High Deposit MIG

Processes and Heat Inputs

Best for	Standard Spray	High-Deposition MIG	Accu-Pulse	Versa-Pulse	Corto Circuito	RMD
Deposition	**A**	**A**	**A**	**B**	**D**	**D**
Gap filling	**D**	**D**	**B**	**B**	**A**	**A**
Low Heat Input	**D**	**C**	**B**	**A**	**A**	**A**
Out-of-Position Welds			**A**	**B**	**B**	**B**
Low Spatter	**A**	**A**	**A**	**B**	**C**	**B**
Thick Metals	**A**	**A**	**A**	**C**	**D**	**D**
Thin Metals			**B**	**A**	**A**	**A**
Increased Travel Speed	**A**	**A**	**A**	**A**	**B**	**C**

A	Best Fit
blank	Not Reccomended

Increasing deposition rate in an effective and efficient way

In our competitive market, deposition rate, is considered a measure of production efficiency.

Many manufacturers have developed effective welding processes to improve the deposition rate but in most cases, the solution developed requires high investments and/or additional mechanization or robotics, compromising ease of use.

Exception: Miller HD improves the deposition rate significantly while maintaining the ease of handling of a single-wire MIG weld.

HD MIG at a glance

Deltaweld® con Intellx™ Elite	Material Thickness 5+ mm.	Welding positions

Very similar to “standard” MIG

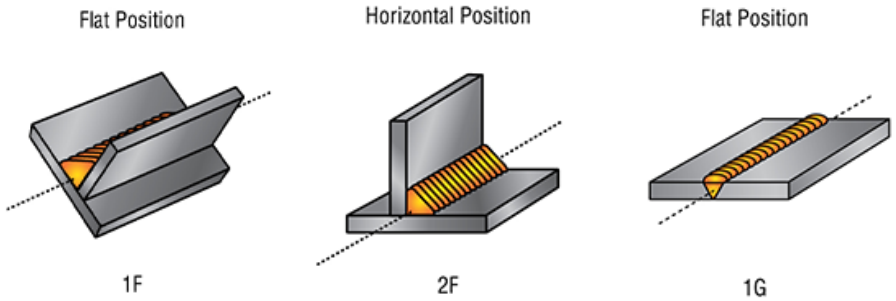
Single wire welding

Suitable for welding in position 1F - 2F - 1G

From 6 kg to 9 kg/hour using 1,2mm wire

30-50% increased deposit

Minimal changes to your welding technique



HD MIG: What's Different

High Dep uses special process software that supports MIG welding with a extended Electrical Stick Out.

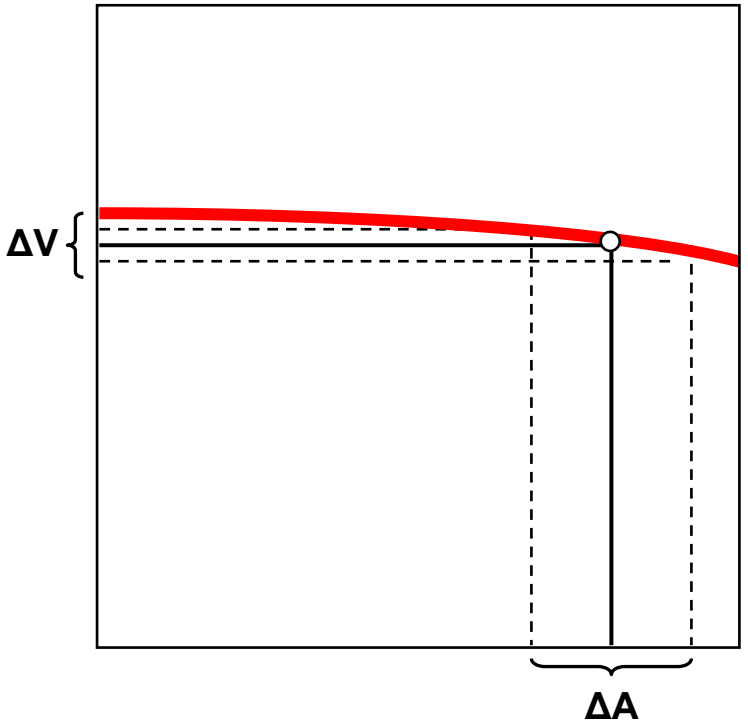
The software controls the welding arc over 3 main pillars :

