

TPS/i

Twin systems



Self-regulating
process



High deposition
rate



High-speed
welding



Effortless
control to
unleash
your welding
potential



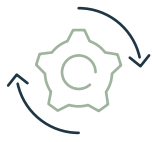
The future of welding

Tandem welding has never been so easy

Consistently high welding speeds with reliable penetration and deposition rates of up to 25 kg/h – welcome to the TPS/i Twin. Our latest innovation offers maximum control and time savings with intelligent welding processes that automatically adjust welding parameters and variables in the background, supported by robotic assistance systems as well as automatic changeover and cleaning systems.

TPS/i Twin systems have a modular design that enables them to be customized to the application in question. Whereas a Push system is the ideal solution for steel applications, a PushPull solution is recommended for aluminum. Anyone wishing to achieve maximum welding speed and process stability should opt for the CMT Twin process.

TPS/i – The advantages for you



Self-regulating process

Only make settings that are absolutely necessary

An automatic process for better results. Our system is capable of automatically adjusting welding parameters and variables during the welding process in order to ensure optimum regulation of both arcs at all times.



Smart assistance systems

Time-saving support

TeachMode, TouchSense, SeamTracking, WireSense, and short circuit detection right inside the gas nozzle. Our assistance systems simplify the handling of the welding system, thereby increasing welding efficiency.



High deposition rate

Up to 25 kg/h

It's never been easier to process large components. Two TPS/i power sources combined in a single system provide particularly high deposition rates and good gap-bridging ability.



High-speed welding

Welding speeds of up to 4 m/min

Fast welding without loss of quality. The high deposition rate provides fast travel speeds with reliable penetration and notch-free welds.



Totally stable welding

Consistent production with a long service life

High process security thanks to reliable wire feeding. The dynamic Twin Drive unit and wire buffers ensure maximum stability.

For more details, please visit:
www.fronius.com/tpsi-twin-systems





The system for steel

Welding process: PMC Twin
Application: Steel

Typical welding tasks: Axles,
rims, bogie frames, and steel girders



TX Twin torch body change station

- Automatic torch body changeover in a matter of seconds
- Replacement of up to 8 torch bodies
- Greater output due to reduced robot downtime



TPS/i welding torch service station

- Efficient brush cleaning, milling cutter cleaning, or magnetic cleaning as well as high-pressure purging of the wearing parts
- Regular cleaning increases the service life of the welding robot and leads to consistent weld quality.





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2 x TPS 500i

Up to 2 x 500 A with
40% duty cycle



WF 30i wirefeeder

Two wirefeeders in one housing
act as a central media conduit
and improve accessibility.



Twin controller

- Synchronizes the welding process
- Central robot interface
- For all commercially available welding robots



Twin PushPull

The system for aluminum

Welding process: PMC Twin

Application: Aluminum

Typical welding tasks: Aluminum profiles, wagon construction, containers, pressure vessels, tanks



Wire buffer*

Guarantees consistent wirefeeding and process stability



CMT Twin

The system for light gage sheets and nickel-based alloys

Welding process: CMT Twin and PMC Twin

Applications: Light gage sheets, aluminum, nickel-based alloys, high-strength steel

Typical welding tasks: Axle production, exhaust gas systems, hydraulic cylinders, mobile crane booms, pressure vessels



Twin torch body

Compact and smart design. Improved accessibility and minimal cleaning effort thanks to reduced spatter adhesion. The water cooling also guarantees longer service life of the wearing parts.



Twin Drive

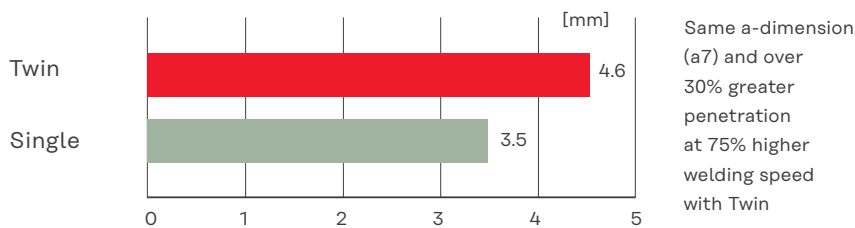
The highly dynamic drive unit uses a precise reversing wire movement to ensure absolute stability in the CMT process. The compact design enables easy access to components and allows users to change settings directly on the user interface of the Twin Drive.

