

ESAB

®

焊接數位解決方案



- 焊接縫檢查
- 焊接缺陷偵測
- 通過評級評分功能
- 焊接品保文件輸出

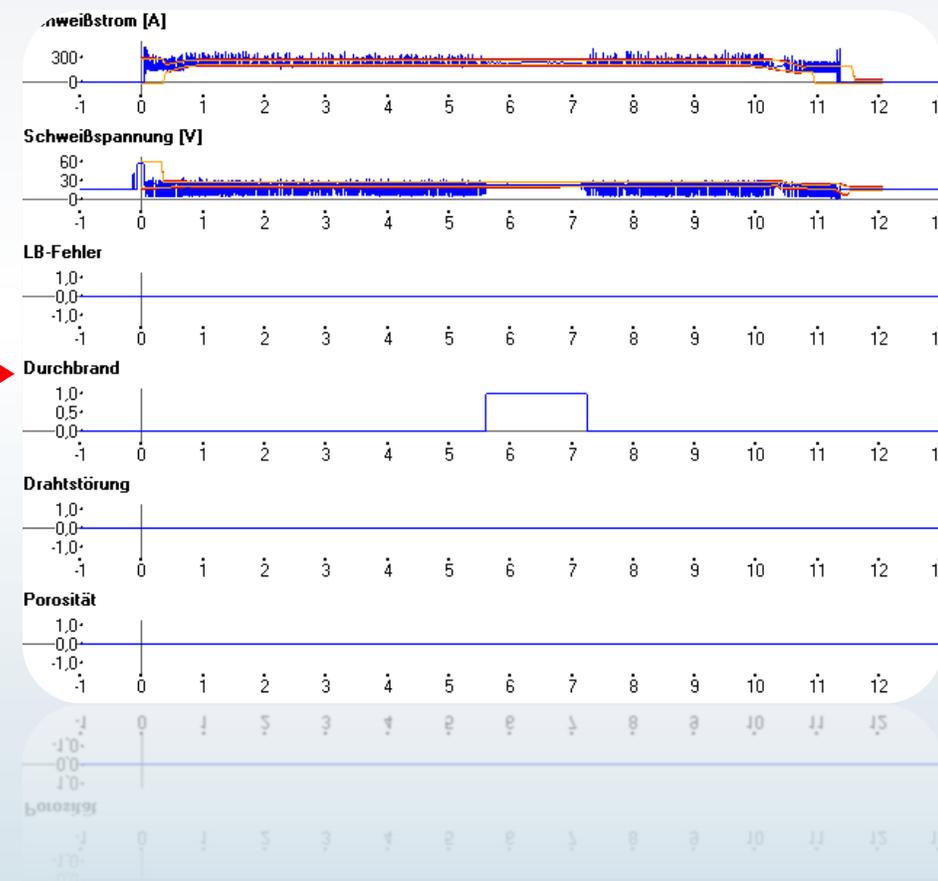
WELDQAS

Quality Assurance System



通過程序資料量測查找電弧的變化

電弧形行為的變化 → 接縫故障 → 焊接參數中的反映出來



WELDQAS

一般:

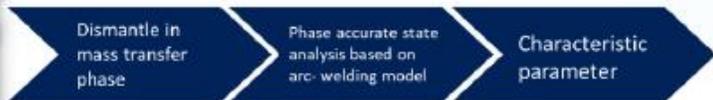
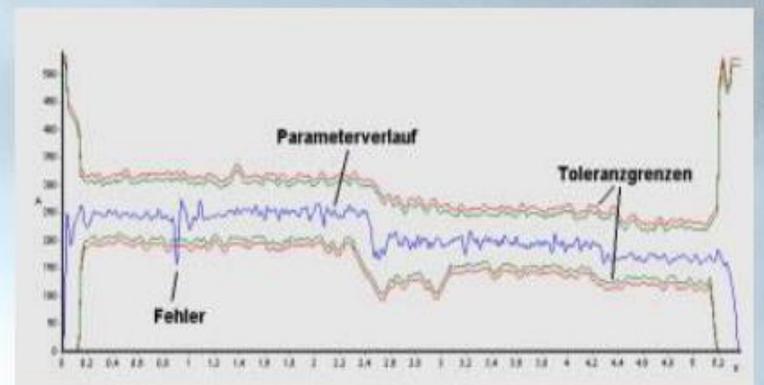
- 100%焊接生產的監控和記錄
- 優化流程並避免焊接瑕疵
- 過程特定的動態即時分析
- 焊接零件識別 — 完全可追溯性
- 管材廠專用解決方案
- 自動記錄焊接時間和消耗值