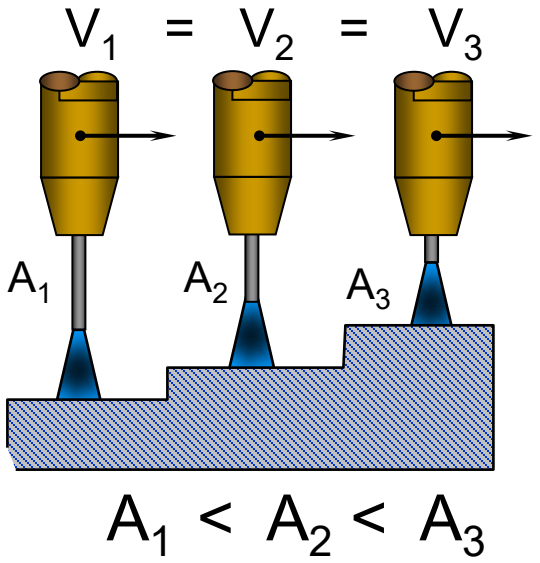
1. Special CV / CC slope characteristic
2. Stabilizes the ratio Arc length / Arc cone
3. Prevents Arc Rotation / Arc swirl

Standard MIG process

Output Characteristics: Straight MIG, Constant Voltage or CV

In CV mode, the welding current is an effect of the WFS and electrical stickout

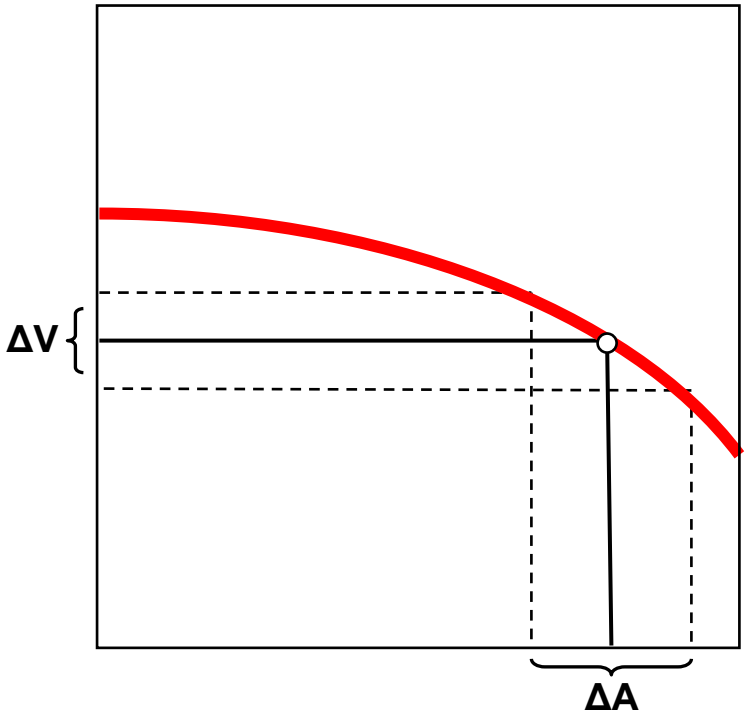


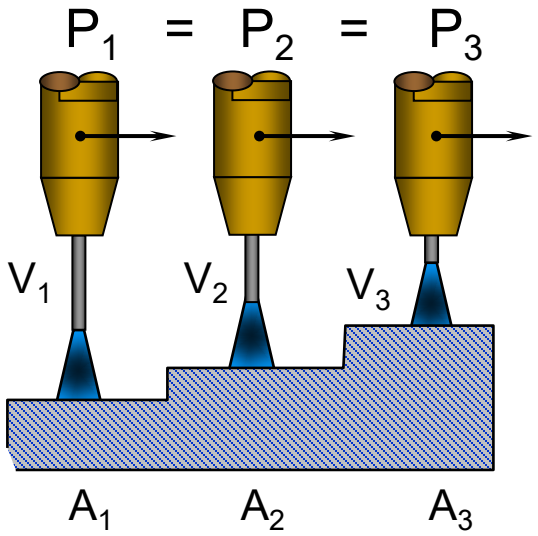


In CV a small ΔV causes a large ΔA , the WFS is fixed, the welding current regulates itselfes, total output power varies significantly

