

# Suvremeni postupci zavarivanja

## TIG

## DynamicWire



**RCK** REGIONALNI CENTAR  
**SLAVONIKA 5.1** KOMPETENTNOSTI



Fronius International, Martin Willinger, 22.11.-2022-v01  
Information Class: Official

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# Why do we need modern welding processes?

- According to a study of the AWS (American Welding Society), the average age of a welder in the US is 55 years.
- Welding requires a high skill level, especially high hands on skills.
- High demand of skilled people.
- New materials, cost effectiveness, health policy, ... are challenging the welding industry.



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# Some people say.....

# WRONG



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# Introduction & definition

**TIG DynamicWire is based on active control of the wire feed.**

- ⊕ The actively interacting wire control expands the parameter window and simplifies handling.
- ⊕ The wire feed speed automatically adjusts to the amperage, arc length and seam type.
- ⊕ TIG Dynamic Wire works in Synergic mode.  
Current and wire feed speed do not have to be set separately.
- ⊕ There are individual characteristics for different wire diameters and alloys.
- ⊕ The fine-tuning of the wire feed speed can be done using the wire correction.

*TIG DynamicWire is currently only available for manual applications with iWave 300i-500i*

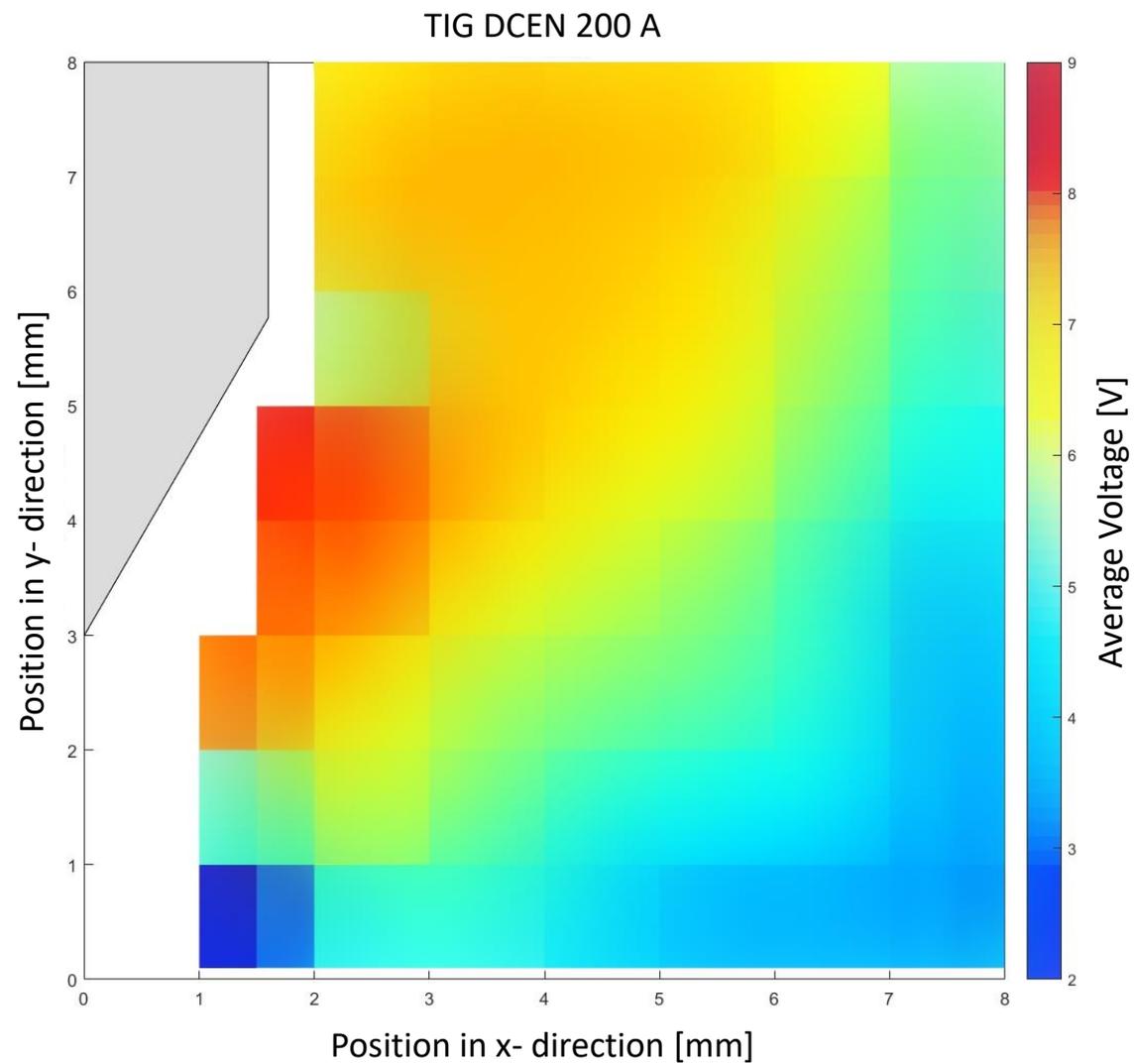


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# Voltage measurements in the arc plasma



