



# **TIME 5000** Digital

Manual MIG/MAG high-performance welding



PERFECT WELDING

# Top quality and top performance – the best of both worlds

## GENERAL REMARKS

### Digital high-performance welding: Combining “must-have” and “good-to-have”

The TIME Process is a tried and tested high-performance welding process for manual and mechanised applications that has been doing sterling service in industry for many years. By “high-performance”, we mean a welding process that achieves either a deposition rate of at least 8 kg/h, or a wirespeed of at least 15 m/min with 1.2 mm steel wire.

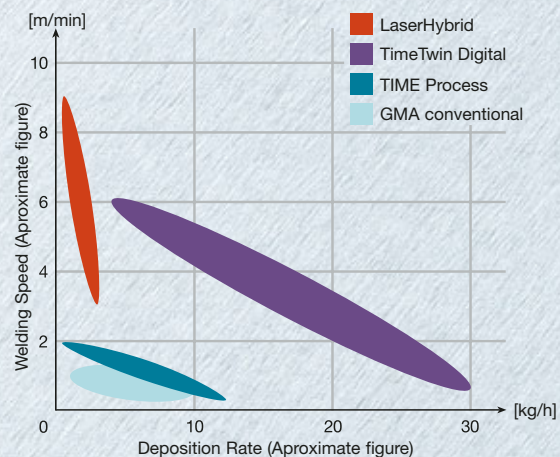
Now the TIME Process has been totally digitised. With all the attendant benefits that come as standard with Fronius digital welding systems, such as: 100 % reproducibility of all welding results, modular system principle, digital microprocessor control, superb welding properties.

The TIME Process from Fronius offers cost-saving welding of steel plates, with deposition rates that are as much as 30 % higher. For manual welding, this has huge productivity-boosting potential.

## UTILISATION

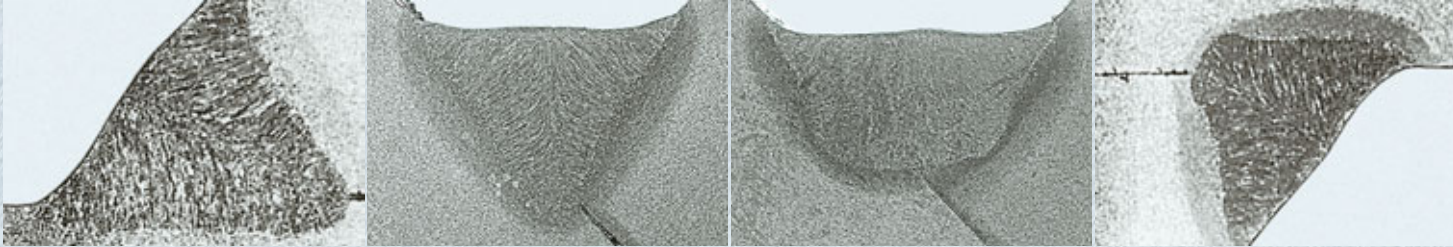
### An uncompromising long-distance performer

The TIME Process plays out its full range of strengths on unalloyed and low-alloy steels, and on fine-grained structural steels and low-temperature resistant steels. It is mainly used in sectors such as the construction of plant, tanks and vessels; mechanical engineering and structural steelwork; shipbuilding, and the manufacturing of special vehicles and construction machinery.



Classification of high-performance welding processes with reference to deposition rate and welding speed





*Metal thickness:  $\leq 15$  mm  
Shielding gas: Ar/CO<sub>2</sub>  
Deposition rate: up to 8 kg/h  
Position: PB*

*Metal thickness:  $> 15$  mm  
Shielding gas: Ar/He/CO<sub>2</sub>  
Deposition rate: up to 12 kg/h  
Position: PA*

*Metal thickness:  $> 15$  mm  
Shielding gas: Ar/He/CO<sub>2</sub>  
Deposition rate:  $> 10$  kg/h  
Position: PA*

*Metal thickness:  $> 10$  mm  
Shielding gas: Ar/He/O<sub>2</sub>/CO<sub>2</sub>  
Deposition rate: up to 5 kg/h  
Position: PD*

## TIME PROCESS

### The full spectrum

To get the TIME high-performance welding process up to full speed, three factors have to be just right:

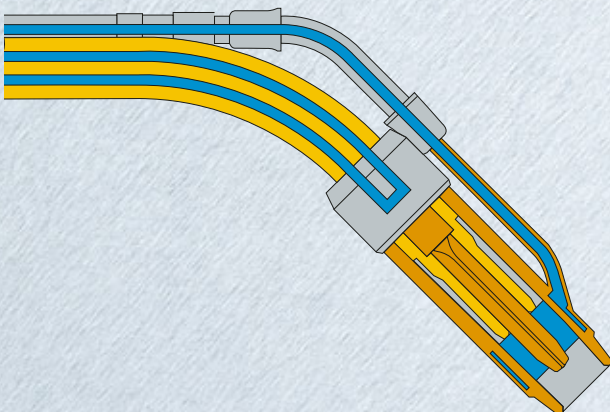
- the shielding gas
- the stick-out
- the welding system

### Shielding gas

Achieving a stable arc and excellent weld-seam quality calls for special shielding-gas mixtures, as supplied by very many gas manufacturers: Either 2-component gases based on argon/CO<sub>2</sub>, or 3- or 4-component gases based on argon/CO<sub>2</sub>/O<sub>2</sub>/helium.