HD MIG Process Factors

Output Characteristics: High Dep Modified CV - Slope Control

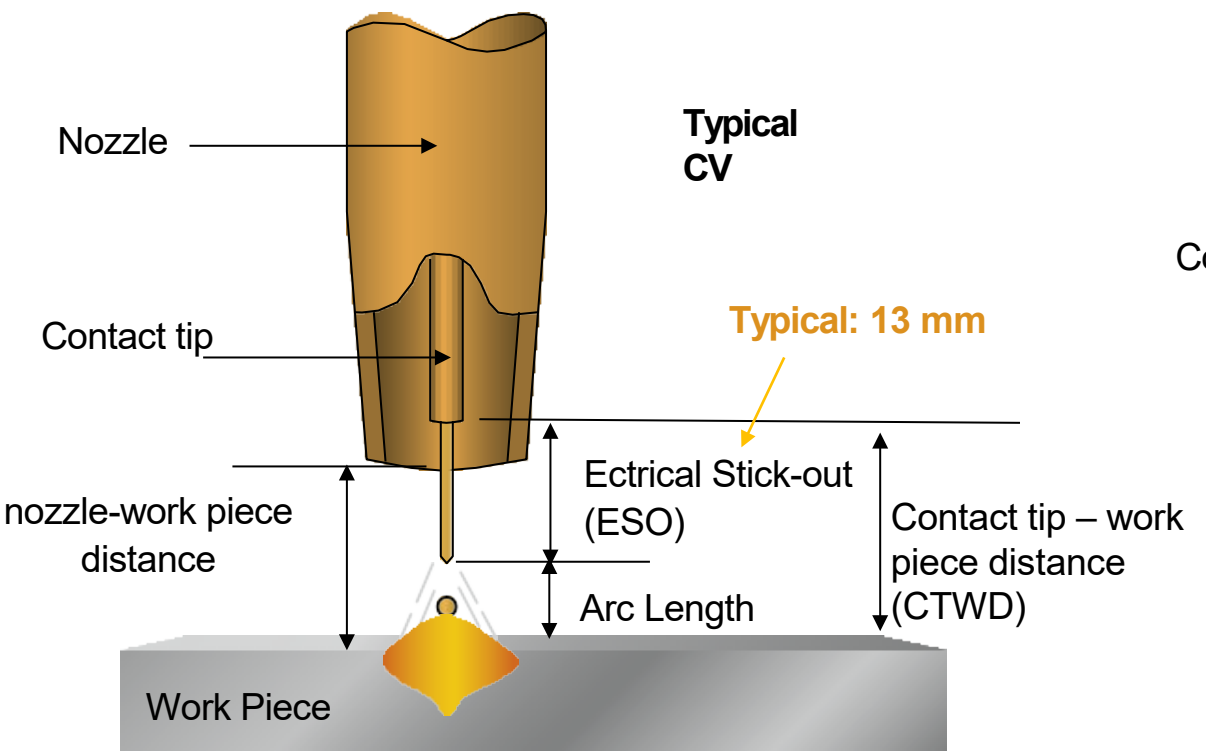


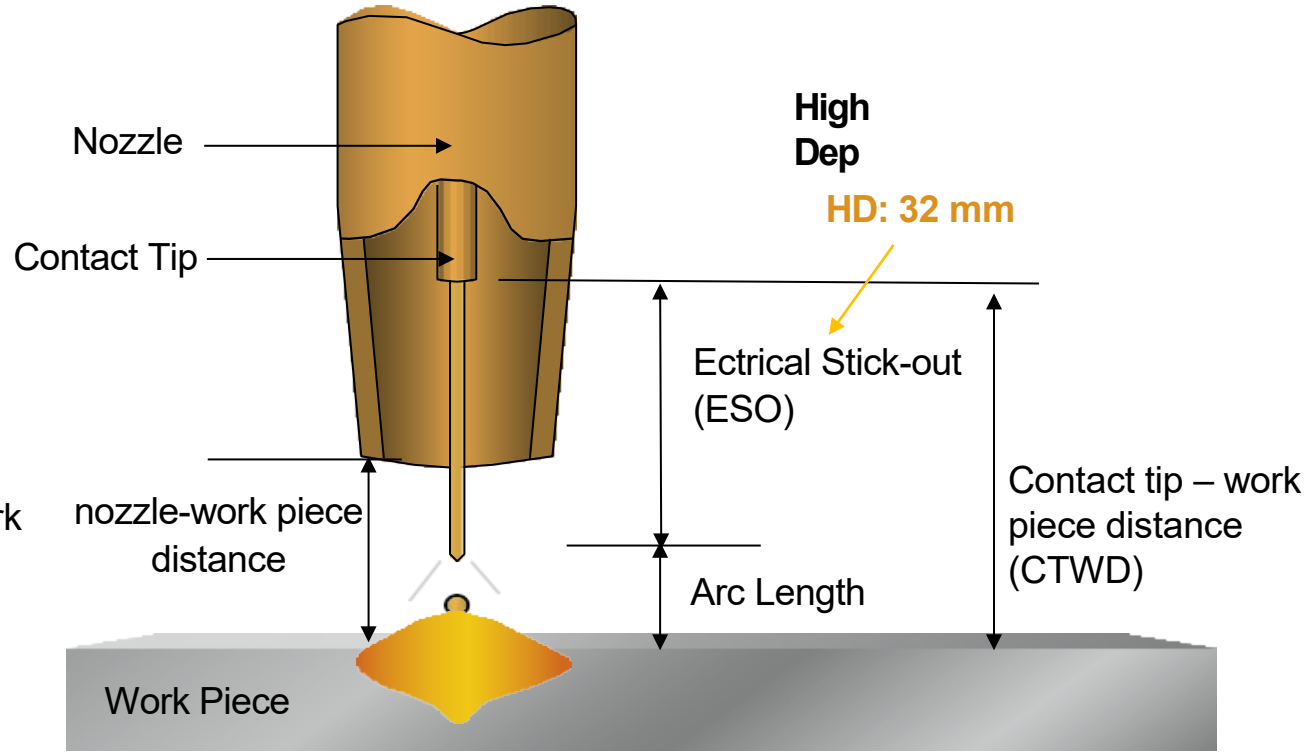


In High Dep mode the software supports stable welding with extended Stick Out.

The WFS is fixed, V/A balance regulates itselfes, Arc Power is virtually constant

HD MIG: how it works



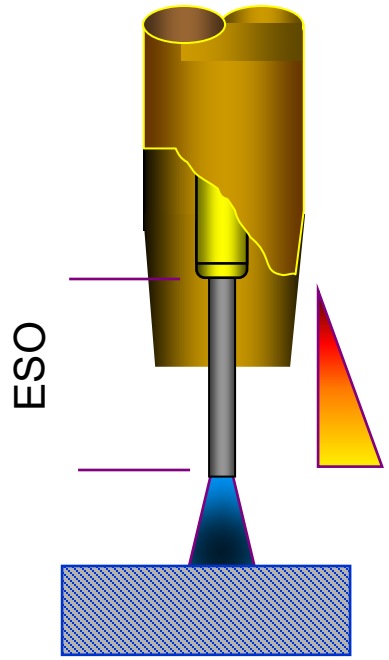


The High Dep process software will adapt the machine to work with higher Arc voltage and increased stick-out.

