FontechCEA
TECHNICAL ALLIANCE

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INDUSTRY 4.0

For Industry 4.0 we mean the transformation of manufacturing processes based on the digitalization of the factory, the connection between physical and digital systems and the interconnectivity of more equipment. Industry 4.0 certainly represents the fourth industrial revolution.

The main hubs around which this "revolution" revolves are represented by:

▸ Interconnectivity between equipment in the production cycle.

▸ Continuous monitoring of work conditions by means of appropriate set of sensors and adaptive capacity versus any process drift.

▸ Equipment remote control, maintenance and diagnosis.

▸ Machines viewed as networked objects (IOT Internet of things).

CEA EQUIPMENT FOR INDUSTRY 4.0

In order to face the challenge of this philosophy, CEA has developed the new DIGITECH VP2 (VISION PULSE 2) equipment and a series of support software, which, no doubt, allow these equipment to be fully complying with INDUSTRY 4.0 concepts.

The features of DIGITECH VP2 equipment can be briefly summarized as follows:

▸ Digital electronic control managed by a microprocessor.

▸ Graphical interface with user friendly and intuitive LCD display.

▸ Unique identifiability of the equipment through an IP address.

▸ Possibility of being connected to other equipment by an Ethernet or Wifi network.

▸ Possibility of remote activating programs or JOBS via Ethernet or Wifi.

▸ Possibility of interconnecting several networked equipment.

▸ Low energy consumption thanks to latest generation inverter power sources.

▸ Remote auto-diagnostic system.

QUALITY CONTROL AND PARAMETER PRINTING

CQM "CEA QUALITY MANAGER" software has been developed by CEA to enable welding data recording, monitoring and printing by means of an external computer connected to one or more power sources of QUBOX and DIGITECH VP2 series.

Ideal for monitoring production and satisfying quality needs of the market, CEA QUALITY MANAGER enables to create customized detailed reports related to welding jobs made on various workpieces by several operators using different materials.

CEA QUALITY MANAGER is a very useful tool for:

▶ satisfying welding documentation requirements as prescribed by the buyers and by international norms such as EN 1090

▶ checking and monitoring the welding process

▶ creating sheets and work procedures from laboratory to be transferred to production

▶ generating welding job printout sheets

CEA QUALITY MANAGER takes advantage from current, voltage and wire speed sensors integrated into the welding equipment, without utilizing any additional complex and expensive detecting instrument and interface systems. To make it work, it is enough to simply use an Ethernet connection and the welding data recording program is ready to operate, enabling the monitoring of one or more power sources connected via Ethernet to your computer.

INDUSTRY 4.0

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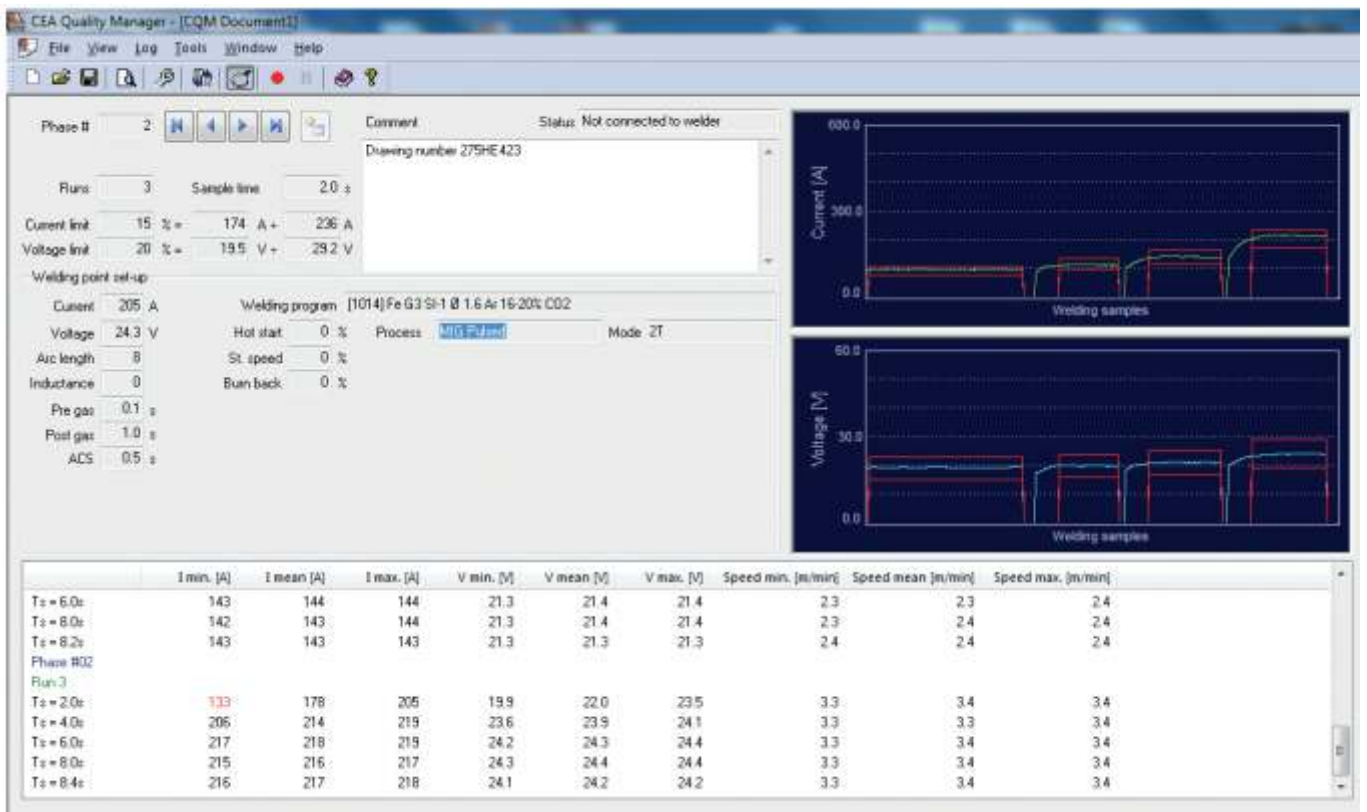
ETHERNET LAN

