



TPS/i

Robotics

Infinite power to unleash
your welding potential

A man with a beard is wearing a black welding mask and a dark grey work jacket with red accents. He is looking directly at the camera. The background is dark.

Where innovation and
outstanding performance
come together

Robotic welding



We combine a culture of innovation and customer focus in a unique way: since the 1990s, we have been revolutionising the industry with pioneering solutions for robot-assisted welding.

By making good things even better, we not only develop welding systems, but also create solutions that expand the possibilities of automated robotic welding. We achieve a high quality weld thanks to intelligent control and a stable arc.

Software solutions allowing easy integration plus welding data recording and analysis complete our systems.

- Accurate welds
- Fewer rejects
- Energy-efficient
- Minimal downtime thanks to simple maintenance

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The advantages for you



Transformation for maximum efficiency

Converting a manual welding machine to a robotic welding system is quick and easy. All common standard interfaces are available.



Overview of production

WeldCube is a central tool that networks and monitors all welding machines in production, so you can fulfil any documentation requirements. Plus, the component-related evaluation of process data allows you to optimise your production line and realise its full potential.



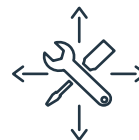
Easy upgrades

The system's functionality can be quickly expanded using software options and Welding Packages.



Ready for use in no time

The TPS/i facilitates quick and straightforward communication with robots from different manufacturers, ensuring rapid integration of the welding system.



All-rounder for any application

Our welding system is versatile. No matter whether you're working with aluminium, CrNi or steel, the TPS/i ensures optimum welded joints. With our solutions, you remain flexible and optimally equipped for future challenges. The result: perfect welds with excellent support.

Versatile
and precise

Equipped with two or three perfectly synchronised wirefeeders, the PushPull system ensures extremely precise feeding. Accurate wire feeding forms the basis for high process stability, especially for long wire feeding distances and applications with aluminium alloys or CuSi.

PushPull systems



Perfect results every time

Easy handling and low maintenance: the system is most frequently used in applications such as CrNi and steel, where consistent quality and high system availability are required. The assistance systems of the LSC and PMC processes help deliver outstanding welding results.

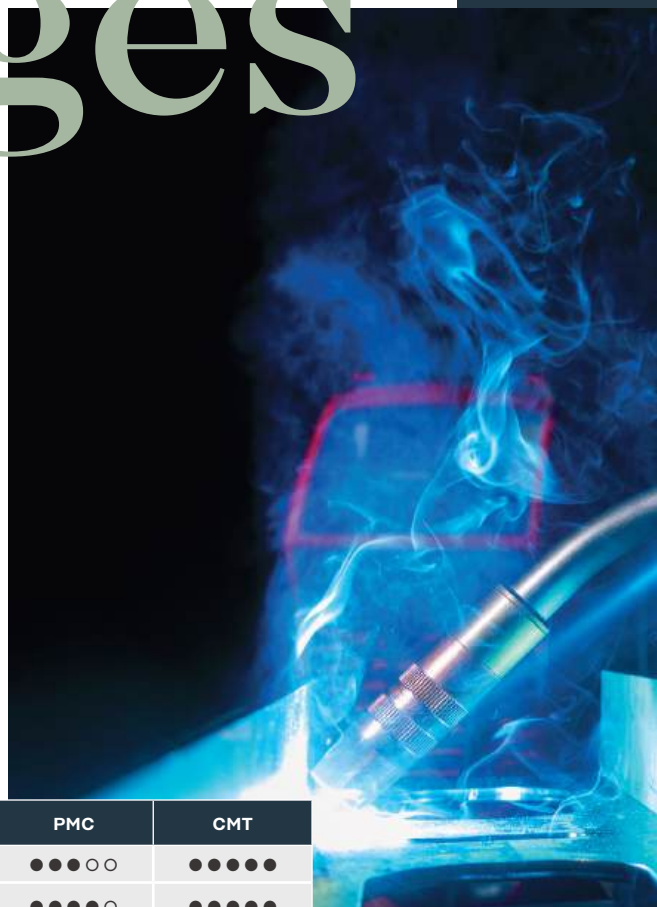
Push systems



Fully compatible with our

welding packages

Thanks to our modular Welding Packages, custom solutions can be developed quickly and efficiently. The TPS/i can be flexibly adapted to meet specific welding requirements. The standard and pulse processes are available as basic packages or advanced Welding Packages, such as LSC, PMC or CMT, can be used for particularly demanding welding tasks. The optimum interaction of welding processes and intelligent penetration and arc length stabilizers makes production faster and of higher quality, which reduces rejects to a minimum.