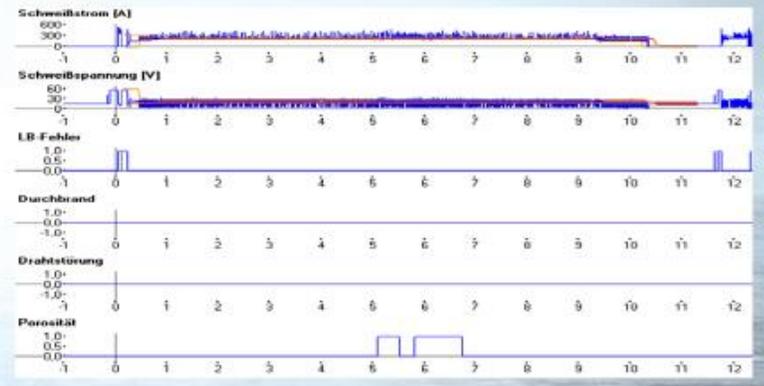
WELDQAS

seam faults caused by differences in the welding parameter

measured by HKS-sensors



Synchronised signals U, I	Current profile, short circuit	<ul style="list-style-type: none"> Porosities Burn-through Wire jam Arc jam
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A	0.0 A	V	0.0 V
	220.0		22.7
	0.0%		0.0%
	0.0%		0.0%

PFD II



00:20

00:19

Record no. 5
Program no. 1.01.005

Pore Detection OK

Job-Nr. **1.5**

Label
Roboter 2020

Note

1.5

pores



burn-through



wire faults



Arc error



通過品質評級進行評估(評分功能)在穩定且符合品質的焊接生產中,可測量參數(焊接電流,焊接電壓)在穩定的模式上有所不同。偏離更改表示存在問題。

Simple rules of mark creation

Ideal value – all monitoring parameters matching set values perfectly	→ Note = 1,0
at least one process parameter has reached warning threshold	→ Note > 3,0
at least one process parameter has reach the fault threshold	→ Note > 5,0



