously. In "bothsides-simultaneously" TIG-AC welding, both arcs have to be synchronised. This is taken care of by the digital MagicWave power sources.



REAL SKILL BECOMES APPARENT AT THE END

/ At the end of the weld, there are two main things to watch out for: The first of these is the end crater. This has to be filled, at a lower amperage. The power sources take care of this, with the end-crater and downslope functions. The second thing is the gas post-flow, to make sure that the electrode and the weld-pool do not oxidise. In the past, the gas post-fl ow had to be set manually. On the digital machines, the ideal postfl ow time is computed automatically.

TAC: SPOT-BY-SPOT TACK WELDING

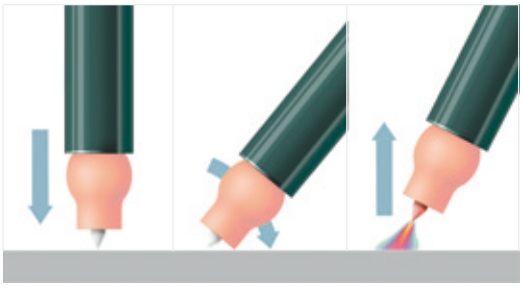
/ Before you can weld, you have to tack. With TAC, one spot is all it takes – because the pulsed arc sets the two weld-pools in motion, making them "jump together", in next to no time, to make one single weld-pool. This works fast, and is a lot easier than the old method. The TAC function is also very useful when light-gauge sheets are being welded without filler metal, as here too, the pulsed arc helps the weld-pools to merge more thoroughly.

SIMPLY PERFECT

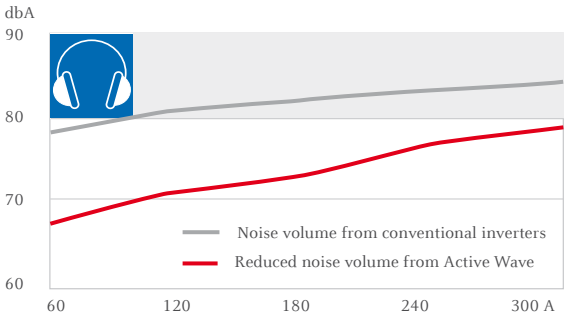
/ The ignition plays a vital rôle in TIG welding. On each of the machines, ignition is possible either with or without touchdown. In non-contact ignition, the arc starts immediately with a high-voltage impulse, ensuring perfect ignition right from the first push of the button – even when you're using extra-long hosepacks. Touchdown ignition is especially valuable in sensitive areas of application. And the important thing here is to make sure that there are no tungsten inclusions. The digital process control takes good care of this, perfectly controlling the entire sequence.

ACTIVE WAVE ENSURES PEACE AND QUIET

/ Active Wave makes TIG AC welding a much quieter business: The integrated digital signal processor always computes – in real time – the waveform that will permit the highest possible arc stability with the lowest possible noise-emission levels. Measurement of these noise levels clearly shows that with Active Wave, even when the machine is delivering 300 A of power, the dbA value is still below 80 dbA.



/ For sensitive areas of application: Touchdown ignition



/ Control panel of MW 2500 Job

/ Control panel of MW 3000 Comfort

/ Control panel of TT 2500 Standard

ALL PLAIN TO SEE

/ The machines in this series are available in three different versions – Standard, Job and Comfort, each with differing functions. "Job", for instance, lets you work in job mode and allows cold-wire control and automated applications.

/ The "Comfort" model also includes a number of extra plus-points, such as the plain-text display. This is unique, in terms of both handling guidance and userfriendliness, and ranks at the very forefront of modern technology. It functions extremely simply and "tells it like it is", in plain text. That means no abbreviations, no numerical codes, just straight-to-the-point announcements like "Main current", "Lowered current" or "Electrode diameter". The additional parameters can be set very conveniently using a navigation menu. The plain-text display is easy to read and absolutely selfexplantory, meaning that anyone can learn to use it straight away. The "Comfort" control panel lives up to the usual high Fronius standards, and is easy to operate even when wearing gloves.