PMC Twin

PMC (Pulse Multi Control) is a further development of the pulsed arc from Fronius. It represents the technological basis for the PMC Twin process and, as is typical of Fronius, is available with various characteristics. This means that the welder can get straight to the process properties needed to suit the application at hand.

Reliable penetration

Confidence in creating the desired weld quality: With the Twin process, an even greater penetration depth is achieved despite its enormous speed.

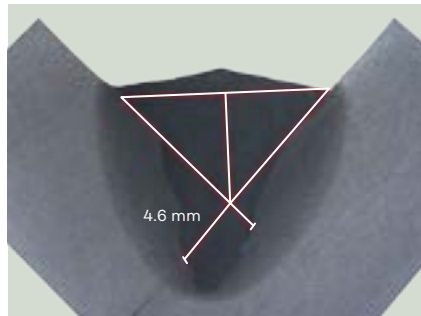


Single



Current [A]: 406, Voltage [V]: 33.1, vs [cm/min]: 40

Twin

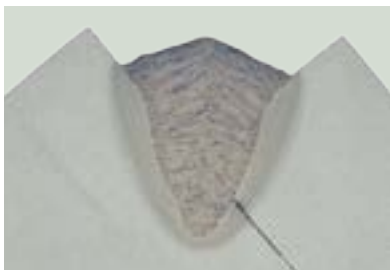


Lead: Current [A]: 440, Voltage [V]: 34.8, vs [cm/min]: 70
Trail: Current [A]: 340, Voltage [V]: 27.2, vs [cm/min]: –

Comparison – welding a fillet weld, position: PA, shielding gas: M21 Ar+18%CO₂, filler metal: ER70S-9 Ø 1.2 mm, sheet thickness: 12 mm, prerequisite: a-dimension: a7

High deposition rate

One welding pass is all it takes. Thanks to the high deposition rate of the Twin system, welds that needed to be welded in multiple passes are a thing of the past.



Parameters	
vs [cm/min]:	120 cm/min
Dep. rate =	25.10 kg/h
Contact tip angle =	0°
Lead Vd =	PMC 27 m/min
Trail Vd =	PMC 20 m/min
a-dimension =	5,4
Penetration =	4,0 mm





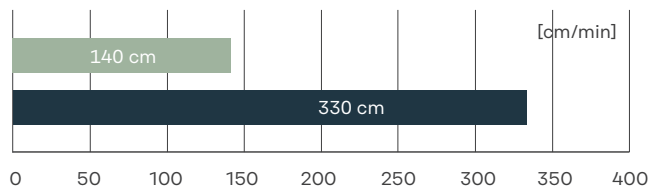
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nted.

CMT Twin

CMT (Cold Metal Transfer) is a welding process developed by Fronius that represents the technological basis for the CMT Twin process. By combining various processes, advantages like high speed, gap-bridging ability, and minimal spatter are brought together in a single process. The process is also available with various characteristics so that the right process properties are instantly to hand according to the application in question.

Full speed ahead to the perfect result

Reliable penetration. Thanks to the high deposition rate, the tandem process enables speeds of up to 330 cm/min. This makes welding 2.5 times faster than with just one arc.

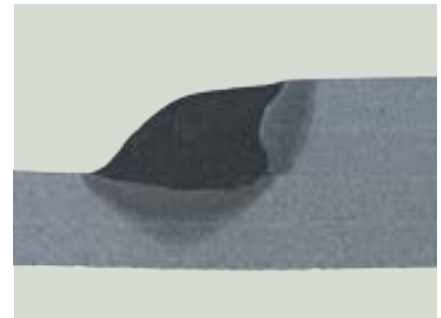


Single



Current [A]: 406, Voltage [V]: 33.1, vs [cm/min]: 140

Twin



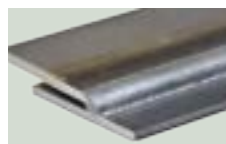
Lead: Current [A]: 440, Voltage [V]: 34.8, vs [cm/min]: 330
Trail: Current [A]: 340, Voltage [V]: 27.2, vs [cm/min]: –

