

A red Fronius iWave AC/DC 500i robotic welding power source is shown in a factory setting. The machine's control panel features a color touchscreen displaying welding parameters: 162 A, 170A, and 10.7 V. A robotic welding torch is visible in the background, performing a weld on a metal component. The machine has a prominent 'iWAVE' logo on its side.

iwave

for automated
welding solutions



Total flexibility



iWave—The all-rounder in automated welding

Top quality for every weld and every material: thanks to new technology, the iWave offers advantages for more targeted heat input, significantly improved ignition, and therefore maximum control over the arc.

Cold wire TIG welding made easy: with DynamicWire, key challenges of TIG cold-wire welding, such as gap bridging and quickly identifying the right parameters, are incredibly simple. Process control is elevated to a new level.

Need a system that can master the full array of welding challenges? Then iWave Multiprocess PRO is the perfect choice. In addition to offering every imaginable TIG and plasma function, it also accommodates all MIG/MAG welding process variants.

iWave

The advantages for you



Dynamic wire feeding

Gap bridging up to 30% possible

The DynamicWire dynamic wire feeding system automatically adjusts the wire feed speed to the current conditions during welding. The wire is always supplied in the exact quantity required, allowing air gaps of up to 30%* to be compensated for and welded.

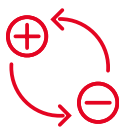
*in relation to the material thickness



Targeted heat input

Maximum control of the weld pool

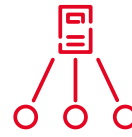
CycleTIG allows you to control the arc, in turn giving you maximum control over heat input. Short welding times allow you to keep the weld pool safely and easily under control, making it simple to weld even the thinnest materials.



Reproducible ignition

Up to 71% less ignition delay

Our RPI auto intelligent ignition function offers fast and, above all, reproducible ignition—without any manual adjustment of the ignition parameters and with any material properties.



Multiprocess PRO

One system for every process

Complete freedom during automated welding: with iWave Multiprocess PRO, you can use all MIG/MAG process variants in addition to all TIG and plasma functions within a single system. The modular concept allows you to individually expand your high-tech welding machine platform with the Standard, Pulse, PMC, LSC, or CMT welding packages.



Spring-loaded CrashBox

Z-triggering in minus direction

Improved seals on the new CrashBox prevent the ingress of dirt, meaning that this has no influence on the accuracy of the TCP (Tool Center Point). In the event of collisions, the option of Z-triggering in the minus direction is also advantageous.



Interfacing

One interface for every process and a uniform process image

Thanks to the standard high frequency resistance, all existing interfaces of the TPS/i welding systems can now also be used for iWave or TIG and plasma welding without additional hardware. There is now one interface for every process, including a uniform process image.

iWave

300i–500i



Interfaces

One interface for every weldable process and uniform process images. Any type of fieldbus communication possible.

One welding machine for every welding process (TIG incl. HF, plasma, MIG/MAG incl. all welding packages) with no compromise to quality.



External gas regulator box

Control of two different gases outside the welding machine or the wirefeeder.



External high frequency

Reliable high frequency ignition when using long hosepacks from approx. 12 m in length.



SplitBox extension hosepack

The media required for the welding process—such as current, gas, or water cooling—are consolidated in the SplitBox for availability directly at the robot.



Water cooling

Optional water cooling depending on the required cooling capacity and application.