### Stick-out

With 1.2 mm wires, the stick-out is usually between 10 and 12 mm; in the TIME Process, it is between 15 and 25 mm. This is absolutely vital for achieving the higher efficiency that characterises this process. As the wire is greatly heated up by the longer stick-out, the wirespeed or the deposition rate can be increased by 30 %. The fact that the contact tube can be moved back means that in spite of the long stick-out, clean gas coverage of the weld-pool is still assured.



*TIME manual welding torch with 2-circuit cooling system and continuously adjustable contact tube for regulating the long stick-out*

### Welding system

Clearly, a welding process that delivers 30 % more performance makes much bigger demands of the welding system and of the welding torch. What is called for here is greater output power, a correspondingly high duty cycle, and higher-capacity wirefeeders. For example, a special type of drive motor with a shrunk-on disc rotor, and a 4-roller drive, together ensure reliable wire travel at all times, at wirefeed speeds of up to 30 m/min.

Total digitisation means that the system comes with a wealth of built-in know-how. It integrates parameter records for a large number of shielding-gas mixtures and wire diameters as standard, and makes them easy to retrieve by way of the "Synergic" function. And this is not all, of course. Process know-how means much more.

Among other things, an automatic 3-parameter control system makes the entire process very much easier to handle, helping to ensure perfect welding results by making it easy to set different parameters for both ignition, welding and the end of welding. What this means in practice is flawless ignition, notch-free edge welds and no crater cracks.



*The 3-parameter control makes it easy to set different parameters*



Control panel with synergic characteristics specially tailored for the TIME Process



TR 2100-1 remote-control unit for setting and retrieving start-up, main and crater-fill parameters



VR 7000-30 wirefeeder: A portable, enclosed wirefeed unit for D 300/K300 spools



With its 2-circuit cooling system, the TIME manual welding torch ensures optimum cooling at high deposition rates

## ECONOMY

A 30 % higher deposition rate, with all the savings that this gives, should be a big enough efficiency gain all by itself. But the TIME Process doesn't leave it there. The machine concept is extremely flexible, multiprocess-capable and robot-enabled. As well as steel, other materials such as aluminium or chrome-nickel can also be welded using various different processes.

## SAFETY

Fronius also insist on safety features like the CE Mark including tilt-test, S Mark and IEC "Degree of protection IP 23".

And for TIME, in addition to all these: TIME safety gloves, high shade-number filter lenses, UV-resistant protective apparel.

## TECHNICAL DATA

Power source		TIME 5000 Digital
Mains voltage		3 x 400 - 460 V
Mains voltage tolerance		± 10 %
Mains frequency		50 / 60 Hz
Mains fuse protection (slow-blow)		35 A
Cos phi		0.99
Welding current range	MIG/MAG	3 - 500 A
	TIG	3 - 500 A
	MMA	10 - 500 A
Welding current at:	10 min/40 °C (104 °F)	40 % d.c. 500 A
		60 % d.c. 450 A
	10 min/25 °C (77 °F)	100 % d.c. 360 A
		75 % d.c. 500 A
		100 % d.c. 450 A
Open-circuit voltage		70 V
Working voltage		28 - 48 V
Degree of protection		IP 23
Dimensions LxWxH		625 x 290 x 475 mm
		24.61 x 11.42 x 18.70 in
Weight		37.4 kg / 82.45 lb



Wirefeeder	VR 4000-30	VR 4000-30 TIME
Control panel	Standard	3-parameter control
Wirefeed speed	0.5 - 30 m/min.	0.5 - 30 m/min.
Wirefeed drive	4-roller drive*	4-roller drive*
Wire diameter	0.8 - 1.6 mm	0.8 - 1.6 mm
Dimensions LxWxH	650 x 290 x 410 mm	650 x 290 x 410 mm
	25.59 x 11.42 x 16.14 in	25.59 x 11.42 x 16.14 in
Weight	16.5 kg / 36.38 lb	16.5 kg / 36.38 lb
Torch connector	Fronius F++	Fronius F++
	Euro-ZA	-

\* water-cooled electric motor with shrunk-on-disc rotor



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