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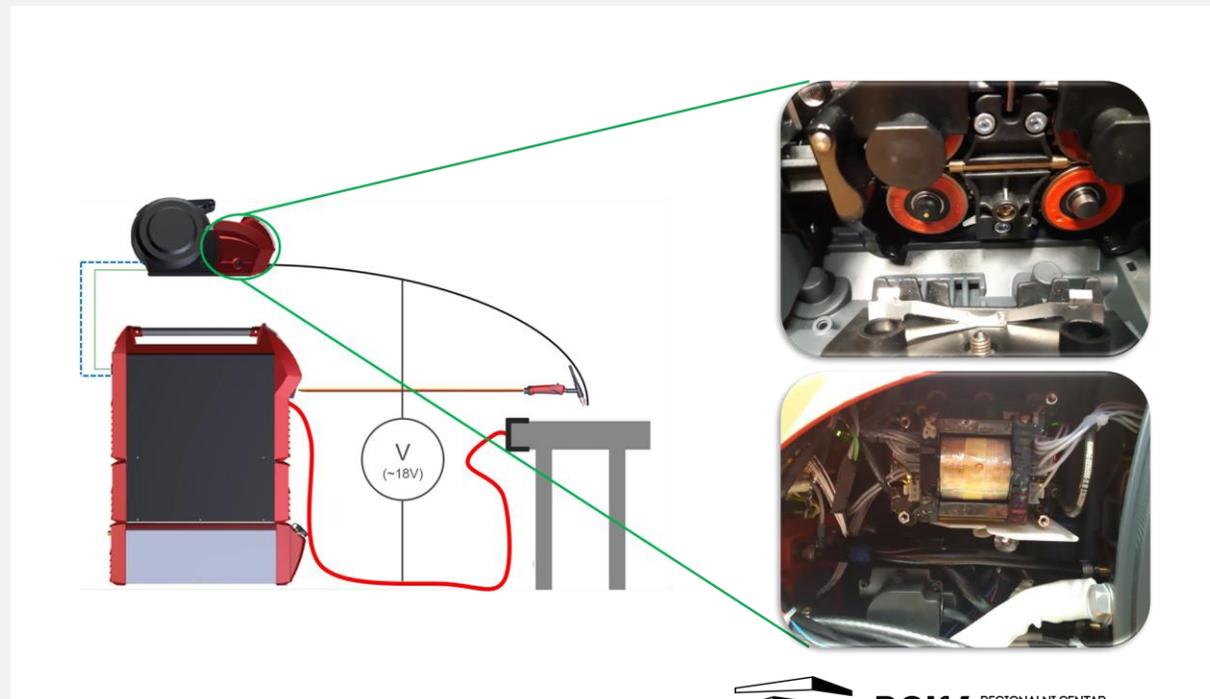
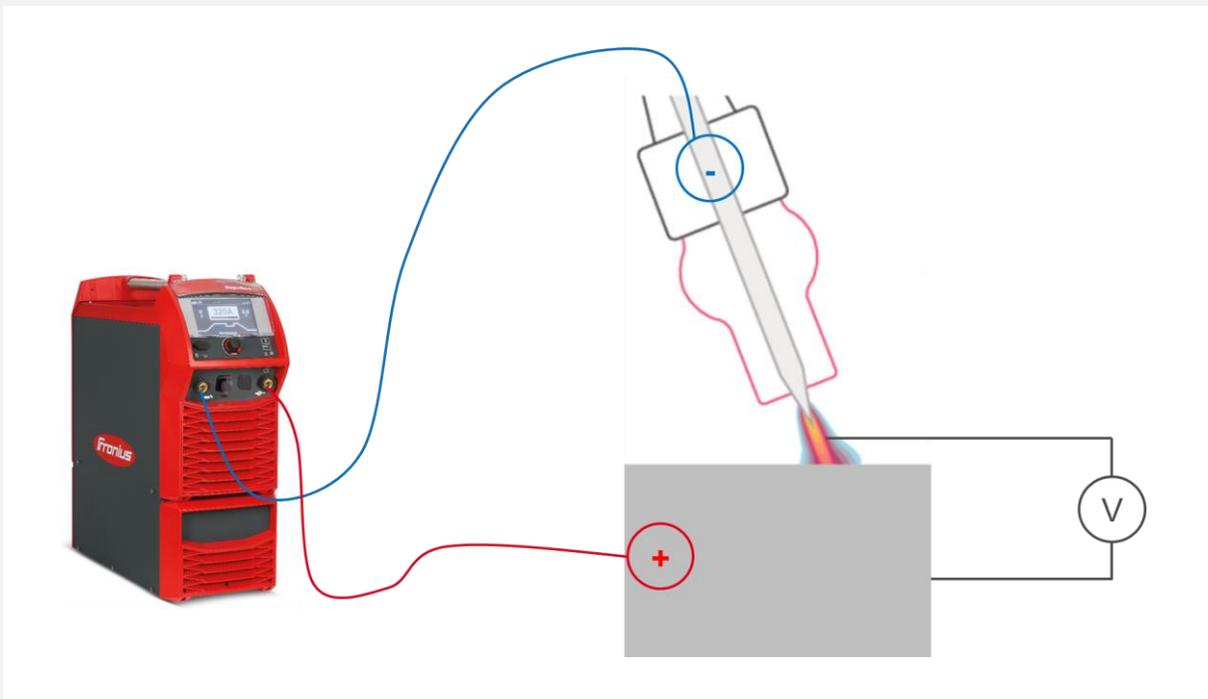
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# Basic principle

An **additional sensing interface** has been added to the existing SR63. In addition, the print "WiVolt" is needed to measure the voltage between the base material and the wire.



A **voltage** can be measured between the workpiece and the wire.