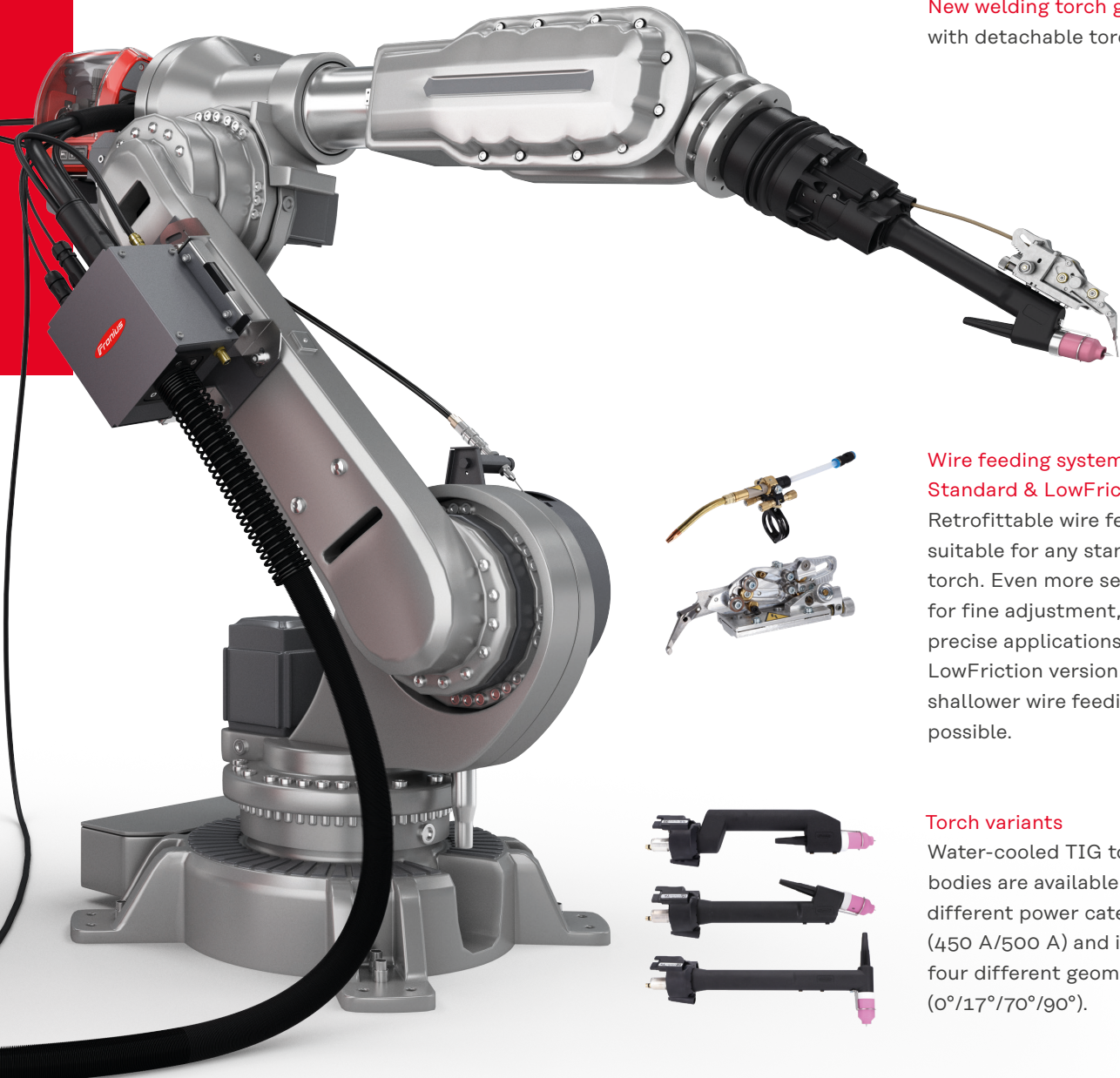
PushPull configuration: CWF 25i Drive

We recommend the PushPull configuration for long wire feeding distances of up to 18 m or thin and soft filler metals such as aluminum. Existing hosepacks can be easily upgraded.



CWF 25i R wirefeeder

Mechanized cold-wire feed for robot systems based on SpeedNet communication—available as a right and left-hand version.

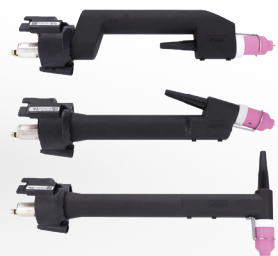


New welding torch generation with detachable torch body.



Wire feeding system Standard & LowFriction

Retrofittable wire feeding system suitable for any standard welding torch. Even more setting options for fine adjustment, to enable precise applications with the LowFriction version. Steeper and shallower wire feeding angles are possible.



Torch variants

Water-cooled TIG torch bodies are available in two different power categories (450 A/500 A) and in four different geometries (0°/17°/70°/90°).



TFC system

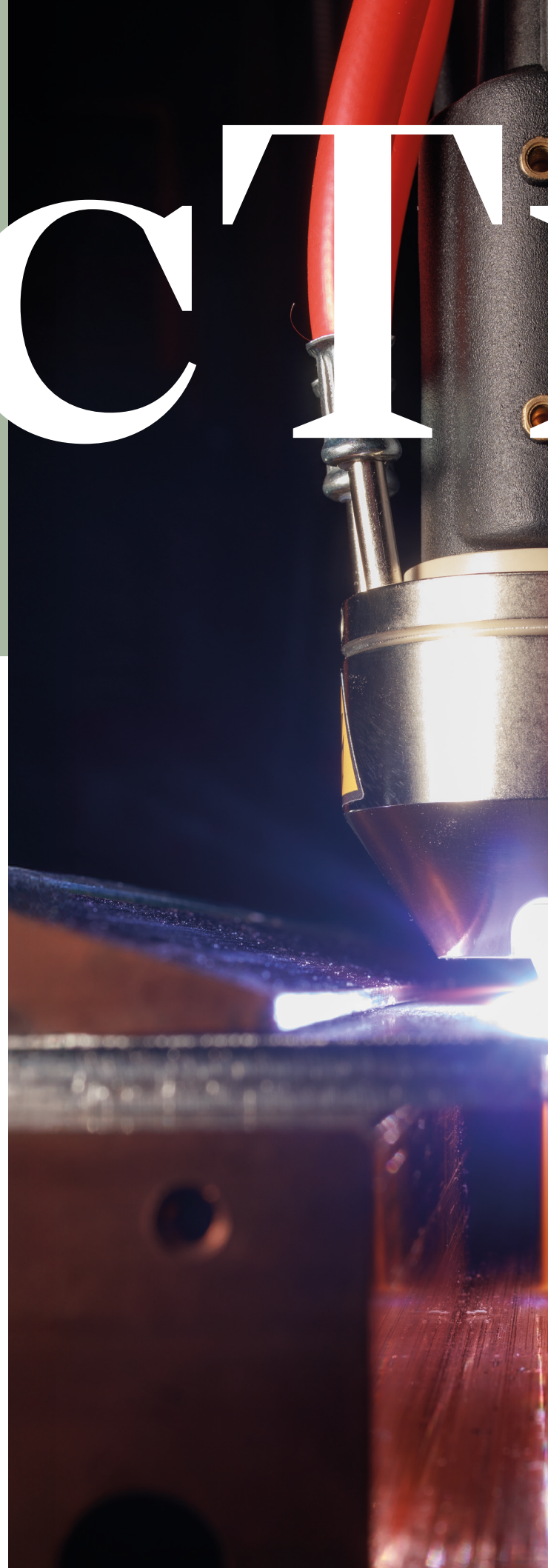
Rapid electrode change in just two steps, similar to a mechanical pencil system.