Comparison – welding a lap joint, position: PB, shielding gas: M21 Ar+18%CO₂, filler metal: ER70S-9 Ø 1.2 mm, sheet thickness: 3 mm

Gap-bridging ability

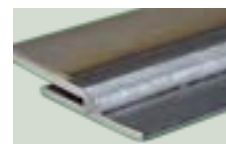
4 x welding speed and optimum gap-bridging ability with Twin welding despite the 3 mm air gap!

Single



Current [A]: 155, Voltage [V]: 12.3, vs [cm/min]: 30

Twin



Lead: Current [A]: 280, Voltage [V]: 28.0, vs [cm/min]: 110
Trail: Current [A]: 125, Voltage [V]: 17.0, vs [cm/min]: –

Intelligent welding

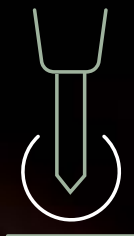
Precise welding, faster—this is what our Twin series can achieve with various auxiliary systems. These, in combination with the robot controller, support welders in making the production process as efficient as possible. This not only saves time and minimizes errors, but means that welds can be reproduced at any time in the desired quality—without the need for manual fine adjustments. And all this in the best possible design to withstand the highest loads and fulfill the most stringent requirements.



Slaghammer

Start welding safely and cleanly.

Before welding starts, slag that has formed on previous welds is chipped away by reversing wire movements.



SFI – Spatter free ignition

The spatter-free ignition with SFI ensures both safe and clean ignition.



Our assistance systems at a glance

SeamTracking

Compensates for clamping and component tolerances during the welding process, thereby preventing weld faults as well as unnecessary rejects.

TouchSense

Developed for welding fillet welds and prepared butt welds. The wire or gas nozzle scans the component in detail and transmits the start and end position to the robot, which calculates the exact seam path.

ShortCircuitDetection

The welding system detects any accumulation of welding spatter within the gas nozzle. This enables cleaning routines to be optimized and process reliability to be increased.

TeachMode

Efficient programming of robotic weld seam positions. The wire is retracted before a collision can occur with the component, thereby preventing the wire from bending. The set stick out remains unchanged.

WireSense

Reduces time-consuming rework. The wire electrodes measure component deviations such as varying air gaps or clamping tolerances and transmit the values to the robot.

Function overview

Areas of application	Twin Push (PMC Twin)	Twin PushPull (PMC Twin)	CMT Twin
Welding speed	● ● ● ● ○	● ● ● ● ○	● ● ● ● ●
Deposition rate	● ● ● ● ●	● ● ● ● ●	● ● ● ● ○
Minimal spattering	● ● ● ○ ○	● ● ● ● ○	● ● ● ● ●
Low heat input	● ● ● ● ○	● ● ● ● ○	● ● ● ● ●
Gap-bridging ability	● ● ● ○ ○	● ● ● ○ ○	● ● ● ● ●
Long wirefeed distances	● ● ○ ○ ○	● ● ● ● ○	● ● ● ● ●

Material	Twin Push	Twin PushPull	CMT Twin
Steel	● ● ● ● ●	● ● ● ● ●	● ● ● ● ●
CrNi	● ● ● ● ○	● ● ● ● ●	● ● ● ● ●
Aluminum	● ○ ○ ○ ○	● ● ● ● ●	● ● ● ● ●

We take responsibility



We believe in sustainability

Long service life, reparability, and recyclability. Like all Fronius products, the TPS/i is designed and produced with sustainability in mind. We use the latest technology to help protect people and the environment, and ensure a worthwhile future for coming generations.

Environment and resources

From production to application, all TPS/i Twin components are environmentally friendly and resource-conserving. Consistently designed with a long service life and reparability in mind, the TPS/i Twin series uses water cooling to guarantee a particularly long service life of wearing parts such as gas nozzles and fittings.

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