ALUMINIUM IS DIFFERENT

/ Aluminium always needs special treatment. So Fronius have made sure that it gets it. For example, in TIG AC welding, aluminium is normally not welded with a pointed electrode tip, but with a shaped cap at the tip of the electrode. On fillet welds, this leads to inadequate root fusion. The MagicWave machines use a pointed electrode with a much smaller shaped cap. This results in perfect root fusion. The cap is shaped automatically, by the way, which means huge time-savings. All you need to do is clamp the pointed electrode into the electrode holder and preselect the cap diameter, and the arc then immediately forms the shape and size of cap that you want. Another interesting function enables you to make variable adjustments to the AC waveform, giving the welder reliable weld-pool control even at high amperages.

Cap diameter: 1 mm
Base metal: AlMg3
Sheet thickness: 5 mm
Welding amperage: 185 A
Welding voltage: 15.6 V
AC balance: -5

Cap diameter: 3.2 mm
Base metal: AlMg3
Sheet thickness: 5 mm
Welding amperage: 185 A
Welding voltage: 15.6 V
AC balance: 0

CHECKLIST

	TT	TT Job	TT Comfort	MW	MW Job	MW Comfort
Digital weld-process regulation and control	●	●	●	●	●	●
Energy-saving inverter technology	●	●	●	●	●	●
Generator-compatible	●	●	●	●	●	●
Thermostat-controlled fan / overtemperature protection	●	●	●	●	●	●
Earth leakage monitoring	●	●	●	●	●	●
Continuous welding-current adjustment from torch	●	●	●	●	●	●
Remote-controllable	●	●	●	●	●	●
Switchover facility between touchdown and HF ignition	●	●	●	●	●	●
Automatic gas post-flow (dep. on welding current)	●	●	●	●	●	●
Gas-test function	●	●	●	●	●	●
Automatic cooling-unit cut-out	●	●	●	●	●	●
Anti-stick Function	●	●	●	●	●	●
Freely selectable parameters on the welding torch		●	●		●	●
Job mode		●	●		●	●
Automatic cap-shaping function	●	●	●			
Polarity reversal	●	●	●			
RPI ignition	●	●	●			
Keylock switch	○	○	○	○	○	○
Robot interface, analogue / digital		○	○		○	○
Cold-wire control		○	○		○	○

DIGITAL INDICATION OF

Plain-text display			●			●
Run-status	●	●	●	●	●	●
Operating mode	●	●	●	●	●	●
Parameters	●	●	●	●	●	●
Welding voltage, welding amperage (actual value)	●	●	●	●	●	●
Service Codes	●	●	●	●	●	●
Job number		●	●		●	●

ADJUSTABLE PARAMETERS

Welding amperage	●	●	●	●	●	●
Electrode diameter	●	●	●	●	●	●
Gas pre-flow time / gas post-flow time	●	●	●	●	●	●
Crater-fill current / start-arc	●	●	●	●	●	●
Upslope / downslope	●	●	●	●	●	●
Hot-Start / arc-force dynamic	●	●	●	●	●	●
AC balance / AC frequency / AC waveform	●	●	●			

OPERATING MODES

2-step mode / 4-step mode	●	●	●	●	●	●
TAC (programmed tack-welding)	●	●	●	●	●	●
AC / DC	●	●	●			
Special 4-step mode		●	●		●	●
TIG pulsed-arc		●	●		●	●
Spot welding		●	●		●	●

● as standard
○ optional

MATERIALS

/ Aluminium and its alloys (with MagicWave)
/ Non-ferrous metals
/ Low and high-alloy steels

APPLICATIONS

/ Manual welding
/ Robot welding

SECTORS

/ Construction of chemical plant, tanks and vessels, machinery and plant
/ Automotive engineering and construction of railway rolling stock
/ Aerospace
/ Site-erection contractors, maintenance and repair firms
/ Pipeline construction
/ Shipbuilding

SMALL ON SIZE, BIG ON QUALITY – THE IDEAL WELDING TORCH FOR THIS POWER CLASS

/ Of all the components of the welding system that execute a work function, the welding torch is the most important. You can have the world's most advanced power source and its very best welder – but if the hosepack is under constant strain, it will still spoil the welding result. Fronius is well aware of this, too. Which is why it is continually developing and improving its welding torches – for instance by adding the watercooled TIG-welding torch TTW 2500, for the power class up to 250 A.