ArcTig

The revolution in TIG keyhole welding

ArcTig is a TIG keyhole welding process for mechanized welding of longitudinal seams. A special electrode clamping system delivers optimal cooling for the tungsten electrode, creating the conditions for significantly higher welding speeds compared to conventional TIG welding and welding depths similar to plasma welding.

Whether it's for the construction of pipes or containers, or for use in aerospace technology—ArcTig offers the optimal solution for everyone who is looking for the very highest quality from their welds as well as a simple and, above all, cost-effective solution. If you're working with mechanized and robot-assisted applications, you can weld materials of up to 10 mm in a single pass without prep work. Experience the perfect balance between top quality and profitability with ArcTig, our innovative TIG welding process.



ios

The advantages for you



Increase your welding speed by up to 100 % compared to the conventional TIG process and boost efficiency by reducing prep work and rework

Spend less on filler metal thanks to a lower weld volume, including single-pass welding at high speeds

No time-consuming weld preparation for material thicknesses of up to 10 mm

Simple handling/parameterization

Single-pass welding up to a material thickness of 10 mm thanks to focused arc


More flexibility in terms of applications compared to plasma

Minimal dilution due to lower heat input

High weld quality

Quick torch change from TIG to ArcTig

Improved access thanks to freely adjustable electrode end



iWave—top quality and efficiency in

plasma welding

Experience the best of plasma welding with the iWave!

The iWave impresses with a sophisticated device concept that takes the general advantages of plasma welding to the next level by offering significant improvements in parameterization and handling. Existing TIG systems can be easily upgraded to a

plasma system—all you need is the OPT/i Plasma hardware option, a plasma welding torch, and the plasma welding package. The result is outstanding weld quality and maximum efficiency in every welding process.

The system's advantages for you

All-in-one welding machine

We build the hardware components required for plasma welding directly into the welding machine. This means that all parameters can be controlled centrally via a single interface.

A hosepack for TIG/plasma

The hosepack can be used for both TIG and plasma welding, which makes it easier to change processes.

Easy upgrade

Existing TIG systems can be quickly and easily upgraded to plasma.

Precise control of plasma gas

Precise gas control is guaranteed with an accuracy of $\pm 5\%$.

Improved gas shield

The newly designed torch components and wear parts increase the gas shield by around 30%.

Process advantages

Higher welding speeds

Soft plasma enables up to 20% higher welding speeds compared to conventional TIG welding—and increases the speed by as much as 100% for the plasma keyhole process.

Completely spatter and pore free

Achieve maximum quality with spatter-free and pore-free welds.

Larger tolerance/process window

Plasma allows for tolerance compensation (gap/offset) of up to 10% of the material thickness.

Longer electrode service life

The electrode is located inside the torch body, where it is less exposed to environmental influences. This also gives the product a significantly longer service life.

No weld preparation

Save time and effort by eliminating the time-consuming process of weld preparation.

Less filler metal

Up to 30% less filler metal needed.