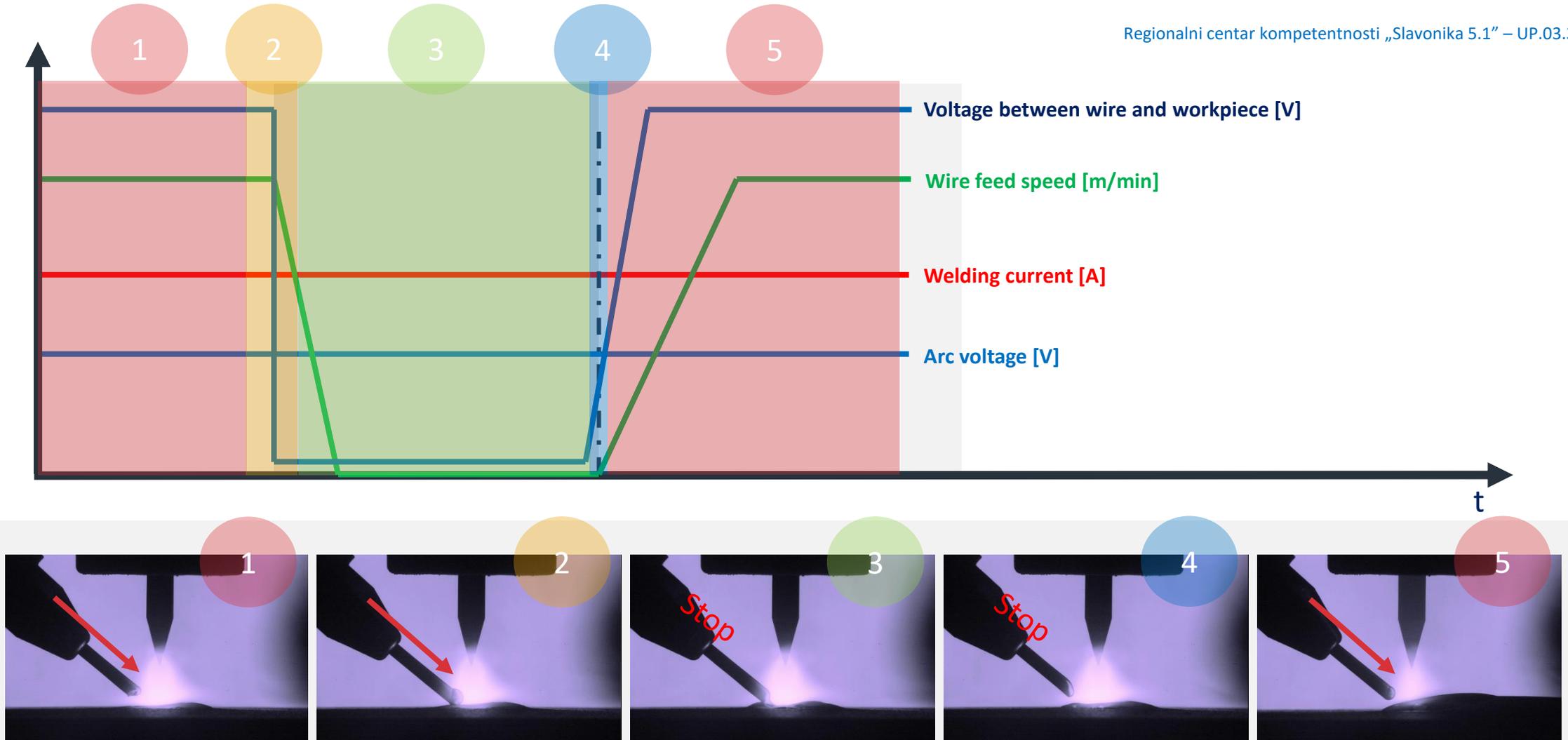
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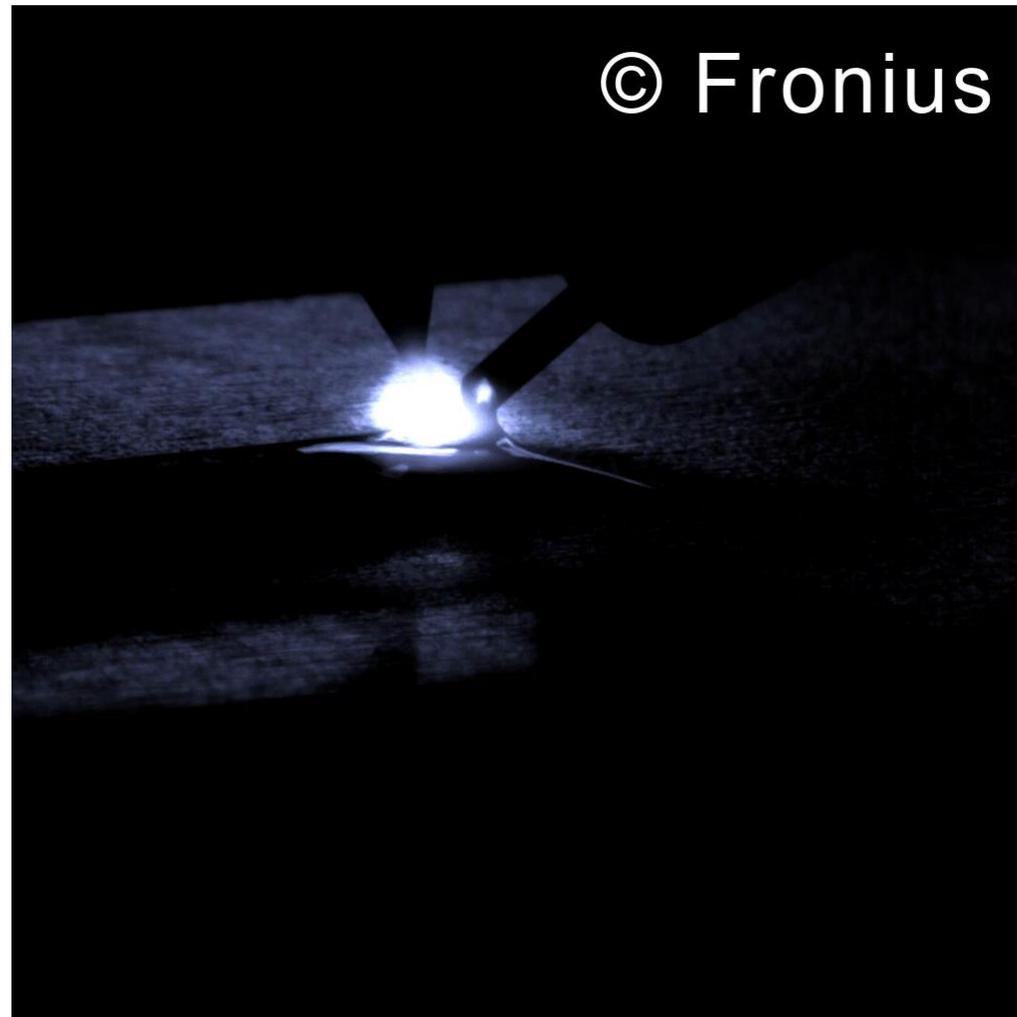
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# Basic principle TIG DynamicWire

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# Basic principle TIG DynamicWire



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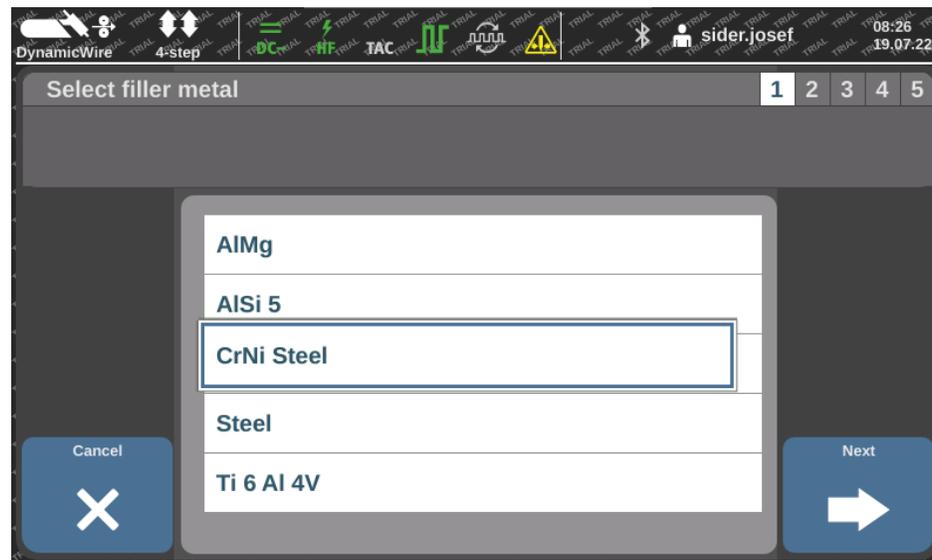
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# TIG synergic lines

Fronius is the world's first provider of an active wire regulation for TIG cold wire welding!



Different synergic lines for the most common filler materials are available as soon as the welding package TIG DynamicWire is activated!



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# TIG

NEW

# DynamicWire



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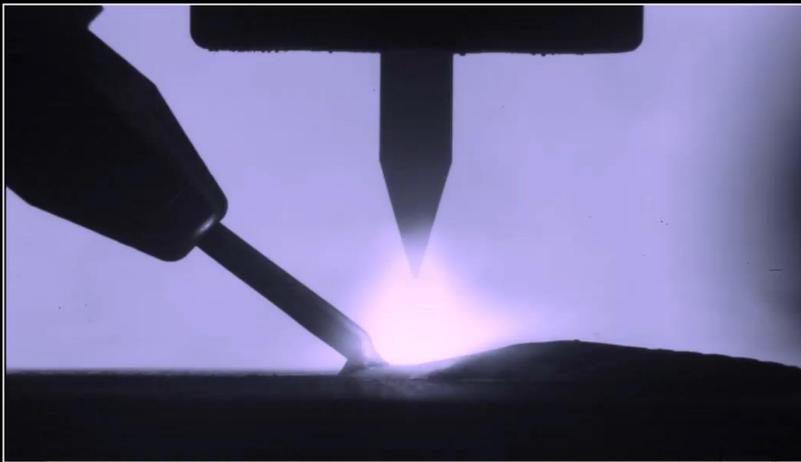
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Projekt je sufinanciran Europskim unijom iz Europskog socijalnog fonda.