HD MIG process

How it works

Longer stick-out will “preheat” the wire and increase deposition rate



Wire temp increasing

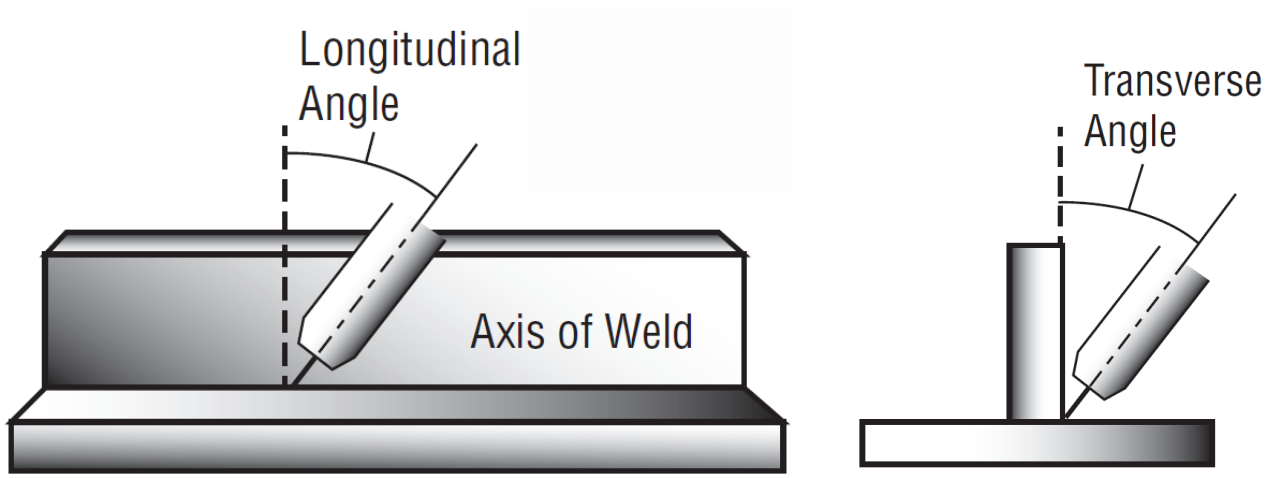
What you need

Torch with recessed contact tip.

- Makes keeping extended stick-out easy and controllable
- Some minor adjustment of your Welding Technique

HD MIG process: welding technique

- Alter your longitudinal angle to a little more flat position between 15 – 20 Degree
- The transverse angle stays ‘’normal’’
- Increase your travel speed to accommodate the increased deposition



HD MIG process: Advantages

HD MIG Welding

- Allows for deposition rates of 9 kg per hour
- Increased wire feed speed at the same amperage as conventional CV
- 8 mm fillet welds at up to 55 cm per minute

Lower Heat Input

- Lower heat input can help reduce warping and burn-through
- Increase control at higher deposition rates

All Skill Levels Can Use It

- Skilled operators can take advantage of the higher deposition rates to make big welds faster, while less skilled operators will appreciate the simplicity and ease of making large welds at high-deposition rates
- Simple to set parameters because it is the same as conventional CV

Auto or Semi-Auto Applications

- Ideal for applications where an operator needs the ability to make large welds faster
- The controllable arc makes large welds easier to accomplish even with less-skilled operators
- HD MIG can be used with through-arc seam tracking

Feature Definitions

Wire Feed Speed (WFS)

- La velocità di Wire feed speed is the first of the two main controls for HD MIG. The preset WFS will determine the deposition rate and will have a large effect on the amperage. With synergic* MIG enabled, a recommended voltage will be displayed. This will change automatically as your WFS is adjusted.

Increase	• To increase deposition for faster travel speeds and increase bead size • To increase amperage and penetration
Decrease	• To weld on thinner materials (down to 5 mm) • To reduce amperage and penetration

Voltage

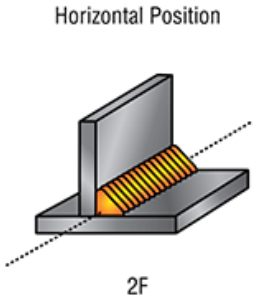
- Voltage is the other main control for HD MIG. Voltage adjustments will change the physical arc length. Increasing will make the wire burn closer to the contact tip and decreasing makes the wire burn closer to the workpiece.

Increase	• To reduce spatter production • To create a flatter bead profile
Decrease	• To help increase travel speed • To provide more control of the weld puddle • To provide more crackle in the arc

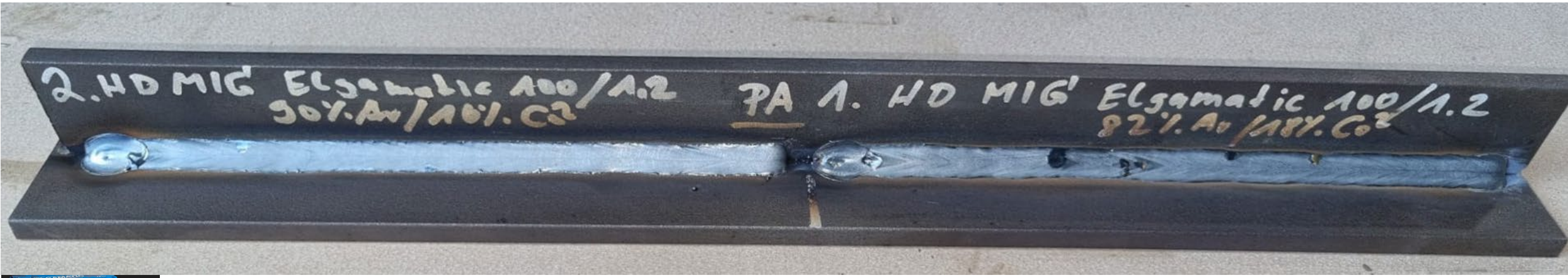
HD MIG process: parameters table

2F Fillet Welds (32 mm CTWD)