A	0.0 A	V	0.0 V
	220.0		22.7
	0.0%		0.0%
	0.0%		0.0%

PFD II

00:20
00:19

Record no. 13
Program no. 1.01.004

Pore Detection

Job-Nr. **2.4**
Kennzeichnung
Roboter 2020

Note **3.1**

pores

burn-through

wire faults

Arc error



A	0.0 A	V	0.0 V
	223.3		25.0
	1.5%		0.0%
	11.6%		4.2%

PFD II

00:10
00:09

Record no. 9
Program no. 1.01.009

Pore Detection

Job-Nr. **1.9**
Kennzeichnung
Roboter 2020

Note **5.0**



Date	Time	Parameter	Recon	Job	Program	Mark	Channel 1	Channel 2	Channel 6	Channel 7	Channel 8	Channel 5
19/3/2020	9:41:48 A	t _{res} 19.7 s	18	2	101009	1.5	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
19/3/2020	9:41:31 A	t _{res} 9.4 s	17	2	101008	5.4	A 123.0 A	V 20.5 V	0.0 %	28.6 %	7.9 %	0.0 %
19/3/2020	9:41:04 A	t _{res} 19.7 s	16	2	101007	1.2	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
19/3/2020	9:40:36 A	t _{res} 19.7 s	15	2	101006	3.1	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
19/3/2020	9:40:09 A	t _{res} 19.7 s	14	2	101005	1.5	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
19/3/2020	9:39:42 A	t _{res} 19.7 s	13	2	101004	3.1	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
19/3/2020	9:39:14 A	t _{res} 19.7 s	12	2	101003	1.9	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
19/3/2020	9:38:57 A	t _{res} 10.1 s	11	2	101002	5.0	A 223.4 A	V 25.0 V	1.5 %	0.0 %	12.1 %	4.2 %
19/3/2020	9:38:29 A	t _{res} 19.7 s	10	2	101001	1.6	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
19/3/2020	9:37:50 A	t _{res} 10.1 s	9	1	101009	5.0	A 223.4 A	V 25.0 V	1.5 %	0.0 %	11.6 %	4.2 %
19/3/2020	9:37:23 A	t _{res} 19.7 s	8	1	101008	2.0	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
19/3/2020	9:36:56 A	t _{res} 19.7 s	7	1	101007	1.2	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
19/3/2020	9:36:28 A	t _{res} 19.7 s	6	1	101006	3.1	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
19/3/2020	9:36:01 A	t _{res} 19.7 s	5	1	101005	1.5	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
19/3/2020	9:35:34 A	t _{res} 19.5 s	4	1	101004	5.0	A 220.9 A	V 22.7 V	0.0 %	0.8 %	0.0 %	0.0 %
19/3/2020	9:35:06 A	t _{res} 19.7 s	3	1	101003	1.9	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
19/3/2020	9:34:39 A	t _{res} 19.7 s	2	1	101002	5.0	A 220.1 A	V 22.7 V	0.0 %	0.0 %	8.6 %	0.0 %
19/3/2020	9:34:12 A	t _{res} 19.7 s	1	1	101001	1.6	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
28/2/2020	12:45:47	t _{res} 19.7 s	3	1	101002	5.0	A 220.1 A	V 22.7 V	0.0 %	0.0 %	8.6 %	0.0 %
28/2/2020	12:45:20	t _{res} 19.7 s	2	1	101001	1.6	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
28/2/2020	12:32:05	t _{res} 19.5 s	7	1	101004	5.0	A 220.9 A	V 22.7 V	0.0 %	0.8 %	10.7 %	0.2 %
28/2/2020	12:31:38	t _{res} 19.7 s	6	1	101003	1.9	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
28/2/2020	12:31:10	t _{res} 19.7 s	5	1	101002	5.0	A 220.1 A	V 22.7 V	0.0 %	0.0 %	8.6 %	0.0 %
28/2/2020	12:30:43	t _{res} 19.7 s	4	1	101001	1.6	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
28/2/2020	12:28:00	t _{res} 19.7 s	1	1	101001	1.6	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
23/10/2019	3:08:07 P	t _{res} 19.7 s	7	1	101007	1.2	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
23/10/2019	3:07:40 P	t _{res} 19.7 s	6	1	101006	3.1	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
23/10/2019	3:07:12 P	t _{res} 19.7 s	5	1	101005	1.5	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
23/10/2019	3:06:45 P	t _{res} 19.5 s	4	1	101004	5.0	A 220.9 A	V 22.7 V	0.0 %	0.8 %	10.7 %	0.2 %
23/10/2019	3:06:18 P	t _{res} 19.7 s	3	1	101003	1.9	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
23/10/2019	3:05:51 P	t _{res} 19.7 s	2	1	101002	5.0	A 220.1 A	V 22.7 V	0.0 %	0.0 %	8.6 %	0.0 %
23/10/2019	3:05:23 P	t _{res} 19.7 s	1	1	101001	1.6	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
22/10/2019	11:30:00	t _{res} 19.7 s	55	7	101006	3.1	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
22/10/2019	11:29:32	t _{res} 19.7 s	54	7	101005	1.5	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
22/10/2019	11:29:05	t _{res} 19.7 s	53	7	101004	3.1	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
22/10/2019	11:28:38	t _{res} 19.7 s	52	7	101003	1.9	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %
22/10/2019	11:28:20	t _{res} 10.1 s	51	7	101002	5.0	A 223.4 A	V 25.0 V	1.5 %	0.0 %	12.1 %	4.2 %
22/10/2019	11:27:52	t _{res} 19.7 s	50	7	101001	1.6	A 220.1 A	V 22.7 V	0.0 %	0.0 %	0.0 %	0.0 %

Close

New results 1

Refresh

Filter

Filter ...

Select all

Curves

Several curves

Data

Fill in ...