# Videos [1/2]

## TIG DynamicWire / Pulse



## TIG wire correction

-5

0

+5

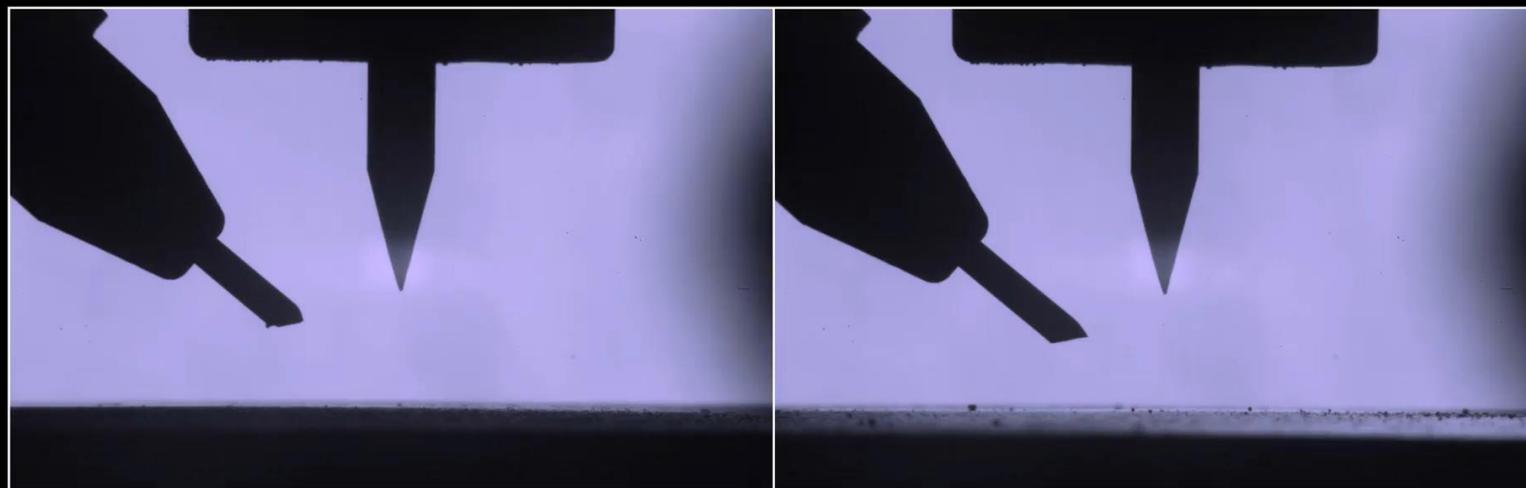


# Videos

## [2/2]



Wire position start



2mm

off



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Projekt je sufinansiran Evropskim fondom za regionalni razvoj



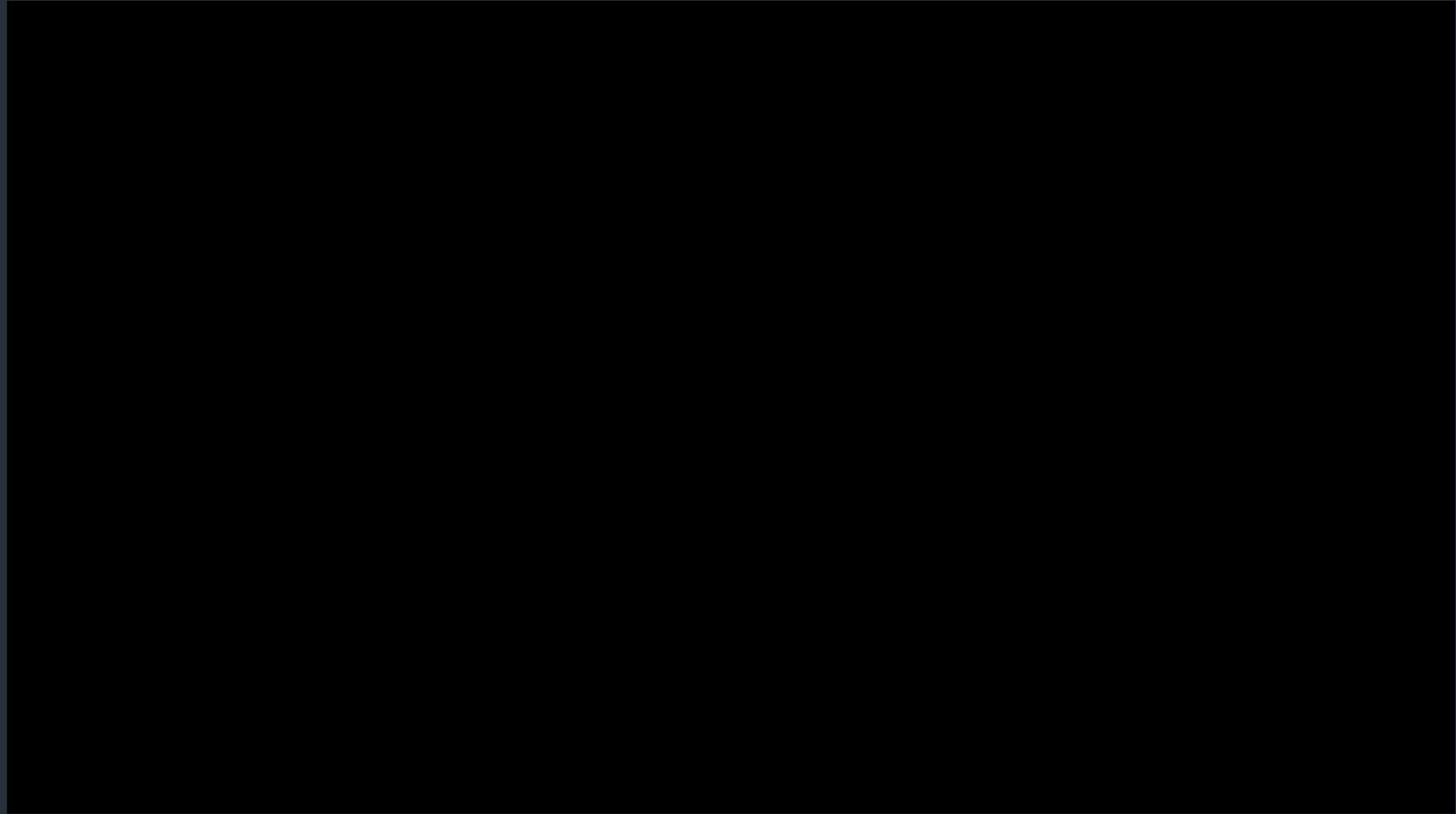


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Projekt je sufinansiran sredstvima iz Europskog socijalnog fonda

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**SAMPLE**

8mm sheet metal SS 1.4301  
fillet weld

# Practical advantages

Dynamic wire control results in a number of application-related advantages, e.g.