After all data related to the welding process are inserted (operator, power source model, used material, gas etcetera), this software, for each welding operation, will enable to:

▸ Decide welding parameter minimum and maximum acceptable values.

▸ Detect real minimum, average and maximum values for welding current, voltage and wire speed within the defined sample interval.

▸ Generate quality graphics updated in real time.

▸ Save and store detected welding parameters.

▸ Generate welding operation printing reports.

CEA Quality Manager - 1.5.2 (build 1792)

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Piece:	CRANES AB 1456	COD:	B71235478
Description:	TEST N. 471		

Notes:	NOTES

Operator:	Paul Smith - U 503		
Welder:	Digitech Vision 5000	S/N:	AG107005
Firmware:	H04-03.04 F03-04.06-BETA1012 C04-28.01 500A		

Phase # 1			
Description	DIGITECH 5000 VISION		
Sampling time 1.0 s	Current limit 10 %	Voltage limit 10 %	

Run 1

Curve [1011] Fe G3 SI-1 Ø 0.8 Ar 16-20% Co2		Inductance	0
Process MIG Pulsed		Pre gas	0.1 s
Mode 4T		Post gas	1.0 s
Current 200 A		Burn back	0 %
Voltage 27.5 V		Hot start	0 %
Starting speed 0 %		Job slope	0.5 s
Arc 0			

Started: 18/03/2016 11:10:43 — Terminated: 18/03/2016 11:10:43

Sample #	T [s]	Current [A]			Voltage [V]			Wire speed [m/min]		
		Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
1	0.20	109	111	112	19.80	20.30	20.80	17.10	17.10	17.10

Started: 18/03/2016 11:10:43 — Terminated: 18/03/2016 11:10:43

Sample #	T [s]	Current [A]			Voltage [V]			Wire speed [m/min]		
		Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
2	1.00	92	101	112	15.00	17.50	20.80	17.00	17.10	17.20
3	2.00	84	87	91	12.50	13.40	14.60	17.00	17.10	17.10
4	3.00	80	81	83	11.50	11.90	12.40	17.00	17.10	17.20
5	4.00	78	79	80	11.10	11.20	11.40	17.00	17.00	17.10
6	5.00	78	78	78	11.00	11.00	11.10	17.00	17.00	17.10
7	6.00	78	78	79	11.00	11.00	11.10	17.00	17.10	17.10
8	7.00	78	78	78	10.90	10.90	11.00	17.00	17.10	17.20
9	8.00	78	78	78	10.90	10.90	11.00	16.90	17.00	17.10
10	9.00	78	78	79	10.90	11.00	11.00	17.00	17.10	17.20
11	10.00	78	78	79	10.90	11.00	11.00	17.00	17.10	17.20
12	11.00	78	78	78	10.90	10.90	10.90	17.00	17.10	17.20
13	12.00	73	77	78	10.80	10.90	11.00	17.00	17.10	17.20
14	13.00	66	69	72	10.70	10.90	12.20	17.00	17.10	17.10

CEA Quality Manager - 1.5.2 (build 1792)