Results

Configuration

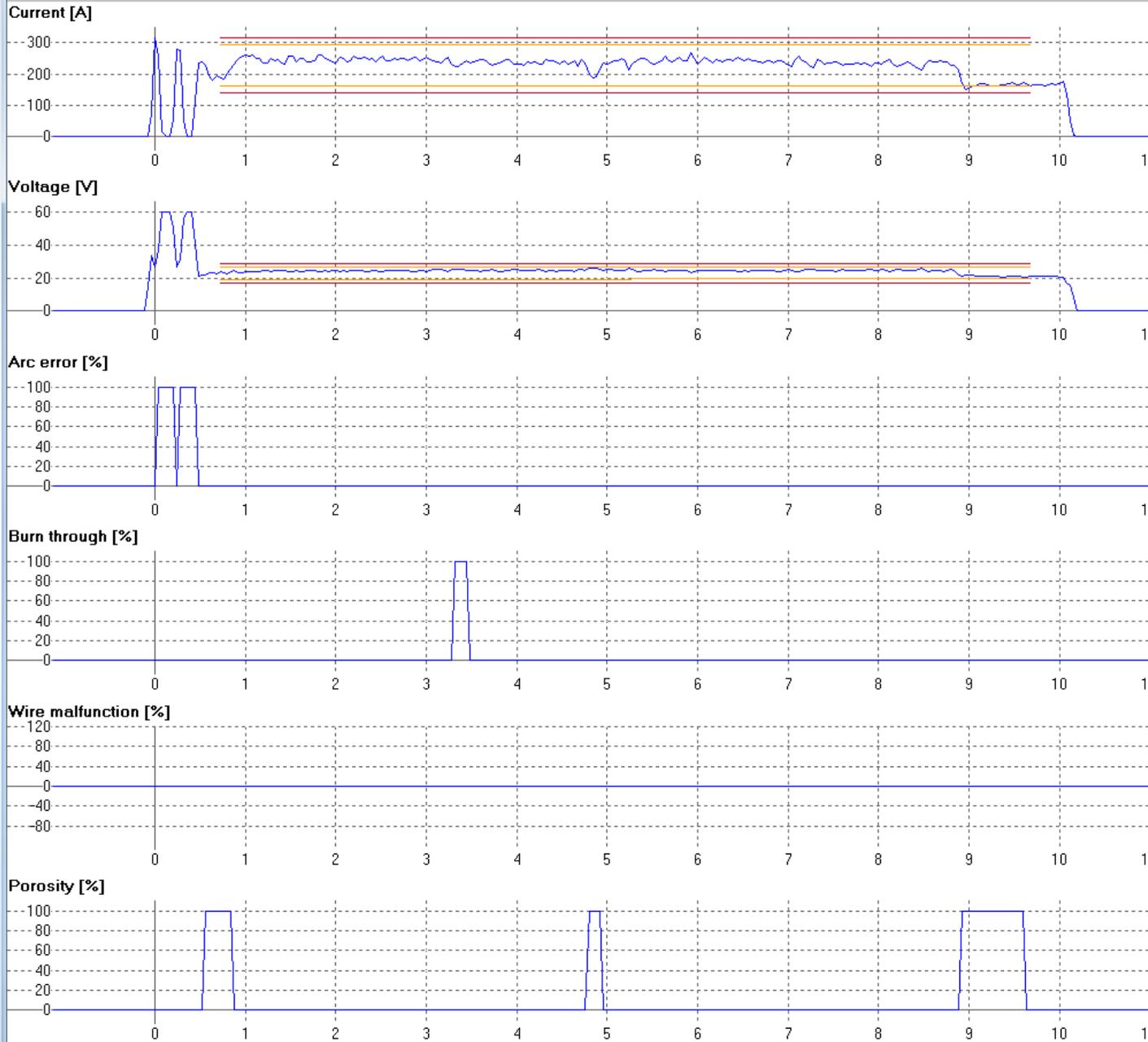
Print

產出結果頁面-
所有測量紀錄都
相對應的儲存:
日期 + 時間





按兩下進入焊 縫結果以詳細 資訊:



Dynamic Process analysis // 動態過程分析

Detecting irregularities by current and voltage

通過電流和電壓檢測異常

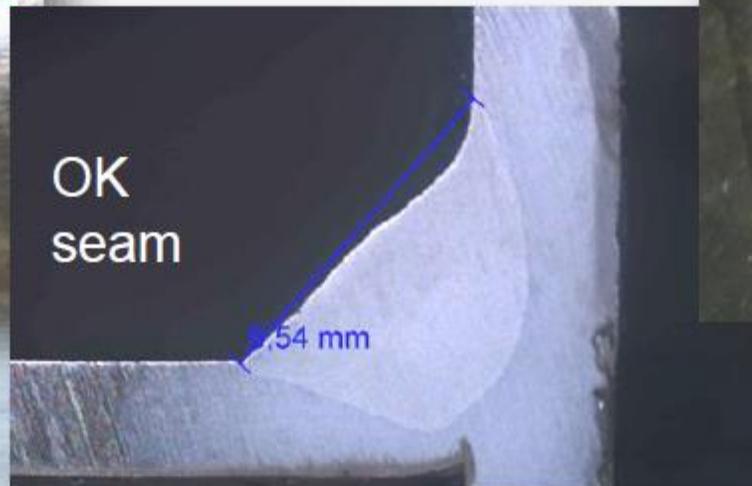
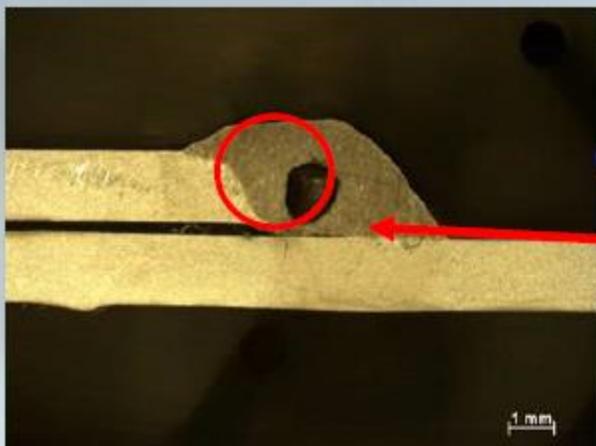
detectable irregularities

Porosities

Seam length

Seam interruption

Burn-through



WELDQAS FOR SAW

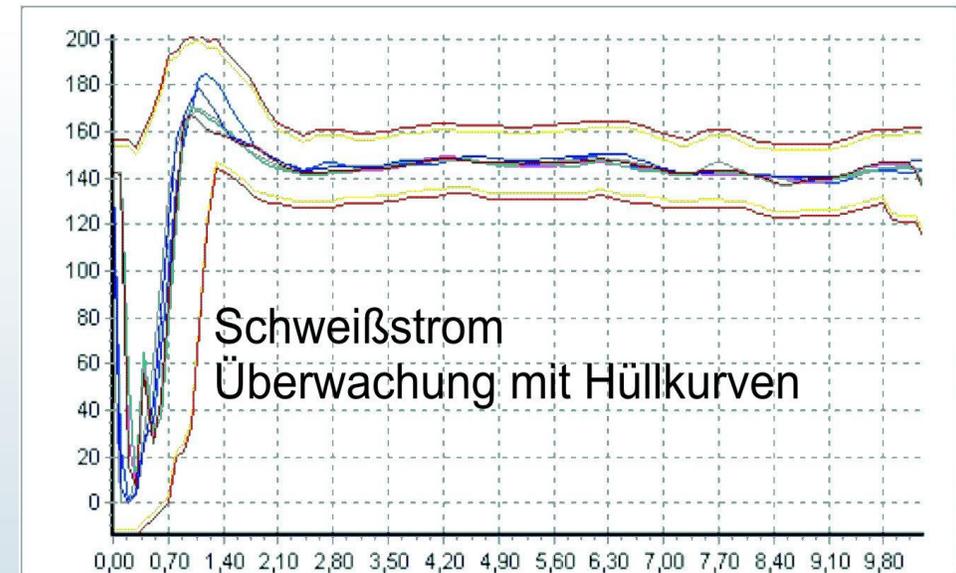
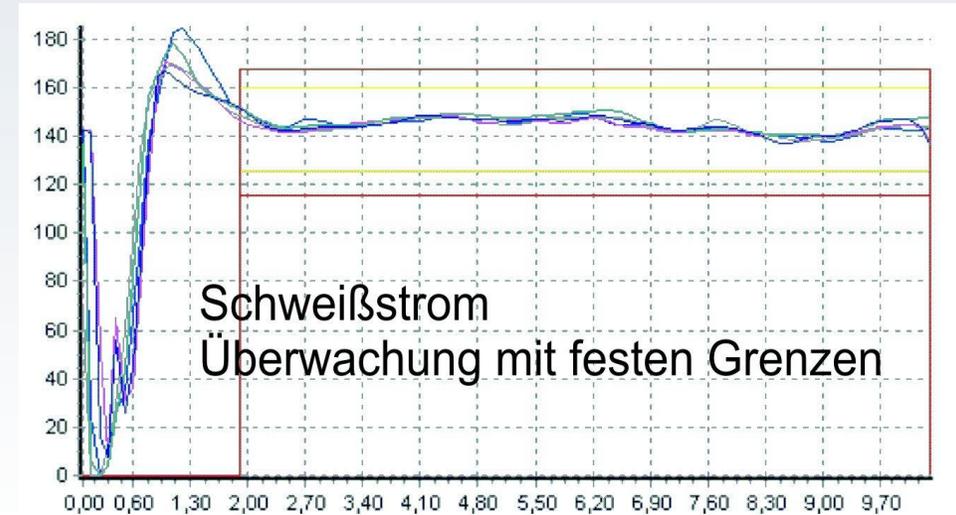
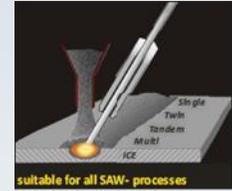
相較與其他監控系統的優勢