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- ⊕ **Improved wetting behaviour** (excitation of the weld pool)
- ⊕ Helps in case of **component tolerances** because the wire feeding regulates the amount of filler material
- ⊕ **Application-specific set-ups / characteristics** are available
- ⊕ **Simplified manual welding**, as tolerances and changes in arc length are corrected by the process
- ⊕ Wire and current no longer have to be set separately thanks to **TIG SynergicMode**



# Wire control in case of tolerances

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The average wire feed speed adapts to the arc length or to the gap that has to be bridged because of TIG DynamicWire, e.g. varying gap between 4 and 0mm



Weaving OFF



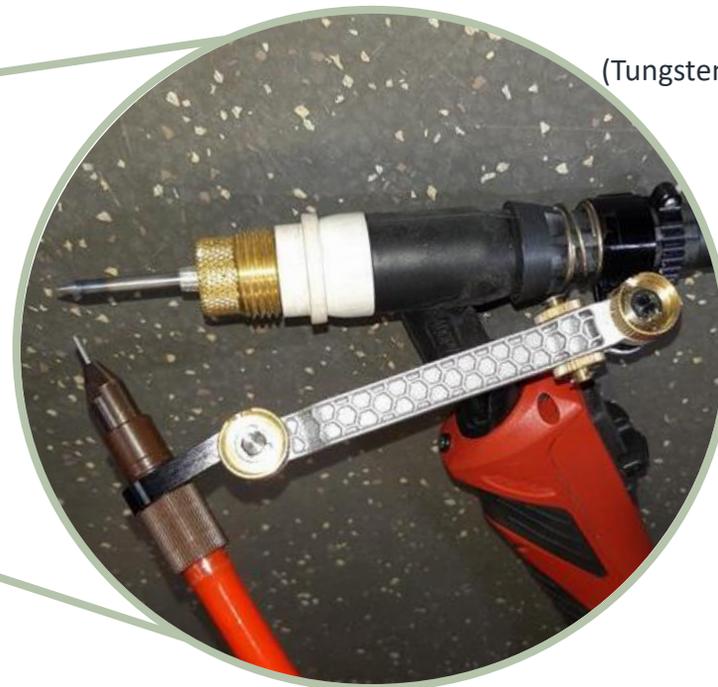
Weaving ON



# Wire feeding for manual applications

Change of tungsten electrode with  
TFC system

(Tungsten Fast Clamp, similar to „lead pencil  
system“)

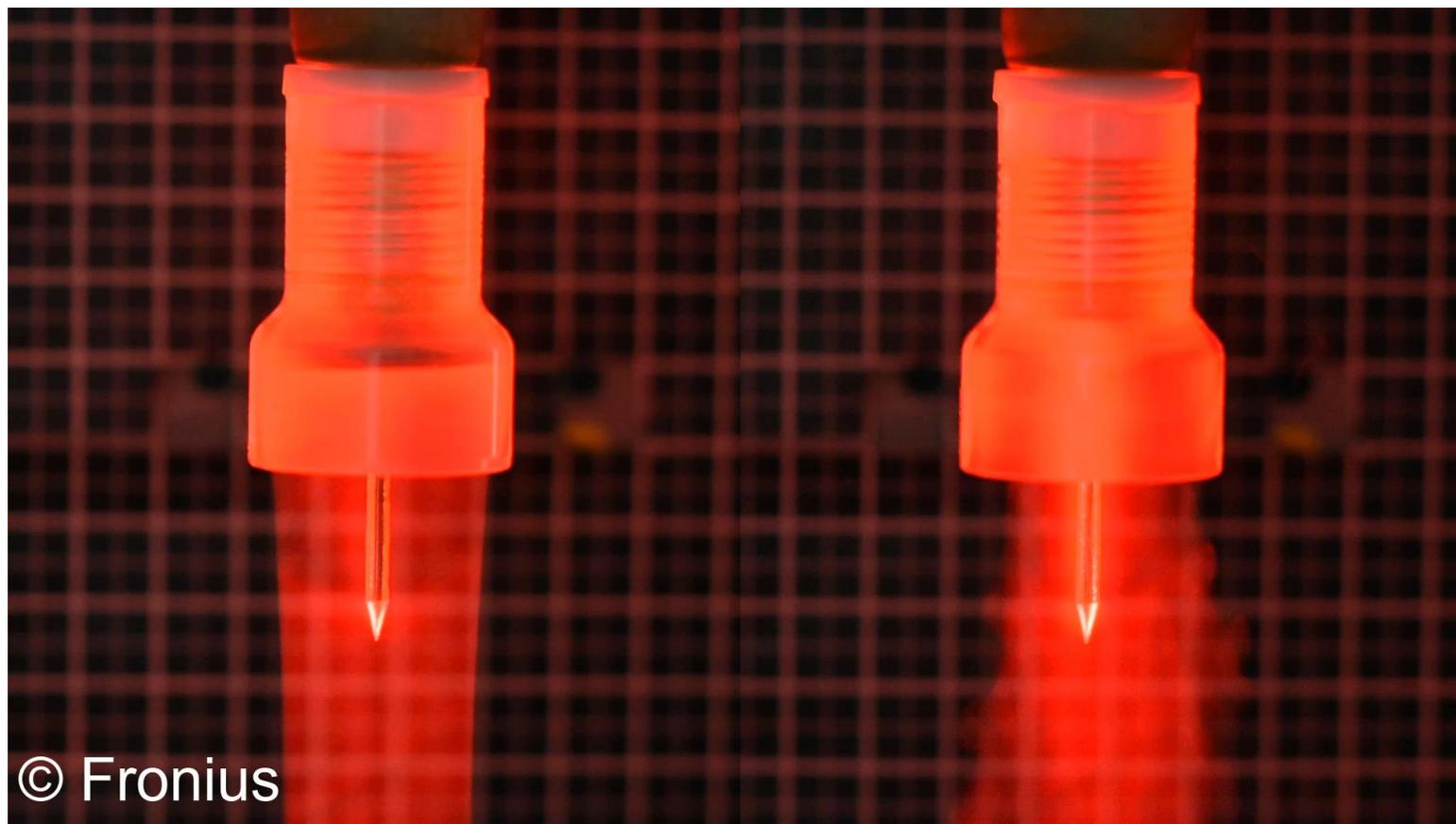


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# Champagner Gas Nozzle with tripple sieve