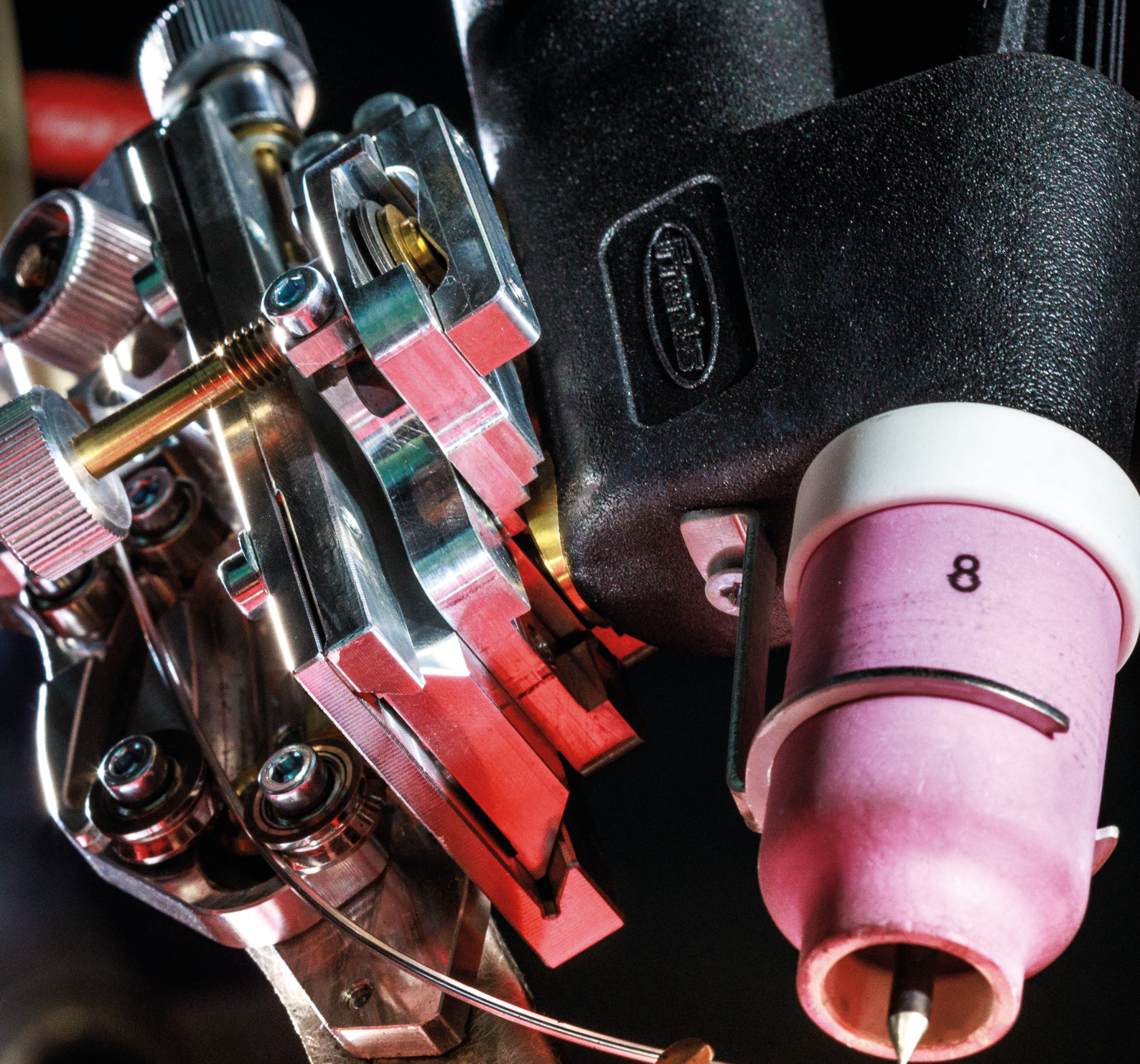
Higher penetration

Achieve higher penetration with minimal distortion compared to conventional TIG welding.