/ Its ergonomically designed handle-shell is smaller and so fits even better in the welder's hand - in fact, it can even be held like a pencil. The up/down rockers are easy to actuate while wearing gloves. The handleshell also integrates a perfect anti-kink feature: The hosepack flexes more quickly, resulting in more precise torch guidance. Importantly for uninterrupted water cooling, the hosepack itself cannot be endlessly rotated. A final, economic, argument is that the wearing parts from other Fronius welding torches are all compatible with the TTW 2500.

/ For the power class up to 300 A, other Fronius welding torches can be used as well, of course. Mention should also be made of the TIG welding torch with its integral coldwire feeder unit for manual and automated coldwire applications.

WELDING TORCH		TTW 2500	TTW 3000
Welding current	AC	180 A	250 A
	DC	250 A	300 A
Duty cycle		40 %	60 %
Electrode diameter		1,0 - 3,2 mm 0.039-0.126 in.	1,0 - 3,2 mm 0.039-0.126 in.
Weight		0,47 kg (1.03 lb.)	0,57 kg (1.65 lb.)

WELDING TORCH		TTG 2200	TTG 2600
Welding current	AC	180 A	220 A
	DC	220 A	260 A
Duty cycle		35 %	35 %
Electrode diameter		1,0 - 4,0 mm 0.039-0.157 in.	1,0 - 4,0 mm 0.039-0.157 in.
Weight		0,96 kg (2.11 lb.)	0,57 kg (1.25 lb.)