Sample #	T [s]	Current [A]			Voltage [V]			Wire speed [m/min]		
		Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
189	16.00	185	185	185	25.00	25.00	25.10	9.90	10.00	10.00
190	17.00	185	185	185	25.00	25.00	25.00	9.90	10.00	10.00
191	18.00	185	185	185	25.00	25.00	25.00	9.90	9.90	10.00
192	19.00	185	185	186	25.00	25.00	25.00	9.90	10.00	10.10
193	20.00	185	185	186	24.90	25.00	25.00	9.90	9.90	10.00
194	21.00	185	185	185	24.90	25.00	25.00	9.90	9.90	10.00
195	22.00	185	185	186	24.90	25.00	25.00	9.90	9.90	10.00
196	23.00	185	185	186	24.90	24.90	25.00	9.90	10.00	10.10
197	24.00	185	185	186	24.90	25.00	25.00	9.90	10.00	10.00
198	25.00	185	186	186	25.00	25.00	25.00	9.90	9.90	10.00
199	26.00	185	186	186	25.00	25.00	25.00	9.90	10.00	10.00
200	27.00	185	186	186	25.00	25.00	25.00	9.90	9.90	10.00
201	27.40	185	185	186	25.00	25.00	25.00	9.90	10.00	10.10

Run 11

Started: 18/03/2016 11:15:05 — Terminated: 18/03/2016 11:15:11

Sample #	T [s]	Current [A]			Voltage [V]			Wire speed [m/min]		
		Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
202	1.00	89	93	97	14.60	16.60	19.20	9.90	10.00	10.00
203	2.00	88	90	100	14.10	20.80	27.20	9.90	10.00	10.00
204	3.00	108	134	153	25.80	26.40	27.10	9.90	9.90	10.00
205	4.00	156	166	173	25.30	25.50	25.80	9.90	10.00	10.00
206	5.00	174	178	181	25.10	25.20	25.30	9.90	10.00	10.00
207	6.00	181	183	184	25.00	25.10	25.10	9.90	10.00	10.00
208	6.80	184	184	185	25.00	25.00	25.00	9.90	9.90	10.00

Run 11

Started: 18/03/2016 11:15:05 — Terminated: 18/03/2016 11:15:11

Sample #	T [s]	Current [A]			Voltage [V]			Wire speed [m/min]		
		Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
202	1.00	89	93	97	14.60	16.60	19.20	9.90	10.00	10.00
203	2.00	88	90	100	14.10	20.80	27.20	9.90	10.00	10.00
204	3.00	108	134	153	25.80	26.40	27.10	9.90	9.90	10.00
205	4.00	156	166	173	25.30	25.50	25.80	9.90	10.00	10.00
206	5.00	174	178	181	25.10	25.20	25.30	9.90	10.00	10.00
207	6.00	181	183	184	25.00	25.10	25.10	9.90	10.00	10.00
208	6.80	184	184	185	25.00	25.00	25.00	9.90	9.90	10.00

WELDER STATUS CONTROL AND WELDING JOB DUPLICATION

CWM: CEA WELDER MANAGER is a software which allows to monitor the status of one or more QUBOX and DIGITECH VP2 welding equipment, one another connected via Ethernet (or via Wifi as optional) by means of an external computer in the same network.

Ideal for the remote monitoring of the welding equipment status, including any faced anomaly, CEA WELDER MANAGER enables to save and duplicate JOBS from one equipment to another, by allowing to copy and paste exactly same setting on all available power sources, thus obtaining a perfect equality in their welding quality.

CEA WELDER MANAGER takes advantage from resources integrated into the welding equipment without utilizing any additional complex and expensive instruments and interface systems. To make it work, it is enough to simply use an Ethernet connection and the program is ready to operate.

CCEA WELDER MANAGER is a very useful tool for:

▸ remote monitoring the welding equipment status an time

▸ quickly identifying any suffered anomaly

▸ remote activating welding JOBS

▸ copying and pasting JOBS from one welding equipment to the other

▸ controlling and monitoring the whole welding process combined with CQM (CEA QUALITY MANAGER).

JOB SAVE AND DUPLICATION

More and more there is the need of a very high quality in welding and repeatability of the results. Once a series of JOBS has been created and memorized in one welding equipment, it would be a long and tiring task to manually re-input exactly same parameters into other power sources, with the risk of making involuntary mistakes.

CEA WELDER MANAGER allows to transfer JOBS from one equipment to others, by granting the reproducibility of the welding operations from one working place to another.

By connecting an external computer - onto which this software has been installed - to a welding equipment, it is possible to download all memorized JOBS (DOWNLOAD FROM WELDER) and create a file, which, thenafter, can be transferred to one or more power sources, by simply clicking onto UPLOAD TO WELDER icon.

CEA WELDER MANAGER is very useful to also make a JOB BACKUP and therefore safely keep memorized JOBS data onto an external unit from where, in case of failure or necessity, they can be retrieved.

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