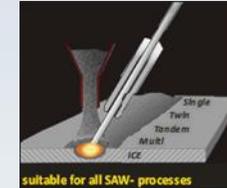
1. 使用封包曲線進行監控

2.

與使用固定限制的監控不同(對於可以按時間順序定義的流程 - 遮罩開始和結束時間),使用包絡曲線進行監控可更好地檢測焊接故障,原因:

- i. 監控焊接過程的所有部分(包括點火和回填溶坑填充量)
- ii. 根據焊接工藝參數的「自然」進度精確調整監控。
- iii. 特別適用於全自動焊接工藝(機器人焊接)
- iv. WeldQAS 系統支援具有固定限制的公差規格(例如,對於超長焊縫或 UP 區域),並使用封包曲線進行監控

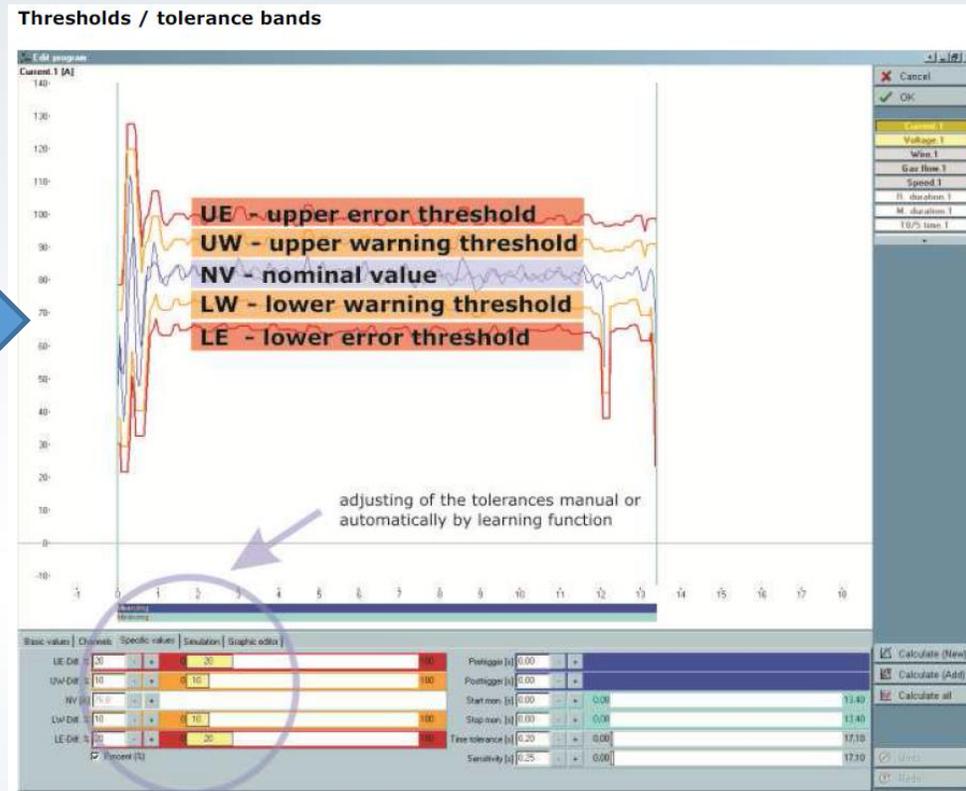
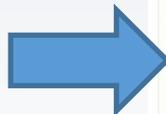




WELDQAS

相較與其他監控系統的優勢

2. 自動統計學習過程 (AI)
3. WeldQAS 系統是一個獨特的系統,提供自動學習功能的選項,從記錄的數據與正在進行的生產並行。
4. 信號行為經過統計分析,異常序列自動排除。