Solid wire 90/10 Ar/CO_2	Thickness (mm)	Leg size (mm)	Travel Speed (cm)	WFS (m/min)	Voltage	Amperage	Dep. Rate (kg/h)
1,2 mm	6	6	46	10	28.3	243	4,7
			56	12,7	29.7	279	6
	10	8	46	14,6	31.0	297	7
			56	19,5	33.5	355	9,6
1,4 mm	6	6	46	7,6	27.5	252	4,6
			56	9,5	29.5	293	5,7
	10	8	46	11,4	30.5	320	6,9
			56	14,6	33.0	370	8,8
1,6 mm	6	6	46	4,7	26.5	267	4.1
			56	5,8	27.5	306	5,2
	10	8	46	7,6	28.7	367	6,8
			56	9,6	33.0	450	8,6



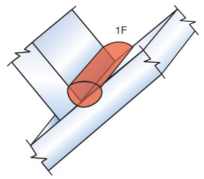
HD MIG: tests



Elgamatic 100 1,2mm

M20: 90%Ar/10%CO_2

V ⎓ 32V



1F/PA

A ⎓ 300 A

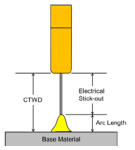
1,2 mm

WFS m/min	deposit [kg/ h]
10	5,3
11	5,9
12	6,4
13	6,9
14	7,5

12,73 m/min; Arc 0; LB0

M21: 82%Ar/18%CO_2

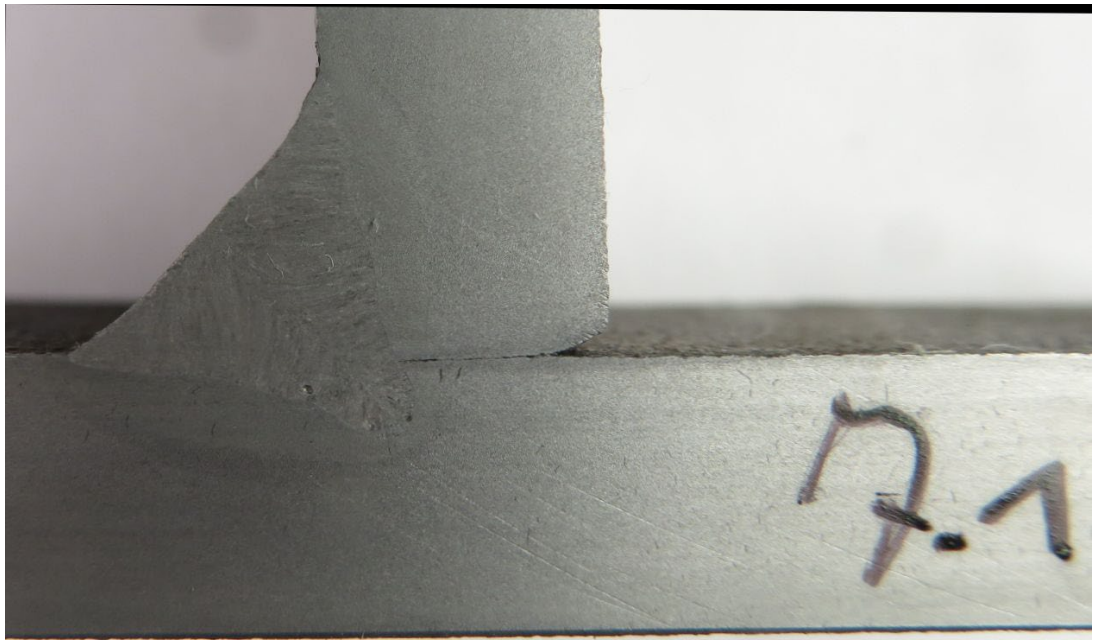
V ⎓ 34,5V

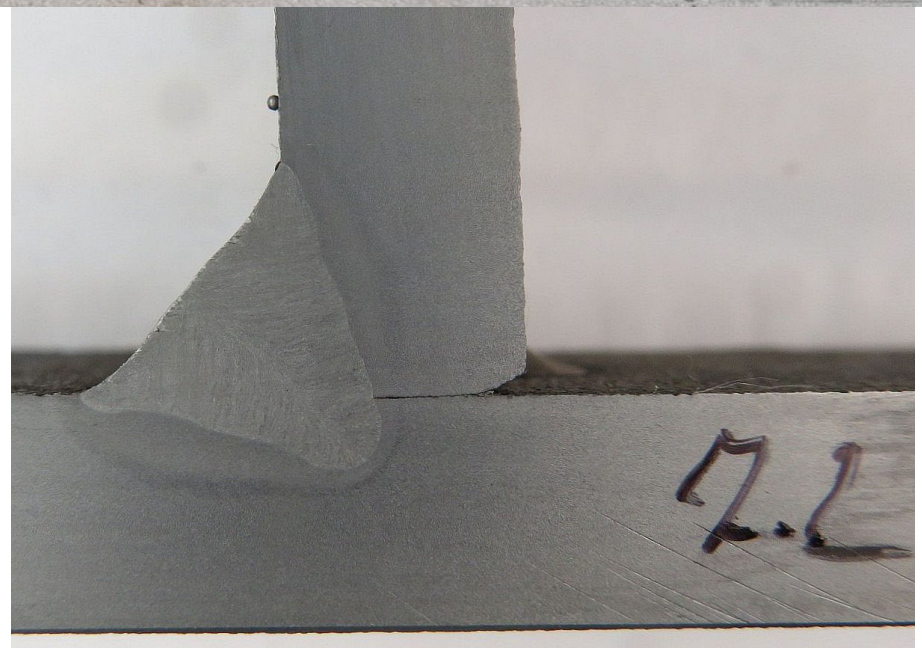


25 mm

HD MIG: tests

Elgamatic 100 1,2mm





HD MIG: applicazioni

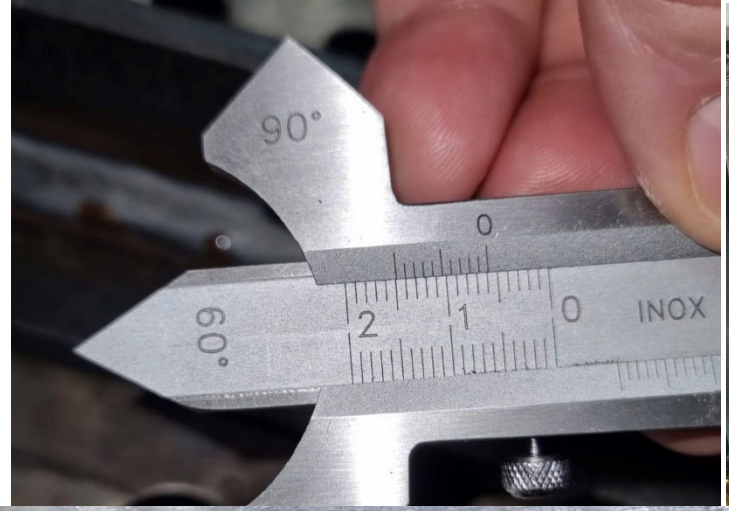
Elgamatic 100 1,2mm

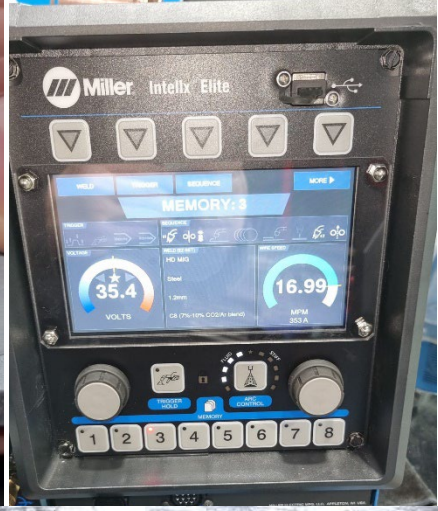
M21: 82%Ar/18%CO_2

Processo HD MIG: applicazioni

Elgamatic 100 1,2mm

M20: 90%Ar/10%CO_2





ITW Welding

Miller Elga

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