

Katlenburg-Lindau (by customer's facility) 19/02/2019

Client: Marquardt

Target: 1) To introduce the @TSHYP solution and test it on customer's joint configuration

Background:

The client produces metallic structures for infrastructure in general including frames for electricity cross-country transportation.

Review of present welding conditions:

Filler metal: solid wire 1,2 mm type ESAB 12.50 in spools diam 1,2 mm

- Mechanized process
- WFS 8 m/min (280A-27,5v)
- Deposition rate approximately 4,2 Kg/h
- Travel speed 13 cm/min with oscillation
- Welding on ceramic backing



Expectation:

Increase travel speed

Trials feedback

@TSHYP – Hyperfill 2x1,0 mm

WFS (m/min)	W.Parameters	Dep. Rate (Kg/h)	Feedback	
12 (#160)	390A-33V-Trim (with gas 82/18)	1,00	8,8	Massive presence of spatter (*) Travel speed improved from 13 to 25 cm/min (+ 100%). Client satisfied

(*) client didn't complain; material is highly oxidized.

Pieces welded with Esab wire are spatter free.



General customer feeling

- Positive
 - Deposition rate increased by 100%
 - Travel speed increased by 100%
 - Cost saving for client estimated in 3 €/m or 6 €/kg of deposited material (see calculation)

Area to improve:

- Spatter

Next actions

- Provide offer for @TSHYP full solution and Supramig HD 1,0 mm → Feimann S.
- Propose Weldycar + oscillation + accessories for fume aspiration → Feimann S.
- Propose to client a DCR to begin discussion on ROI if there is a real intention to invest in HYP → Feimann S.
- Consider as second step, possibility to automatize the full process, with a simply automation like example below, with 1 oscillating torch HYP (or 2 torch to halve the welding time) plus system to rotate pieces of 180° for welding the back side → T.Kron



Lorenzo Coato



TRAVEL SPEED COST ANALYSIS

Size and Type of Weld _____

Material Thickness & Misc. _____

PROCESS DESCRIPTION

PRESENT

PROPOSED

Welding Process	135-GMAW mechanized
Electrode / Flux Name - Class. Number	ESAB 12.50 ER70S-6
Electrode Diameter - Shielding Gas	1,2
WFS - Amps - Volts	8 - 280-27,5
Polarity	DC+

Welding Process	HYP 2x1,0
Electrode / Flux Name - Class. Number	Supramig HD
Electrode Diameter - Shielding Gas	2x1,0
WFS - Amps - Volts	12-390-33
Polarity	DC+

1	Average Travel Speed	0,13 m/min
2	(Line 1 X 60)	7,8 m/hr
3	Operating Factor	50,00%
4	(Line 3 / 100 X Line 2)	3,9 m/hr
5	(1.0 / Line 4)	0,2564 hrs./m
6	Deposition Rate @ 100%	4,2 kg/hr
7	(Line 6 / Line 2)	0,5385 kg/m

		0,25 m/min
		15 m/hr
		50,00%
		7,5 m/hr
		0,1333 hrs./m
		8,8 kg/hr
		0,5867 kg/m

LABOR AND OVERHEAD

8	Labor & OH Rate	€ 30,00 /hr
9	(Line 8 X Line 5)	€ 7,69 /m
10	Total Additional Costs	€ - /m
11	Total Labor & OH (Line 9 + Line 10)	€ 7,69 /m

		€ 30,00 /hr
		€ 4,00 /m
		€ - /m
		€ 4,00 /m

MATERIAL DATA

12	Electrode Cost	€ 1,50 /kg
13	Electrode Efficiency	97,00%
14	(Line 12 / Line 13 X Line 7)	€ 0,83 /m
15	Gas Flow Rate	l/hr
16	Gas Cost	€ - /l
17	(Line 15 X Line 16 / Line 2)	€ - /m
18	Flux Cost	€ - /kg
19	Flux Usage Ratio	0,00%
20	(Line 19 / 100 X Line 18 X Line 7)	€ - /m
21	Total Material Costs (Line 14+Line 17+Line 20)	€ 0,83 /m

		€ 2,00 /kg
		97,00%
		€ 1,21 /m
		l/hr
		€ - /l
		€ - /m
		€ - /kg
		0,00%
		€ - /m
		€ 1,21 /m

22	Grand Total Costs (Line 11 + Line 21)	€ 8,52 /m
----	--	-----------

		€ 5,21 /m
--	--	-----------

23	SAVINGS Line 22 Pres. - Line 22 Proposed	€ 3,32 per meter of weld
----	---	--------------------------



DEPOSITION RATE COST ANALYSIS

Size and Type of Weld _____

Material Thickness & Misc. _____

	<u>PRESENT</u>	<u>PROPOSED</u>
<u>PROCESS DESCRIPTION</u>		
Welding Process	135-GMAW mechanized	HYP 2x1,0
Electrode / Flux Name - Class. Number	ESAB 12.50 ER70S-6	Supramig HD
Electrode Diameter - Shielding Gas	1,2	2x1,0
WFS - Amps - Volts	8 - 280-27,5	12-390-33
Polarity	DC+	DC+
Average Travel Speed	13,000	25,000
1 Deposition Rate @ 100%	4,200 kg/hr	8,800 kg/hr
2 Operating Factor	50,00%	50,00%
3 (Line 2 / 100 X Line 1)	2,100 kg/hr	4,400 kg/hr
4 (1.0 / Line 3)	0,476 hrs/kg	0,227 hrs/kg
<u>LABOR AND OVERHEAD</u>		
5 Labor & OH Rate	€ 30,00 /hr	€ 30,00 /hr
6 (Line 5 X Line 4)	€ 14,29 /kg	€ 6,82 /kg
7 Total Additional Costs	/kg	/kg
8 Total Labor & OH (Line 6+Line7)	€ 14,29 /kg	€ 6,82 /kg
<u>MATERIAL DATA</u>		
9 Electrode Cost	€ 1,50 /kg	€ 2,00 /kg
10 Electrode Efficiency	0,970	0,970
11 (Line 9 / Line 10)	€ 1,546 /kg	€ 2,062 /kg
12 Gas Flow Rate	/hr	/hr
13 Gas Cost	/l	/l
14 (Line 12 X Line 13 / Line1)	€ - /kg	€ - /kg
15 Flux Cost	/kg	/kg
16 Flux Usage Ratio	%	%
17 (Line 16 / 100 X Line 15)	€ - /kg	€ - /kg
18 Total Material Costs (Line 11+Line 14+Line 17)	€ 1,55 /kg	€ 2,06 /kg
19 Grand Total Costs (Line 8+Line 18)	€ 15,83 /kg	€ 8,88 /kg
20 SAVINGS (Line 19 Pres. - Line 19 Propo)	€ 6,95 per kilogram of weld	



A - 7400 Oberwart, Kreuzgasse 1
 Tel: +43 (0) 3352 210 88 - 0
 Fax: +43 (0) 3352 210 88 - 3
 E-mail: office@weld-tec.com
www.weld-tec.com

*welding .
 cutting .
 automation .
 service .*