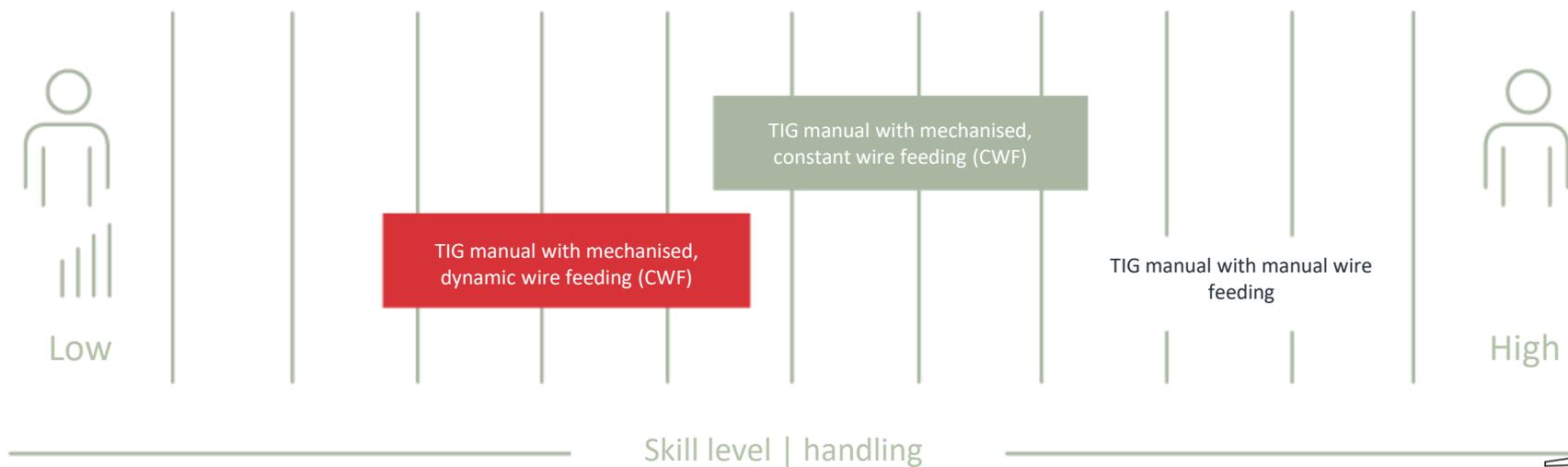


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# Comparison of TIG Cold- vs. DynamicWire

# „The easiest way of TIG cold wire welding!“



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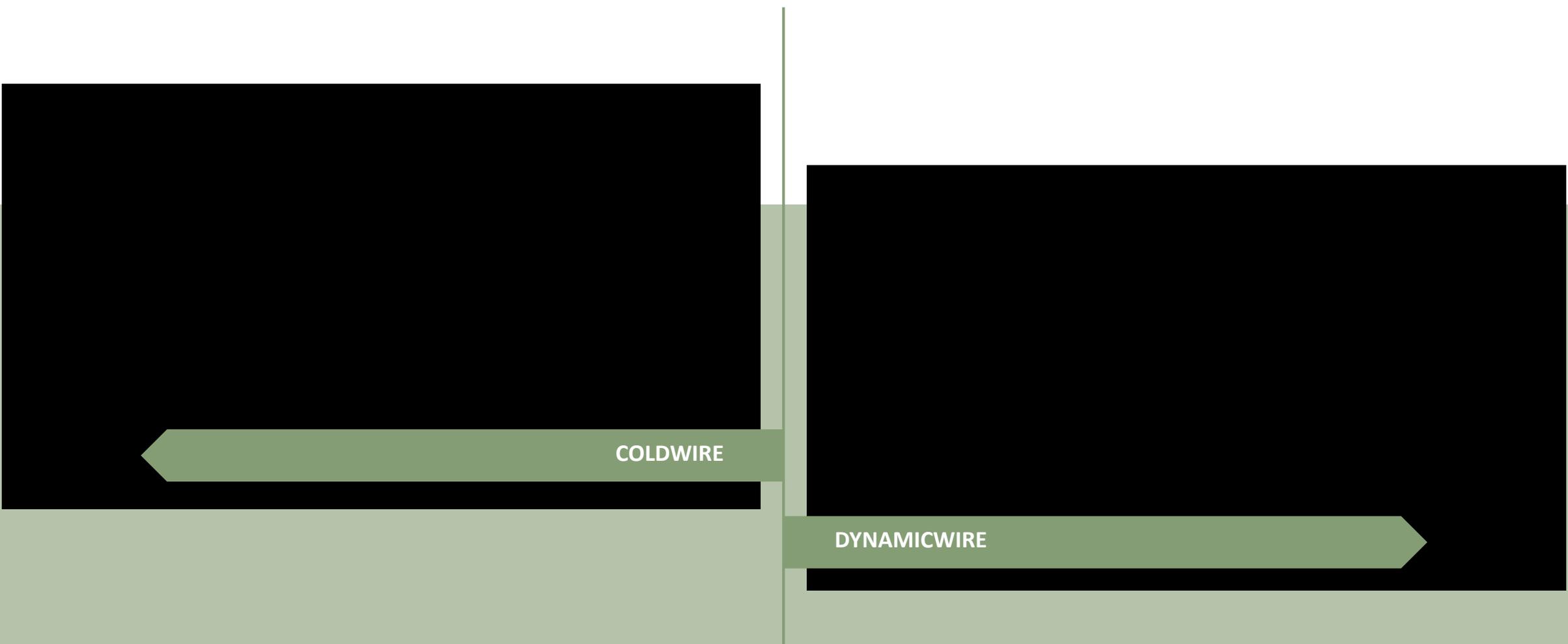


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# Comparison | V-seam



COLDWIRE

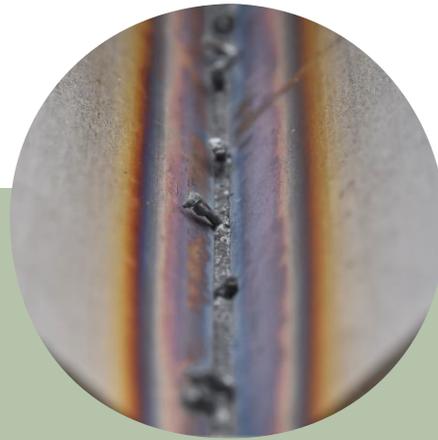
DYNAMICWIRE

# Comparison | V-seam

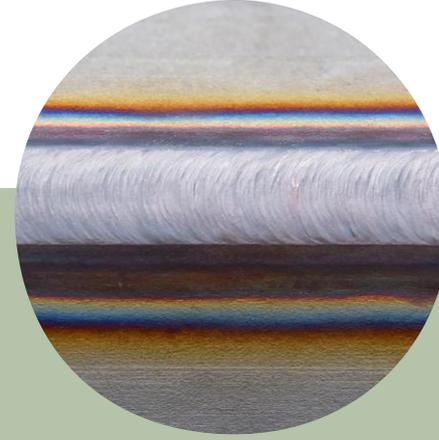
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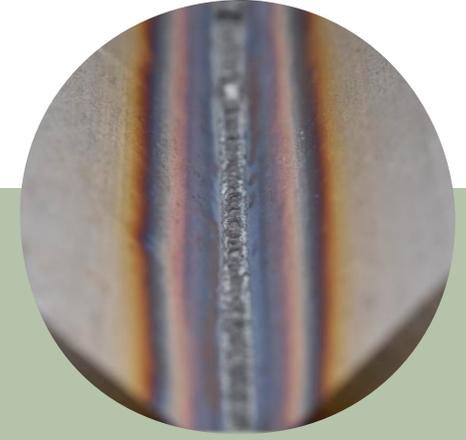
Weld seam