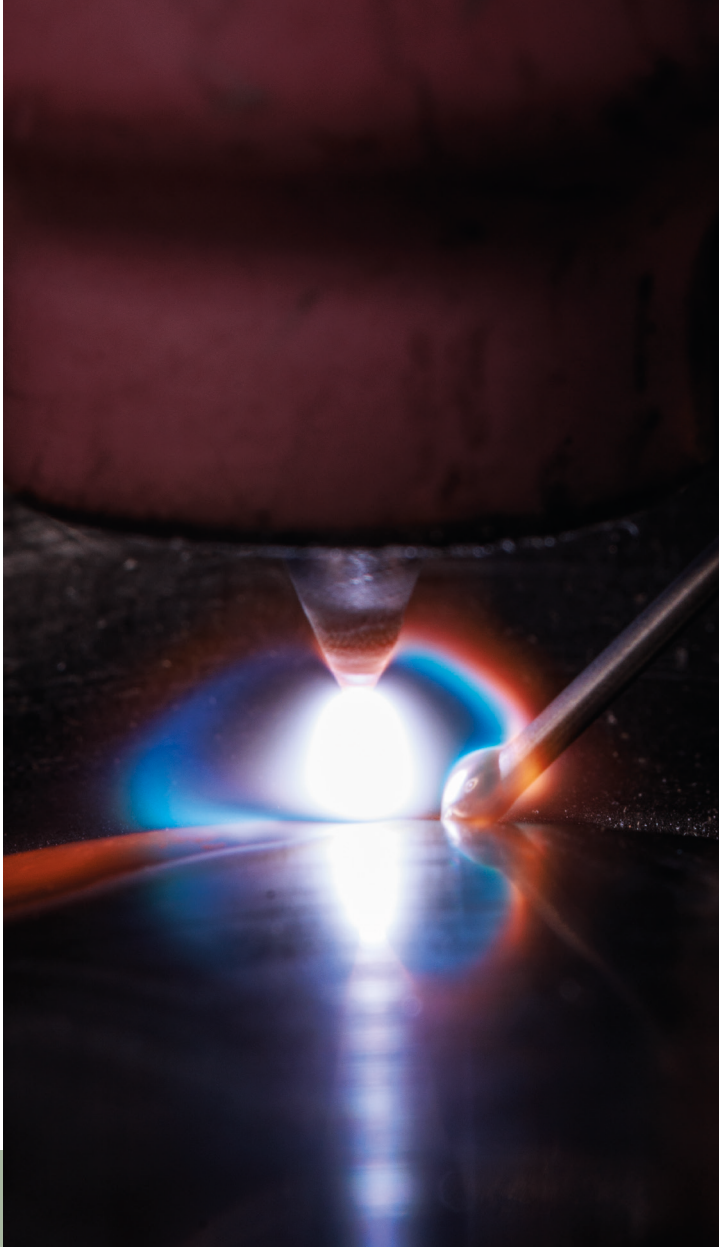
Torch variants

Water-cooled plasma torch bodies are available in two different power categories (200 A/350 A) and in four different geometries ($0^\circ/17^\circ/70^\circ/90^\circ$).



Dynamic Wire

Active wire control—
automated TIG
cold-wire welding
made easy



Despite its advantages, automated TIG cold-wire welding presents various difficulties. Finding the right welding parameters is a key challenge. With DynamicWire, you only have to set one parameter: the rest are stored using material-specific characteristics.

The innovative advantage of Fronius TIG DynamicWire compared to conventional continuous wirefeeding in cold wire systems lies in its automatic self-regulation. The welding machine actively adjusts the wire speed to the current conditions. Air gaps of up to 30%* can be welded with DynamicWire—previously almost impossible with TIG cold-wire welding.

The result? Perfect welds every time.

Existing iWave cold-wire systems can be easily upgraded with the patented TIG DynamicWire Welding Package through software activation.



The TIG DynamicWire Welding Package can be quickly added to automated iWave systems with a cold-wire feed from 300i-500i. Simply activate the software and get welding!

The advantages for you

- The right wire speed, every time
- Air gap bridging of up to 30%* possible
- Set just one parameter to start welding
- Suitable for TIG and plasma applications

*in relation to the material thickness

For targeted
heat input

Cycle



Connected
by welding | United
by passion



We focus on connections –
between people, industries,
and metals. Find out
more here.

www.fronius.com/welding/aboutus



TIG

TIG welding made easier thanks to the CycleTIG function. Based on the principle of stitch welding, this function offers additional setting options and new parameter combinations for improved welding results.



Targeted heat input

Very targeted heat input can be generated by means of a short interval time, a low or no base current, and a long interval pause time. Areas of application include edge application or repair work on die-cast parts.



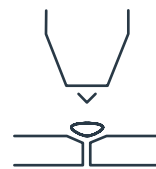
Outstanding weld appearance

Combined with the tacking function, CycleTIG enables the welder to achieve an excellent seam appearance.



Fewer temper colors

The use of CycleTIG reduces temper colors and therefore keeps the need for rework to a minimum.



Easy control of the weld pool

Thanks to the short welding time, the weld pool can be well-controlled with ease. This prevents burn-through, particularly in corner and butt welds.

Complete flexibility—One welding machine for all processes and process variants.

Whether you're using TIG, plasma, or MIG/MAG—the iWave 300i, 400i, or 500i with the Multiprocess PRO hardware option give you complete freedom during welding.

The key difference between this system and conventional multiprocess devices is that in addition to all high-tech TIG and plasma functions, you also have access to every process variant from the field of MIG/MAG welding.

Equipped with the right peripheral components such as welding torches and wirefeeders, you can put together the precise functions you need from the modular welding packages—Standard, Pulse, PMC, LSC, CMT, PMC AC, and CMT AC. Additive manufacturing is also an option with the iWave.

Equipped for
the challenges
of tomorrow

Multiprooc



The advantages for you

Flexible and adaptable

Equipped today for the challenges of tomorrow. Are you faced with new welding tasks that demand a different welding process? No problem with iWave—the same welding machine can be used for every welding process, so there's no need to buy a new one.

Reduced space requirement

One welding machine for every process: instead of three different welding machines (TIG, plasma, and MIG/MAG), you need space for just one.

Unbeatable quality

All our available TIG, plasma, and MIG/MAG welding process variants (Standard, Pulse, LSC, PMC, and CMT) can be retrofitted quickly and easily. In fact with iWave AC/DC, even PMC AC, CMT AC, and additive manufacturing are possible.

Time-saving

Process change in a single step: equipped with the right components, a fully automated process change from TIG to MIG/MAG is possible.