		Standard	LSC	Pulse	PMC	CMT
Areas of application	Sheet thickness up to 1 mm	●●●○○	●●●○○	●●○○○	●●●○○	●●●●●
	Sheet thickness between 1 and 3 mm	●●●○○	●●●○○	●●○○○	●●●○○	●●●●●
	Sheet thickness upwards of 3 mm	●●●○○	●●●○○	●●○○○	●●●●●	●●●○○
	Welding in position	●●●○○	●●●○○	●●○○○	●●●○○	●●●●●
	Welding speed	●●●○○	●●●○○	●●○○○	●●●●●	●●●●●
	Welding with 100% CO ₂	●●●○○	●●●○○	○○○○○	○○○○○	●●●●●
	Spatter prevention	●●○○○	●●●○○	●●○○○	●●●○○	●●●●●
	Mechanised root passes	●●●○○	●●●○○	●●○○○	●●●○○	●●●●●
Materials	Steel	●●●○○	●●●○○	●●○○○	●●●●●	●●●●●
	CrNi	●●●○○	●●●○○	●●○○○	●●●●●	●●●●●
	Aluminium	●○○○○	○○○○○	●●○○○	●●●●●	●●●●●
	Other materials	●●○○○	●●●○○	●●○○○	●●●○○	●●●●●

The stable arc with
reversing wire motion

CMT

Cold Metal Transfer: the highly specific type of droplet detachment minimises heat input. Reversing wire motions also ensure low spattering.



99%
less spatter*

33%
lower heat input*

A stable arc with
no exceptions

- Perfectly suited to high-strength steels
- Not susceptible to external influences (changes in stickout or workpiece surface)
- Suited to 100% CO₂

Faster welding

- High speed but the same penetration
- Fast joining of thin sheets
- Spatter-free ignition (SFI)

* under laboratory conditions

The optimised pulsed arc

With its optimised pulse characteristics, Pulse Multi Control provides high-quality welds at high welding speeds.

PMC



High weld seam quality and appearance

- Increased process stability thanks to arc length stabilizers and penetration stabilizers
- Spatter-free ignition (SFI)
- Optimised for welding vertical-up seams without pendulum movement due to PMC mix
- TIG-like seam rippling thanks to PMC Ripple Drive

Improved weld properties*

- Consistently greater penetration
- 15% higher welding speed
- 15% less heat input

* compared to a conventional pulsed welding process

The modified dip transfer arc

LSC

Low Spatter Control: soft reignition represents a significant difference compared to the standard dip transfer arc. Here, the short circuit is resolved at a low current level. This results in a stable welding process.



Weld up to 4.5x
quicker**

- Very well suited for out-of-position welding
- Welding in the downhand position is optimally supported by the properties of LSC
- The powerful arc ensures optimum root formation in overhead positions

Up to 75% less
spatter***

- Less rework
- Lower consumption of filler material
- Fewer rejects
- Less cleaning required and savings on wear parts

** compared to TIG root
pass welding

*** compared to standard arc at 6 m/min wire speed,
5 mm unalloyed steel



Faster, more accurate
welding with

assistance systems

WireSense

Uses the wire electrode as a sensor

Imprecise clamping fixtures and minimal material differences can have a negative influence on the welding result and cause costly, time-consuming rework. With WireSense, these problems are a thing of the past. The wire electrode measures component deviations, such as varying air gaps or clamping tolerances, and transmits the values to the robot.