基於調整後值的監視模擬
用戶可以從自動學習中「排除」不良焊縫的選項。

WELDQAS FOR SAW

相較與其他監控系統的優勢

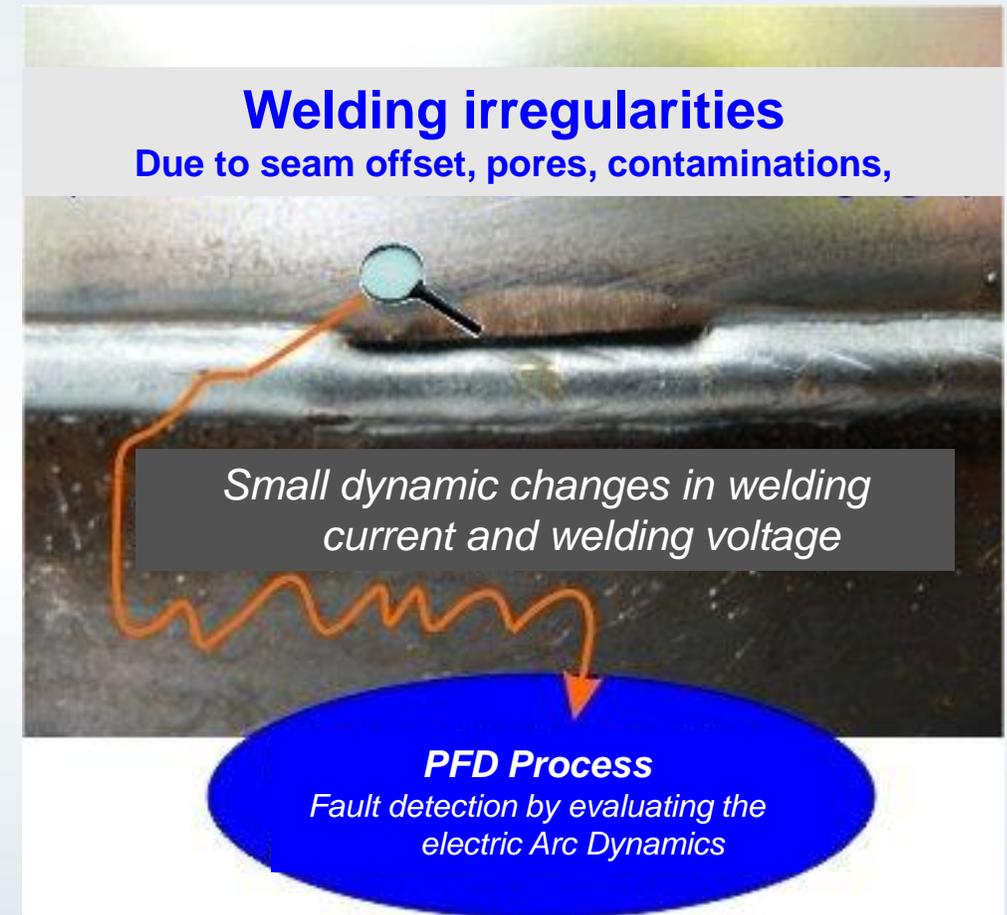
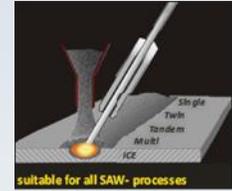
3. 開創性故障偵測 (PFD) - 透過評估電弧動力學獲得專利的故障偵測