Save on resources and running costs

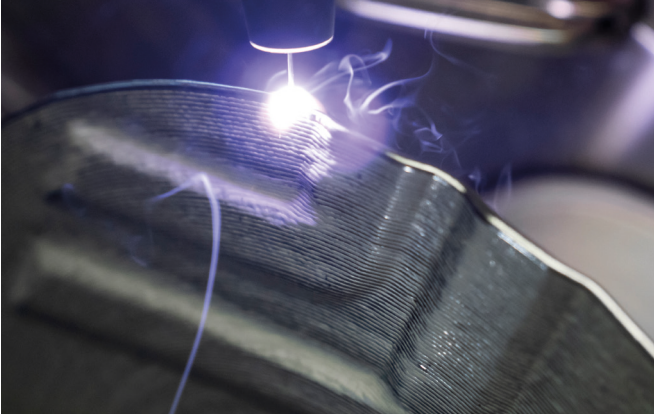
If just one welding machine is required, it only needs to be packed up and transported to the customer or place of use once. It also means that only one machine has to undergo regular maintenance—and ultimately that there's only one machine to dispose of or recycle at the end of its service life.



cess

PRO

CMT Additive Pro



Additive manufacturing with iWave

Thanks to its revolutionary reversing wire movement, the CMT process is extremely stable, making it a perfect solution for additive manufacturing. This means that the layers can be built up spatter-free, consistently, and evenly.

We developed the CMT Additive Pro welding characteristics specifically for additive manufacturing. They make it easy to achieve a reproducible uniform layer structure, as well as deal with other challenges.

With the iWave 300i-500i series, the Multiprocess PRO option, and the CMT Welding Package, we offer a complete solution for additive manufacturing. The perfectly tuned equipment is compatible with all conventional robot systems thanks to suitable interfaces.

CMT AC

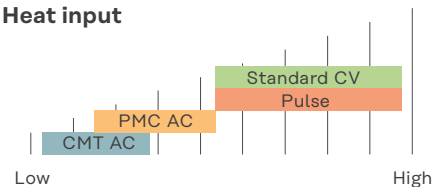
The CMT AC process achieves a remarkably low heat input with the same deposition rate by reversing the wire movement and the polarity of the wire electrode. With this technology, you can easily adjust the positive and negative components with the help of correction parameters and thus achieve extremely precise control over the heat input.

Our solution for
even lower heat
input during
MIG/MAG
welding

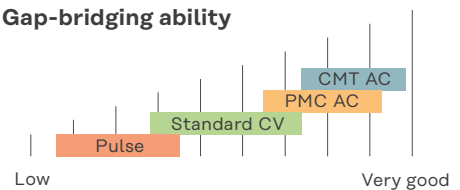


Base material: AlMg3
Filler metal: AlMg4.5
Sheet thickness: 1.5 mm
Air gap: 1.5 mm

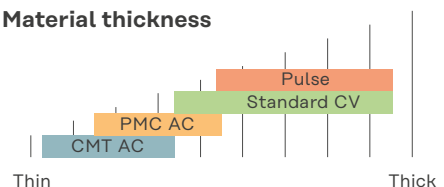
Heat input



Gap-bridging ability



Material thickness



The advantages for you

- CMT AC is the Fronius MIG/MAG process with the lowest heat input
- Excellent gap-bridging ability
- Highly controllable heat input—and therefore perfect for additive manufacturing processes
- Gleaming welds due to reduced magnesium oxides (for AlMg wires)
- Process with the lowest welding fume emissions



Full connectivity

iWave is equipped with the most important communication standards. Wirelessly connect peripheral devices to the welding machine in next to no time—meaning anything from high-tech welding helmets (such as the Vizor Connect) to remote controls. Use WLAN to integrate welding machines directly into your network for easy firmware updates.



Central data documentation with WeldCube Premium

Minimal administration and maximum overview: WeldCube Premium significantly reduces your documentation workload by storing your welding data centrally in a database. Intelligent management, statistics, and analysis functions including graphic visualization support you in controlling welding production.



Cybersecurity

Data security is also becoming increasingly important in welding production. We guarantee the highest security standards to protect your welding data and the entire welding system from unauthorized access. The use of the HTTPS protocol increases security when transmitting sensitive data.

Performance

for the
industrial
future





SmartManager

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 minimizes 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 documentation: Get complete data documentation at a glance, with export function
- Signal visualization 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
- Back-up and recovery: Easy backup allows you to seamlessly restore data when replacing hardware



User management

Complete control: the integrated authorization system allows you to assign individual permissions to each user. Thanks to NFC, when someone logs in with a key card or fob, the system immediately knows what they are (and are not) allowed to do. And if you want the perfect solution for assigning and administering authorizations for multiple welding machines centrally, you need look no further than our Central User Management.

Ignition

iWave takes TIG welding ignition behavior to a whole new level. The high frequency ignition process has been optimized and the ignition behavior adapted to the different electrode diameters.