TeachMode

Keeps the stickout constant

The wire electrode retraction function offers several advantages for the efficient programming of welding positions on the robot. Retracting the wire before a collision prevents the wire from bending, thereby keeping the set stickout constant. This saves a considerable amount of time as manual corrections are no longer needed, while the welding quality remains constant. The system is also compatible with all common filler metals, increasing the flexibility and efficiency of the welding process.

Our assistance systems, such as TeachMode, TouchSense, WireSense and SeamTracking, further optimise the welding process by saving time, preventing collisions, compensating for tolerances and increasing process reliability.

SeamTracking

Tracks seams during welding

The SeamTracking robot assistance system plays an active part in the welding process. The robot automatically corrects the seam path based on changed parameters by means of pendulum movements. This ensures precise tracking of the seam path, avoiding welding errors due to voltage and component tolerances.

TouchSense

Perfect alignment with the component

Before the welding process begins, the exact position of the workpiece is determined by scanning with a wire or gas nozzle. This allows the robot controller to compensate for the component position.

Short Circuit Detection

The welding system detects accumulations of welding spatter inside the gas nozzle. Cleaning routines can be optimised and process reliability increased.



Welding systems with

vision

SmartManager

Managing digital welding machines

The SmartManager is a web-based solution in the field of welding technology. As part of the welding system, the SmartManager provides advanced setting options. Data acquisition and control minimises downtime and provides detailed insights into the performance of the welding system.

Efficient management made easy

- Convenient access: manage the overall system and all settings conveniently via PC or tablet
- Comprehensive data documentation: get complete data documentation at a glance, with export function
- Signal visualisation and system overview gives you an overview of all signals and the system
- Efficient job management: create, compare and process jobs quickly and easily
- Always up to date: stay up to date at all times with the latest updates
- Backup & restore: easy backup allows you to seamlessly restore data when replacing hardware



Simple integration of
your welding machines
via LAN/WLAN

User management

Wondering how you can assign and manage authorisations centrally for several welding systems? A standalone solution in the WeldCube portfolio, Central User Management, provides the answer. You can assign individual authorisations to each user via the authorisation system integrated into the TPS/i. When someone logs in with a key card or fob, the system immediately knows what they are (and are not) allowed to do. With just a few clicks, user rights are set centrally for one or more welding systems. The relevant information is automatically sent to all connected systems.

WeldCube welding data management

With the WeldCube software portfolio, we are expanding our welding systems across the entire welding technology production process. Simplified workflows, structured processes, faster training of untrained workers and standard-compliant welding all support users in manual welding production. We are your partner for perfect welding quality, increased productivity and transparency. With the correct welding system and the right software solution, you are already equipped for the challenges of tomorrow and can optimally unleash your welding potential.



For more information, visit
www.fronius.com/tpsi-robotics



Sustainability defines our actions

Thanks to its modular structure and customised software packages, the TPS/i can be easily adapted to suit individual welding requirements, thereby saving valuable resources.

Lower consumption and less welding spatter: optimised welding processes, such as CMT or LSC, help to reduce welding spatter by up to 75%*. On the one hand, this means that less filler material is required. On the other, time-consuming and cost-intensive rework is reduced. By using the latest technology, we help to take the pressure off people and the environment and safeguard the future for subsequent generations by making it one worth living in.

* compared to a conventional welding process



Unleash your welding potential

To ignite the welding potential of our customers: that's our mission. As the innovation leader for arc welding and global market leader for robot-assisted welding, we create both advanced and profitable welding solutions, which are inspired by our sustainable mindset. We enjoy long-standing relationships with our customers. We understand their challenges and perspectives and maintain a close relationship with them through our regional service teams throughout the world. We listen, understand and therefore shape the mindset of the welding industry. Our strengths lie in combining our customers' knowledge with our expertise, which allows them to unleash their full welding potential.

The highest service quality

A reliable partner with
a global presence

Fronius is active and present in almost all countries worldwide. With 34 international Fronius companies and sales and service partners and representatives in over 60 countries, we are always available for our customers. Our global sales and service network ensures the best customer service. Rapid support when needed minimises downtime and saves customers money.

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