TECHNICAL DATA

POWER SOURCE	MW 2500	MW 2500 MV	MW 3000	MW 3000 MV	TT 2500	TT 2500 MV	TT 3000	TT 3000MV
Mains voltage 50-60 Hz	3×400 V	3×200-240 V 3×400-460 V 1×200-240 V	3×400 V	3×200-240 V 3×400-460 V 1×200-240 V	3×400 V	3×200-240 V 3×400-460 V 1×200-240 V	3×400 V	3×200-240 V 3×400-460 V 1×200-240 V
Mains voltage tolerance	± 15 %	± 10 %	± 15 %	± 10 %	± 15 %	± 10 %	± 15 %	± 10 %
Mains fuse protection (slow) 3×400 (460) V 3×230 V 1×230 V	16 A	16 A 32 A 32 A	16 A	16 A 32 A 32 A	16 A	16 A 32 A 32 A	16 A	16 A 32 A 32 A
Primary contin. power (100% d.c) 3×400 (460) V 3×230 V 1×230 V	4,5 kVA	4,5 kVA 4,1 kVA 4,1 kVA	5,5 kVA	5,5 kVA 4,7 kVA 4,7 kVA	4,5 kVA	4,4 kVA 4,1 kVA 4,1 kVA	6,1 kVA	6,1 kVA 5,5 kVA 5,5 kVA
Cos phi 1	0,99	0,99	0,99	0,99	0,99	0,99	0,99	0,99
Welding current three-phase TIG MMA	3-250 A 10-250 A	3-250 A 10-250 A	3-300 A 10-300 A	3-300 A 10-300 A	3-250 A 10-250 A	3-250 A 10-250 A	3-300 A 10-300 A	3-300 A 10-300 A
Welding current single-phase TIG MMA	3-220 A 10-180 A	3-220 A 10-180 A	3-220 A 10-180 A	3-220 A 10-180 A	3-220 A 10-180 A	3-220 A 10-180 A	3-220 A 10-180 A	3-220 A 10-180 A
Welding current at 10min/40 °C (104 °F) 3×400 V 3×460 V on MV	40% ED 250 A 100% ED 170 A	40% ED 250 A 100% ED 170 A	35% ED 300 A 100% ED 190 A	35% ED 300 A 100% ED 190 A	50% ED 250 A 100% ED 190 A	50% ED 250 A 100% ED 190 A	50% ED 250 A 100% ED 240 A	50% ED 250 A 100% ED 240 A
Welding current at 10min/40 °C (104 °F) 3×230 V 1×230 V		35% ED 250 A 100% ED 160 A 45% ED 220 A 100% ED 150 A		30% ED 300 A 100% ED 170 A 40% ED 220 A 100% ED 150 A		45% ED 250 A 100% ED 180 A 55% ED 220 A 100% ED 170 A		45% ED 300 A 100% ED 220 A 55% ED 220 A 100% ED 190 A
Open-circuit voltage	89 V	89 V	89 V	89 V	85 V	85 V	85 V	85 V
Standardised working voltage TIG MMA	10,1-20,0 V 20,4-30,0 V	10,1-20,0 V 20,4-30,0 V	10,1-20,0 V 20,4-32,0 V	10,1-20,0 V 20,4-32,0 V	10,1-20,0 V 20,4-30,0 V	10,1-20,0 V 20,4-30,0 V	10,1-20,0 V 20,4-32,0 V	10,1-20,0 V 20,4-32,0 V
Ignition voltage (Up)*	10 kV	10 kV	10 kV	10 kV	10 kV	10 kV	10 kV	10 kV
Type of cooling/insulation class	AF / B	AF / B	AF / B	AF / B	AF / B	AF / B	AF / B	AF / B
Dimensions LxWxH mm Inches	560/250/435 22.0x9.8x17.1	560/250/435 22.0x9.8x17.1	560/250/435 22.0x9.8x17.1	560/250/435 22.0x9.8x17.1	560/250/435 22.0x9.8x17.1	560/250/435 22.0x9.8x17.1	560/250/435 22.0x9.8x17.1	560/250/435 22.0x9.8x17.1
Weight	26,6 kg (58.64 lb.)	28,2 kg (62.17 lb.)	28,1 kg (61.95 lb.)	30,0 kg (66.14 lb.)	24,2 kg (53.35 lb.)	25,9 kg (57.10 lb.)	24,2 kg (53.35 lb.)	25,9 kg (57.10 lb.)

COOLING UNIT	FK 2500 FK 2500 FC	FK 2500 MV FK 2500 MV FC
Mains voltage 50-60 Hz	400 V	200-240 V 400 - 460 V
Mains voltage tolerance	± 10 %	± 10 %
Power consumption 50 Hz/60 Hz	0.6/0.7 A	0.6-1.4 A
Cooling capacity Q=1l/min +25 °C/77°F Cooling capacity Q=1l/min +40 °C/104°F	800 W 500 W	800 W 500 W
Max. delivery rate	3,5 l/min	3,5 l/min
Maximum rise	35 m (114.8 ft.)	35 m (114.8 ft.)
Max. pump pressure	4.2 bar (60.9 psi)	4.2 bar (60.9 psi)
Coolant volume	4 l (1.1 gal.)	4 l (1.1 gal.)
Degree of protection	IP 23	IP 23
Dimensions LxWxH	625/240/225 mm 24.1x9.4x8.9 in.	625/240/225 mm 24.1x9.4x8.9 in.
Weight	9 kg (20 lb.)	11,6 kg (25.6 lb.)

CE S IP 23 *The arc-ignition feature complies with the Standards governing manual operation.

/ Battery Charging Systems / Welding Technology / Solar Electronics

WE HAVE THREE DIVISIONS AND ONE PASSION: SHIFTING THE LIMITS.

/ Whether Battery Charging Systems, Welding Technology or Solar Electronics - our goal is clearly defined: to be the technology and quality leader. With around 3,000 employees worldwide, we shift the limits of what's possible - our more than 850 active patents are testimony to this. While others progress step by step, we innovate in leaps and bounds. Further information about all Fronius products and our global sales partners and representatives can be found at **www.fronius.com**

v02 2012 EN

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M,06,0082,EN V1 Jan 2012 awl8