Stable and
reproducible

RPI auto**

Up to 71%* less
ignition delay

Are you looking for a faster ignition process that is fully reproducible—regardless of the material characteristics involved? If so, iWave offers an off-the-shelf solution in the form of RPI auto. The new ignition mode is the next logical step in the development of the proven “RPI on” function. The welding machine now makes changes to the ignition settings automatically, including when it’s necessary to counter deteriorations in ignition—and without any need for manual intervention.

Evaluation overview	RPI off	RPI on	RPI auto
Reproducible ignition	●●○○	●●●○	●●●●
Lowest ignition delay	●●●○	●○○○	●●●●
Lowest electrode load	●●●○	●○○○	●●●○
Gentle action on the weld surfaces	●●●●	●●○○	●●●○

* Compared to RPI off, test series conducted under laboratory conditions: 200 A welding current | 0.5 s welding time | CrNi | 1000 ignitions

** Only for iWave AC/DC





Tacking

Time savings of up to 50%
when tacking materials

Pulse currents are used to make the weld pool oscillate. This makes it easier to tack components together and reduces tacking time, leaving hardly any or no temper colors on the tacking points.



Waveforms (AC/DC)

The right arc for every
application

Weld however you like: for AC welding, iWave allows you to select the waveforms yourself. In other words, the ones that characteristically produce your preferred weld properties for the welding task at hand. If necessary, you can also combine different waveforms.



Automatic cap-shaping

in just 2 seconds

Save time: use this function to quickly form a cap based on the set electrode diameter.

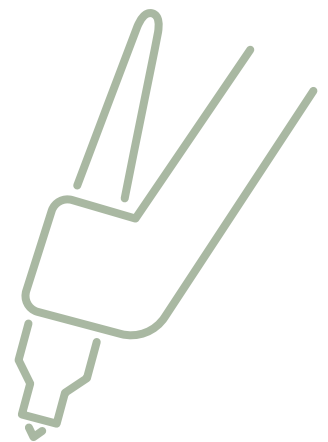


Automatic gas post-flow

Protection for the tungsten electrode

Welding without oxidation: to achieve this, iWave provides a gas shield for the tungsten electrode and the weld. The gas post-flow time is calculated automatically, depending on the set welding current and the electrode diameter.

TIG- Functions





More information at
www.fronius.com/iwave-automated

Function overview	iWave 300i AC/DC	iWave 400i AC/DC	iWave 500i AC/DC	iWave 300i DC	iWave 400i DC	iWave 500i DC
MIG/MAG pulsed-arc welding	✓	✓	✓	✓	✓	✓
RPI on	✓	✓	✓			
RPI auto	✓	✓	✓			
SoftStart (touchdown ignition)	✓	✓	✓	✓	✓	✓
HF ignition	✓	✓	✓	✓	✓	✓
Touch HF ignition	✓	✓	✓	✓	✓	✓
TIG Comfort Stop	✓	✓	✓	✓	✓	✓
Arc break voltage	✓	✓	✓	✓	✓	✓
Automatic cap-shaping	✓	✓	✓			
Waveform setting (AC/DC)	✓	✓	✓			
Tacking	✓	✓	✓	✓	✓	✓
Synchronized welding	✓	✓	✓	✓	✓	✓
Automatic gas post-flow	✓	✓	✓	✓	✓	✓
CEL mode	✓	✓	✓	✓	✓	✓
CycleTIG	✓	✓	✓	✓	✓	✓
Cold- & DynamicWire	✓	✓	✓	✓	✓	✓
Multiprocess PRO	✓	✓	✓	✓	✓	✓
Generator-compatible	✓	✓	✓	✓	✓	✓
Multivoltage 200–600 V	✓	✓	✓	✓	✓	✓
Cooling type	Gas-cooled or water-cooled					
Connectivity (WLAN, NFC, Bluetooth)	✓	✓	✓	✓	✓	✓
Ethernet and SpeedNet	as standard					
Plasma welding	✓	✓	✓	✓	✓	✓
ArcTig (TIG keyhole welding)	✓	✓	✓	✓	✓	✓
Hot-wire welding	✓	✓	✓	✓	✓	✓
TIG/plasma PushPull	✓	✓	✓	✓	✓	✓
ArcTig PowerSharing		✓	✓		✓	✓