Root



Weld seam



Root

COLDWIRE

DYNAMICWIRE

# Comparison | Z-weaving

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COLDWIRE

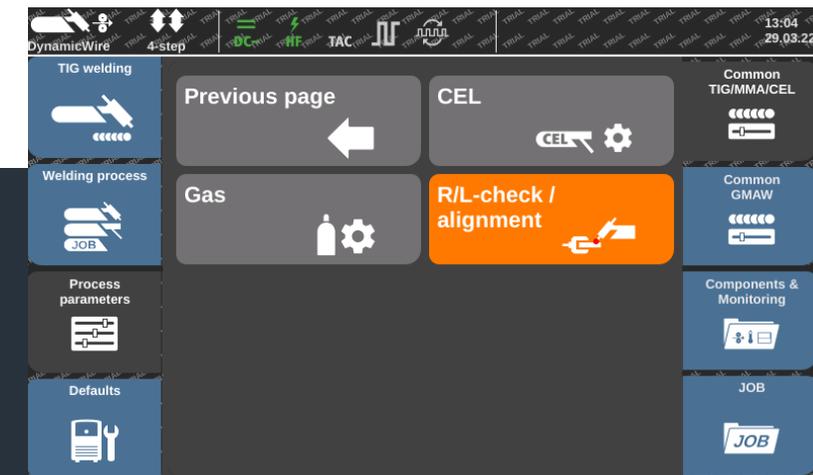
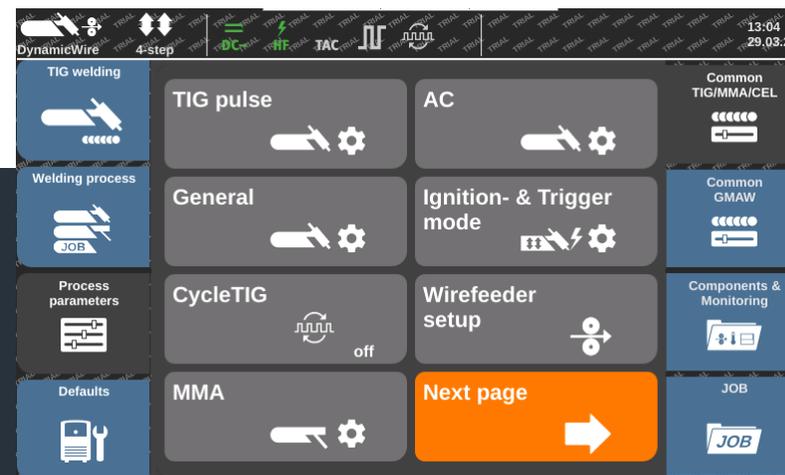
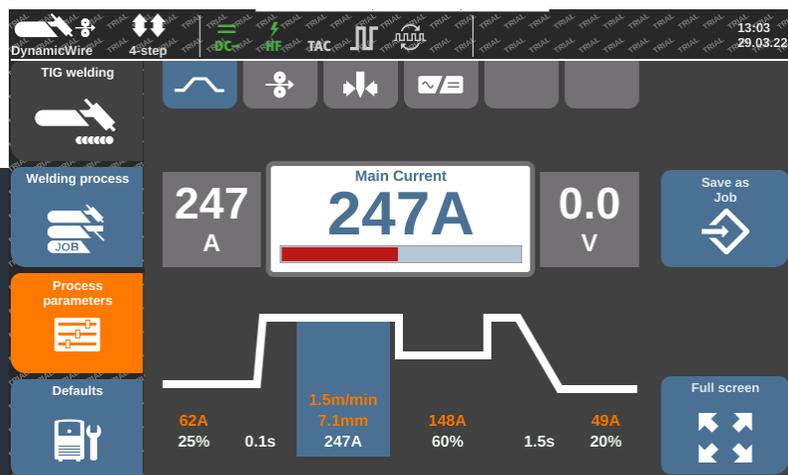


DYNAMICWIRE

# How-to

# Resistance alignment (R/L)

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**MOST IMPORTANT SET-UP FOR SUCCESSFUL TIG DYNAMICWIRE WELDING !**

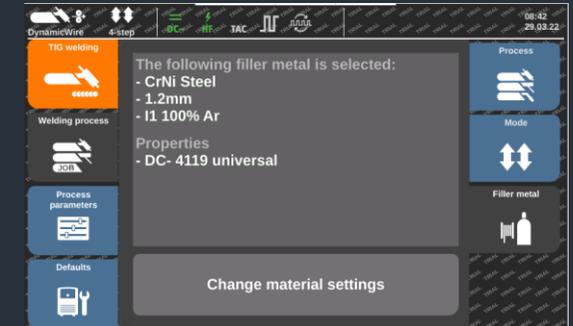
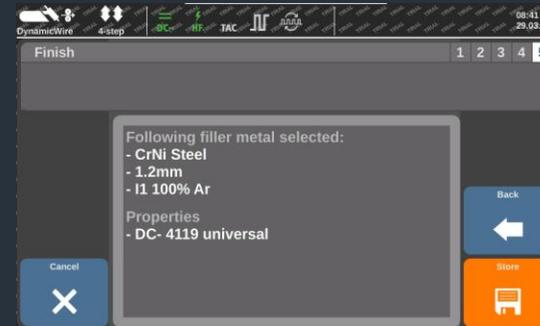
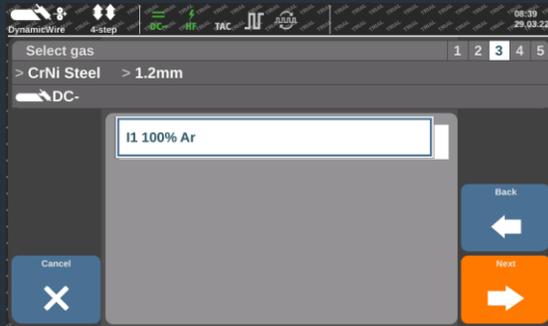
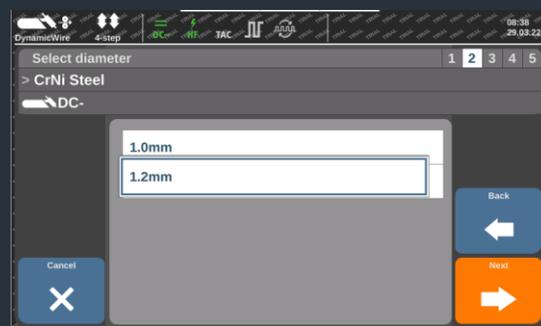
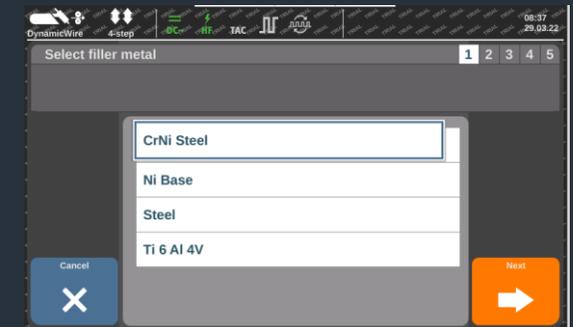
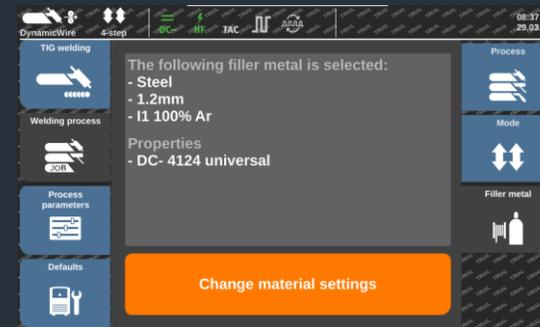


