/ Perfect Welding / Solar Energy / Perfect Charging

SHIFTING THE LIMITS

MAGICWAVE 1700/2200
TRANSTIG 2200

/ TIG & MMA welding

ACTIVE WAVE TECHNOLOGY

ACTIVE WAVE TECHNOLOGY BOOSTS PROFITABILITY

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

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

/ Available in both “Standard” and “Job” versions. “Job” offers extra functions such as job-mode, and supports col-wire control and automated applications.

/ Exceedingly high arc stability, even on aluminium base metals from which the oxide has been completely re-mo-ved; no instability (verifiably so)!

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

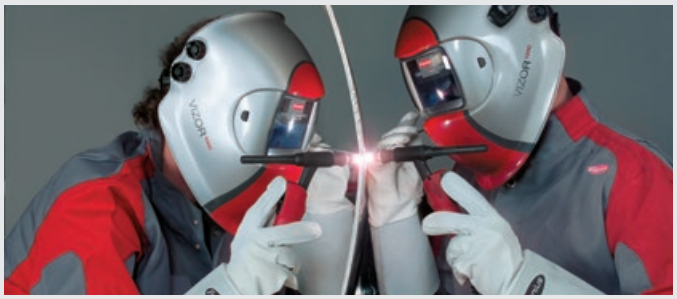
/ TAC function for faster tacking of materials.

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

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

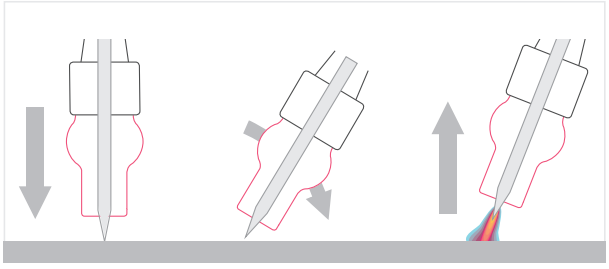
/ Before you can weld, you have to tack. With TAC, one spot is all it takes – because the pulsed arc sets the two weld-pools in motion, making them "jump together", in next to no time, to make one single weld-pool. This works fast, and is a lot easier than the old method. The TAC function is also very 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

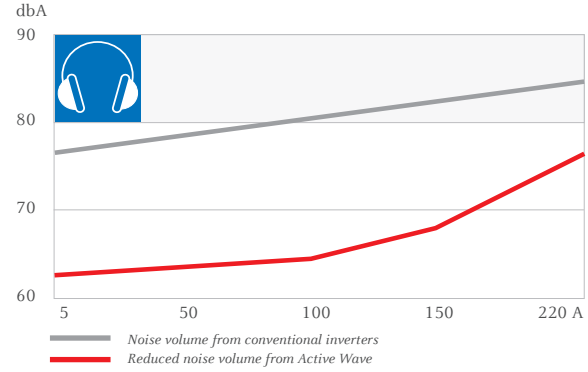
/ The ignition plays a vital rôle in TIG welding. On each of the machines, ignition is possible either with or without touchdown. In non-contact ignition, the arc starts immediately with a high-voltage impulse, ensuring perfect ignition right from the first push of the button – even when you're using 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



/ TransTig 2200 control panel

/ MagicWave 2200 "Job" control panel

REMOTE-CONTROL À LA CARTE

/ Remote control units are really practical. They come in especially handy for welders, because they let you intervene in the welding process and change parameters directly at the scene of the action. No matter where your welding machine happens to be. Special mention should be made here of the JobMaster TIG welding torch, which comes with integral remote control. This lets you call up all your settings, any time and anywhere, regardless of where the machine is standing. The JobMaster TIG welding torch features a digital parameter display, job recall and freely selectable parameters, meaning that you decide for yourself which parameters you want to alter during welding.

/ A few more words on the torch: Particularly advantageously for TIG welding, this comes with a leather hose, whose much greater flexibility means that the welder only has a smaller proportion of the total weight of the torch to carry with him while he works. The torch also has an ergonomically shaped handle and a swivel-mounted hosepack. Another great feature is the torch central connector F++, with a separate water connector so that there is absolutely no way that any coolant can get into the gas channel and cause porosity in the weld metal.

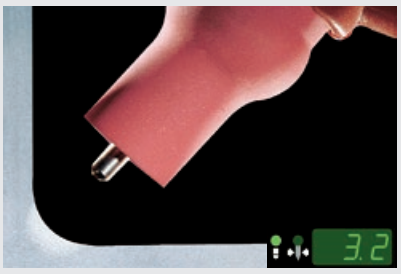
/ Different types of job call for different types of welding torch. Which is why there is a special one for robot applications, with an integrated cold-wire feeder unit. Or a special cold-wire torch for manual welding, also with an integrated wirefeed – used mainly for series applications with good accessibility. By the way, the cold-wire control system, complete with all parameters, is already integrated in the power source.

SPECIAL PROGRAM FOR ALUMINIUM

/ 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, and perfect root fusion as a result.