Technical data iWave

	iWave 300i DC	iWave 300i DC MV/NC	iWave 400i DC	iWave 400i DC MV/NC	iWave 500i DC	iWave 500i DC MV/NC
Weight	40.0 kg / 88.2 lb	38.0 kg / 83.7 lb	41.0 kg / 90.4 lb	39.5 kg / 87.1 lb	43.0 kg / 94.8 lb	41.0 kg / 90.4 lb
Dimensions / width	300 mm / 11.8 in	300 mm / 11.8 in	300 mm / 11.8 in	300 mm / 11.8 in	300 mm / 11.8 in	300 mm / 11.8 in
Dimensions / height	510 mm / 20.0 in	510 mm / 20.0 in	510 mm / 20.0 in	510 mm / 20.0 in	510 mm / 20.0 in	510 mm / 20.0 in
Dimensions / length	706 mm / 27.8 in	706 mm / 27.8 in	706 mm / 27.8 in	706 mm / 27.8 in	706 mm / 27.8 in	706 mm / 27.8 in
Mains frequency	50-60 Hz					
Mains voltage	3 x 400 V	3 x 200 – 230 V 3 x 380 – 575 V	3 x 400 V	3 x 200 – 230 V 3 x 380 – 575 V	3 x 400 V	3 x 200 – 230 V 3 x 380 – 575 V
Mains voltage tolerance	+/- 15%	+/- 10%	+/- 15%	+/- 10%	+/- 15%	+/- 10%
Welding current / duty cycle [10min/40 °C]	300 A / 40%	300 A / 40%	400 A / 40%	400 A / 40%	500 A / 40%	500 A / 40%
Welding current / duty cycle [10min/40 °C]	260 A / 60%	260 A / 60%	360 A / 60%	360 A / 60%	430 A / 60%	430 A / 60%
Welding current / duty cycle [10min/40 °C]	240 A / 100%	240 A / 100%	320 A / 100%	320 A / 100%	360 A / 100%	360 A / 100%
Maximum welding current	300 A	300 A	400 A	400 A	500 A	500 A
Minimum welding current	3 A					
Mark of conformity	CE, S	CE, CSA, S, CCC	CE, S	CE, CSA, S, CCC	CE, S	CE, CSA, S, CCC
Open circuit voltage	96 V	99 V	96 V	99 V	96 V	99 V
Working voltage range	10.1 – 22.0 V	10.1 – 22.0 V	10.1 – 26.0 V	10.1 – 26.0 V	10.1 – 30.0 V	10.1 – 30.0 V

	iWave 300i AC/DC	iWave 300i AC/DC MV/NC	iWave 400i AC/DC	iWave 400i AC/DC MV/NC	iWave 500i AC/DC	iWave 500i AC/DC MV/NC
Weight	65.5 kg / 144.4 lb	63.5 kg / 139.9 lb	67.0 kg / 147.7 lb	65.0 kg / 143.3 lb	68.5 kg / 151.0 lb	66.5 kg / 146.6 lb
Dimensions / width	300 mm / 11.8 in	300 mm / 11.8 in	300 mm / 11.8 in	300 mm / 11.8 in	300 mm / 11.8 in	300 mm / 11.8 in
Dimensions / height	740 mm / 29.1 in	740 mm / 29.1 in	740 mm / 29.1 in	740 mm / 29.1 in	740 mm / 29.1 in	740 mm / 29.1 in
Dimensions / length	706 mm / 27.8 in	706 mm / 27.8 in	706 mm / 27.8 in	706 mm / 27.8 in	706 mm / 27.8 in	706 mm / 27.8 in
Mains frequency	50-60 Hz					
Mains voltage	3 x 400 V	3 x 200 – 230 V 3 x 380 – 575 V	3 x 400 V	3 x 200 – 230 V 3 x 380 – 575 V	3 x 400 V	3 x 200 – 230 V 3 x 380 – 575 V
Mains voltage tolerance	+/- 15%	+/- 10%	+/- 15%	+/- 10%	+/- 15%	+/- 10%
Welding current / duty cycle [10min/40 °C]	300 A / 40%	300 A / 40%	400 A / 40%	400 A / 40%	500 A / 40%	500 A / 40%
Welding current / duty cycle [10min/40 °C]	260 A / 60%	260 A / 60%	360 A / 60%	360 A / 60%	430 A / 60%	430 A / 60%
Welding current / duty cycle [10min/40 °C]	240 A / 100%	240 A / 100%	320 A / 100%	320 A / 100%	360 A / 100%	360 A / 100%
Maximum welding current	300 A	300 A	400 A	400 A	500 A	500 A
Minimum welding current	3 A					
Mark of conformity	CE, S	CE, CSA, S, CCC	CE, S	CE, CSA, S, CCC	CE, S	CE, CSA, S, CCC
Open circuit voltage	96 V	101 V	96 V	101 V	96 V	101 V
Working voltage range	10.1 – 22.0 V	10.1 – 22.0 V	10.1 – 26.0 V	10.1 – 26.0 V	10.1 – 30.0 V	10.1 – 30.0 V

We take responsibility

We believe in sustainability

Like all of our products, iWave has been designed and built with sustainability in mind—by which we mean a long service life, reparability, and recyclability. By using the latest technology, we help to take the pressure off people and the environment, to safeguard the future for subsequent generations by making it one worth living in. When developing the new iWave series, care was taken to install the components in such a way that they can be serviced and replaced individually. New technologies reduce power losses and gas consumption, thereby conserving resources.

The highest service quality

A reliable partner with a global presence: Fronius is active and present in almost all countries worldwide. With 38 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 minimizes downtimes and saves customers money.



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