# Steps to follow on the MCU

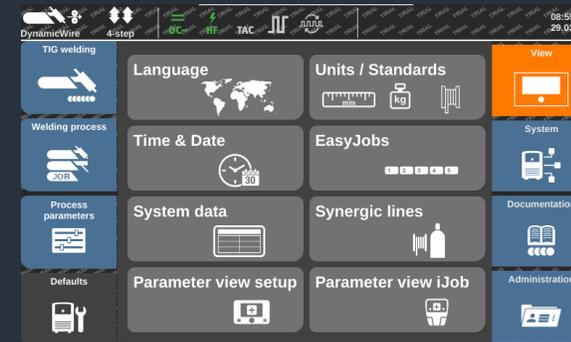
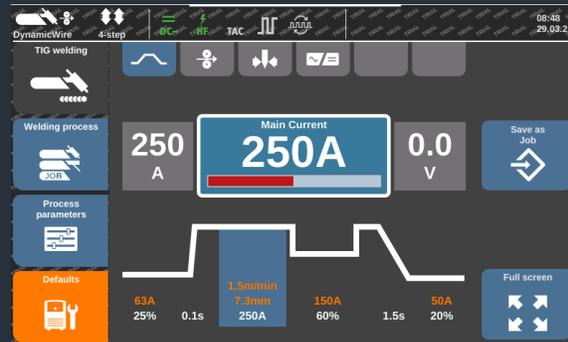
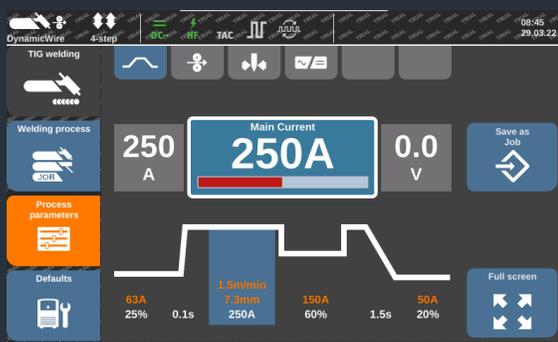
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**EXAMPLE**

Sample setup for 8mm SS1.4301 sheet metal (500mm) fillet weld with Filler Material ER316LSi 1.2mm PA-position

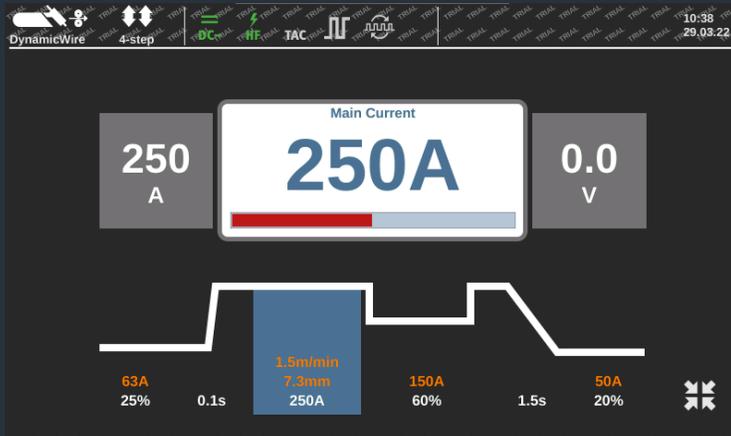


# Additional settings on the MCU

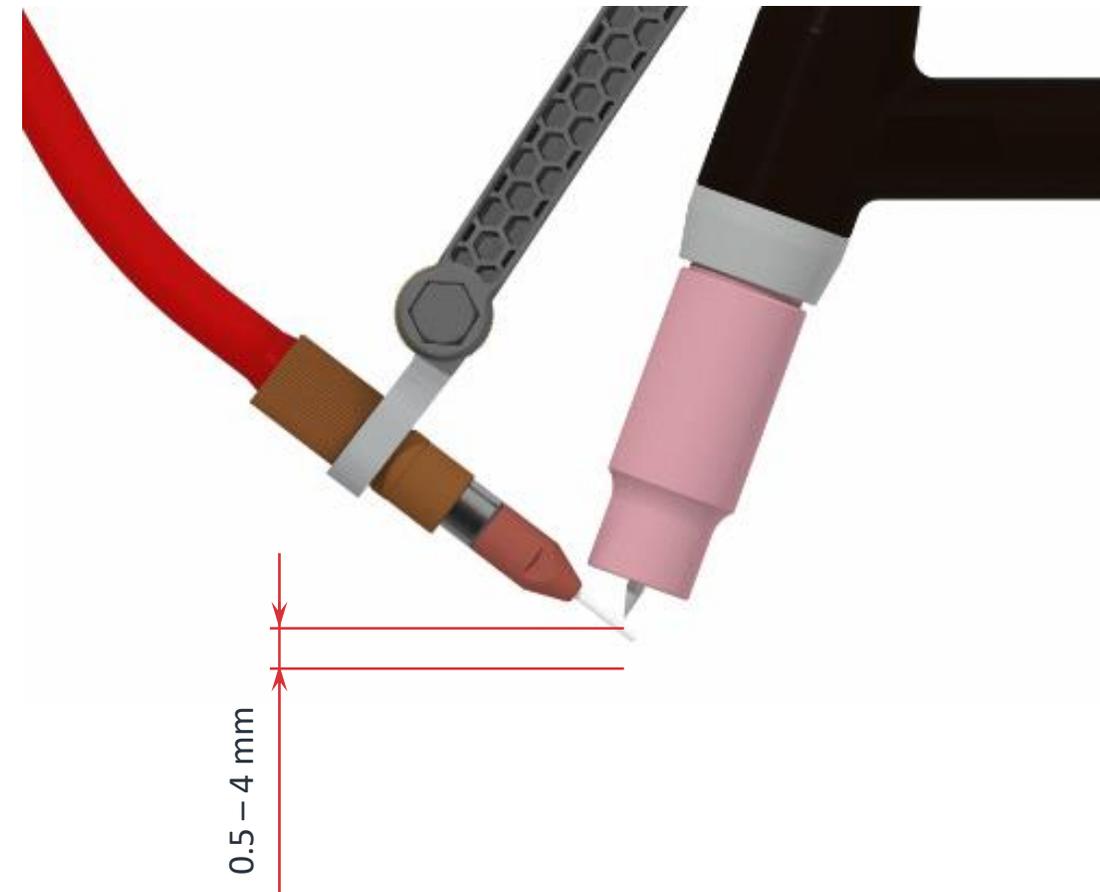


# Additional settings on the MCU

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# Wire distance to the tungsten electrode



Current range [A]	Wire distance to tungsten electrode [mm]
40 - 150	0.5 – 1.5
150 - 260	1.5 – 2.5
260 – 320	2.4 - 4

Universal setting: 2 mm



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We say the welding industry is innovative.



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# Welding demo



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