/ The cap is shaped automatically, by the way, which means huge savings of time. All you need to do is clamp the pointed electrode into the electrode holder, pre-select the cap diameter (e.g. 1.6 mm), and the arc 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

MATERIALS

/ Aluminium and its alloys
/ Non-ferrous metals
/ Low and high-alloy steels

APPLICATIONS

/ Manual welding
/ Robot welding

INDUSTRIAL SECTORS

/ Construction of chemical plant, tanks and vessels, machinery and plant
/ Site-erection contractors
/ Structural metalworking, maintenance and repair firms
/ Pipeline construction

CHECKLIST

	MW 1700	MW 2200	TT 2200
Digital weld-process control	●	●	●
Microprocessor 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[1]	●	●	●
Job mode[1]	●	●	●
Automatic cap-shaping function	●	●	
Polarity reversal	●	●	
RPI ignition	●	●	
Rate-of-flow watchdog for torch cooling system		○	○
External current-flow signal	○	○	○
Robot interface, analogue/digital[1]	○	○	○
Cold-wire control[1]		○	○

DIGITAL INDICATION OF

	MW 1700	MW 2200	TT 2200
Run-status	●	●	●
Operating mode	●	●	●
Welding voltage, welding amperage (actual value)	●	●	●
"Hold" function	●	●	●
Overtemperature	●	●	●
Service code	●	●	●
Mains voltage monitoring	●	●	●
Job number[1]	●	●	●

ADJUSTABLE PARAMETERS

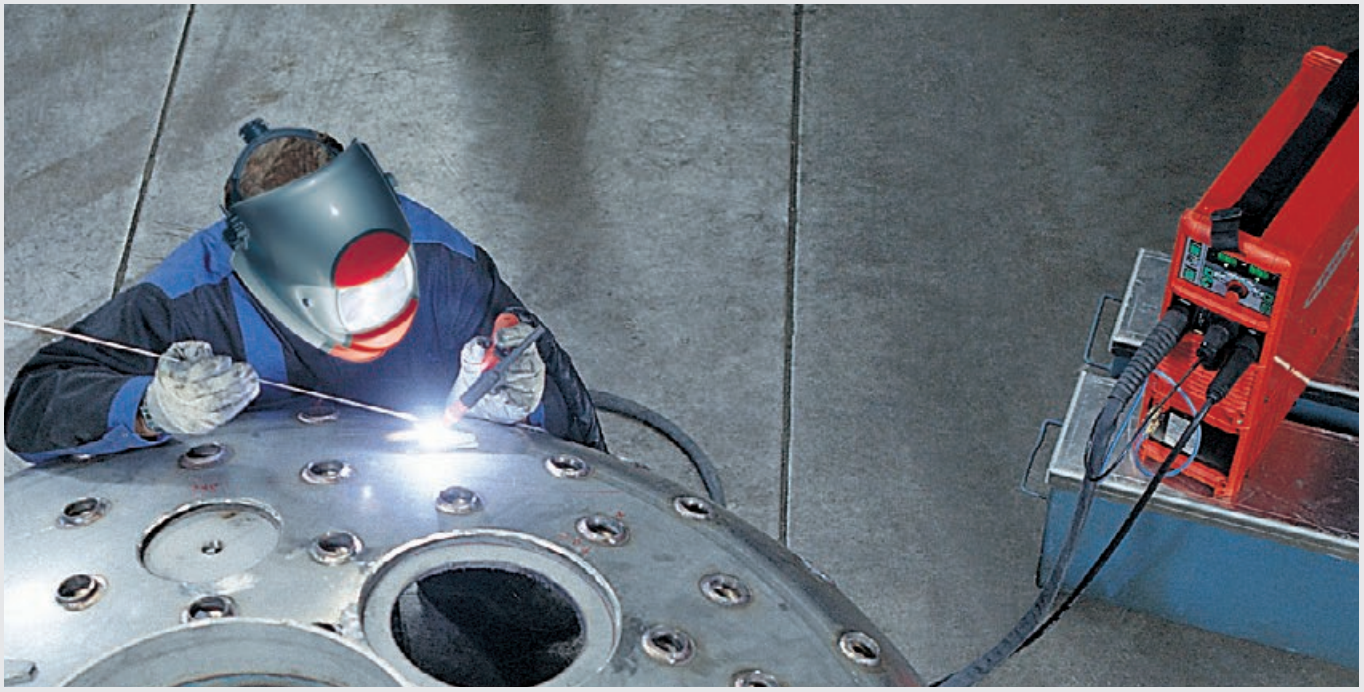
	MW 1700	MW 2200	TT 2200
Welding power (continuously adjustable)	●	●	●
Welding power (continuously adjustable)	●	●	●
Gas pre-flow time / gas post-flow time	●	●	●
Crater-fill current / start-arc	●	●	●
UpSlope / DownSlope	●	●	●
Hot-Start / arc-force dynamic	●	●	●
AC balance / AC frequency / AC waveform	●	●	