4. PFD 工藝基於確定工藝索引,並在焊接不規則情況下檢測焊接電流和焊接電壓的微小動態變化,如孔隙、孔隙、污染、接縫偏移、不完全融合、焊縫滲透故障等氣體和電線的影響

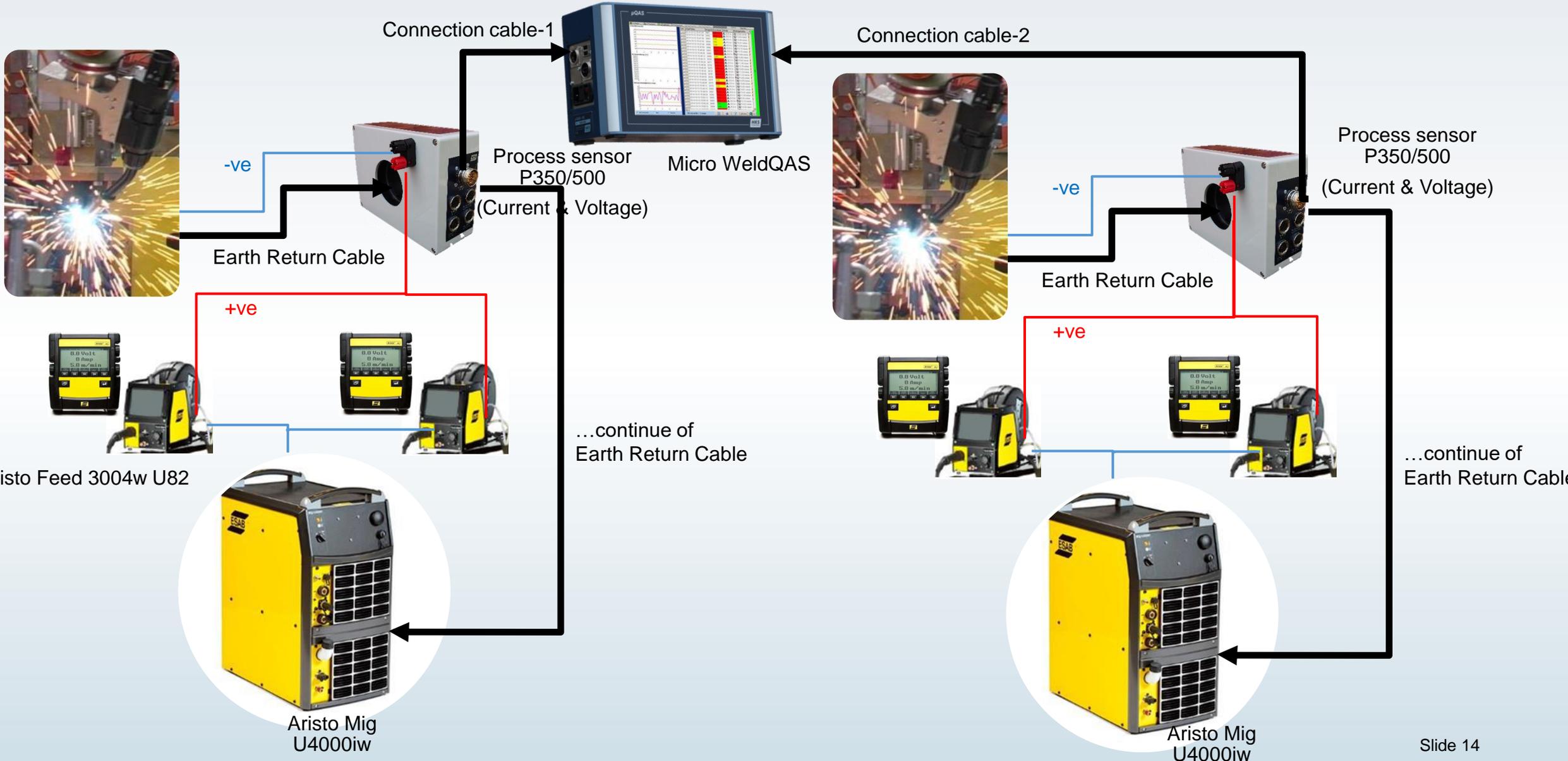
過程指數僅根據電流和電壓的高度動態級數在線計算。

它與大電流的焊接電流無關它不需要任何可學習的模式。

這產生了一個比較值,用於監控自動生產電弧分析指標



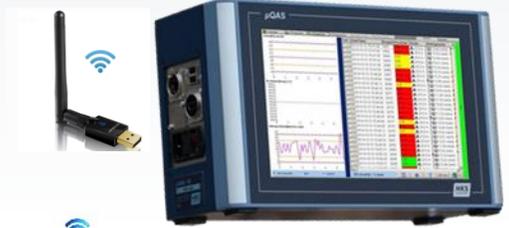
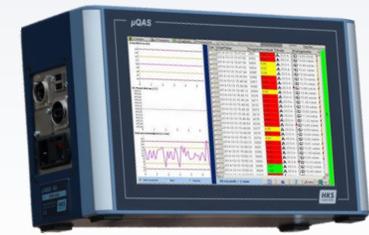
WELDQAS - 安裝原理圖



WELDQAS - WI-FI 安裝配置建議圖(網路由訓練單位另購建置)



Network software WeldQAS



Aristo Mig U4000iw



Aristo Mig U4000iw





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