OPERATING MODES

	MW 1700	MW 2200	TT 2200
2-step mode / 4-step mode	●	●	●
TAC (programmed tack-welding)	●	●	●
AC / DC	●	●	
Special 4-step mode[1]	●	●	●
TIG-Puls[1]	●	●	●
Spot welding[1]	●	●	●

MW 1700
MW 2200
TT 2200

[1] only on „Job" version
● as standard
○ optional



COMPLETE SYSTEM, EVEN INCLUDING A TIG TORCH

/ Fronius is a system supplier. Each member of the system is designed to "fit in" optimally with all the others, in perfect harmony. It takes in everything from modularly designed power sources (available for both gas and water-cooled torches, incidentally), to remote-control units, cooling units, trolleys and a wide range of different robot interfaces, as well as complete welding-data documentation and visualisation.

/ For cold-wire applications: TTW 4000 KD welding torch with integrated remotecontrol, display and wirefeed

/ The KD 4000D-11 feeder unit ensures perfect wirefeeding in cold-wire applications

/ JobMaster TIG torch with integrated remote control and display

/ TR 2200 F pedal remote-control unit: For precision control of the welding current, all the time

/ RCU 2000 remote control unit: For completely remote-controlling the power source

TECHNICAL DATA

POWER SOURCE	MAGICWAVE 1700 / JOB	MAGICWAVE 2200 / JOB	TRANSTIG 2200 / JOB
Mains voltage, 50-60 Hz	230 V	230 V	230 V
Mains voltage tolerance	-20 / +15%	-20 / +15%	-20 / +15%
Mains fuse protection (slow-blow)	16 A	16A	16A
Primary continuous current (100 % d.c.)	3.3 kVA	3.7 kVA	3.0 kVA
Cos phi 1	0.99	0.99	0.99
Welding-current range (continuous) TIG Electrode	3 - 170 A 10 - 140 A	3 - 220 A 10 - 180 A	3 - 220 A 10 - 180 A
Welding current at 10 min/25°C 10 min/40°C	40% d.c. 170 A 60% d.c. 140 A 100% d.c. 110 A 35% d.c. 170 A 60% d.c. 130 A 100% d.c. 100 A	40% d.c. 220 A 60% d.c. 180 A 100% d.c. 150 A 35% d.c. 220 A 60% d.c. 170 A 100% d.c. 150A	50% d.c. 220 A 60% d.c. 200 A 100% d.c. 170 A 40% d.c. 220 A 60% d.c. 180 A 100% d.c. 150 A
Open-circuit voltage	88 V	88 V	84 V
Standardised operating voltage TIG Electrode	10.1 - 16.8V 20.4 - 25.6 V	10.1 - 18.8 V 20.4 - 27.2 V	10.1 - 18.8 V 20.4 - 27.2 V
Ignition voltage (Up)*	10.0 kV	9.5 kV	9.5 kV
Degree of protection	IP 23	IP 23	IP 23
Type of cooling	AF	AF	AF
Insulation class	B	B	B
Dimensions L x W x H	485 x 180 x 344 mm 19.09 x 7.09 x 13.54 inch	485 x 180 x 390 mm 19.09 x 7.09 x 15.35 inch	485 x 180 x 390 mm 19.09 x 7.09 x 15.35 inch
Weight	15 kg / 33.1 lb	17.4 kg / 38.4 lb	16.8 kg / 37 lb

CE S IP 23 *The arc ignition feature is suitable for manual operation.

WELDING TORCH	TTG 2200 A	TTG 2600 A	TTW 3000 A
Welding current AC DC	180 A 220 A	220 A 260 A	250 A 300 A
Duty cycle	35%	35%	60%
Electrode diameters	1.0 - 4.0 mm	1.6 - 6.4 mm	1.0 - 3.2 mm
Weight	0.96 kg / 2.1 lb	1.2 kg / 2.6 lb	0.75 kg / 1.7 lb

COOLING UNIT	FK 2200
Mains voltage, 50 - 60 Hz	230 V
Mains voltage tolerance	-20 / +15 %
Cooling capacity Q = 1 l/min. +25 °C +40 °C	660 W 450 W
Delivery rate	3.0 l/min
Delivery head	30 m
Max. pump pressure	4.3 bar
Coolant capacity	1.5 l
Degree of protection	IP 23
Dimensions L x W x H	540 / 180 / 180 mm 21.26 x 7.09 x 7.09 inch
Weight (without coolant)	6.6 kg / 14.5 lb

/ Perfect Welding / Solar Energy / Perfect Charging

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

/ Whether welding technology, photovoltaics or battery charging technology – our goal is clearly defined: to be the innovation leader. With around 3,000 employees worldwide, we shift the limits of what's possible - our record of over 1,000 granted patents is testimony to this. While others progress step by step, we innovate in leaps and bounds. Just as we've always done. The responsible use of our resources forms the basis of our corporate policy.

Further information about all Fronius products and our global sales partners and representatives can be found at **www.fronius.com**

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